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Proceedings of UGC Sponsored Two Day National Seminar On

BETTER HEALTH & FITNESS MANAGEMENT THROUGH PHYSICAL EDUCATION

ON 10th & 11th AUGUST 2017

Organized by

DEPARTMENT OF PHYSICAL EDUCATION

J.M.J COLLEGE FOR WOMEN
(AUTONOMOUS) , TENALI
Affiliated to Acharya Nagarjuna University
Reaccredited By NAAC With 'B' Grade (2.75)

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NATIONAL SEMINAR
ON
"BETTER HEALTH AND FITNESS MANAGEMENT THROUGH PHYSICAL EDUCATION"

Introduction

Physical Fitness is the capacity to carry out responsible vigorous physical activity and includes qualities in pertain to the individual health and well being. Sports training largely depend on Physical Fitness. Physical Fitness improves the general fitness, health, organic functioning capacity, strength, stability of muscular and skeleton system etc.

Importance of Physical Fitness or motor abilities is the main criteria in sports training. As per Sabastian Coe - says that, the basis for overall physical fitness is achieved by improving your respiration and your circulation, and to the end the most effective activity is running. The longer you keep running and exercise well the longer you will stay well.

Physical Fitness is the basic criteria for every individual in the society. To lead a successful life an individual has to undergo fitness programmes in his daily life. It is an important programme for sportsman. Through fitness a sportsman easily adapts motor abilities and conditioning.

Sports specialists traditionally define the term fitness as a physical capacity to perform a task. The types of physical capacities necessary to participate in a sporting contest vary between sports and within sports. From the many components of physical fitness most sports are mainly concentrated with strength, speed, endurance, flexibility and co-ordination.

PHYSICAL FITNESS:

- Fitness is the total functional capacity (adaptation of various systems of the body) to perform a specific task.
- Ability to carry our reasonably vigorous physical activities involving muscular strength, muscle endurance, cardio-respiratory endurance and flexibility.
- Physical fitness is the capacity to carry out responsible vigorous physical activity and included qualities in pertain to the individual health and well-being.

AIMS AND OBJECTIVES

Improve health

- Increase efficiency of heart and lungs.
- Reduce cholesterol level.
- Increase muscle strength.
- Reduce Blood pressure
- Reduce risk of major illness such as diabetes and heart diseases
- Weight loss.

Improve sense of well-being

- More energy
- Less stress
- Improved qualities of sleep
- Improved ability to cope with stress.

- Increased mental sharpness.

Improved appearance

- Weight loss
- Toned muscle
- Improved posture

Enhance Social Life

- Improved self-image
- Increased opportunities to make new friends
- Increased opportunities to share an activity with friends and family member.

Increased capacities

- Increased systems functioning capacity.
- Increased resistance power.
- Improves cardiac health.
- Keeps body joint lubricated.
- Improves muscle mass and muscle tone.
- Reduce the chance of having heart diseases.
- Help to control glucose level in the diabetic person's.
- Improves the balance of the body, which minimizes the risk.
- Improves Neuro-muscular co-ordination.

Sr. Regina Mary
President, Soc.JMJ

MESSAGE

Dear Sr. Shiny K.P.,

Greetings and good wishes!

I am indeed happy to note that the department of **Physical Education** is organizing Two Day National Seminar on **"Better Health and Fitness Management through Physical Education" from 10th to 11th August, 2017.** I extend my warmest wishes to the organizing committee for choosing the relevant topic.

In the recent times, it is the most important aspect in this deteriorating environment. Everybody is being more conscious towards their health and wants to be fit throughout the life. Health and fitness are two sides of the same coin, both are very necessary to live a healthy and happy life. Without proper health and fitness one cannot have a feeling of physical, mental, spiritual and social well being. It is very necessary by the people of all age group to be healthy and fit.

Conference like this provides a great opportunity to enhance knowledge and it is an occasion for the resource persons, delegates and scholars to exchange ideas and interact with each other. I am sure that this Seminar on **"Better Health and Fitness Management through Physical Education"** will generate necessary professional enlightenment in the minds of our faculty and students to progress further.

On this occasion, I take the opportunity to congratulate the Management and the department of Physical Education for their sincere, dedicated contributions towards the success of this prestigious event. And may this programme leave a lasting impression on everyone who participates in the two days National Seminar at JMJ College for Women, Tenali.

I pray that God may continue to bless, deepen the spirit of dedication and pursuit of excellence in all your endeavours.

My heartfelt felicitations to all of you on this occasion!

With all good wishes,

Sr. Regina

Sr. Regina Mary
President, Soc. JMJ

MESSAGE

Dear Ms.K.Aruna Sujatha

Greetings and Good Wishes!

I am extremely delighted to know that the Department of Physical Education is organizing UGC Sponsored Two day National Seminar on "Better Health and Fitness Management through Physical Education", 10th & 11th of August 2017. Physical fitness is the capacity to carry out the responsible vigorous physical activity and included qualities pertained to the individual health and well-being. Physical fitness is the basic criteria for every individual in the society to lead a successful life.

Every players dream is to represent his Country in the event of Olympics and win gold medals as a token of love and gratefulness towards his country. Games also helps to develop the real character of sports person it gives an opportunity to be leaders of the team which gives themselves self confidence. The sports persons are very much encouraged by thousands of people who will be watching the game.

May this coming together and sharing enable the delegates to explore and enhance their knowledge on the given topic.

I congratulate the organizing committee of the seminar for taking the challenge in conducting a two day National Seminar. Wishing you a great success and assuring you of my prayers.

Sr. Stella Maris
Correspondent
JMJ College for Women
Tenali

Dr. Sr.Shiny K.P.
Principal

MESSAGE

I am happy that the Department of Physical Education is organizing UGC Sponsored Two Day National Seminar on **Better Health & Fitness Management through Physical Education during 10th & 11thAugust, 2017.** Games and sports keep one physically and mentally fit. Participating in sports develops five components of fitness, namely: strength, speed, skill, stamina and flexibility. Sports helps an individual much more than in the physical aspects alone. It builds character, teaches and develops strategic thinking, analytical thinking, leadership skills, goal setting, risk taking and above all improves health. Playing sports or engaging in extracurricular activities play an important part in one's personality development as one develops management skills, negotiation skills, communication skills, convincing skills, conflict management and confidence. Therefore, effective measures should be taken to ensure people's active participation in games as it improves the overall health of the nation and its citizens.

I hope that this seminar will be a platform for the students, delegates and research scholars to discover modern trends in fitness to enjoy better health. I **congratulate the Organizing Committee** for their persistent effort to conduct the seminar effectively and **best wishes to the delegates**. **I wish you a booming seminar and productive discussion.**

May God Bless you.

Dr.R.Elangovan
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Tamilnadu Physical Education and Sports University,
Melakkottaiyur (p.o), Chennai – 600 127
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MESSAGE

It gives me immense pressure to understand that JMJ College for Women (Autonomous) - Tenali organizes UGC Sponsored Two day National Seminar on "Better Health & Fitness Management through Physical Education" at Tenali on 10th and 11th August 2017.

Indian Physical Education is entering into a new era. The successes in Indian Men cricket team's champions trophy second place performance, Indian Women cricket team's second place performance in World cup, First Place in Asian Athletic Championship. India is 96th rank in World football, organizing under - 17 Fifa World cup in India this year. Popular league matches in India are note worthy recent incidents in Indian Sports. Creating culture of Sports, fostering health and fitness and to create platform for talent identification from grassroots level are a must for better performance. Concentrating on College and School Sports is the need of the hour.

Physical activities activate hypothalamus in the brain which balances hormonal secretion and promotes electrical activity to attain total wellbeing. Physical Education promotes and purifies DAT1, DRD2, DRD4 and DRD7R genes, meant for improving creativity as because the present period in the world is known as the age of creativity.

Physical Education helps not only Men but for others particularly women to think critically by analyzing situations and challenges and act purposefully and fruitfully.

Rev.sr.Stella Maris B, Correspondent and Dr.Sr.Shiny K.P, Principal of JMJ College for women are not ordinary human beings having spiritual experience but spiritual beings having a lot of human experience. They make us proud of yesterdays and remain the guiding lights of tomorrows. Leaders are not born; they seize the limelight when they see what the normal beings fail to see. Great leaders do not set out to be leaders; they set out to make a difference. It is never about the role – always about the goal. Both are great leaders in Education. Let the God bless them in all their future endeavors including of Ms.K.Aruna Sujatha Organizing secretary and other team members of the Seminar.

Awareness of Physical Education in the world is very positive and amazing. I hope this innovative and impressive Seminar would help to increase the understanding of the concepts of Physical Education for the betterment of India as well as the world.

Let the Seminar, be a turning point in the History of Indian Physical Education. I wish the Seminar every success.

R. Elangovan

Dr.R.Elangovan

MESSAGE

I'm glad to know that J.M.J College for Women, Tenali is organising a UGC sponsored national seminar on "Better Health and Fitness Management through Physical Education" on 10th & 11th August, 2017.

Physical Fitness improves the general fitness, organic functioning capacity, strength, Stability of human body and the efficiency of all the systems, especially cardiovascular, muscular, nervous and skeletal systems of the body. A lot of debate is going on regarding modern trends in fitness. I hope a fruitful discussion will take place to promote the health and fitness among the sportspersons and among the general public.

I congratulate the organising committee of the National Seminar, particularly the convenor, Mrs. Aruna Sujatha for her sincere efforts and the responsibility she has taken up for conducting the seminar.

I'm confident that the participants will be highly benefited by the deliberations of expert speakers in this field.

I wish the seminar a grand success.

Thanking you,

(Y.KISHORE)

Dr.P.Johnson
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Acharya Nagarjuna University
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MESSAGE

I am happy to note that the Department of Physical Education, JMJ College for Women, Tenali, Guntur District is Organizing a UGC Sponsored Two Day National Seminar on Better Health & Fitness management Through Physical Education in Association with Indian federation of Computer Sciences in Sports on 10th & 11th August 2017.

Physical Education plays an important role for the benefit of health and it also improves the fitness, wholesome personality. Sports give a good opportunity for social interaction, Joy and Fun. In this context, this Seminar will provide a platform for exchange ideas and knowledge of different experts from different kinds of sports fields.

I hope that the delegates will enjoy the benefits of enriching their knowledge by interacting among themselves and with the senior resource persons.

I wish you all a great success.

Dr.P.Johnson

I. DEVI VARA PRASAD

MESSAGE

Dear Ms. K. Aruna Sujatha

I am very much delighted to send this message on the occasion of the Two-day UGC National Seminar on **"Better Health & Fitness management Through Physical Education"** being organized by the Department of Physical Education, JMJ College for Women, Tenali, Guntur District, on 10th and 11th August,2017.

The topic chosen for the seminar is having lot of topical significance and contemporary relevance. The reforms that are initiate in the Health & Fitness attractive for the society and also contributed for the expansion through sports. The Liberalization measures that were taken up in this area have also promoted the spirit of competition and the resulting benefits are being passed to the public. At the same time, there are still spates of serious policy issues that are left to be debated upon, in the wider interest of the people. I believe that this seminar provides a platform for exchange of scholarly thoughts and creative deliberations and suggests suitable measures for a Fitness & Healthy growth through Sports in India.

I am sure that there will be wide ranging discussions in the seminar on several of issues concerned which would certainly benefit the students and the faculty of the Department.

I wish the seminar a grand success and leave a lasting impression on every participant.

Yours Affectionately,

(I. DEVI VARA PRASAD)

DR. K. JOTHI Ph D., ***Associate Professor,***
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Associate Professor

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07.08.2017

MESSAGE

I am extremely delighted to note that the Department of Physical Education, JMJ College for Women, Tenali, Guntur District is organizing a UGC Sponsored Two Day National Seminar on ***Better Health & Fitness management*** , in association with Indian federation of Computer Sciences in Sports on 10th & 11th August 2017.

The National conference and all its deliberations will bring fruitful results for the growth of sports knowledge for all concerned. Life will not be life without physical activities. Every day the technology is fast changing and the knowledge updating and information sharing is must for keeping one self healthy and fit..

The topic is apt for the conference and I wish the conference will indeed expand the knowledge and facilitate further. I wish the conference a great success.

K. Jothi Dayanandan
Associate Professor,
YMCA College of Phy. Edn.
Nandanam,
Chennai-35

Chief Patron

Rev. Sr. Stella Maris B.

Correspondent, JMJ College for Women

Patron

Dr. Sr. Shiny K.P.

Principal, JMJ College for Women

Convenor & Organizing Secretary

Ms. K. Aruna Sujatha

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&

HOD's of All Departments

JMJ College for Women, Tenali

Edited By
K. ARUNA SUJATHA

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ANALYSIS OF SELECTED PSYCHOLOGICAL SKILLS OF MALE AND FEMALE PARTICIPANTS IN DIFFERENT SPORT DOMAINS

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[2.]Dr.Ravi Kumar, lecturer in Physical Education, A.C.College, Guntur, Andhra Pradesh

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Abstract

This investigation was purported to analyze the selected psychological skills of male and female participants in different sport domains. For this reason, 320 sportsperson from different sport domains (*individual and team sports*) were selected as subjects from Guntur district, Andhra Pradesh, India. These subjects were in the age group of 18 to 21 years, and they were tested for their level of achievement motivationandcompetitive anxiety using standardized instruments. The data collected were subjected to statistical analysis by means of Two-way ANOVA, and simple effect test. The confidence interval was fixed at $p < 0.05$ in all cases. The research findings imply that difference in gender and participation in different sport domains contributes to the variation in developmental process on achievement motivation and anxiety.

Key: Sports Domains, Achievement motivation

Introduction

Every human being is born with specific physical and psychological strengths and weaknesses, yet the skills are learned and developed through day to day endeavours. Irrespective of the sport in question, an athlete's success or failure is dependent on a combination of physical and mental abilities (Nideffer, 1976). Psychological, social and physical development process project powerful influences on sport participation, defined broadly as engagement, learning, and performance in sports. Sport experiences often foster citizenship, social success, positive peer relationships, leadership skills, and a sense of initiative in participants.

The highly desirable benefits of a physically active lifestyle are mastery of motor and sport-specific skills that contribute to competence in lifelong physical activities, attaining social and psychological life skills (e.g., interpersonal skills, resistance skills), and improving developmental outcomes such as confidence, self-regulation, character, motivation, and perseverance (Weiss, 2008).

Developmental sport psychology is the term for the area of study focused on determining the role of sport participation experiences in developing psychological, social, and physical competencies. The acquisition of sport skill expertise is both a product of development and a process for development, meaning that psychological development affects sport skill acquisition and that the sport skill acquisition process results in psychological changes.

Youth sport participants themselves give many specific reasons or motives for sports participation, and typically have higher perceptions of competence and control than those who drop out. Competence motivation theory suggests that mastery behaviour in activities such as sport is predicted by one's perceptions of ability and sense of control over performance situations. Achievement goal theory shows that behaviour is

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often predicted by children's perceptions of their abilities and their goal perspectives, meaning their views on what it means to be successful in sport.

Contemporary thinking views stress as a dynamic relationship between athletes and their practice and competition environment. Specifically, performers appraise the demands to cope with these demands. Inherent within this approach is the perspective that performers will encounter many different demands that tax their resources and it is the athletes' perceived ability to cope with these that form the process of stress. If athletes feel that they cannot cope with the demands then they are then likely to experience different levels of competition anxiety.

Elite athletes repeatedly have to perform under high pressure, and it is therefore not surprising that psychological characteristics often distinguish those successful at the highest standard from their less successful counterparts (Morris, 2000). Early research evidence already supported an association between psychological characteristics and sports performance (Morgan & Pollock, 1977; Morgan, 1979; May *et al*., 1985). Further research evolved with an emphasis in identifying psychological skills relevant to sport (Meyers *et al*., 1996). Yet, it is not self-evident that the relation between psychological skills and performance level is similar for different types of sports or for males and females.

The conceptualization of sport structure plays a vital role in the modification of psychological skills. Furthermore, gender differences play a prominent role in the enhancement of psychological skills of athletes participating in different sports. Thereby, the analysis of psychological skills of male and female athletes participating in different sports is necessitated to understand the gender difference and nature of activity in developing the psychological skills. The main aim of this investigation was to analyze the selected psychological skills (*achievement motivationandcompetitive anxiety*) of male and female participants in different sport domains.

Methodology

In this study, 320 sportsperson from different sport domains (*individual and team sports*) were selected as subjects from Guntur district, Andhra Pradesh, India. The subjects selected in the domain of individual sports consist of 74 male and 58 female sportsperson, whereas, 105 male and 83 female sportsperson considered as subjects from that of team sports. The subjects selected were position holders in the district level tournament in respective sports. The age of the subjects were ranged between 18 and 21 years. The participants in athletics, badminton, table tennis, tennis, power lifting, and weight lifting were considered to be as subjects categorized as individual sports in this study, while the basketball, cricket, football, handball, hockey, kabaddi, khokho, and volleyball players were considered as subjects belonging to team sports. These sports of different domains were chosen considering the popularity and achievement of the sportsperson in State level tournaments.

The selected subjects were tested for their level of achievement motivationandcompetitive anxiety using standardized instruments. The data collected were subjected to statistical analysis by means of Two-way ANOVA, and simple effect test. The confidence interval was fixed at $p < 0.05$ in all cases.

Results

The data on achievement motivationandcompetitive anxiety were analysed for statistical significant gender difference and the influence of participating in individual and team sports.And all those results were tabulated in tables from 1 through 6.

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Table – 1: Mean and Standard Deviation on Achievement Motivation among Sportsperson of different Sports Domain

Gender	Sports Domain	Mean	Std. Deviation	N
Male	Individual Sports	26.689	3.420	74
	Team Sports	24.962	3.905	105
Female	Individual Sports	25.431	3.550	58
	Team Sports	27.289	2.878	83

It is obvious from Table-1 that female has more achievement motivation than their counterpart irrespective of their sports. Furthermore, it is observed that participants in individual sports are highly motivated to achieve compared to those engaged team sports.

The data on achievement motivation have been analyzed by two-way analysis of variance to determine the gender difference and the influence of participation in different sports domains, and the obtained results are presented in Table-2.

Table – 2:Two-way Analysis of Variance on Achievement Motivation

Source	Sum of Squares	df	Mean Square	F	Sig.
Gender	21.843	1	21.843	1.799	.181
Sports Domain	.327	1	.327	.027	.870
Gender * Sports Domain	245.670	1	245.670	20.232	.000
Error	3836.983	316	12.142		

It is observed from Table-2 that the achievement motivation between gender (*male and female*) irrespective of sports domain is $F(1, 316) = 1.799$, ($p = 0.181$), which indicates that no significant differences exist between male and female irrespective of sports domain (*individual and team sports*) on achievement motivation. Moreover, the achievement motivation between sports domain (*individual and team sports*) irrespective of gender is $F(1, 316) = 0.027$, ($p = 0.870$), which indicates that no significant differences exist between individual and team sports irrespective of gender on achievement motivation.

But, the obtained $F(1, 316) = 20.232$, ($p < 0.05$) value for the two-way interaction of gender (*male and female*) and sports domain (*individual and team sports*), reveals a significant difference on achievement motivation. It establishes the existences of significant differences in the two way interaction effect on achievement motivation. Since, the interaction effect is significant, the simple effect test has been applied as follow up test and it is presented in Table-3.

Table – 3: The Simple Effect Test on Achievement Motivation among Sportsperson of different Sports Domain

	Sum of Squares	df	Mean Squares	F ratio	Sig.
Gender and Individual Sports	51.470	1	51.470	4.239	.040
Gender and Team Sports	251.071	1	251.071	20.677	.000
Sports Domain and Male	129.508	1	129.508	10.666	.001
Sports Domain and Female	117.879	1	117.879	9.708	.002
Error	3836.983	316	12.142		

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Table-3 reveals that statistically significant difference on achievement motivation exists between male and female sportsperson participating in individual sports, as the obtained $F(1, 316) = 4.239$, ($p < 0.05$). Likewise, considerable difference on achievement motivation between male and female sportsperson participating in team sports is observed, as the obtained $F(1, 316) = 20.677$, ($p < 0.05$). It also shows that there is a statistically significant difference on achievement motivation between individual and team male sportspersons as the $F(1, 316) = 10.666$, ($p < 0.05$), per se, considerable difference on achievement motivation exists between individual and team female sportspersons as the $F(1, 316) = 9.708$, ($p < 0.05$).

Table – 4: Mean and Standard Deviation on Anxiety among Sportsperson of different Sports Domain

Gender	Sports Domain	Mean	Std. Deviation	N
Male	Individual Sports	19.649	3.677	74
	Team Sports	20.391	2.669	105
Female	Individual Sports	15.862	3.247	58
	Team Sports	18.349	2.662	83

It is obvious from Table-4 that male are more anxious than female irrespective of their sports. Furthermore, it is observed that participants in team sports are highly anxious compared to those play individual sports.

The data on anxiety have been analyzed by two-way analysis of variance to determine the gender difference and the influence of participation in different sports domains, and the obtained results are presented in Table-5.

Table – 5:Two-way Analysis of Variance on Anxiety

Source	Sum of Squares	df	Mean Square	F	Sig.
Gender	649.028	1	649.028	70.488	.000
Sports Domain	199.275	1	199.275	21.642	.000
Gender * Sports Domain	58.226	1	58.226	6.324	.012
Error	2909.619	316	9.208		

It is observed from Table-5 that the anxiety between gender (*male and female*) irrespective of sports domain is $F(1, 316) = 70.488$, ($p < 0.05$), which indicates that significant differences exist between male and female irrespective of sports domain (*individual and team sports*) on anxiety. It also shows that the anxiety between sports domain (*individual and team sports*) irrespective of gender is $F(1, 316) = 21.642$, ($p < 0.05$), which indicates that significant differences exist between individual and team sports irrespective of gender on anxiety. Furthermore, the obtained $F(1, 316) = 6.324$, ($p = 0.012$) value for the two-way interaction of gender (*male and female*) and sports domain (*individual and team sports*), reveals a significant difference on anxiety.

A finding of the study establishes the existences of significant differences in the two way interaction effect on anxiety. Since, the interaction effect is significant, the simple effect test has been applied as follow up test and it is presented in Table-6.

Table – 6:The Simple Effect Test on Anxiety among Sportsperson of different Sports Domain

	Sum of	df	Mean	F ratio	Sig.

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	Squares		Squares		
Gender and Individual Sports	466.208	1	466.208	50.633	.000
Gender and Team Sports	193.121	1	193.121	20.974	.000
Sports Domain and Male	23.888	1	23.888	2.594	.108
Sports Domain and Female	211.229	1	211.229	22.941	.000
Error	2909.619	316	9.208		

Table-6 shows that there is a statistically significant difference on anxiety between male and female sportsperson participating in individual sports, as the obtained $F(1, 316) = 50.633$, ($p < 0.05$). Per se, considerable difference on anxiety between male and female sportsperson participating in team sports is noticed, as the obtained $F(1, 316) = 20.974$, ($p < 0.05$). However, it also demonstrates that statistically significant difference on anxiety didn't exist between individual and team male sportspersons as the $F(1, 316) = 2.594$, ($p = 0.108$), whereas, considerable difference on anxiety exists between individual and team female sportspersons as the $F(1, 316) = 22.941$, ($p < 0.05$).

Conclusion

The research findings of this study imply that difference in gender and participation in different sport domains contributes to the variation in developmental process on achievement motivation and anxiety.

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NUTRITIONAL STATUS AND PSYCHOLOGICAL WELLBEING

P. Hemalatha
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ABSTRACT

Well being is a dynamic concept that includes subjective, social, and psychological dimensions as well as health related behaviors. The factors which contribute to an individuals psychological wellbeing are contentment, happiness positive relationships with others personnel mastery etc. Mental health is a level Psychological well being, or an absence of a mental disorder. Mental health includes our emotional, psychological and social well-being. It affects how we think, feel and act it also helps determined how we handle stress, relate to others, and make choices.

Like an expensive car our brain functions best when it gets only premium fuel. Eating high –quality foods that contain lots of vitamins, minerals and antioxidant nourishes the brain and protects it from oxidative stress –the waste (free radicals) produced when the body uses oxygen which can damage cells.

The food we eat is associated with our mood, behaviour, and cognition. Just like the heart, stomach and liver, the brain is an organ that is acutely sensitive to what we eat and drink. The body of evidence linking diet with mental health is growing at a rapid pace. Saturated fats, transfats and processed foods are to be cautiously consumed to stop damage to brain cells.

The Mental Health Care Bill 2016 passed by the RajyaSabha recently brings the rights of patience with mental problems to the centre stage. Jahoda 1958 has identified 6 indicators of mental health such as a positive attitude towards self growth, self actualization, integration, autonomy, perception of reality and environmental mastery.

This paper highlights the role of nutrition in Psychological Well being of the person and how it influences the quality of life. It also explores on the type of foods that helps for proper brain functioning.

Psychological wellbeing often known as Good Mental Health or Emotional Health etc. If you have good mental health you can make the most of your potential, hope with life, play a full part in your family, work place, community etc. mental health or psychological wellbeing is needed dot every one irrespective of age. We all have times when we feel down, stressed or frightened. Most of the time those feeling passed, but some times they developed into a more serious problem. It does not always stay the same. It can change as circumstances change and as you move through different stages in your life.

What we eat may affect how we feel. Food can also have a long lasting effect on our mental health. Our brain needs a number of nutrients in order to stay healthy and function well, just like the other organs in your body. A diet that is good for physical health is also good for mental health. Psychological wellbeing is one of the main dimensions of the quality of life which has been used in nutritional studies.

Nutrients that the brain needs and dietary sources		
Nutrient	**Effect of deficiency**	**Dietary sources**
Vitamin B1	Poor concentration and attention	Whole grains, vegetables
Vitamin B3	Depression	Whole grains, vegetables
Vitamin B5	Poor memory; stress	Whole grains, vegetables
Vitamin B6	Irritability; Poor memory: stress; depression	Whole grains, Bananas
Vitamin B12	Confusion ; poor memory; psychosis	Meat, fish dairy products, eggs

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Vitamin C	Depression	Vegetables, fresh fruits
Folic acid	Anxiety; depression; psychosis	Green leafy vegetables`
Magnesium	Irritability; insomnia; depression	Green vegetables, nuts, seeds
Selenium	Irritability; depression	Wheat germ, brewer's yeast, liver, fish, garlic, sunflower seeds, Brazil nuts, whole grains
Zinc	Confusion; blank mind; depression; loss of appetite; lack of motivation	Oysters, nuts, seeds, fish

Our brain is always on. It takes care of our thoughts and movements, our breathing and heart beat, our senses—it works hard 24/7, even by you're a sleep. That fuel comes from the foods you eat and whats in that fuel makes all the differences. Put simply, what our eat directly affects the structure and function of our brain and ultimately our mood.

Like an expensive car our brain functions best when it gets only premium fuel. Eating high –quality foods that contain lots of vitamins, minerals and antioxidant nourishes the brain and protects it from oxidative stress –the waste (free radicals) produced when the body uses oxygen which can damage cells.

The body of evidence linking diet and mental health is growing at a rapid pace. As we see its impact on short and long term mental health, the evidence indicates that food placed an important contributing role in the development. It is proved that nutrition plays a vital role in Management and prevention of specific mental health problems such as depression, schizophrenia, attention deficient hyper activity disorder, and Alzheimer's disease. The World Health Organization defines mental health as "positive sense of well-being encompassing the physical, mental, social, economic and spiritual aspects of life; not just the absence of disease. Mental health is a barometer of the social life of morbidity and mortality is a sign of social as well as individual malaise".

Mental health is "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community". Mental health conditions are associated with long-lasting disability and significant mortality through suicide, medical illness, and accidental death.

Comprehensive mental health promotion interventions that include nutrition education and food skills training components, with a focus on pregnant moms, infants, children, and adolescents, can lead to reductions in neural tube defects, low birth weight, and premature delivery, and can positively affect cognitive development, behavior, and academic performance. Positive parenting programs that include healthy lifestyle interventions have led to a return on investment in excess of 6% based on reduced use of special education, social, mental health, and criminal justice services.

The promotion of optimal nutrition that supports mental health through public health, policy, and programming can lead to reductions in health and social costs. Public health messaging and social marketing that highlight the importance of healthy eating and mental health, initiatives targeted at building healthy food environments

Mental health is "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community". Positive mental health enhances social cohesion and social capital, improves peace and stability in the living environment, contributes to economic development in societies, and is a principle of democratic society. Mental health problems occur across all ages, cultures, and population's evidence

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demonstrates that mental health promotion and disease prevention interventions can lead to health, social and economic gains.

The food we eat is associated with our mood, behaviour, and cognition. Current knowledge about nutrition and mental health is based on a variety of evidence from animal behavioural research, neurochemical experiments in vitro, epidemiological studies, and some clinical trials, and it continues to evolve. Based on the current literature, there are at least 10 common interrelated frameworks that explain the interactions between the food we eat and the functions of the mind

1. **Societal Shifts** Some observers have speculated that appetite for high-calorie foods has been accelerated by broad cultural and policy developments, including policies related to punishment (i.e., mass incarceration), access to housing, and food production, which in turn contributed to issues such as obesity and mental health conditions.
2. **Changes in the Typical Diet** The increased incidence in mental health conditions such as depression over recent years might be linked to the change in our diet. The increasing incidence of mental health conditions is a complex issue associated with a range of biological, social, and economic factors; changes in food consumption may be a contributing factor.
3. **Food Insecurity** Because mental health conditions account for a substantial portion of the global disease burden, related factors such as food insecurity have received increased attention. Individuals with conditions such as anxiety or depression may have diets that lack critical micronutrients. the experience of food insecurity generates uncertainty, which in turn leads to stress and symptoms of anxiety and depression
4. **Genetics** Inborn errors of metabolism can have many effects, including influencing enzyme and coenzyme reactions in the brain.
5. **Nutrition in the Prenatal** Environment Human neurodevelopment is the result of genetic and environmental interactions. Epidemiological studies that examined the role of prenatal nutrition relative to mental health conditions have found that prenatal caloric malnutrition, low birth weight, and prematurity increase the risk for neuro developmental disorders, schizophrenia, and schizoid and antisocial personality disorders.
6. **Long-Term Effects of Poor Nutrition** Many individuals are not diagnosed with some types of mental health conditions (e.g., depression) until after decades of life, which suggests that long-latency effects of poor nutrition on the central nervous system affect mental health
7. **Nutrition and Stress** Cortisol, an important steroid hormone secreted in response to stress, may affect mental health, mood stability in particular. Cortisol secretion levels may be affected by negative mood states, fatigue, and “burnout,” as a result of acute and chronic stress30. Psychological factors associated with food intake (e.g., intentional diet restraint) may alter cortisol secretion and therefore mental function.
8. **Energy Metabolism and Glucose** is the preferred fuel source for the brain. The roles of glucose include forming acetylcholine and many other neurotransmitters. Glucose utilization enhances cognition and may be affected by fatty acids which can alter both how glucose is used and also insulin sensitivity.
9. **Antioxidant** Affects Several substances containing antioxidants, such as minerals and vitamins (beta carotene, alphatocopherol), polyphenols, and herbal extracts may prevent oxidative stress leading to DNA damage.

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10. **Membrane Function and NeurotransmitterAffects** Several substances, especially lipids and fatty acids, act on the integrity of the membranes of neurons. Imbalances of these nutrients may alter membrane fluidity, receptor formation and function, signaling and surface activity, blood-brain barrier integrity, and the release of neurotransmitters, hormones, and cytokines. These effects may be especially true for elderly people in whom membrane function declines with age45

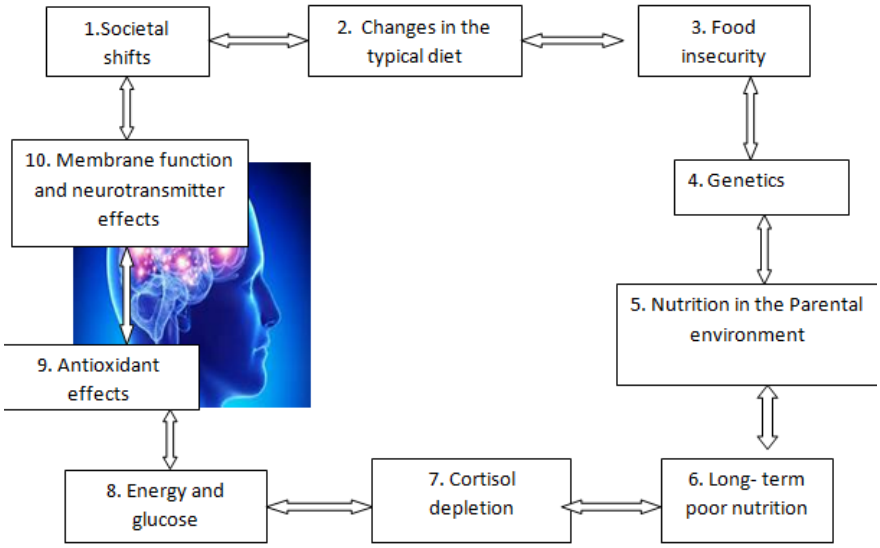

Figure 1: The intersections of Nutrition and the Mind

Conclusion:

Nutrition places a significant role in mental health care. To remain healthy brain needs complex carbohydrates, essential fatty acids, amino acids, vitamins and minerals and water in varying quantities. It needs complex carbohydrates to supply the necessary fuel in the form of glucose, which is available in whole grains, vegetables and beans. Brain also needs Omega-3 and Omega-6 fatty acids which can not be made with in the body and we derived directly from the diet. Oily fish I the richest source of Omega-3. Neuro transmitters which are the messengers in the brain are made from the amino acids which need to be derived from protein in the diet. A deficiency in certain amino acids leads to depression for example Tryptophan and serotonin. Fish, fruits, eggs, avocado fruit, wheat germ are some of the sources of serotonin. Insufficient fluid intake leads to dehydration and results in irritability loss of concentration and reduces efficiency in mental task.

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PHYSICAL FITNESS FOR WOMEN FOR BETTER HEALTH - A CRITICAL ANALYSIS

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Introduction

In India majority of women are suffering from anemia, diabetes, joint pains and arthritis due to lack of proper nutrition and physical exercise this is due to lack of proper infrastructure, lack of facilities in smaller towns and villages. In course of time they neglect their health and all these will become into chronic stage. Hence proper care should be to be taken from the beginning in giving due importance to physical fitness for women for better health.

Keywords:Physical activity, health centers, ailments, diseases.

Physical Activity and Women: Social inequality, poverty and inequitable access to resources, including health care, result in a high burden of noncommunicable diseases (NCDs) among women worldwide and especially in India. Although women generally tend to live longer with NCDs than men, they are often in poor health.

Regular activity can help prevent unhealthy weight gain and also help with weight loss, when combined with lower calorie intake. If you are overweight or obese, losing weight can lower your risk for many diseases. Being overweight or obese increases your risk of heart disease, high blood pressure, stroke, type 2 diabetes, breathing problems, osteoarthritis, gallbladder disease, sleep apnea (breathing problems while sleeping), and some cancers. Regular physical activity can also improve your cardio respiratory (heart, lungs, and blood vessels) and muscular fitness. For older adults, activity can improve mental function.

Benefits of Physical activity for women: Regular physical activity can improve women's' health and help prevent many of the diseases and conditions that are major causes of death and disability for women in India. Many women suffer from disease processes that are associated with inadequate participation in physical activity.

Physical Activity has also been associated with improved psychological health by reducing levels of stress, anxiety and depression. This is particularly important for women who demonstrate an incidence of depression that is reported to be almost double that of men in both developed and developing countries like India. It has also been suggested that physical activity can contribute to building self-esteem and confidence and can provide a vehicle for social integration and equality for women in society.

Cardiovascular diseases account for one-third of deaths among women around the world and half of all deaths in women over 50 years old in developing countries, Diabetes affects more than 70 million women in the world and its prevalence is projected to double by 2025, Osteoporosis is a disease in which bones become fragile and more likely to break and is most prevalent in post-menopausal women, majority of women are suffering from osteoporosis in India. Breast cancer is the mostly commonly diagnosed cancer in women along with other cervical, uterus, colon cancers.

How to start?: You have to consult a doctor if you are physically inactive for some time or illness or pregnant or if you are so elderly. Accordingly you have to follow. Usually start slowly. Do some light exercises. Go for light walking and gradually increase the intensity of your exercise.

Initially take the stairs instead of the elevator, going for a walk during your coffee break or lunch, walking all or part of the way to work doing housework at a fast pace and doing gardening, and other house hold work.

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Reasons for Physical inactivity in women: Despite this, physical inactivity is generally more prevalent among girls and women than their male counterparts especially in India. Many factors hinder the participation of women in physical activity and their access to health care due to various reasons. The income of women is often lower than that of men and therefore the costs of access to physical activity facilities may be a barrier, Agreement may be required from senior members of the household who control household resources before a woman can engage in physical activity.

Women often have a workload in the home and care-giving roles for other family members which may limit the time available for them to engage in physical activity, Women who have limited mobility may be unable to travel to health centers or physical activity facilities, Cultural expectations may restrict the participation of women in certain forms of physical activity.

The physical activity guidelines state that an active lifestyle can lower your risk of early death from a variety of causes. There is strong evidence that regular physical activity can also lower your risk of:

- Heart disease
- Stroke
- High blood pressure
- Unhealthy cholesterol levels
- Type 2 diabetes
- Metabolic syndrome
- Colon cancer
- Breast cancer
- Falls
- Depression
- Mental illness

Physical activity may also help:

Improve functional health for older adults, Reduce waistline size, Lower risk of hip fracture, Lower risk of lung cancer, Lower risk of endometrial cancer, Maintain weight after weight loss, Increase bone density, Improve sleep quality, Reduces the risk of dying from heart diseases, Reduces the risk of developing diabetes, Reduces the risk of developing colon cancer, Reduces feelings of depression and anxiety, Helps to build and maintain healthy bones, muscles and joints, Helps older adults stronger and better able to move about without falling. Promotes psychological well-being, Helps to control weight, build lean muscle mass and reduce body fat, Helps to control weight, build lean muscle mass and reduce body fat, Prevents or delays development of high blood pressure and helps reduce blood pressure among adolescents and adults.

Conclusion: To continue physical activity some tips have to be followed. Engage in activity which you like most like walking, swimming, cycling etc. Search for a good partner while doing physical activity so that you will continue if you have a good partner. Maintain a routine so that you will maintain rhythm. Choose a comfortable time in a day and maintain it regularly. Take exercise as a fun listen to music while doing so that you can relax most.

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IMPORTANCE OF SPORTS AND GAMES FOR BETTER HEALTH

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KEYWORDS: Health, Sports, Games, Balanced Diet, Wealth, Stress, Curriculum.

For a better and a healthy life all that we need is a balanced diet. Balanced diet should be comprised of vitamins, minerals, nutrients, sufficient carbohydrates etc which are available in vegetables, fruits, green leafy vegetables, fish, egg, chicken, soya etc. But in the present generation children are attracted to the road side junk foods and fast foods. Parents should bring awareness among their kids and inculcate them healthy dietary habits which leads to good health and a prosperous life.. The above mentioned points are the basic foundation for maintaining good health and succeed in life. There is a well-known saying that " HEALTH IS WEALTH". It's just a 3 word line but they are inter-twined. There is a long chain between health and wealth. If we take good and whole-some food we have good health. For being healthy balanced diet itself is not enough. We need to do exercises and maintain good habits to keep our body fit and strong physically and mentally. If we have good health and the ability to do exercises daily, it will develop our confidence levels. As a result we can face challenges that we come across our life. One will have the courage to do anything. If they are healthy, their mind will be always free from stress. As a result they will concentrate on their studies. They will succeed well in their education and get a good job which gives him/her a wealthy life. So to live a happy, successful and prosperous life we need good health which we mainly get from exercising i.e. playing sports and games.

Sports and games play a significant role in the development of the well-being of the people. Sports and games protect the body from various diseases. They improve the functioning of various organs in the body. Playing sports and games should be a part of one's daily curriculum. Sports like walking, jogging, cycling, swimming, running, doing workouts in gym etc and exercises like yoga, meditation etc can be done on daily basis.

SPORTS AND GAMES ARE VERY USEFUL:

- FOR HEALTHY HEART: Sports like cricket, badminton, tennis etc are the best sporting examples in stretching the body. As a result the most important inner organ i.e. heart improves pumping of blood and circulates well.
- FOR CONTROL OF DIABETES: Playing sports improves the production of insulin in sufficient levels in the body. It also protects from the risk of type-2 diabetes.
- FOR LOWERING OF CHOLESTROL LEVEL: Sports helps in lowering the bad cholesterol levels. In a study, it has showed Sports helps in that sports person or athletes have good cholesterol level while non sports person have bad cholesterol.
- **FOR WEIGHT MANAGEMENT**: As we know that obesity has become a big problem in the present generation, playing sports burn the calories. People who play sports regularly are always lean and healthy.
- **FOR LOWERING HYPERTENSION**: Hypertension is nothing but high blood pressure, which results in heart stroke. This can be controlled by playing sports.

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- **FOR THE IMMUNE SYSTEM** : Indulging in playing sports regularly strengthens the immune system. If a person's immune system is weak he/she will easily STRENGTHENING affected by the diseases. So playing sports strengthens the immune system.
- **FOR IMPROVING BLOOD CIRCULATION:** circulation of blood improves when we play sports. Apart from blood circulation playing sports also increases amount of hemoglobin.
- **FOR MUSCLE TONING:** Sports are the best form for muscle buildup. The endurance of muscles also increases and helps in gaining stronger body.
- **FOR STRONGER BONES**: Playing sports not only strengthen the muscles but also bones. Bones get strength from bone density and aging decreases bone density which can result in "Osteoporosis".
- **FOR POSITIVE ENERGY:** Sports bring positive energy. It refreshes mind and helps in developing a positive and fresh outlook towards life.
- FOR SELFESTEEM**:** Playing a particular sport helps to build self esteem. When one improves in any particular sport one feels happy about it.
- **FOR DISICIPLINE:** Discipline becomes a part of life when you start playing sports. This is because sports inspire and motivate people to live life by certain rules and regulations and move life in a positive way.

Sports helps us a lot in maintaining our health as well as our personality. Sports develop an over all aptitude for facing challenges in life. So we must play daily no matter which game we play but we must play.

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BALANCED DIET AND PHYSICAL FITNESS

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ABSTRACT
Balanced diet and regular physical activity are the building blocks of good health. By eating right food and being active we can maintain a healthy life style. Here we will focus more on a healthy diet as what we eat largely affects our health. A balanced diet must contain all the macro and micro nutrients which we need and in the right proportions. People generally take excess of macro nutrients and too little of micro nutrients which will affect their health status. It is more essential for children for proper growth and development .Nutrition plays an important role not only in physical health but also on mental health. Nutrition in infants and children appears to affect health in later life.
Regular exercise and the consumption of a healthy diet can lead to a host of benefits, including increased energy, happiness, health and even a long life. Exercise and diet are pivotal to determining a person's overall health, and making them both part of your lifestyle can make a dramatic difference in how you look and feel.
For children and young people evidence indicates that sixty minutes of activity on most days will help them achieve healthy growth and development. There is strong evidence that a more active and fitter population would have lower rates of obesity, cardiovascular disease, type 2 diabetes, some cancers and fewer mental health problems.
Being active can also improve your personal appearance, encourage fun with family and friends, maintain the ability to live independently, and enhance fitness for sports. Regular exercise will maintain the performance of your lungs and heart Exercise will also improve muscle strength, increase joint flexibility and improve endurance. This paper explores on the composition of Balanced diet and its effect on Fitness and Health status of individual

Introduction
Balanced diet and regular physical activity are the building blocks of good health. Poor eating habits and too little physical activity can lead to being overweight and bring along related health problems. By eating right food and being active we can maintain a healthy life style. Here we will focus more on a healthy diet as what we eat largely affects our health. A balanced diet must contain all the macro and micro nutrients which we need and in the right proportions. People generally take excess of macro nutrients and too little of micro nutrients which will affect their health status. It is more essential for children for proper growth and development .Nutrition plays an important role not only in physical health but also on mental health. Nutrition in infants and children appears to affect health in later life. Breast feeding may help increase immunity and reduce some allergies. Generally, a healthy diet consists of healthy vegetables, fresh fruits, low or non-fat dairy products and whole grains. You must also include protein from meat, fish, eggs, poultry and nuts and limit your consumption of sugar, salt and fat.

Research evidence: The 2006 European Commission Green Paper Promoting Healthy Diets and Physical Activity highlighted that important lifestyle choices pre-determining health risks at adult age are made during childhood and adolescence. The report emphasised that it is vital for children to be guided towards healthy behaviours. Recent data collected for the Health Behaviour in School-aged Children survey in Wales indicated that 22 per cent of 15 year old boys and 17 per cent of 15 year old girls are overweight or obese. Early intervention is important as eating habits can become established in early childhood.

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The diets of many children and young people in Wales are inadequate, with low intakes of fruit and vegetables and high intakes of snacks that are high in fat, sugar and salt. In addition, vitamin and mineral deficiencies, e.g. vitamin D and iron, are common in certain groups.

For children and young people evidence indicates that sixty minutes of activity on most days will help them achieve healthy growth and development. There is strong evidence that a more active and fitter population would have lower rates of obesity, cardiovascular disease, type 2 diabetes, some cancers and fewer mental health problems. The proportion of young people meeting recommended activity levels declines between the ages of eleven and fifteen. A number of researchers have noted improved behaviour and school performance following a healthy meal and adequate hydration.

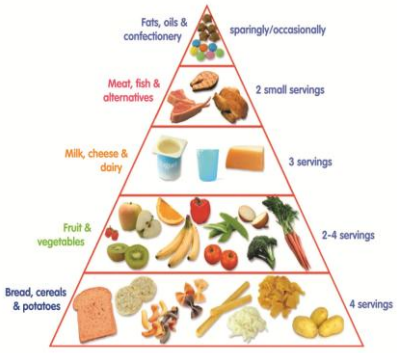
BALANCED DIET: A right and balanced diet is important for maintaining your physical fitness because the food is simply fuel. The foods you eat have calories and these calories should be burned by your body to power all your body's functions. According to experts, what you need is a diet that is high in healthy foods like fruits, vegetables, and whole grains. Likewise, a diet should be low in saturated fat and low in cholesterol.

Macro nutrients include: Fats, Proteins, Carbohydrates and water, while micro nutrients include: Vitamins, Minerals and Trace Elements that we need in very small amounts. We get all the energy and calories from macro nutrients with the exception of water. Also Fats provide more than twice the calories compared to Protein and Carbohydrates!

We cannot always keep track of exactly how much of each nutrient we need on a daily basis and it is even more difficult to remember which food gives us which nutrients. However, we can easily remember that we need to eat a variety of foods and practice moderation in our eating regimens to fulfil our nutritional requirements, as no one food can provide us all that we need to be healthy.

Water, the fourth macro nutrient, does not provide energy, but helps control body temperature, transports nutrients to cells and waste products to kidney for excretion. Average daily requirement of a sedentary individual is approximately 2000 kcal, while a highly active person may require an average of 3500 kcal per day.

Pyramid: If you have a balanced diet you can get all the nutrients your body needs, in the right proportions. To help you figure this out, scientists have developed a food pyramid, which will guide you in getting the right amounts of nutrients. Every day, you should have a variety of foods according to the number of servings listed in the pyramid. Follow the guide lines in the Food Pyramid and you get to know that it is important to choose from all food groups daily for a healthy balanced diet.



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A. Carbohydrates: Carbohydrates are what keep your body's motor running. They are the most important source of energy, especially during moderate to extensive physical activity. However, just as you would not put diesel in a petrol-run car, you have to be smart about which Carbohydrate you eat.

Eating for Energy (% of calories from macro nutrients recommended in a daily diet) Carbohydrates 50-60%, Proteins 10-15%, Fat ≤ 30%. 1 gram of pure Carbohydrate is 4 kcal, Instead of eating foods with added sugar, try fruits, vegetables such as cabbage, cauliflower, cucumber, okra, spinach, turnip etc and wholegrain cereals. These get digested slowly, releasing sugar slowly into your bloodstream, thus not bringing in dramatic changes in your blood glucose levels. Fibre, a form of Carbohydrate from plants, not only helps your digestion, it also helps reduce the risk of diabetes, heart disease and even some cancers.

B. Proteins for Better Growth and Development: Proteins form the body's main structural elements. Our body uses Proteins for growth and to build and repair bones, muscles, connective tissues, skin, internal organs and blood. Hormones, antibodies and the enzymes that regulate the body's chemical reactions are all made up of Proteins. Without the right Proteins, blood will not clot properly and cuts will not heal well. More so if Carbohydrates and Fats cannot meet your energy needs, Proteins can be broken down and used as a source of emergent energy. Proteins are found in a variety of foods, but meats and dairy products are amongst the most concentrated sources. Grains, legumes, and vegetables all contribute to protein in diet.

Protein is required to help your body repair cells and make new ones. Protein is also important for growth and development during the early stages of childhood, adolescence, and pregnancy. About 30 to 35% of your daily diet should consist of protein found in pulses like whole grams, dals, chickpeas, peas, lentils, beans, peanuts, milk, eggs, fish, and meat. 1 gram of pure Protein gives 4 kcal.

C.Fat: Fats provide energy, store and provide vitamins, and synthesize hormones. Helps insulate body heat, it is essential for the absorption of Vitamin A, D, E and K, serves as a source of essential fatty acids, holds body organs in position and protects us against damage from physical shocks! There are three kinds of fats namely, polyunsaturated such as walnuts, flax seeds, etc; monounsaturated fat such as olive oil and omega-3 fatty acids such as fish oil, walnuts, etc.

Oil is one of the main ingredients used in cooking. Vegetable oil is the main villain used in cooking as it contains fat that is harmful for the body. Instead, you can go for **unrefined or cold pressed oil** which has a higher nutritional value than the unrefined oil.

The different types of fats are: Saturated, Polyunsaturated, Monounsaturated and Trans Fats. Add foods to your diet that are high in Monounsaturated Fats, such as olive oil and canola oil. In moderation, Monounsaturated Fats help lower total blood cholesterol by lowering LDL ('bad' cholesterol) without lowering HDL ('good' cholesterol) and help maintain a healthy heart.

Eat foods containing Polyunsaturated Fats found in corn oil, soybean oil, sunflower and seafood. Polyunsaturated Fats lower total cholesterol and LDL ('bad' cholesterol) but also lower HDL ('good' cholesterol). However, it is still recommended for lowering total as well as bad cholesterol. Avoid Trans Fats and Saturated Fats. These are implicated in raising total as well as LDL ('bad' cholesterol). In addition Trans Fats also decrease HDL ('good' cholesterol). To limit saturated fat, eat lean cuts of meat (i.e. chicken breasts instead of beef qeema), and choose low-fat dairy products. Avoid products made from partially hydrogenated vegetable oils such as commercial baked products, shortenings and margarines, unless they are declared Trans Fats free. Try to avoid frying food, instead grill or poach. Average Calorie Count from: 1 gram of pure Fat is 9 kcal

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d. Vitamins and Minerals: These micronutrients support metabolism, nerve and muscle function, bone maintenance and cell production. Fruits and vegetables are the primary sources of vitamins and minerals including potassium, dietary fiber, folate (folic acid), vitamin A, and vitamin C. Simple carbohydrates like glucose and fructose are also found in fruits and vegetables. Opt for fresh fruits instead of fruit juices.

Conclusion:

Physical activity is any form of movement that uses energy. People of all shapes and sizes and abilities can benefit from being physically active. Eating a balanced diet and being physically active are two of the most important things you can do to be and stay healthy at any age.

Being active can also improve your personal appearance, encourage fun with family and friends, maintain the ability to live independently, and enhance fitness for sports.

Regular exercise will maintain the performance of your lungs and heart to most efficiently burn off excess calories and keep your weight under control. Exercise will also improve muscle strength, increase joint flexibility and improve endurance. Another main benefit of physical activity is that it decreases the risk of heart disease, the leading cause of deaths. Eating a balanced diet can help boost or maintain the immune system, which is important for optimum physical fitness.

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INFLUENCE OF INCLINE, DECLINE AND SPRINT RUNS IN TREADMILL ON RESTING HEART RATE AND CARDIORESPARRATORY ENDURANCE AMONG LONG DISTANCE RUNNERS

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ABSTRACT

The Aim of the study was to find out the effect of Incline, Decline and sprint runs on treadmill on selected Resting Heart Rate and Cardioresparatory endurance among long distance runners. the investigator randomly selected 60 Long Distance Runners , who competed at inter collegiate level sports meets representing different colleges in A.P. They were divided into four groups at random again consisting fifteen subjects in each group and they were randomly assigned as experimental group I Incline Running on Treadmill and Experimental group II Decline Running on Treadmill, group-III Sprint Running on Treadmill And group-IV control group. Varibles are Resting Hart Rate &Cardioresparatory Endurance, The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA, which was the effect of Incline, Decline and sprint running on treadmill. In all cases 0.05 level was fixed to test the hypothesis of the study.

Keywords: Resting Heart Rate and Cardioresparatory endurance

INTRODUCTION

The goal of physical fitness programme is to improve the performance in activities of daily living, job demands, sports and recreational activities, which was said by Craig Liebenson(2003).

Sport plays a very prominent role in the modern society. It is important to individuals, a group, a nation and indeed the world. Throughout the world, sport has a popular appeal among people of all ages and both sexes.

The body is the temple of soul, and to reach harmony of body, mind, and spirit, the body must be physically fit. Hence where there is a sound body there we can ensure a sound mind. Research has shown that the physically fit person is able to withstand fatigue for longer periods than the unfit; that the physically fit person is better equipped to tolerate physical stress, that the physically fit person has a stronger and more efficient heart; and that there is a relationship between good mental alertness, absence of nervous tension, and physical fitness.

OBJECTIVES OF THIS STUDY

The study aims at finding out answers to the following research questions:

How far selected treadmill exercises such as Incline, Decline and sprint running influences selected Resting Heart Rate and Cardioresparatory endurance among long distance runners?

Whether different types of treadmill exercises would have different influence on selected Resting Heart Rate and Cardioresparatory endurance among long distance runners?

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of Incline, Decline and sprint runs on treadmill on selected Resting Heart Rate and Cardioresparatory endurance among long distance runners.

DELIMITATION

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The study would be delimited in the following aspects and while interpreting the results. It should be taken into consideration.

1. The study would be delimited to 60 long distance runners of collegiate level and their age was between 18 to 25 years.
2. In this study, the following variables would be selected:

   Dependent Variables

   1. Resting Heart Rate
   2. Cardio respiratory endurance

LIMITATIONS

1. The investigator could not control the life style, psychological stress and factors that affect metabolic function.
2. Psychological and sociological aspects of their day-to-day life interactions to their environment could not be controlled.

   The daily routine, climatic conditions, nutritional actors, motivational factors and socio-economic factors, were not taken into consideration.
3. The time of training and time of testing were the working days, in mostly morning and evening hours.

DEFINITION OF TERMS

Training

Training has been explained as programme of exercise designed to improve the skills and increase the capacities as resting heart rate (Hardayal Singh, 1991).

Cardio respiratory Endurance

It is the ability to persist in physical activity that requires oxygen for physical e

Resting Pulse Rate

The time from the end of one contraction to the end of the next contraction is a complete heart beat or pulse or cardiac cycle. The complete cardiac cycle takes less than one second (about 0.08 sec) in a normal adult at rest and it shortened by exercise.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the study was to find out the effect of Incline, Decline and sprint running on treadmill on Resting Heart Rate and Cardioresparatory endurance among long distance runners. To achieve the purpose of this study, sixty long distance runners who had participated at intercollegiate level competitions from different colleges in Andhra Pradesh were selected as subjects. The selected subjects' age group was ranging from 19 to 25 years. The subjects were randomly divided into four groups and each group consists of fifteen subjects. Group one acted as experimental group one and Group two acted as experimental group two, group three acted as experimental group three and group four acted as control group. Group one underwent Incline treadmill walking and running exercises, group II underwent Decline treadmill walking and running exercises and group three underwent sprint running on treadmill, group four was control group which did not participated in any special training.

SELECTION OF VARIABLES

The research scholar reviewed the various scientific literature pertaining to the different forms of treadmill training exercises on the following variables were selected.

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Dependent Variables

Cardiopulmonary Fitness Variables

1. Cardiorespiratory Endurance
2. Resting Heart Rate

Independent Variables

1. Incline training on Treadmill for twelve weeks
2. Decline Training on Treadmill for twelve weeks
3. Sprint running training on Treadmill for twelve weeks

EXPERIMENTAL DESIGN

For the purpose of the study, random group design was employed. Randomly selected long distance runners (N=60) were divided into four groups consisting of 15 in each group. Experimental Group I underwent Incline treadmill walking and running exercises, experimental group II underwent Decline treadmill walking and running exercises and experimental group three underwent sprint running on treadmill, group four was control group which did not participated in any special training. The control group did not participate in any special exercises except of their routine. Pre test scores were obtained using standard tests on selected Resting Heart Rate and Cardioresparatory endurance before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre test and post test means were subjected to statistical treatment using ANCOVA, which was the effect of Incline, Decline and sprint running on treadmill. In all cases 0.05 level was fixed to test the hypothesis of the study.

CRITERION MEASURES

Table 1 shows the variables selected and the tests administered to measure the criterion measures of the study.

Table I: Showing the Variables and Tests for the Research

S.No	Variables	Tests
1	Cardio respiratory Endurance	Harvard Step up test
2	Resting Heart Rate	Palpation method

TREADMILL TRAINING

While training for experimental group I, Incline treadmill exercises, experimental group II – Decline treadmill exercises, experimental group III sprint running treadmill exercises care was taken that the training intensities and frequency would be never maximal. The load was equal to each subject for which volume and intensity and frequency were manipulated. In this process, monitoring the training intensity was generally determined by maintaining the heart rate, time to time by the investigator.

Each training session was started with light warm up and ended with warm down exercise. Total time of treadmill training session was 45 minutes with 10 minutes warm up, 30 minutes treadmill exercises and five minutes cool down. The training programme was given 5 days per week, that is, Monday to Friday, except Saturdays and Sundays.

Schedule for Incline Treadmill Exercise Group

Slow Pace walking for 5 minutes in Treadmill

Stretching for 5 minutes

Incline treadmill running for 30 minutes at a pace that brings the subject heart rate upto 60 – 70% of his maximum heart rate. This was a comfortable pace where, the subject could speak in full sentences, although he would be breathing harder than usual.

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Five Minutes stretching exercises for cool down.

Five days a week, except Saturdays and Sundays, the subjects in experimental group I, underwent this treadmill training

Schedule for Decline Treadmill Running Exercise Group

Slow Pace jogging for 5 minutes in Treadmill

Stretching for 5 minutes

The subject was asked to run Decline slower pace for 3 minutes, and then three minutes fast pace run. The subjects continued to Decline run slower pace and Decline run fast pace alternatively for five times or 30 minutes.

Five Minutes stretching exercises for cool down.

Five days a week, except Saturdays and Sundays, the subjects in experimental group II, underwent this treadmill training

Schedule for Sprint running Treadmill Exercise Group

Slow Pace jogging for 5 minutes in Treadmill

Stretching for 5 minutes

The subject was asked to run sprint run slower pace for 3 minutes, and then three minutes fast pace run. The subjects continued to do sprint run slower pace and fast pace alternatively for five times or 30 minutes.

Five Minutes stretching exercises for cool down.

Five days a week, except Saturdays and Sundays, the subjects in experimental group I, underwent this treadmill training

CARDIO RESPIRATORY ENDURANCE (HARVARD STEP TEST)

Purpose

To measure the cardio respiratory endurance through Physical Efficiency Index.

Equipments

A stable bench 20 inches high and a stop watch.

Procedure

The subject step up and down 30 times a minute on a bench 20 inches high. Each time the subject should step all the way up on the bench with the body erect. The stepping process is performed in four counts, as follows: 1. one foot is placed on bench, 2. other foot is placed on the bench; 3. one foot is placed on the floor; 4. the other foot is placed on floor. The tester may lead off with the same foot each time or any change feet as she desires, so long as the four count step is maintained. The steps were counted the cadence as 'up, up, down, down'.

The stepping exercise continues for exactly five minutes, unless the subject is forced to stop sooner due to exhaustion. In either case the duration of the exercise in seconds is recorded; the maximum number of seconds is 300 for the full five minute period.

Immediately after completing the exercise, the subject sits on a chair. The pulse is counted 1 – 1½ , 2 – 2½ and 3 – 3½ minutes after the stepping ceases.

Scoring

A physical efficiency index (PEI) is computed utilizing the following formula:

$$PEI = \frac{\text{Duration of Exercise in Seconds x 100`}}{\text{2 x Sum of pulse counts in recovery}}$$

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RESTING HEART RATE

Objective

The purpose of this test was to record the number of heart beat per minute.

Equipment

A stop watch (1/100 of a second) and a chair.

Procedure and Scoring

The resting heart rate of all the subjects was recorded in sitting position in the morning session. Before taking the resting heart rate, the subjects were asked to sit in a chair inside a room and relax for 20 minutes. To record the heart rate, finger tips were placed on the radial artery at the subjects wrist in such a manner that palpation was clear and the number of palpation was counted for one minute.

RESULTS AND DISCUSSIONS

RESULTS ON CARDIO RESPIRATORY ENDURANCE

The statistical analysis comparing the initial and final means of Cardio respiratory Endurance due to Incline training, Decline training, sprint runs training and control groups of long distance runners is presented in Table II

Table II

COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO INCLINE TRAINING, DECLINE TRAINING AND SPRINT RUNS TRAINING ON CARDIO RESPIRATORY ENDURANCE

	Incline trainings Group	Decline training Group	Sprint Runs Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	71.86	73.67	71.49	72.99	B	45.79	3	15.26	0.25
StdDev	6.26	7.20	8.50	9.04	W	3428.52	56	61.22	
Post Test Mean	79.08	78.97	79.87	73.44	B	395.07	3	131.69	2.35
StdDev	7.78	7.00	8.50	7.63	W	3142.54	56	56.12	
Adjusted Post Test Mean	79.46	78.29	80.46	73.15	B	473.27	3	157.76	4.39*
					W	1975.02	55	35.91	

SOV: Source of Variance; B: Between W: Within

Required $F_{(0.05),\,(df\ 3,75)}$ =2.77

* Significant at 0.05 level of confidence

As shown in Table II, the pre test mean on Cardio respiratory Endurance of Incline trainings group was 71.86 with standard deviation +6.26pre test mean of Decline training group was 73.67 with standard deviation +7.20, the pre test mean of sprint runs training group was 71.49 with standard deviation +8.50, the pre test mean of control group was 72.99 with standard deviation +9.04. The obtained F ratio of 0.25 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

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The results presented in Table II, the post test mean on Cardio respiratory Endurance of Incline trainings group was 79.08 with standard deviation +7.78post test mean of Decline training group was 78.97 with standard deviation +7.00, the post test mean of sprint runs training group group was 79.87 with standard deviation +7.00, the post test mean of control group was 73.44 with standard deviation +7.63. The obtained F ratio of 2.35 on post test means of the groups was insignificant at 0.05 level as the obtained F value was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on Cardio respiratory Endurance on Incline trainings group was 79.46, Decline training group was 78.29, sprint runs training group was 80.46 and control group was 73.15. The obtained F value on adjusted means was 4.39. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Cardio respiratory Endurance of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table III

Table III: Multiple Comparisons between Incline training, Decline training, Sprint runs training and Control Groups andScheffe's Post Hoc Analysis onCardio respiratory Endurance

Incline trainings Group	Decline training Group	Sprint Runs Training Group	Control Group	MEAN DIFF	C.I
79.46	78.29			1.17	6.31
79.46		80.46		-1.00	6.31
79.46			73.15	6.31*	6.31
	78.29	80.46		-2.17	6.31
	78.29		73.15	5.14	6.31
		80.46	73.15	7.31*	6.31

***** Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 6.31. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

Incline trainings Group Vs Control Group (MD: 6.31)

Sprint runs training Group Vs Control Group (MD: 7.31)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

Incline trainings Group Vs Decline Training Group (MD: 1.17)

Incline trainings Group Vs Sprint runs Training Group (MD: 1.00)

Decline training Group Vs Sprint runs Training Group (MD: 2.17)

Decline training Group Vs Control Group (MD: 5.14)

The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure I.

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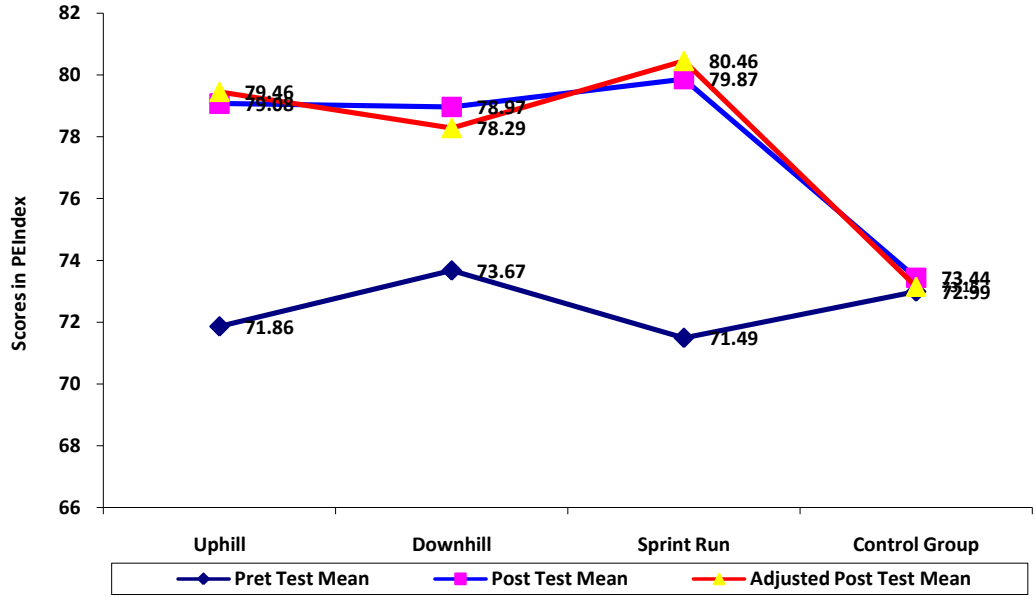
Figure I: LINE GRAPH SHOWING PRE, POST AND ADJUSTED MEANS ON CARDIO RESPIRATORY ENDURANCE



RESULTS ON RESTING HEART RATE

The statistical analysis comparing the initial and final means of Resting Heart Rate due to Incline training, Decline training, sprint runs training and control groups of long distance runners is presented in Table IX

Table IV: COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO INCLINE TRAINING, DECLINE TRAINING AND SPRINT RUNSTRAINING ON RESTING HEART RATE

	Incline trainings Group	Decline training Group	Sprint Runs Group	Control Group	SOV	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	72.73	71.80	71.60	69.00	B	115.25	3	38.42	1.12
StdDev	3.90	7.46	4.87	6.52	W	1918.93	56	34.27	
Post Test Mean	67.47	68.27	67.00	70.13	B	85.78	3	28.59	1.30
StdDev	4.72	5.40	4.87	4.67	W	1236.40	56	22.08	
Adjusted Post Test Mean	66.62	67.97	66.82	71.46	B	214.45	3	71.48	6.68*
					W	588.91	55	10.71	

SOV: Source of Variance; B: Between W: Within

Required $F_{(0.05),\,(df\ 3,75)}$ =2.77

* Significant at 0.05 level of confidence

As shown in Table *IV*, the pre test mean on Resting Heart Rate of Incline trainings group was 72.73 with standard deviation +3.90pre test mean of Decline training group was 71.80 with standard deviation +7.46,

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the pre test mean of sprint runs training group was 71.60 with standard deviation +4.87, the pre test mean of control group was 69.00 with standard deviation +6.52. The obtained F ratio of 1.12 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table *IV*, the post test mean on Resting Heart Rate of Incline trainings group was 67.47 with standard deviation +4.72post test mean of Decline training group was 68.27 with standard deviation +5.40, the post test mean of sprint runs training group group was 67.00 with standard deviation +5.40, the post test mean of control group was 70.13 with standard deviation +4.67. The obtained F ratio of 1.30 on post test means of the groups was not significant at 0.05 level as the obtained F value was lesser than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at post experimental stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The adjusted mean on Resting Heart Rate on Incline trainings group was 66.62, Decline training group was 67.97, sprint runs training group was 66.82 and control group was 71.46. The obtained F value on adjusted means was 6.68. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the Resting Heart Rate of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table V

Table V: Multiple Comparisons between Incline training, Decline training, Sprint runs training and Control Groups andScheffe's Post Hoc AnalysisonResting Heart Rate

Incline trainings Group	Decline training Group	Sprint Runs Training Group	Control Group	MEAN DIFF	C.I
66.62	67.97			1.34	3.44
66.62		66.82		0.19	3.44
66.62			71.46	4.84*	3.44
	67.97	66.82		1.15	3.44
	67.97		71.46	3.49*	3.44
		66.82	71.46	4.64*	3.44

***** Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 3.44. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level.

Incline trainings Group Vs Control Group (MD: 4.84)

Decline training Group Vs Control Group (MD: 3.49)

Sprint runs training Group Vs Control Group (MD: 4.64)

The following paired mean comparisons were less than the required confidence interval and were not significant at 0.05 level.

Incline trainings Group Vs Decline Training Group (MD: -1.34)

Incline trainings Group Vs Sprint runs Training Group (MD: -0.19)

Decline training Group Vs Sprint runs Training Group (MD: 1.15)

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The pre test, post test and ordered adjusted means were presented through line graph for better understanding of the results of this study in Figure II.

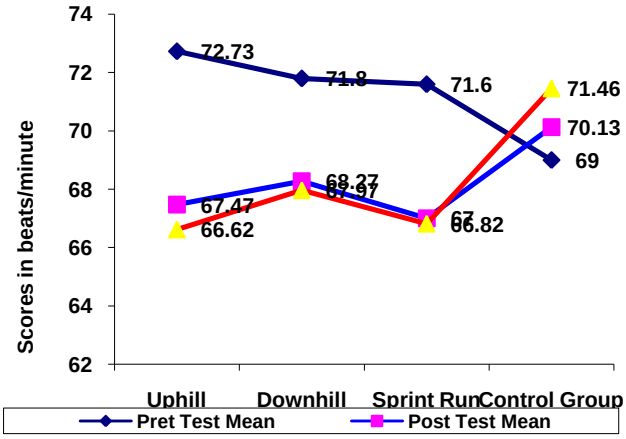

Figure II: LINE GRAPH SHOWING PRE, POST AND ADJUSTED MEANS ON RESTING HEART RATE

CONCLUSIONS

Within the limitations and delimitations of the study the following conclusions were drawn:

1. It was concluded that Incline running and sprint running on treadmill significantly influenced on cardio respiratory endurance of long distance runners compared to control group. Comparing among treatment groups, there was no significant differences in altering cardio respiratory endurance of the long distance runners.
2. It was concluded that Incline running, Decline running and sprint running on treadmill significantly on , resting heart rate of long distance runners compared to control group. Comparing among treatment groups, there was no significant differences in altering resting heart rate of the long distance runners.

SUGGESTIONS FOR FURTHER RESEARCH

1. Similar research may be undertaken among sedentary middle aged men and women to highlight the benefits of different modes of treadmill running.
2. A comparison between treadmill exercises and floor exercises on health related physical fitness and blood profiles may be undertaken.
3. A study may be undertaken compare the influence of different modes of treadmill running among triathlon athletes, marathon runners, cyclists etcetera with long distance runners.
4. A study with larger samples would throw more light on the results of this study.

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EFFECT OF SELECTED ASANA AND PRANAYAMA ON SELECTED PHYSIOLOGICAL AND PHYSICAL FITNESS VARIABLES OFSCHOOL BOYS

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ABSTRACT: The purpose of this study was to find out the effect of selected asana and pranayama on selected physiological and physical fitness variables of school boys**.** The investigator selected twenty school boys college level were selected from Ramakrishna Mission Vidyalaya, Coimbatore, Tamilnadu. Their age ranged from 11 to 14 years. The subjects were divided into two equal groups. Group 1 consisting 10 subjects called as the experimental group and group 2 consisting of 15 students called as the control group .The group I was assigned the weight asana and pranayama programme. The control group was not allowed to participate in any kind of treatment. The selected criterion physiological variable namely respiratory rate tested with nostril method test and physical fitness variable namely flexibility tested with sit and reach test. The training period was for eight weeks except on Saturday and Sunday in each week. The data were collected from before and after the eight weeks of asana and pranayama programme. The data was analyzed by the use of paired't' test. The level of confidence was fixed 0.05. The results study shows that improvement on selected criterion variable physiological variable namely respiratory and physical fitness variable namely flexibility due to effect of asana and pranayama. The control group did not improve respiratory rate and flexibility.

Key words : Yogasana, Pranayama, Respiratory rate and flexibility.

INTRODUCTION

Yoga is a science of right living and it works when integrated in our daily life. It works on all aspects of the person: the physical, mental, emotional, psychic and spiritual. The word yoga means 'unity' or 'oneness' and is derived from the Sanskrit word 'yuj' which means 'to join'. The word Yoga automatically calls to mind Sage "Patanjali" the founder and father of Yoga. He lived around three centuries before Christ, and was a great philosopher and grammarian. He was also a physician and a medical work is attributed to him. However this work is now lost in the pages of time. His best known work is Patanjali Yoga Sutras of Aphorisms on Yoga.

METHODOLOGY

The purpose of this study was to find out the effect of selected asana and pranayama on selected physiological and physical fitness variables of school boys**.** The investigator selected twenty school boys college level were selected from Ramakrishna Mission Vidyalaya, Coimbatore, Tamilnadu. Their age ranged from 11 to 14 years. The subjects were divided into two equal groups. Group 1 consisting 10 subjects called as the experimental group and group 2 consisting of 15 students called as the control group .The group I was assigned the weight asana and pranayama programme. The control group was not allowed to participate in any kind of treatment. The selected criterion physiological variable namely respiratory rate tested with nostril method test and physical fitness variable namely flexibility tested with sit and reach test. The training period was for eight weeks except on Saturday and Sunday in each week. The data were collected from before and after the eight weeks of asana and pranayama programme. The data was analyzed by the use of paired't' test. The level of confidence was fixed 0.05.

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TABLE- I: COMPUTATION OF "t" RATIO BETWEEN THE PRE AND POST TESTS SCORES ON RESPIRATORY RATE OF EXPERIMENTAL AND CONTROL GROUP

Variable	Group	Mean	Df	Standard Deviation	Standard error mean	(t)	Table value
Respiratory rate	Experimental group (Pre)	12.80	9	0.788	0.249	8.57*	1.97
	Experimental group (Post)	11.40	9	0.516	0.163		
	Control group (Pre)	12.40	9	0.84	0.843	1.00	
	Control group (Post)	12.30	9	0.56	0.674		

*Significance at 0.05 level of confidence

Table-I reveals that the means of the experimental group pre and post test on resting pulse rate were 12.80 and 11.40 respectively. The calculated 't' value8.57 is greater than the required table value of 1.97 at 0.05 levels. So it was found to be significant. It means that there is a significant mean difference between the experimental group pre and post test on respiratory rate.

The means of the control group pre and post test on respiratory rate were 12.40 and 12.30 respectively. The calculated 't' value1.00 is lesser than the required table value of 1.97 at 0.05 levels. So it was found to be not significant. It means that there is not significant mean difference between the control group pre and post test on respiratory rate.

FIGURE SHOWING THE MEAN VALUES OF ASANA AND PRANAYAMAON RESPIRATORY RATE

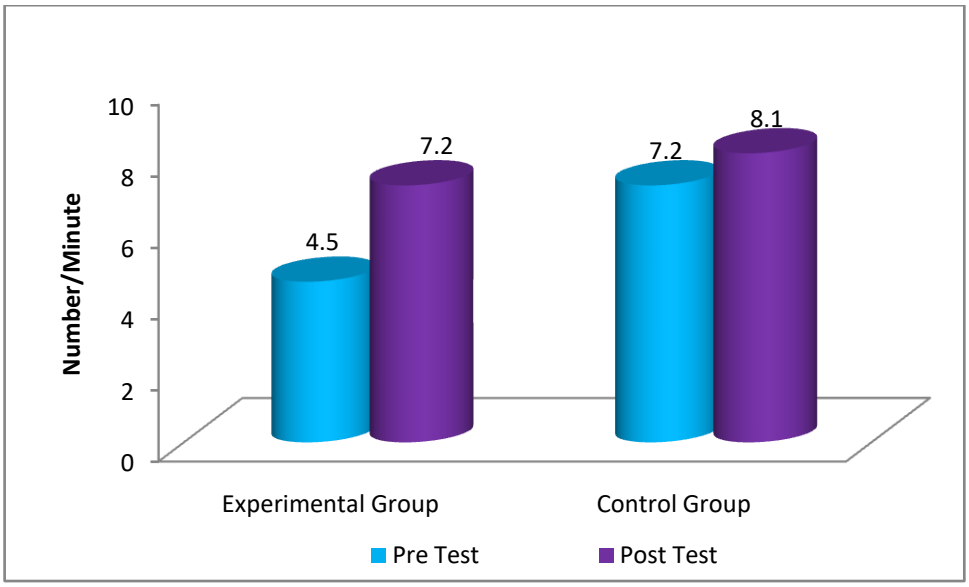

TABLE- II

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COMPUTATION OF "t" RATIO BETWEEN THE PRE AND POST TESTS SCORES ON FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUP

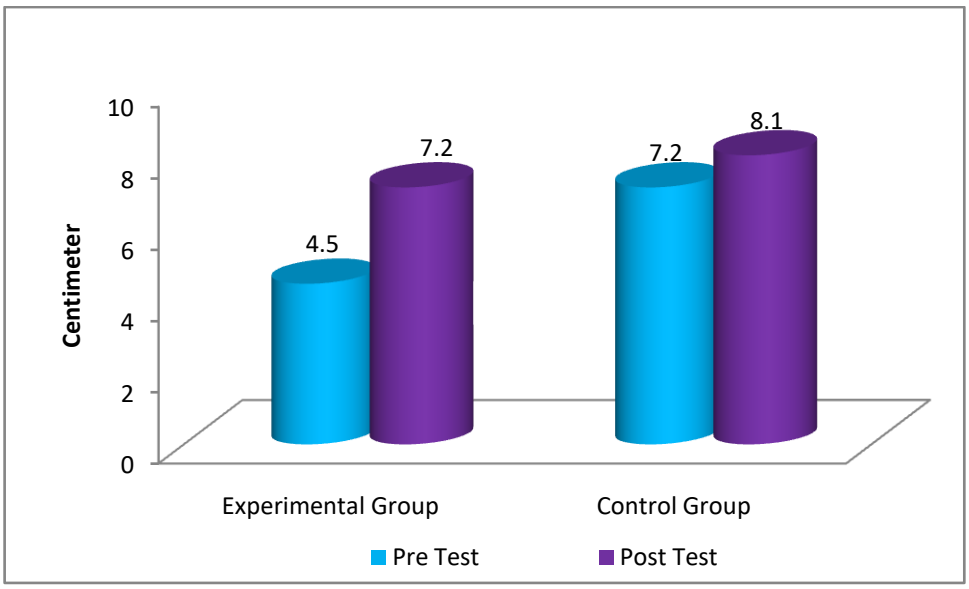
Variable	Group	Mean	Df	Standard Deviation	Standard Error mean	't'	Table value
Flexibility	Experimental group (Pre)	4.50	9	2.368	0.749	12.65*	1.97
	Experimental group (Post)	7.20	9	2.201	0.696		
	Control group (Pre)	7.70	9	2.86	0.90	1.50	
	Control group (Post)	8.10	9	2.76	0.87		

*Significance at 0.05 level of confidence

Table-II reveals that the means of the experimental group pre and post test on flexibility were 4.50 and 7.20 respectively. The calculated 't' value 12.65 is greater than the required table value of 1.97 at 0.05 levels. So it was found to be significant. It means that there is a significant mean difference between the experimental group pre and post test on flexibility.

The means of the control group pre and post test on flexibility were 7.70 and 8.10 respectively. The calculated 't' value 1.50 is lesser than the required table value of 1.97 at 0.05 levels. So it was found to be not significant. It means that there is not significant mean difference between the control group pre and post test on flexibility.

FIGURE SHOWING THE MEAN VALUES OF ASANA AND PRANAYAMA ON FLEXIBILITY



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The study reveals that the eight weeks of asana and pranayama programme significantly improved the respiratory rate and flexibility. In the control group there were no changes because they were not given any special training. Subjects chosen for the experimental study was not given any physical exercise other than the treatment, thus it was concluded that any improvement on the selected variable was on the account of treatment given. The result of this investigations showed that there was a significant improvement on the respiratory rate and flexibility between pre and post test of experimental group as a result of 8 weeks asana and pranayama training.

CONCLUSIONS

It was concluded that there was a significant improvement on the selected variables namely respiratory rate and flexibility by the application of asana and pranayama program.

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THE ROLE OF HEALTH AND FITNESS THROUGH YOGA

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ABSTRACT

The main goals of Yoga in human Life are Physical Health, Mental Health, Social Health, Spiritual Health, self realization of realization of the divine with us Yoga is a great of Physical, Mental and Spiritual practices or disciplines which originated in a ancient India Health Body makes it easy the concentrate and mediate. Yoga is deeply related to Human life Yoga makes life more rich, prosperous and cultured. Regularly practicing Yoga increases proprioception and improved balance. Move more, eat less-thats the edge of many a dieter. Yoga can help on both fruits. A regular practice gets you moving and burns and calories and the spiritual and emotional dimensions of your practice may encourage you to address any eating and weight problems a deeper level. Yoga may also inspire you to become a more conscious eater.

As Yoga combines several techniques used for stress reduction, it can be said to provide the combined benefits of breathing exercises, stretching exercises fitness programs, Mediation practice and guided Imagery in the technique. Those who are regular practice in Yoga frequently report that they sleep better feel less stressed concentrating on breath in the key of Yoga for control the health maintained.

KEY WORDS: Yoga, Health management, fitness.

INTRODUCTION

The World Yoga provides a sense of peace which certainly derived from the etymology of the World. Today it was practiced for Fitness, Health Body and mind strength, flexibility, emotional well-being and much more the main practice of Yoga is to taking control over the body, mind and emotional aspects. Meditation is another component of Yoga and many health essential to feel well and live a happy life. Meditation can help us to eliminate negative thoughts, worries anxiety, all factors that can prevent us feelings happy.

Yoga in daily life is a system of practice consisting of eight levels development in the areas of Physical, mental, Social and Spiritual Health. When the body is Physically Health, the mind is clear, focused and stress is under control. This gives the space to connect with loved ones and maintaining socially healthy relationships.

Aim : Yoga Improves Health

My experience inspired me to pore over the scientific studies I'd collected in India as well as the West to identify and explain how yoga can both prevent disease and help you recover from it. Here is what I found.

1. Improves your flexibility: Improved flexibility is one of the first and most obvious benefits of yoga. During your first class, you probably won't be able to touch your toes, never mind do a backbend.

2. Builds muscle strength: Strong muscles do more than look good. They also protect us from conditions like arthritis and back pain, and help prevent falls in elderly people. And when you build strength through yoga, you balance it with flexibility. If you just went to the gym and lifted weights, you might build strength at the expense of flexibility.

3. Perfects your posture: Your head is like a bowling ball big, round, and heavy. When it's balanced directly over an erect spine, it takes much less work for your neck and back muscles to support it.

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4. Prevents cartilage and joint breakdown : Each time you practice yoga, you take your joints through their full range of motion. This can help prevent degenerative arthritis or mitigate disability by "squeezing and soaking" areas of cartilage that normally aren't used. Joint cartilage is like a sponge; it receives fresh nutrients only when its fluid is squeezed out and a new supply can be soaked up.

5. Protects your spine: Spinal disks the shock absorbers between the vertebrae that can herniate and compress nerves crave movement. That's the only way they get their nutrients. If you've got a well-balanced asana practice with plenty of backbends, forward bends, and twists, you'll help keep your disks supple.

6. Betters your bone health: It's well documented that weight-bearing exercise strengthens bones and helps ward off osteoporosis. Many postures in yoga require that you lift your own weight. And some, like Downward- and Upward-Facing Dog, help strengthen the arm bones, which are particularly vulnerable to osteoporotic fractures.

7. Drains your lymphs and boosts immunity: When you contract and stretch muscles, move organs around, and come in and out of yoga postures, you increase the drainage of lymph (a viscous fluid rich in immune cells).

8. Ups your heart rate: When you regularly get your heart rate into the aerobic range, you lower your risk of heart attack and can relieve depression. While not all yoga is aerobic, if you do it vigorously or take flow or Ashtanga classes, it can boost your heart rate into the aerobic range. But even yoga exercises that don't get your heart rate up that high can improve cardiovascular conditioning. Studies have found that yoga practice lowers the resting heart rate, increases endurance, and can improve your maximum uptake of oxygen during exercise

9. Drops your blood pressure: If you've got high blood pressure, you might benefit from yoga. Two studies of people with hypertension, published in the British medical journal *The Lancet*, compared the effects of Savasana (Corpse Pose) with simply lying on a couch.

10. Founds a healthy lifestyle: Move more, eat less—that's the adage of many a dieter. Yoga can help on both fronts. A regular practice gets you moving and burns calories, and the spiritual and emotional dimensions of your practice may encourage you to address any eating and weight problems on a deeper level. Yoga may also inspire you to become a more conscious eater.

11. Lowers blood sugar: Yoga lowers blood sugar and LDL ("bad") cholesterol and boosts HDL ("good") cholesterol. In people with diabetes, yoga has been found to lower blood sugar in several ways: by lowering cortisol and adrenaline levels, encouraging weight loss, and improving sensitivity to the effects of insulin.

12. Helps you focus: An important component of yoga is focusing on the present. Studies have found that regular yoga practice improves coordination, reaction time, memory, and even IQ scores. People who practice Transcendental Meditation demonstrate the ability to solve problems and acquire and recall information better.

13. Relaxes your system: Yoga encourages you to relax, slow your breath, and focus on the present, shifting the balance from the sympathetic nervous system (or the fight-or-flight response) to the parasympathetic nervous system. The latter is calming and restorative; it lowers breathing and heart rates, decreases blood pressure, and increases blood flow to the intestines and reproductive organs comprising what Herbert Benson, M.D., calls the relaxation response.

14. Improves your balance: Regularly practicing yoga increases proprioception (the ability to feel what your body is doing and where it is in space) and improves balance. People with bad posture or dysfunctional

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movement patterns usually have poor proprioception, which has been linked to knee problems and back pain. Better balance could mean fewer falls.

15. Maintains your nervous system: Some advanced yogis can control their bodies in extraordinary ways, many of which are mediated by the nervous system. Scientists have monitored yogis who could induce unusual heart rhythms, generate specific brain-wave patterns, and, using a meditation technique, raise the temperature of their hands by 15 degrees Fahrenheit. If they can use yoga to do that, perhaps you could learn to improve blood flow to your pelvis if you're trying to get pregnant or induce relaxation when you're having trouble falling asleep.

METHODOLOGY: Sarma College, situated OngolePrakasam district of A.P. State students who are with Overweight and suffering with Obesity are the subject for the study. Their age is between 16 to 20 years. The ware administrated with simple asanas, pranayama and meditation and Physical exercise for an hour daily between 5 to 7 am. For a period of 10 weeks.All of them are residing at hostel are provided with nutrition diet. Their weight were measured before and after the exercise with the help of medical lab.

The weight was reduced 30% in period of 10 weeks.

RESULTS

It is found that 90 % of the intimates who were suffering with Obesity came to normal and they expressed that are felling Physically very active and fit for their daily routine.

RECOMMENDATIONS

1. The Government should provide intensive training in yoga for the physical education teachers provide yoga and meditation hall in every school.
2. Yoga should be made a mass movement and introduced in all the fields including corporate sectors for human resource development threrby improving the economy of our country

It is recommended that the Regular yoga and meditation classes should be conducted to all the students at university level for all the round developments of their personality.

CONCLUSION

Yoga through meditation works remarkably to achieve this harmony and helps the mind work in Synchronies with the body. How often do we find that we are unable to perform our activities properly and in a satisfying manner because of the confusions and conflicts in our mind weigh down heavily upon us. Moreover, stress which in reality is the killer affecting all parts of our physical, endocrinal and emotional systems can be corrected through the wonderful yoga practice of meditation. What it means is that meditation creates conditions, where you are not affected by the happenings around you. This in turn creates a remarkable calmness and a positive outlook, which also has tremendous benefits on the physical health of the body. These are just some of the tangible benefits that can be achieved through yoga.

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IMPACT OF MODIFIED PLYOMETRIC TRAINING WITH SPECIFIC DRILLS ON SELECTED SKILL PERFORMANCE VARIABLES OF PRE ADOLESCENCE TENNIS PLAYERS

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ABSTRACT

The purpose of this study was find out the impact of modified plyometric training with specific drills on selected skill performance variables of pre adolescence tennis players. To achieve the purpose 15 school level tennis boys from Maruthi College Coaching Academy, Coimbatore. Their age are ranged from 10 to 14 years. Single group design (experimental group) was used in this study. The following criterion variables were selected for the study namely skill performance are forehand drive and backhand drive. Forehand drive and backhand drive was assessed by Hewitt's forehand and backhand drive test. The training period would be the six week except only Sunday for every week. Data were collected from each subject before and after the six week of training. The collected data were statistically analyzed by using paired 't' test. The obtained 't' ratio was tested for significance at 0.05 level of confidence. The results shows that the skill performance variables are significantly improved on forehand drive and backhand drive due to modified plyometric training with specific drills on pre adolescence tennis players.

Keywords :-Plyometric**,** Specific drills, forehand drive and backhand drive.

INTRODUCTION

The history of tennis dates back several thousand years. The game was first created by European monks to be played for entertainment purposes during religious ceremonies. Tennis is a sport played between two players (singles) or between two teams of two players each (doubles).The modern game of tennis originated in the united kingdom in the late 19th century as "lawn tennis" Tennis is an Olympic sport and is played at all levels of society at all ages. The sport can be played by anyone who can hold a racket, including people in wheelchairs.

Tennis is played by millions of recreational players and is also a popular worldwide spectator sport. The four Grand Slam tournaments (also referred to as the "Majors") are especially popular: the Australian Open played on hard courts, the French Open played on red clay courts, Wimbledon played on grass courts, and the US Open played also on hard courts. Training means sequence of exercise that improves performance of players improved on particular skills. **(Hardyal Singh 1991).** The plyometric training means varied jump with different height of steps the improve explosive power of individuals. "The purpose of study was to find out impact of modified plyometric training with specific drills on selected skill performance variables of pre adolescence tennis players"

METHODOLOGY

The purpose of this study was find out the impact of modified plyometric training with specific drills on selected skill performance variables of pre adolescence tennis players. To achieve the purpose 15 school level tennis boys from Maruthi College Coaching Academy, Coimbatore. Their age are ranged from 10 to 14 years. Forehand drive and backhand drive were selected as skill performance variables. The training period

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would be the six week except only Sunday for every week. Data were collected from each subject before and after the six week of training. Forehand drive and backhand drive was assessed by Hewitt's forehand and backhand drive test. The collected data were statistically analyzed with paired 't' test and the significance was set at 0.05 level of confidence.

RESULTS

TABLE-I: COMPUTATION OF 't' RATIO BETWEEN PRE AND POST TEST ON SKILL PERFORMANCE VARIABLES OF PRE ADOCESCENCE TENNIS PLAYERS

Variable	Test	Mean	SD	DM	σ DM	't'
Forehand drive	Pre test	11.20	2.07	3.30	0.32	9.80*
	Post-test	14.40	2.23			
Backhand drive	Pre test	10.87	2.56	2.86	0.35	8.19*
	Post test	13.73	2.52			

* Significant

Level of confidence 0.05 with df 14 table value 2.14

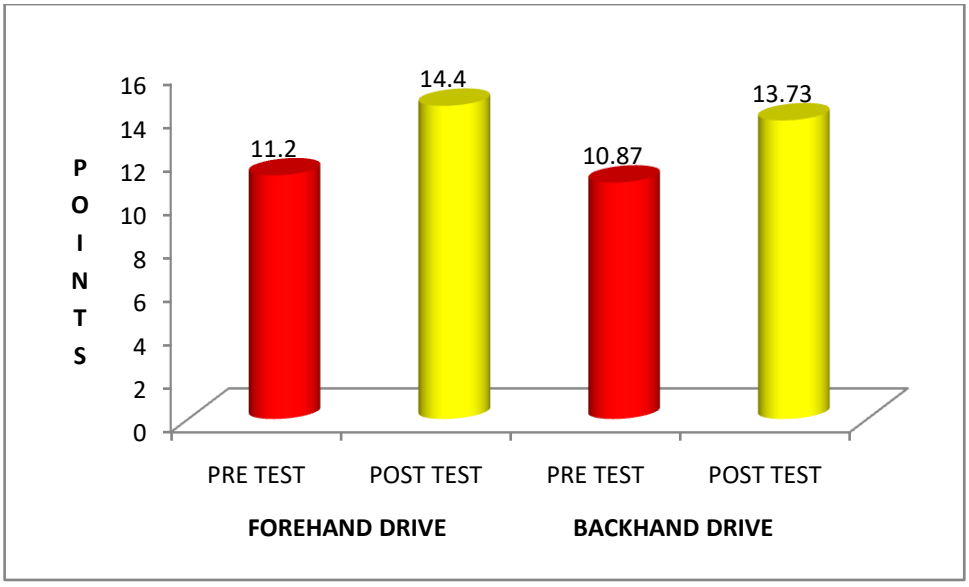
Table- I shows that the mean values of pre test and post test on forehand drive are 11.20 and 14.40 respectively. The obtained 't' value was 9.80 and the required table value is 2.14. Since the obtained 't' ratio is higher than the table value, it is found to be significant

Table- I also reveals that the mean values of pre test and post test on backhand drive are 10.87 and 13.73 respectively. The obtained 't' value was 8.19 and the required table value is 2.14.since the obtained 't' ratio is higher than the table value, it is found to be significant.

The result of the study reveals that the skill performance variables namely forehand drive and backhand drive are significantly improvement between pre and post test of the experimental group.

The means difference of pre and post test on skill performance variables are presented in figure-I.

THE MEAN VALUES OF PRE AND POST TEST ON SKILL PERFORMANCE VARIABLES OF PRE ADOLESCENCE TENNIS PLAYERS



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DISCUSSION ON FINDINGS

Based on results of the study shows that experimental group significant improvement on forehand drive and backhand drive of pre adolescence tennis players due to impact of modified plyometric training with specific drills. The results of the study consent with other study. **Salonikidis K., (2008)** The Effects Of Plyometric, Tennis-Drills, And Combined Training On Reaction, Lateral And Linear Speed, Power, And Strength in Novice Tennis Players. **Fernandez-Fernandez, J.(2014**) In-season effect of a combined repeated sprint and explosive strength training program on elite junior tennis players.**Genevois C, Frican B, CreveauxT, Hautier C, (2013).** Effects of Two Training Protocols on the Forehand Drive Performance in Tennis.

CONCLUSION

Within limitation of the present study, then following conclusion are drawn.

1. There is significant improvement on forehand drive and backhand drive due to six week of modified plyometric training with specific drills.

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SPIRITUAL LIFE ENHANCES PSYCHOLOGICAL WELLBEING AND PROSPERITY IN LIFE

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Abstract
Psychological wellbeing influences the physical health, working strength, as health is wealth even economy of individual family, society and country. The Commission on the Measurement of Economic Performance and Social Progress initiated by the French government and chaired by Joseph Stiglitz, 2009 argued that self-reported wellbeing should also be taken into account. Psychological wellbeing related tobehavior and mind, embracing all aspects of conscious and unconscious experience as well as thought.Spiritual life enhances Psychological wellbeing.Understanding and incorporating **Self-acceptance**, Self-**growth** especially spiritually **gives a Purpose and meaning** to live in **Autonomy, Connectedness; Mastery** – is a catalyst for further motivation and brings greater wisdom, self-awareness, and psychological well-being (Joe Wilner (2011). Psychological Well-Being is a significant predictor of Subjective Well-Being (SWB) improves, and Happiness energizes employee SWB (Burns, Richard A. and Machin, M. Anthony; 2009).

Key words:Psychological wellbeing, Spiritual life, **Self-acceptance,** Self-**growth, Autonomy,**

Introduction

Psychological wellbeing a social, cognitive Process, includes perception, cognition, attention, emotion (affect),intelligence, phenomenology, motivation (conation), brain functioning, and personality. The psychologists are involved in some kind of therapeutic role, practicing in clinical, counseling or school settings and are employed in industrial and organizational settings, or in other areas such as human development and aging, sports, health, and the media, as well as in forensic investigation and other aspects of law. Cognitive psychology will be developed with genetically base influenced by the environment to which an individual is exposed to.

Organizations and research of Psychological wellbeing

The *American Association for Humanistic Psychology*, formed in 1963: stands for respect for the worth of persons, in exploration of new aspects of human behavior. e.g., love, creativity, self, growth, organism, basic need-gratification, self-actualization, higher values, being, becoming, spontaneity, play, humor, affection, naturalness, warmth, ego-transcendence, objectivity, autonomy, responsibility, meaning, fair-play, transcendental experience, peak experience, courage, and related concepts. (A. J. Sutich,1963)

The name industrial and organizational psychology (I–O) (1960) and became enshrined as the Society for Industrial and Organizational Psychology, Division 14 of the American Psychological Association, in 1973 (Laura L. Koppes,2003) with the goal to optimize human potential in the workplace; to reach their target markets, and the organization of their company (Steven Williams, 2005).In 2010 *Clinical Psychological Review* published a special issue devoted to positive psychological interventions have been limited in scope, but their effects are thought to be superior to that of placebos, especially with regard to helping people with body image problems.

School of Military Psychology

During World War I, when Robert Yerkes established the School of Military Psychology at Fort Oglethorpe in Georgia, to provide psychological-training for military staff military. (Nancy Tomes, 2008; Robert M. Yerkes,

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1918) now includes psychological screening, clinical psychotherapy, suicide prevention, and treatment for post-traumatic stress, as well as other aspects of health and workplace psychology such as smoking cessation (Joshua N. Friedlander, 2005).

Theories and measurements of Psychological well-being

Psychological wellbeing refers to subjective wellbeing (Diener, 2000); "Hedonic" wellbeing refer to the subjective feelings of happiness and "Eudiamonic" wellbeing refer to the purposeful aspect of PWB and Carol Ryff has developed a very clear model that breaks down Eudaimonic wellbeing into six key parts based on Aristotle's Nicomachean Ethics, "where the goal of life isn't feeling good, but is instead about living virtuously". 1) Self-acceptance: positive attitude towards oneself and accepting various aspects of self.2) Personal growth: insight into own potential, sense of development, and open to new and challenging experiences. 3) Purpose in life: holds goals and beliefs that affirm sense of direction and feels that life has a purpose and meaning.4)Environmental mastery: capability to manage complex environment, and mold environment to suit needs.5)Autonomy: Exhibits self-direction that is often guided by his / her- own socially accepted conventional internal standards and resists unsavory social pressures.6)Positive relations with others: Has warm, satisfying, trusting personal relationships and is capable of empathy and intimacy.

A recent review of well-being measures grouped into four broad groups of Hedonic Eudiamonic, Quality of Life and Wellness measures. Cantril Ladder is used to evaluate Life evaluation referring peoples' thoughts about the quality of their lives; Hedonic wellbeing referring everyday feelings such as happy, sad, and angry.(Kahneman D*et.al;*2004). Eudemonic wellbeing focuses on judgments about the meaning and purpose of one's life; (Ryff CD, Singer BH, Dienberg Love G.2004) .Psychological well-being is very much tied to the basic human needs fulfillment, delineated in Self-determination theory; or the need for purpose as popularized by Daniel Pink along with autonomy and mastery; or the Alderfer's ERG theory emphasizing needs of Growth and Relatedness, all of these need satisfactions lead to psychological well-being. Nico at Mappalicious has a good write-up on the same with traits of low and high scorers on each dimension mentioned.

Psychological wellbeing of People around the World

In the UK, the Office for National Statistics is driving a national debate over measuring wellbeing, (Seaford C. Policy 2011) the Gallup-Heathway's Wellbeing Index Poll interviews 1,000 US adults every day about wellbeing, and similar initiatives are taking place in other countries. (Harter JK, Gurley VF2008).Older populations, although less healthy and less productive are more satisfied with their lives, and experience less stress, worry, and anger than do middle-aged people. Psychological wellbeing Patterns are not universal across populations. Gallup's World Poll, (survey began in 2006, residents of more than 160 countries, 98 percent of the world's population, using random nationally representative samples, typically of 1,000 individuals in each country). In Middle East, the countries of the former Soviet Union, and sub-Saharan Africa — life evaluation declines steadily with age, at least in the period 2006-2010; lower In the transition countries, than in the Anglo countries, and the elderly do particularly badly, the opposite of the Anglo countries. Worry increases with age in the transition countries, and decreases in the Anglo countries. However, cross-national surveys such as the Gallup World Poll, and longitudinal cohort's studies of ageing in China, India, South Korea, Brazil, and the WHO Study on Global Ageing and Adult Health (SAGE) are beginning to redress the balance. The implications of this new knowledge about psychological wellbeing for economic and health policy have yet to be established.

Importance of Physical Health for Psychological Wellbeing

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Psychological wellbeing is associated with **increased risk** of **physical illness depression** and life **stress** with premature **mortality**, coronary heart **disease**, diabetes, disability and other chronic conditions. (Nov 6, 2014). Treating symptoms associated with anxiety and depression in cancer patients improved survival time; high blood pressure, heart attack, diabetes, digestive health, recovery post-operation and mental health (Kelly Anderson, 2016). Psychological well-being of young people influences talent development environments in sports (athlets), (Ivarsson, A et al ,2014) .

Tips to improve physical health and Psychological well-being

Physical health and psychological wellbeing are interdependent and they sustain with Spiritual development, with prayer and meditation enhancing energy levels and transform an individual to live peacefully, friendly, happily with love and harmony in the society with values which is important for strengthened individual, society, country and world. Doing **exercise** yoga, swimming, spending time with friends and family bring**s** you a sense of calm as happiness strengthens us.**Sound mind, sound body helps you to sleep well and** on average, 8 hours of sleep per night Irrespective of gender and age is**essential, for maintaining good health.** Early to bed and early to rise makes a man healthy and wealthy. Avoid caffeine, alcohol, cigarettes, other substances and heavy exercise stick to **Balanced diet.**

Qualities to wellbeing: PERMA i.e. 1) Positive Emotion, 2) Engagement, 3) Relationships, 4) Meaning and 5) Achievement are five separate qualities constitute a set of positive emotional skills and attitudes that can lead children to higher achievement and success in life, better physical health, better relationships, more resilience against depression and anxiety, and even better conduct. (Dr. Martin Seligman, the “father” of positive psychology)

Insight into a Human being and Psychological well-being

Each Human being has to nourish his body and spirit as God created man with mud and breathed the Holy Spirit (Genesis2:8). As the spiritual life is neglected, human values (Infinity, Eternity, Silence, Peace, Unity, Truth, Goodness, Knowledge, Power, Beauty, Love and Bliss) are reduced impacting Psychological wellbeing. Hence People are suffering with the works of the flesh(Galathians-5:16-23), namely Adultery, Fornication, Uncleanness, Idolatry, Licentiousness, Sorcery, Hatred, Contentious, Jealousies, Out bursts of wrath Selfish ambitions, Dissensions, Heresies, Envy, Murders, Drunkenness, Revelries which drives the person away from blissful life. Society Phasing Burning problems of the families like isolated and split- families due to jobs and divorces; attention to carrier and money; neglected children and elders; increased-care centers and old age homes.

Solutions from the Holy Bible to Psychological well-being

Integrate human life with the Spirit by Prayer Pluck the Fruits of Holy Spirit **(**Galathians-5:16-23) love, joy, peace, kindness, faithfulness, goodness, gentleness long suffering, and self-control to guide, to light our path, shine like sun and shower like rain. The problems of the individual, family and the society can be solved. Teach a child how he should live, and he will remember it all his life. (Proverbs 22:6). Reverence for the lord gives confidence and security to a man and his family. Do you want to avoid Death? Reverence for the lord is a fountain of life (Proverbs14:26-27).Peace is what I leave with you; it is my own peace that I give you. I do not give it as the world does. Do not be worried and upset; do not be afraid (John14; 27).

Conclusion

Parents, preachers and teachers must drive the children and youth to grow spiritually for Psychological well-being, and to follow God’s new Commandment - Love one another as it is essential for every person`s Psychological well-being since Love is eternal (I Corinthians 13:4-8).. As I have loved you, so you must love one

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another (John 13:34).For god loved the world so much that he gave his only son, so that everyone who believes in him may not die but have eternal life(John 3:16).Love your life partner and children. You can forgive a person if you love more and you can love if you forgive that person. Everyone have to avoid "Negative values" which are rooted in ego, ignorance, and falsehood.

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PROMINANCE OF YOGA PRACTICE FOR BENEFITS OF PHYSICAL FITNESS

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YOGA

Yoga is an ancient Indian practice which involves movements of the body and the training of the mind to achieve balance and well-being. The purpose of traditional yoga for each individual is to keep him/her healthy, both physically and mentally, and to be able to attain his or her topmost potential as a person. Practicing yoga as a lifestyle can be beneficial for individuals with disabilities or with chronic health conditions through the physical postures and breath work. Each yoga pose can be modified or adapted to meet the needs of each student.

The word yoga has its origin in the Sanskrit root 'yuj' meaning to bind, join, attach and yoke, to direct and concentrate one's attention on, to use and apply. It also means union or communion. Yoga was collated, co-ordinated and systematized by Patanjali, an ancient Indian saint, in his classical work yog sutras, which consist of 185 terse aphorisms. (Iyengar BKS, 2008)

Yoga is an ancient Indian practice that couples physical postures with conscious attention to breathing, and a meditative practice. Yoga is used to foster mental and physical awareness, which recognizes the inseparable nature of the two. Yoga literally means "yoke", which accurately describes this mind-body connection, and allows one to overcome the perceived limitations of oneself (**Choudhury, 2007; Iyengar, 2001).**

Yoga is a not religion. It is a philosophy of life based on certain psychological facts, and its aim is the development of a perfect balance between the body and the mind that permits union with the divine. A perfect harmony between the individual and the cosmos. All the sacred writings of India (the Vedas, the Upanishads, the Puranas and the Tantras) are full of exploits by men and women of all castes, creeds and religions: people from all walks of life that arrived at the highest degree of knowledge through the discipline if yoga – while carrying on their various occupations (**Sri Ananda, 2006).**

Swami SatyanandaSaraswati (1986) main manual for hatha practice, Asana, Pranayama, Mudra Bandha, he states, the main aim of hatha yoga is to bring about a balanced flow of prana in idea and pingalanadi. The word hatha is comprised of two beeja mantras ham, representing the sun or solar force, and them, representing the moon or lunar force. To bring about a balance between these two forces, the body must first be purified by the shatkarmas. The aim of hatha yoga is to balance these two flows so that neither the mental nor physical faculties are dominant. . . .When Ida and pingalanadi are purified and balanced, and the mind is controlled, then sushumna, the most important nadi, begins to flow. Sushumna must be flowing for success in meditation. If pingala flows, the body will be restless; if Ida flows, the mind will be overactive. When sushumna flows, Kundalini awakens and rises through the chakras. (APMB pp. 522-523).

Ancient books on Yoga, such as Yoga Shastra, Hatha-Yoga Pradipika and Yoga sutra by Patanjali state that the 'Yama'(mental discipline) and the 'Niyama' (mental purification) should be practiced first and only then followed by the 'Asanas' and 'Pranayama'. Ahimsa (non-violence), Satya (truth), Asteya (non-stealing),

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Brahmacharya (chastity) and Aparigraha (non-covetousness) are Yama, i.e., rules of good conduct for society and the individual. Shaucha (purity of body and mind), Santosha (contentment), Tapas (self-discipline and austerity), Svadhyaya (study of scriptures) and IshwaraPranidhana (conternplation) are the Niyama. i.e., rules of self-purification related to personal discipline (**Sri Ananda, 2006).**

Yoga shows us that happiness is within ourselves and trying to quench desires is like pouring ghee on fire which only makes it blaze more instead of putting it out. So with desire, it is never satisfied. Yoga shows us that happiness for which we are eternally searching can be obtained through non-desire. To achieve a state of non-desire, the mind must be trained to think clearly. A healthy mind requires a healthy body. This is where Hatha Yoga comes in.

All the wonders of modern science will not bring happiness, peace of mind, health or a long life. Although wonders have been achieved in our external environment such as space travel, computers, etc. our internal environment has been neglected. Thousands of years ago the ancient yogis turned their minds inwards and discovered their true nature. This allowed them to work out a system of body and breathing exercises which result in vitality, rejuvenation and peace of mind.

The human mind is subject to certain weaknesses which are universal. avidya-wrong notions of the external world, asmita-wrong notions of the external world, asmita-wrong notions of oneself, raga-longing and attachment for sensory objects and affections, dweshad is like and hatred for objects and persons, and abinivesha or the love of life are the five defects of the mind that must be removed. Constant meditation and introspection eradicate these mental flaws. The human body is a vehicle for journeying this life. It must be kept in proper form if the mind should functions well. For this, there are practices too, but Patanjali does not elucidate on them.

EIGHT STEPS OF YOGA

Patanjali'swriting also became the basis for a system referred to as "Ashtanga Yoga" ("Eight-Limbed Yoga"). This eight-limbed concept derived from the 29th Sutra of the 2nd book, and is a core characteristic of practically every Raja yoga variation taught today. The Eight Limbs are:

1. **Yama** (The five "abstentions"): Ahimsa (non-violence), Satya (Truth, non-lying), Asteya (non-covetousness), Brahmacharya (non-sensuality, celibacy), and Aparigraha (non-possessiveness).
2. **Niyama** (The five "observances"): Shaucha (purity), Santosha (contentment), Tapas (austerity), Svadhyaya (study of the Vedic scriptures to know about God and the soul), and Ishvarapranidhana (surrender to God).
3. **Asana:** Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation.
4. **Pranayama** ("Suspending Breath"): Prana, breath, "ayama", to restrain or stop. Also interpreted as control of the life force.
5. **Pratyahara** ("Abstraction"): Withdrawal of the sense organs from external objects.
6. **Dharana** ("Concentration"): Fixing the attention on a single object.
7. **Dhyana** ("Meditation"): Intense contemplation of the nature of the object of meditation.
8. **Samadhi** ("Liberation"): merging consciousness with the object of meditation.

In the view of this school, the highest attainment does not reveal the experienced diversity of the world to be illusion. The everyday world is real. Furthermore, the highest attainment is the event of one of many individual selves discovering it; there is no single universal self-shared by all persons.

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YOGA FOR HEALTH

The most important aim of our lives should be to maintain good health. Many people take their health for granted and abuse their bodies with a sedentary life style, bad diets, medications and high stress factors. Every person, due to generic weaknesses, is susceptible to certain ailments that if not prevented can lead to serious illnesses. When energy is depleted in the body the organs become weak and they cannot function properly. The natural equilibrium will be distributed and a disorder can develop. Genetic factors will dictate which particular disorder may develop and which organ might be affected. Some people may be prone to a certain condition such as diabetes, cancer, peptic ulcers and heart disease. Yoga acts preventives measures to disease by reducing stress level, keeping the internal organs toned and healthy and maintaining a balanced equilibrium between the physical, mental and spiritual level. The emphasis is to unite the system with a combination of breathing techniques, gentle exercise and mind control. This produces a tranquillity that penetrates deep into the mind and soul. It improves the health of the person on all levels. (vimalalalvani, 2003)

BENEFITS OF YOGA ON PHYSICAL FITNESS

Yoga since the ancient times has been proclaimed to viaduct spirit, mind and body. Yoga also allows manufacturing a balance in her or his life. Yoga creates an array of positive benefits such as increased flexibility in the body, increased lubrication of tendons, ligaments and joints, massage of all organs of the body, etc. Some other benefits of practicing yoga are improvised sleeping pattern and boost in energy levels. Due to these ample of features, Yoga is considered as one of the best reliable manners for attaining healthy life in modern age.

Posture - The very nature of Yoga is such that regular carrying out allows the practitioner to expand his or her control over his body, organs, etc. in more than one healthy position. Practitioner observes presenting himself in a healthy manner and in a positive way which includes as of one of the benefits through regular practice leading to improved postures in one.

Strength and Weight - To improve the strength Yoga makes use of excess body weight. Yoga allows for great work out for different body organs and body systems as it is one of the best weights bearing exercise and thereby offers tremendous benefits to the mankind.

Balance - With Yoga, not only better health can be accomplished from inside but outside as well and a balance is achieved with in the body and among the body parts. Different body organs are observed to perform in great balance and thus this directly implements on the enhancement of the body's balance.

Core Strength - Yoga is a proved tool that helps in improvement of health of a human being and enhances the strength inside an individual. It is said that strong core strength enables the body to heal in an effective manner and reduce the chances of injuries. Minor or major muscle group and several other body organs are stimulated in aspect of their action and improvement in strength and flexibility leading to enhanced nourishment for the inner laid body organs as per the benefits of asanas. Inner core strength of the body as well as a means to lead a healthy and constant life is developed through regular practice of Yoga.

Flexibility - Yoga and flexibility go hand in hand. It increases the range of motion in joints and also the lubrication in the joints. The result is enhanced fluidity throughout your body and a sense of ease and get rid of muscle soreness and promotes faster recovery. Instead of feeling weary or tired out after performing yogic asanas, a person feels much relaxed and enthusiastic.

Constant practice of Yoga will result in enhanced flexibility. A body part, which was rigid at the beginning of learning Yoga, would experience a remarkable flexibility in all parts, with regular practice. If it is

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done in a correct form, Yogic stretching helps to develop the entire body. With stretching, the body develops a sense of harmony and balance. Also, with the increased flexibility many tensions and conflicts are erased on their own. The more flexible a body, the better it is for that individual as it saves the body from unnecessary torture and pain.

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EFFECT OF RESISTANCE TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG FEMALE INTERCOLLEGIATE THROWERS

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INTRODUCTION

The genealogy of lifting can be traced back to the beginning of recorded history where man's fascination with physical abilities can be found among numerous ancient writings. Progressive resistance training dates back at least to Ancient Greece, when legend has it that wrestler Milo of Croton trained by carrying a newborncalf on his back every day until it was fully grown. Another Greek, the physician Galen, described strength training exercises using the halters (an early form of dumbbell) in the 2nd century. Ancient Greek sculptures also depict lifting feats. The weights were generally stones, but later gave way to dumbbells. The dumbbell was joined by the barbell in the latter half of the 19th century. Early barbells had hollow globes that could be filled with sand or lead shot, but by the end of the century these were replaced by the plate-loading barbell commonly used today. Another early device was the Indian club, which came from ancient Persia where it was called the "meels". It subsequently became popular during the 19th century, and has recently made a comeback in the form of the club bell. The 1960s saw the gradual introduction of exercise machines into the still-rare strength training gyms of the time. Resistance training became increasingly popular in the 1970s, following the release of the bodybuilding movie Pumping Iron, and the subsequent popularity of Arnold Schwarzenegger. Since the late 1990s increasing numbers of women have taken up resistance training, influenced by programs like Body for Life; currently nearly one in five U.S. women engages in weight training on a regular basis. Strength training is an inclusive term that describes all exercises devoted toward increasing physical strength. Weight training is a type of strength training that uses weights rather than elastic, Eccentric Training or muscular resistance to increase strength. Endurance training is associated with aerobic exercise while flexibility training is associated with stretching exercise like yoga or Pilates. Weight training is often used as a synonym for strength training, but is actually a specific type within the more inclusive category. Despite popular belief, weight training can be beneficial for both men and women. Effective resistance training develops lean muscle, increasing your resting metabolic rate, helping your body burn fat.

STATEMENT OF THE PROBLEM

The present study was to findout the effect of resistance training on selected physical fitness variables among female intercollegiate throwers.

HYPOTHESES

It was hypothesized that there may be significant differences due to resistance training on the selected physical fitness variables namely strength and muscular endurance.

SIGNIFICANCE OF THE STUDY

1. The study will be helpful to know the effect of resistance training on selected physical fitness variables among female intercollegiate throwers.

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2. The study will be helpful to prepare training schedule to improve the effect of resistance training on selected physical fitness variables among female intercollegiate throwers.
3. The study will be helpful to realize throwers and coaches for their coaching purpose.

DELIMITATIONS

The following delimitations are considered for the study

1. This study is confined to 16female intercollegiate throwers as subjects.
2. The subjects were selected from A.C College and J.K.C College Guntur A.P.
3. The subjects were selected only from the age group of 18 and 22 years.
4. The duration of the training was three days per week and six weeks in total.
5. The study is confined only to the selected resistance training.

LIMITATIONS

The following limitations are considered for the study.

1. The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study could not be taken into consideration.
2. Hereditary, social and other psychological factors could not be controlled.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of resistance training on selected physical fitness variables among female intercollegiate throwers.16 subjects were selected randomly from A.C College and J.K.C College, Guntur Andhra Pradesh. The age of the subjects ranged from 18 to 22 years. They were divided into two groups of 8 in each. One group acted as the experimental group. The experimental group was undergone the training for 6 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Resistancetraining

DEPENDENT VARIABLES

- **PHYSICAL FITNESS VARIABLES**
  1. Strength
  2. Muscular endurance

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Strength	Modified push ups	In numbers
2.	Muscular endurance	Bent knee sit ups	In numbers

EXPERIMENTAL DESIGN

The present study is to find out the effect of resistance training on selected physical fitness variables among female intercollegiate throwers. 16 subjects were selected randomly from A.C College and J.K.C College, Guntur Andhra Pradesh. The age ranged from 18 to 22 years. They were divided into two groups each consisting of 8 namely experimental group and control group. The experimental group underwent the resistance training for 6 weeks. The training was given three days in a week and the training session was from

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4:00 pm to 5:00 pm. The control group was not involved in any resistance training. They were engaged in their usual activities. All the subjects were tested in the selected physical fitness variables namely strength and muscular endurance. The pre- test was taken before the start of resistance training and post-test was taken after 6 weeks resistance training.

TRAINING SCHEDULE

The six weeks training schedule as shown in table from II

TABLE II: TABLE SHOWING THE FIRST TO SIX WEEK TRAINING PLAN

Days	No. of exercises.	Rep.	Sets	Total duration of week in minutes	Duration oftraining components in minutes
Monday (resistance training)	4	5	2	180	60
Wednesday (resistance training)	4	4	2		60
Friday (resistance training)	4	3	2		60

Weekly 3 days X 60 minutes = 180 minutes

LIST OF EXERCISES

Resistance Training

Dumbbell bench press, Dumbbell curls, Concentration curls, Hammer curls, Reverse wrist curls, Wrist curls, Dumbbell triceps extensions, One arm dumbbell triceps extensions, Seated dumbbell triceps extensions, Triceps kickbacks, Lying dumbbell press, Front dumbbell press, Push ups, One arm dumbbell rows, Chin ups, Sit ups, Crunches, Incline leg raises, Hanging leg raises, Dumbbell side bends, Good mornings (with stick), Standing calf raises, One leg toe raise (with dumbbell), Bridging and Floor hip abduction.

STATISTICAL TECHNIQUES

The present study paid its attention mainly on testing the effect of resistance training on selected physical fitness variables among female intercollegiate throwers. The Statistical tool used for this present study is described here. The significance of the mean difference between the pre-test and post-test values of the variables was found out by applying ANCOVA.

Table-III: COMPUTATION OF ANALYSIS OF COVARIANCE ON STRENGTH AMONG EXPERIMENTAL AND CONTROL GROUPS

Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	13.87	13.00	Between	3.06	1	3.06	2.05
			Within	20.87	14	1.49	
Post test	20.12	13.50	Between	175.56	1	175.56	74.76*

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mean			Within	32.87	14	2.35	
Adjusted post test mean	19.62	14.01	Between	109.93	1	109.93	286.16*
			Within	4.99	13	0.38	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 14 and 1 & 13 degree of freedom = 4.60 & 4.67

The table-III shows that the pre-test mean value on strengthof experimental group and control group are 13.87 and 13.00 respectively. The obtained 'F' ratio of pre test mean is 2.05 which is lesser than the required table value of 4.60for df 1 and 14 at 0.05 level of confidence onstrength.

The post-test mean value on strength of experimental group and control group are 20.12and 13.50 respectively. The obtained 'F' ratio of post-test mean is 74.76 which are greater than the required table value of 4.60 for df 1 and 14 at 0.05 level of confidence on strength.

The adjusted post-test mean value on strength of experimental group and control group are 19.62 and 14.01 respectively. The obtained 'F' ratio of adjusted post-test mean is 286.16 which is greater than the required table value of for 4.67df 1 and 13 at 0.05 level of confidence on strength.

The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on strength.

FIGURE-1: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON STRENGTH

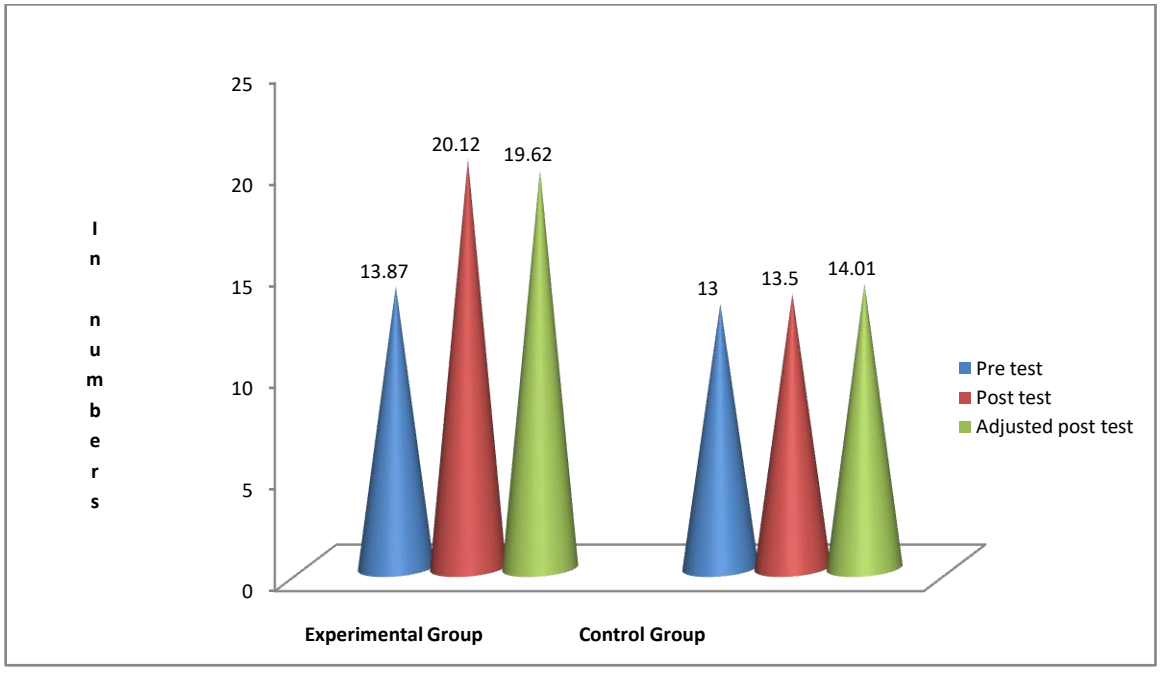

Table-IV: COMPUTATION OF ANALYSIS OF COVARIANCE ON MUSCULAR ENDURANCE AMONG EXPERIMENTAL AND CONTROL GROUPS

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Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	12.87	11.62	Between	6.21	1	6.21	2.59
			Within	34.75	14	2.48	
Post test mean	18.50	12.00	Between	169.00	1	169.00	69.58*
			Within	34.00	14	2.43	
Adjusted post test mean	17.95	12.55	Between	98.96	1	98.96	177.94*
			Within	7.23	13	0.56	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 14 and 1 & 13 degree of freedom = 4.60 & 4.67

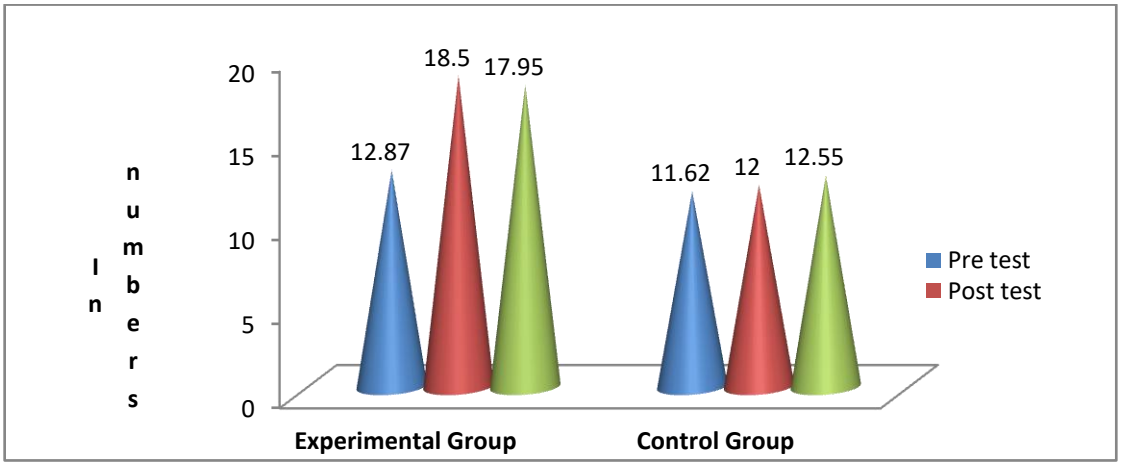
The table-III shows that the pre-test mean value on muscular enduranceof experimental group and control group are 12.87 and 11.62 respectively. The obtained 'F' ratio of pre test mean is 2.59which is lesser than the required table value of 4.60for df 1 and 14 at 0.05 level of confidence onmuscular endurance.

The post-test mean value on muscular endurance of experimental group and control group are 18.50and 12.00 respectively. The obtained 'F' ratio of post-test mean is 69.58 which are greater than the required table value of 4.60 for df 1 and 14 at 0.05 level of confidence on muscular endurance.

The adjusted post-test mean value on muscular endurance of experimental group and control group are 17.95 and 12.55 respectively. The obtained 'F' ratio of adjusted post-test mean is 177.94 which is greater than the required table value of for 4.67df 1 and 13 at 0.05 level of confidence on muscular endurance.

The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on muscular endurance.

FIGURE-2: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON MUSCULAR ENDURANCE



DISCUSSION ON FINDINGS

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The result of the study shows that the experimental group that had undergone selected resistance training and significant improvement on selected physical fitness variables namely strength and muscular endurance. This may be due to the effect of resistance training.

The results conformity with other studies Faigenbaum AD., et al (2007), Gopinath and Arul (2008),has also provide in their studies that an improvement did occur physical fitness variables namely strength and muscular endurance.

CONCLUSIONS

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn.

- It was concluded that experimental group significantly improved on physical fitness variables namely strength and muscular endurance.

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TALENT IDENTIFICATION AND DEVELOPMENT IN SPORTS AND GAMES : CONCEPTS AND ITS PRINCIPLES

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INTRODUCTION

Everyone has ability, but it is not distributed equally or predictably. There are opportunities to develop physically, emotionally and socially and to discover hidden talents, learn about oneself and develop a new sense of competence and self-worth. This applies to coaches as well as athletes. Often ability is a gift of birth, but that doesn't guarantee success. From a more contemporary perspective, **Peltole (1992)** defined talent identification as the process by which children are encouraged to participate in the sports in which they are most likely to succeed, based on results of testing selected parameters. These parameters have been shown to predict future performance, taking into account the child's current level of tness and maturity. **Russell (1989)**went beyond the identification of talent, and proposed that the scientific perspective on the pursuit of excellence in sport be broken down into 4 key stages : Detection, selection, identification and development.

CURRENT PRACTICES IN TALENT IDENTIFICATION :

Talent identification at early ages is one of the major methods to improve the performances. Some of the leading western countries got benefit from the model. In India we are implementing the talent identification procedure since 1980. But in recent years the research development and implementation is very less. Atheletic talent identification is approached from many different angles, depending on which countries are looking at and the sport for which athletes are being recognized and recruited. Today it is acknowledged that appropriate support and training are essential if talented individuals are to full l their potential. Partly for this reason, the early identification of talented athletes is an increasingly important consideration for researchers and practitioners alike. Once talented individuals have been detected, crucial but limited support resources can be optimally deployed to further re ne and develop these talents. Without such support however, the needs of talented children may not be met and their gifts remain undeveloped. Consequently, effective talent identification system is an essential precursor to talent development as it will direct support to those individual who have the greatest potential to achieve senior international success in sport.

The Tamil Nadu government has ordered to conduct a battery of test of assess the motor qualities in children studying in std. VI, VII and VIII in all schools since 2002. These qualities help to identify the child's potential to play particular game / sport. The programme successfully conducted every year and talented children identified and under went vacation camp specific to their qualities. The talent identification and the duration of the programme vary from country. This study is an attempt to make new perceptive to the talent search, combined with the morphological components named as somato types and held tests.

IDENTIFYING AND DEVELOPING TALENT AT RIGHT TIME

Amot& Gaines (1986) stated that sports talent should be recognized and encouraged in children after the age of 10, since such talent is an important part of a child's potential and one that deserves recognition and encouragement as much as any other **Du Randt et al. (1992)** suggested that the first stage of identification should take place at the age of 8-10 years in the form of mass screening and this should be followed up 18-24 months later. Final talent identification should take place at around 14 years of age. **Riordan**

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(1998) suggested that the age at which a child gets involved in a specific sport should depend on the sport. He suggested age 7-8 for swimmers, gymnasts, tennis players and figure skaters, to age 12 – 13 in boxing and cycling and age 13-14 in shooting and weightlifting.

Sports talent is a produce of heredity and environment. But a person must be endowed with basic minimum of biological potential only then it can be developed through training and other environmental factors to a level needed in performance sports. According to Astrand and Rodahl (1986) "genetic factors probably play a major role in a person's performance capacity, at least for those persons aspiring to the levels required for the attainment of Olympic medals. According to them about 70% of an individuals maximal force, power or capacity is a matter of genetically factors. Identification of talent is made more complicated by the fact that it must also take into consideration the possibilities of development of the various performance prerequisites. This is very difficult task as the trainability of performance prerequisites depends basically on heredity and training activity and both are-affected by a multitude of factors during the course of life.

PRINCIPLES OF TALENT IDENTIFICATIN AND DEVELOPMENT

Several sports science disciplines are actively engaged in tackling the problem of talent identification and its development. Still no clear cut formula or procedure is available for identifying talent for various sports. Based on present knowledge gained from actual practice and sports science disciplines and following principles of talent identification and development are presented :

a. Starting point is the structure of future performance

Talent identification and development is a future oriented process. The aim is to find and develop talent for high performance several years ahead in the future. Therefore one has to look for those performance factors or performance capacity which will enable the sportspersons to achieve this performance. The proper implementation of this principle involves tackling of the following tasks:

- Prognosis of sport performance in a sport at a fixed time in the future.
- Determination of the structure of prognostic performance.
- Determination of the performance capacity and its structured essential to achieve prognostic performance.

On the basis of the performance capacity and its structure demand profiles should be prepared for the different stages of training. The demand profiles serve as the base for talent identification and its development.

b. It is a long term Process

Sports talent is a product of heredity and environment. Heredity unfolds itself with the passage of time and is also affected by environment including physical activity. In high performance sports children are normally considered for talent identification. These children are growing and maturing in a certain environment. Growth produces changes in physique, capacities, abilities, personality traits, interests, attitudes etc. Younger the child the faster are the changes. Therefore it is very difficult to judge the final outcome or sports talent. Moreover, through systematic training growth and development processes can be significantly affected. The process of talent identification and its development therefore must begin in early childhood. It should be spread over a number of years and sports training should aim at maximal exploitation of growth and development, especially motor development, for optimum development of talent.

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Steps for talent identification and its Promotion

Step I	Aim	Screening of children for basic training stage. Screening done on the basis of :
		1.Health and physique
		2.General physical performance capacity.
		3.Motives, interests, mental capacities etc.,
		4.Interest of parents etc.
Training in the basic stage should be uniform for all children		

Step II	After 3-4 years of training	
	Aim	Selection for a group of sport (Advanced training stage) Selection based on the following keeping in mind the specific requirements for the group of sports :-
		1. Physique
		2. Motor abilities
		3. Performance
		4. Cognitive, emotional and volitional factors and personality traits.
		5. Ability to tolerate load.

Step III	After 3-4 years of advanced training	
	Aim	Selection for a sport or event (High performance training state). Selection to be based on the following keeping in mind the specific requirements for the sport / event.
		1. Physique
		2. Performance and the potential for performance
		3. Talent indicators
		4. Cognitive, emotional and volitional factors and personality trails
		5. Experimentation by training for a limited period in a sport.

c. A wide range of factors must be considered

Sports performance is the product of total personality of the sport person. Hence when trying to spot talent the effort should not be limited to only physical fitness, technical skills, tactical efficiency and physique. One must consider all factors all factors which directly or indirectly determine or influence performance, performance capacity and sports training. It is very important to give due weight age to those qualities and factors which will enable the child to undergo hard and systematic training for several years. Some of the important factors to be considered for talent identification are given below :

- Age (chronological and biological).
- Performance and training state (present and past).
- Nature and duration of training in the past.
- Motivation, interest and attitude of the child and his parents. Health.
- Socio-economical and living conditions.
- School / college results.

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The training had done in the past and the biological age has special importance for talent identification trained children perform better than the untrained in tests of fitness and sports. This does not always mean that they are more talented. Untrained children with regular training, but with talent, very frequently overtake trained children who are not talented. Similarly children who are biologically advanced perform better than the other children though they may not be talented.

d. It should become progressively more Specific

With the passage of time and also due to regular sports training and sports talent assumes its final shape and shows itself in the form of excellence in a sport or event. Therefore, the effort to spot talent for a specific sport or event should be made at a later stage. It is also very important that effort to develop talent in the initial stages should be through general means. It should gradually become more specific with the passage of time and improvement in performance.

e. Less trainable factors should be given more weightage

Sport performance is determined by a complex of factors. Some of these factors like strength, endurance etc., can be improved to a considerable extent through training. Some factors, however, are very less trainable i.e., are largely genetically determined. Most important among the less trainable factors are physique, height, speed, playability, temperament etc. while identifying talent in children less trainable factors should be given more weight age.

f. Talent indicators should be Considered

Sports science disciplines should be used to provide additional information about the individual components of performance. While assessing talent on the basis of performance in sports, the following aspects of performance, called talent indicators, should be considered :

- ❖ Performance level ;
- ❖ Rate of increase in performance
- ❖ Performance stability
- ❖ Ability to increase performance in a series of competitions
- ❖ Ability to tolerate load.

g. Large population of children is a Basic Necessity :

No system of talent identification and development can be fool proof. This is to because talent identification is basically a process of prediction of a child's performance in the future. During the period of growth and development so many things can happen over which we can have no control. In order to overcome this problem it is essential that a large population of children is selected for the first stage of training. The larger the population the higher is the probability that some of the selected children will reach international level when they grow up (theory of probability).

CONCLUSION

It is clear that talent identification is a diverse subjects that is not easily summed up. There are many different views on what talent identification accomplishes and how it should be structured. It is also acknowledged that a well planned and organized talent identification and development program is essential to the successful development of every sport and games. Whilst research has identified a number of 'key performance indicators' in each sport and game, there is no practical package of information available to coaches in the field. To achieve high level performance in international sporting arena, the Indian government has to implement the above mentioned principles, while identifying and developing in sport. By linking talent identification to the already existing talent screening system, the results can still be achieved in talent

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identification. At the same time talent identification programs need to be scientifically based and assessment should be done continuous in order to maximize a countries sporting performance at global level.

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HEALTH AND FITNESS - BENEFITS OF SPORTS

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ABSTRACT

Sports and other physical activities have innumerable physical health benefits such as improving cardio respiratory and muscular fitness, bone health, increasing life expectancy, and coronary health. Sports can also help prevent various types of cancer and weight gain and have positive effects on mental health by reducing gloominess and improving cognitive function. There is an overwhelming amount of scientific evidence on the positive effects of sports and physical activity as part of a healthy lifestyle. The positive, direct effects of engaging in regular physical activity are particularly apparent in the prevention of several chronic diseases, including: cardiovascular disease, diabetes, cancer, hypertension, obesity, despair and osteoporosis. The WHO has estimated that one in four patients visiting a health service has at least one mental, neurological or behavioural disorder, but most of these disorders are neither diagnosed nor treated. A number of studies have shown that **exercise may play a therapeutic role in addressing a number of psychological disorders**. Studies also show that exercise has a positive influence on depression. Thus this article discusses the health benefits of sports and physical activity in individuals and communities as it enable the persons to maintain fitness to lead a happy life.

Keywords: Health, Fitness, Benefits, Sports and Physical Activity, Healthy Lifestyle

INTRODUCTION

Games and sports keep one physically and mentally fit. They keep one away from diseases relating to heart, obesity, mental stress and sleeplessness. They instil in the player a spirit of self-confidence, self-reliance, discipline, justice, fair play and patriotism. In recent decades, there has been a progressive decline in the level of physical activity in people's daily lives in developed countries. Later, people realized that physical inactivity is a major risk factor for most common non-communicable diseases. Presently sports and physical activity is used by young and old as a tool to improve mental, physical and social well-being. Moderate exercise and good sleep both enhance immune function. There is an overwhelming amount of scientific evidence on the positive effects of sports and physical activity as part of a healthy lifestyle. The positive, direct effects of engaging in regular physical activity are particularly apparent in the prevention of several chronic diseases, including: cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis. Physical activity can help to prevent hip fractures among women and reduce the effects of osteoporosis. Remaining physically active can enhance functional capacity among older people, and can help to maintain fitness, quality of life and independence.

Games are very essential for students but they are neglected in schools and colleges. Even parents do not have high opinion about games and they want their children to devote more time to studies. India lacks funds, and proper training facilities are not provided to the players. Sports bring rich dividends to sportsmen. The government has formulated a New National Sports Policy. Effective measures should be taken to popularize, and encourage participation in games and sports. According to the World Health Organization, 'Health is a state of complete physical, the absence of disease.' Academics serve the purpose of nourishing the mind. But a healthy mind resides in a healthy body. One can develop and maintain a healthy body by actively participating in games and sports. Games keep the body alert, active, youthful and energetic. They instil in us a

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spirit of adventure. Games increase the circulation of blood, boost metabolism, burn calories and improve the respiration and digestive system. A healthy person can work hard cheerfully for a long period of time, and can face dangers boldly. Games also instil in the players the spirit of self-reliance, self-confidence, justice, and fair play. They enable him to follow other virtues like discipline, honesty, integrity, loyalty and patriotism.

While playing games various exercises are performed automatically and one need not join a gymnasium to exercise. Brisk walking, running, cycling, skipping, swimming and yoga are common activities to keep fit. They also tone up the body of both the young and the old. Mild exercises are beneficial for patients recovering from heart attacks and those who suffer from obesity, diabetes, blood pressure etc. Exercise invigorates the mind and the body and helps to keep fit. A player develops team spirit; he learns to adjust with other person's shortcomings. A player respects and follows the rules of the game he plays. He, thus, becomes a man of principles. Sportspersons display punctuality, diplomacy and self-discipline. Sports help us to face the challenges in life bravely.

Many individuals may not take time to do exercise at home like pounding away on a treadmill or working up a sweat in the gym, but once the people start enjoying it, they will gain a number of benefits such as improving general health and well being. There are plenty of reasons why one should involve in sports as it reduce the body fat, bone strengthening, improve stamina and flexibility and so on. The following are some of the many health and fitness benefits of participating in sports and doing regular exercise:

- Playing sports helps reduce body fat or controls body weight.
- Sports enhance fitness and skills.
- Sports help to fight depression and anxiety.
- Sports enable to face challenges and set goals.
- Playing sports helps strengthen bones.
- Sports help aid coordination, balance and flexibility.
- Sports improve stamina and concentration.
- Sports allow one to experience the highs and lows of both winning and losing
- Sports enable the person to meet with a similar interest people and to gain many new friends.
- Sports improve healthy lifestyle.

Besides the above mentioned benefits, sports mainly emphasize on health as discussed below;

Physical activity and psychosocial health

The WHO has estimated that "one in four patients visiting a health service has at least one mental, neurological or behavioural disorder, but most of these disorders are neither diagnosed nor treated". A number of studies have shown that **exercise may play a therapeutic role in addressing a number of psychological disorders**. Studies also show that exercise has a positive influence on depression. Physical self-worth and physical self-perception, including body image, has been linked to improved self-esteem. The evidence relating to health benefits of physical activity predominantly focuses on intra-personal factors such as physiological, cognitive and affective benefits, however, that does not exclude the social and inter-personal benefits of sports and physical activity which can also produce positive health effects in individuals and communities.

Cardio respiratory Health

Sports can help people of all ages maintain and improve the health of their heart, lungs and blood vessels. Physical activity can significantly reduce the risk of coronary disease and stroke. According to the British Parliamentary Office of Science and Technology, approximately 40 percent of deaths related to

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coronary heart disease are related to inadequate physical activity, obesity, stress and raised blood pressure. Sports can help with all of these physical issues, decreasing the risk of **coronary disease by about 50 percent.**

Cancer

Sports can decrease the risk of colon cancer by as much as 300 percent, according to the British Parliamentary Office of Science and Technology. It can also significantly decrease the risk of breast cancer, and might decrease the risk of endometrial and lung cancer.

Psychological Health

Sports can be a form of mental therapy for people with psychological disorders and depression. Sports may promote self-esteem in the form of positive perception of body image and self-worth. By participating in sports with others, people can also enter in positive social environments to promote psychological health. Physical activity can also decrease the risk of cognitive decline that comes with aging and can reduce anxiety in adolescents.

Weight Maintenance

Sports can help promote long-term weight loss and help avoid weight gain. Sports increase metabolic rates and can help increase lean body mass while burning calories and getting rid of excess fat. Although the amount of physical activity needed varies by body type and caloric intake, sports can help a person maintain a healthy weight. According to the U.S. Department of Health and Human Services, between two and half to five hours of moderately-intensive physical activity can help achieve weight stability.

Bone Stimulation

Research has shown that even modest levels of physical exercise during growing years have a measurable, positive impact on bone strength. One study in particular determined that active children accumulated as much as 10 percent to 40 percent more bone mass in certain areas than non-active peers. However, the intensive and weight-conscious sports such as gymnastics and wrestling might lead to slower bone growth. Both female gymnasts and male wrestlers have later onsets of puberty and are shorter than children of the same age. Scientists suspect that a combination of high-intensity workouts and a restricted diet might work to slow overall development and bone growth. Light resistance training performed under appropriate supervision both improves performance in young athletes and protects against injury. The important point is that youth training should focus on technique rather than building muscle.

Barriers to participation in sports and physical activity

- Barriers to participation in physical activity include high costs, poor access to facilities and unsafe environments.
- A major socio-cultural and economic barrier is the manifest idea that sports is masculine and elitist. It is a widely shared perception transmitted by men and women through traditions, beliefs and social practices. This entails that women are not meant to be competitive and their body should not be muscular.
- Practical barriers include poverty and scarcity of economic means. For women this means a lack of time, a lack of appropriate, safe and accessible infrastructure, and no adequate clothing.
- Knowledge barriers include the lack of awareness of the benefits of physical activity. They however also deal with the myths such as the still prominent and thoroughly false perception that sports is a potential impairment to female fertility.

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CONCLUSION

Sports and other physical activities have innumerable physical health benefits, including improved cardio respiratory and muscular fitness, bone health, increased life expectancy, and coronary health. Sports can also help prevent various types of cancer and weight gain and have positive effects on mental health by reducing depression and improving cognitive function. On the whole, playing sports or engaging in extracurricular activities play an important part in one's character and personality development. One develops management skills, negotiation skills, communication skills, convincing skills, conflict management and confidence. However, effective measures should be taken to ensure people's active participation in games. The government should evolve a long-term national sports policy. Selection of players for national and international games should be fair. And also the government should find out the solutions for the barriers to participate in sports and physical activity by the people and promote the participation of skilled young people in sports and games as participation in sports and games could improve the overall health of the nation and its citizens.

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EFFECT OF ADAPTED PHYSICAL ACTIVITIES ON SELECTED PHYSICAL FITNESS VARIABLES AMONGINDIVIDUALS WITH INTELLECTUAL DISABILITIES

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ABSTRACT

The present study is to findout the effect of adapted physical activities on selected physical fitness variables among individuals with intellectual disabilities. 30 subjects were selected from Amrit School for Special Needs, and RKMV University Special Education Unit, Coimbatore. The subjects were between 14 and 18 years. They were divided into two groups of fifteen in each. One group was acted as the experimental group and another group was acted as the control group. The experimental group underwent the adapted physical activities for 8 weeks of 5 days per week. Each training session was for one hour in the evening from 3.00 PM to 4.00 PM. To achieve the result, the collected data on following criterion measures namely physical fitness variables like flexibility and cardiorespiratory endurance were tested. The standardized tests were taken before and after the adapted physical activity training. The paired't' test was applied to analyze the collected data and in all cases the criteria for the statistical significance was set at 0.05 level of confidence. Itis concluded that the adapted physical activities on selected physical fitness variables significantly increased the flexibility and cardiorespiratory endurance among individuals with intellectual disabilities.

KEYWORDS:
adapted physical activity training,flexibility and cardiorespiratory endurance.

INTRODUCTION

Intellectual disability (ID) also known as mental retardation (MR) is defined based on Intelligent Quotient (IQ) and adaptive functioning. WHO International Classification of Functioning (ICF) classifies mental retardation under disability as it impairs the anatomical structure and functioning resulting in activity and participation limitations. The WHO International classification of Diseases, Version 10 [ICD-10 (2010)] and Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, text revision (DSM-IV-TR) by American Psychiatric association use the term mental retardation to denote conditions relating to cognitive disability (Table 1). According to ICD-10 (2010) which complements ICF defines Mental Retardation as "A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor and social abilities. Retardation can occur with or without any other mental or physical condition". The American Association on Intellectual and Developmental Disabilities (AAIDD) defines it as "limitations both in intellectual functioning and adaptive behaviour apparent prior to the age of 18" (AAIDD, 2010). Adaptive behaviour assesses conceptual skills (e.g., language, money and time concepts), social skills (e.g., interpersonal skills, personal independence and social problem solving) and practical skills (e.g., activities of daily living, occupation). AAIDD previously known as The American Association on Mental Retardation (AAMR) substituted the term intellectual disability for mental retardation in line with the ICF definition.

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The definition of intellectual disability does not stand alone and is context dependent. The limits are defined based on the community, environment, age, peers, culture and linguistic diversity based communication and behavioural factors. Degrees of mental retardation are conventionally estimated by standardized intelligence tests. In addition, scales assessing social adaptation in a given environment are performed to give a better indication of the degree of illness.

Intellectual disability is the most common developmental disorder and includes a highly diverse group of cognitive disorders. Many children with intellectual disability have lifelong disability requiring substantial social and educational support. The condition is present as an isolated finding or as a part of a syndrome or disorder for e.g. motor impairment, epilepsy, sensory impairment, gastrointestinal disease, sleep disorders, dementia and others (Winter, 2011). It represents an important health burden in the population and is a frequent reason for referral to genetics and developmental paediatrics clinics (McCarthy, 2011; Oeseburg, 2011). Intellectual disability is an extremely stigmatizing condition (Ali, 2012) and involves utilization of large public health resources, but most data about its burden is based on studies conducted in developed countries. The cost of intellectual disability to the society in the form of additional resources to provide adequate services is huge (Wittchen, 2011; Gustavesson, 2012; Olesen, 2012). Management by behavioural intervention, teaching replacement skills and reinforcing positive attitude effectively controls aggression and social life (Harvey, 2009, Vanderveen, 2009; Katz, 2010; Brosnan, 2011). Individuals with ID are at risk of developing Psychiatric disorders (Einfeld, 2011) and at risk for suicidal behaviours (Ludi, 2012; Giannini, 2011), aggression and self injuriousbehaviours (Denis, 2011).

CAUSES OF MENTAL RETARDATION

While over 300 causes of mental retardation have been identified (Dunn, 1997), no etiologic can be determined for approximately 30-40% of individuals with mental retardation (Sherrill, 1998). Among those persons with an unidentifiable pathology, the causes of mental retardation are unclear. The American Psychological Association (1994) has set forth five predisposing factors for the 60 to 70% with identifiable causes. Those five factors are:

1. Heredity, including normal and abnormal gene mechanisms-5%.
2. Early alterations of embryonic development, including Down syndrome, fetal alcohol syndrome, and infections-30%.
3. Pregnancy and perinatal problems-10%.
4. Postnatal infections, traumas, and toxins-5%.
5. Postnatal environmental deprivation conditions and other mental disorders like autism-15-20%.

STATEMENT OF THE PROBLEM

The present study is to find out the effect of adapted physical activities on selected physical fitness variables namely flexibility and cardiorespiratory endurance among individuals with intellectual disabilities**.**

SIGNIFICANCE OF THE STUDY

1. The salient feature of the application of adapted physical activities used in the present study is to find out the suitable way to develop the selected physical fitness variables among individuals with intellectual disabilities more effectively.
2. The results of the study may help to produce athletes for Special Olympics.
3. The present study would provide a scientific base and guidance to the adapted physical educators, coaches, sports scientists, exercise physiologists, fitness leaders and special educators to design the

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suitable training programme using the training module in the present study with the view to develop variables related to selected physical fitness variables among individuals with intellectual disabilities.

4. The study will increase the self-confidence, physical and motor development among individuals with intellectual disabilities.
5. If special children involve in this type of activities, the other children might be motivated to take part in some form of physical activities.

HYPOTHESES

It is hypothesized that there may be significant differences due to adapted physical activity training on selected physical fitness variables namely flexibility and cardiorespiratory endurance among individuals with intellectual disabilities**.**

DELIMITATIONS

6. This study is confined to thirty male children with mild intellectual disabilities only.
7. The subjects were selected only from the age group of 14 to 18 years.
8. The subjects were selected from Amrit School for Special Needs, and RKMV University Special Education Unit, Coimbatore.
9. The duration of the experimental period was 8 weeks.
10. The study was delimited to the selected variables namely flexibility and cardiorespiratory endurance.

LIMITATIONS

The following limitations are considered for the study.

- ❖ The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study will not be taken into consideration.
- ❖ Hereditary, social and other psychological factors could not be controlled.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of adapted physical activities on selected physical fitness variables among individuals with intellectual disabilities. 30 subjects were selected from Amrit School for Special Needs, and RKMV University Special Education Unit, Coimbatore. The subjects were between 14 and 18 years. They were divided into two groups of 15 in each. One group acted as the experimental group. The experimental group was undergone the training for 8 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Adapted physical activities

DEPENDENT VARIABLES

- ➢ Physical fitness
  1. Flexibility
  2. cardiorespiratory endurance

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Flexibility	Sit and reach	In centimeters
2.	Cardiorespiratory endurance	600 yard run / walk test	In Minutes

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EXPERIMENTAL DESIGN

For this study, thirty school students were selected as subjects. They were selected from Amrit School for Special Needs, and RKMV University Special Education Unit, Coimbatore, Tamil Nadu state. Their age ranged from 14 and 18 years which represented a true random sample group and it was called as experimental group. These subjects were tested to find out their physical fitness variables namely flexibility and cardiorespiratory endurance were tested.

Adapted physical activities' training for 8 weeks was given to the subjects. Their training days and hours every week ranged from Monday to Friday from 3.00pm to 4.00pm. A pre - test was conducted before the adapted physical activities of the training the final test data were collected after 8 weeks.

STATISTICAL TECHNIQUES

't' ratio was calculated to findout the significance difference between the mean of pre and post test of the each group.

TRAINING SCHEDULE

The eight weeks training schedule as shown in table from II

ADAPTED PHYSICAL ACTIVITIES FOR 1 to 8 WEEKS

Day	Training Aim	Exercises	Repetition	Rest in sec	Training Time	Total Duration
Monday	Warming Up	Stretching, and jogging	-	90	8 min	60 min
	Activity – I	Shifting The Ring	2	90	15 min	
	Activity – II	Wall Pass	2	90	15 min	
	Activity – III	The Ups Contest (Badminton)	2	90	15 min	
	Limbering Down	Stretching and relaxation	-	90	7 min	
Tuesday	Warming Up	Stretching, walking and jogging	-	90	8 min	60 min
	Activity – I	Cat-And-Rat	2	90	15 min	
	Activity – II	Do This, Do That	2	90	15 min	
	Activity – III	Simon Says	2	90	15 min	
	Limbering Down	Stretching and relaxation	-	90	7 min	
Wednesday	Warming Up	Stretching, walking and jogging	-	90	8 min	60 min
	Activity – I	Shifting The Ring	2	90	15 min	
	Activity – II	Wall Pass	2	90	15 min	
	Activity – III	The Ups Contest (Badminton)	2	90	15 min	
	Limbering Down	Stretching and relaxation	-	90	7 min	
r s	Warming Up	Stretching and jogging	-	90	8 min	60

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	Activity – I	Cat-And-Rat	2	90	15 min	min
	Activity – II	Do This, Do That	2	90	15 min	
	Activity – III	Simon Says	2	90	15 min	
	Limbering Down	Stretching and relaxation	-	90	7 min	
Friday	Warming Up	Stretching, and jogging	-	90	8 min	60 min
	Activity – I	Shifting The Ring	2	90	15 min	
	Activity – II	Wall Pass	2	90	15 min	
	Activity – III	The Ups Contest (Badminton)	2	90	15 min	
	Limbering Down	Stretching and relaxation	-	90	7 min	

TABLE-III: COMPUTATION OF "t" RATIO BETWEEN THE PRE AND POST TESTS SCORES ON FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	Mean	S.D	DM	σ DM	't'	Table value
Experimental	Pre Test	11.46	0.70	1.15	0.16	17.70*	2.14
	Post Test	14.20	0.59				
Control Group	Pre Test	11.53	1.13	0.07	0.32	0.71	2.14
	Post Test	11.67	0.86				

Table-IIIshows the mean and standard deviation and 't'ratio of experimental and control groups of flexibility among individuals with intellectual disabilities. The experimental group pre and post test mean values are 11.46 and 14.20 and standard deviation values are 0.70 and 0.59 and obtained 't' value is 17.70which is greater than the table value of 2.14. And control group mean values are 11.53 and 11.67 and standard deviation 1.13 and 0.86. The obtained 't' value of 0.71 is lesser than the table value of 2.14. The finding of the study indicates that the experimental group showed significant improvement on flexibility due to adapted physical activity training among individuals with intellectual disabilities.

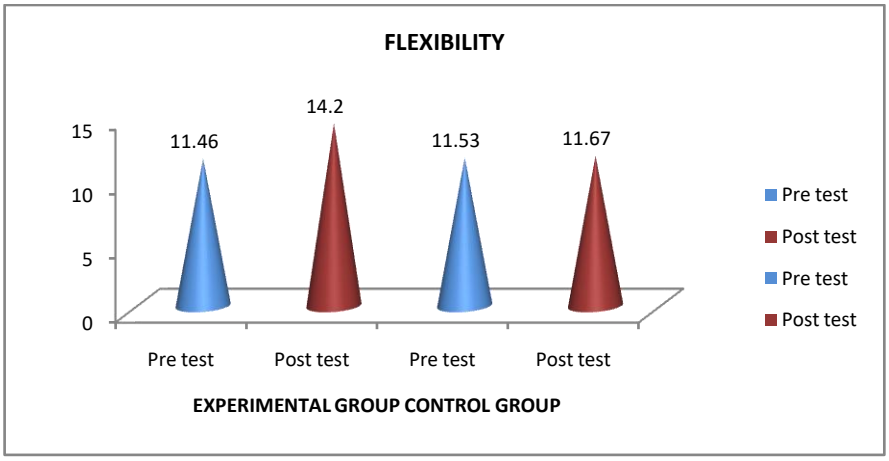

FIGURE – 1: BAR DIAGRAM SHOWING THE PRE MEAN AND POST MEAN OF FLEXIBILITY OF EXPERIMENTAL GROUP AND CONTROL GROUP

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TABLE-IV: OMPUTATION OF "t" RATIO BETWEEN THE PRE AND POST TESTS SCORES ON CARDIORESPIRATORY ENDURANCEOF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	Mean	S.D	DM	σ DM	't'	Table value
Experimental	Pre Test	6.40	0.08	1.15	0.16	7.07*	2.14
	Post Test	6.22	0.39				
Control Group	Pre Test	6.35	0.24	0.07	0.32	0.34	2.14
	Post Test	6.34	0.69				

Table-IVshows the mean and standard deviation and 't'ratio of experimental and control groups of cardiorespiratory endurance among individuals with intellectual disabilities. The experimental group pre and post test mean values are 6.40 and 6.22 and standard deviation values are 0.08 and 0.39 and obtained 't' value is 7.07which is greater than the table value of 2.14. And control group mean values are 6.35 and 6.34 and standard deviation 0.24 and 0.69. The obtained 't' value of 0.34 is lesser than the table value of 2.14. The finding of the study indicates that the experimental group showed significant improvement on cardiorespiratory endurance due to adapted physical activity training among individuals with intellectual disabilities.

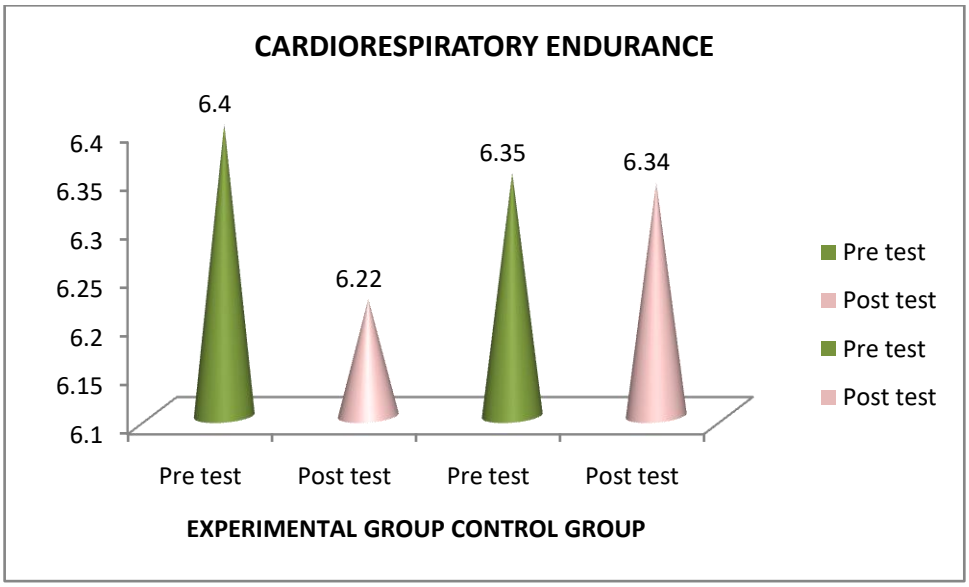

FIGURE – 2: BAR DIAGRAM SHOWING THE PRE MEAN AND POST MEAN OF CARDIORESPIRATORY ENDURANCE OF EXPERIMENTAL GROUP ANDCONTROL GROUP

DISCUSSION ON FINDINGS

The result of the study shows that the adapted physical activity training group had significant improvement on selected physical fitnessvariables namely flexibility and cardiorespiratory endurance among individuals with intellectual disabilities. This may be due to the adapted physical activity training.

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CONCLUSIONS

Based on the statistical analysis and results of the study, the following conclusions are drawn.

- It is concluded that adapted physical activity training significantly improved the physical fitness variables namely flexibility and cardiorespiratory endurance.

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EFFECT OF ISOLATED AND COMBINED STRENGTH AND ENDURANCE TRAINING ON STRENGTH ENDURANCE OF KABADDI PLAYERS

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ABSTRACT

The purpose of the study is to examine the effect of isolated and combined strength and endurance training on strength endurance of kabaddi players. To achieve the purpose of this study, sixty men kabaddi players studying in various colleges affiliated to Sri Krishnadevaraya University, Ananthapur district, Andhra Pradesh, India during the academic year 2014-2015 was selected as subjects. The subjects were selected in the age group of 18 to 22 years and they were randomly assigned into four equal groups of 15 each. Experimental group-I performed strength training, experimental group-II performed endurance training, experimental group-III performed combined strength and endurance training and group-V was acted as control. The strength endurance was selected as dependent variable. The research design of the study was random group design. The data collected from the experimental and control groups on selected dependent variable was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the four groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since, four groups were involved, whenever the obtained 'F' ratio value in the adjusted post test mean was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. The result of the study reveals that due to the effect of isolated and combined strength and endurance training the strength endurance of the subjects is significantly improved. The result of the study also produced 11.91% of improvement due to strength training, 20.76% of improvement due to endurance training and 25.79% of improvement due to combined training.

Key Words: *Isolated and combined strength and endurance training, strength endurance and kabaddi*

INTRODUCTION

Performance in any sports activity depends to a large extent on physical fitness. Sports trainers concentrate on improving the physical fitness and psycho-motor abilities of a player. Improving the physical fitness of a player is also called conditioning. A sound conditioning programme forms the most important part of training any sports person. Conditioning or physical fitness is categorized into general and specific fitness.

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General fitness refers to the common qualities required for any sports person irrespective of the sport i.e., motor qualities such as strength, endurance, flexibility and coordination ability. Every sport demands motor abilities at various levels above the average. Specific fitness is achieved when a player acquires the required motor ability at the intensified level for the particular sport.

The changing nature of the game Kabaddi, demands the right type of physical, physiological and psycho-motor abilities on the part of a player. The increasing trend of professionalism and the converging demand for competitive sports have changed the complexion of the games which had been initially intended as a recreational activity of the villagers. Today with the adventure of modern scientific equipments for training and selection of the players, it has been now made possible to measure the fundamental performance characteristics which contribute to a player's success.

Strength training has been reported to cause muscle fibre hypertrophy, associated with an increase in contractile protein, which contributes to an increase in maximal contractile force (Sale et al., 1990). Strength training also reduces mitochondrial density and suppresses oxidative enzymes activity which can cause impede endurance capacity, but has minimal impact on capillary density or in the conversion of muscle fibre types from fast twitch (type-II fibres) to slow twitch (type-I fibres) (Nelson et al., 1990; Sale et al., 1990).In contrast, endurance training usually causes little or no muscle fibre hypertrophy, but it does induce increases in mitochondria content, citric acid enzymes, oxidative capacity and the possibility of muscle fibre conversion from fast twitch to slow twitch (Bell 1991, Nelson et al., 1990).

Overall, the literature on endurance and strength programmes suggests that the nature of the adaptive responses to training is specific to the training stimulus. McCarthy et al., (1995) also concluded that strength and endurance programs may be antagonistic when combined together (concurrent training) due to these opposing adaptations acquired from each mode in isolation.

Still there is a lot of controversy associated with combined strength and endurance training. This may be due to the variations in regimens and experimental designs (Bell *et al*., 1991).However, by considering factors such as modality and duration, session sequencing, timing, volume, intensity and training frequency, as well as the training status of the individual client, trainers can develop an effective model for concurrent training (Chtara*et al*., 2005; McCarthy *et al*., 1995). All previous studies in this area have utilised only one form of resistance training, heavy training, and explosive training, or training for muscular endurance throughout the intervention program. Because, strength athletes have to perform endurance exercise in order to maintain an optimal body weight or to reduce body fat levels. Aerobic endurance exercises are an effective and efficient method of reducing body fat. Combined strength and endurance training tries to develop all important qualities at the same time. The biggest advantage of the combined training is the parallel development of all qualities, without risking or overtraining athletes.

Combined strength and endurance training in endurance athletes produced improvements in explosive force associated with rapid activation of leg muscles. The training also led to more economical sport-specific performance. The combined strength and endurance training improved anaerobic and selective neuromuscular performance characteristics in young distance runners without decreases in aerobic capacity, although almost 20% of the total training volume was replaced by explosive strength training for eight weeks, (Rick, 2006).

Since, the researcher is felt that there is a need to confirm the beneficial effects of isolated and combined strength and endurance training on bio-motor and psychomotor profiles of kabaddi players.

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Moreover, very little research had been done on kabaddi players, which motivated the investigator to take up the study.

METHODOLOGY

Subjects and Variables

To achieve the purpose of this study, sixty men kabaddi players studying in various colleges affiliated to Sri Krishnadevaraya University, Ananthapur district, Andhra Pradesh, India during the academic year 2014-2015 was selected as subjects. The subjects were selected in the age group of 18 to 22 years and they were randomly assigned into four equal groupsof15each.Experimental group-I performed strength training, experimental group-II performed endurance training, experimental group-III performed combined strength and endurance training and group-V was acted as control. The strength endurance was selected as dependent variables for the study and it was assessed by bent knee sit-ups test.

Training Protocol

Training programme will be administered to the kabaddi players for twelve weeks withthreetrainingunitsperweek.Theexperimental group-I performed strength training, group-II performed endurance training, and group-III performed combined strength and endurance training. The strength training program was a total body workout consisting of 3 sets of 6-10 repetitions on 5 exercises that trained all the major muscle groups. A percentage of each subject's one-repetition maximum for each exercise was used to determine the intensity of each week. The intensity and number of repetitions performed for each exercise was progressively increased. The endurance training consists of 20-40 minutes running with 65- 80% HRR. The running intensity was determined by a percentage of heart rate reserve (HRR). The intensity was increased as training progressed. Combined strength and endurance training group performed strength training during every odd numbered week and endurance training during every even numbered week

Collection of the Data

The data on the selected biomotor and psychomotor variables were collected prior to the commencement of experiment (pre test) and after twelve weeks of training period (post test). Both the pre and post tests were administered under identical conditions, with same apparatus, testing personal and testing procedures.

Statistical Technique

The data collected from the experimental and control groups on selected dependent variables was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the four groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since, four groups were involved, whenever the obtained 'F' ratio value in the adjusted post test mean was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. The level of confidence is fixed at 0.05 for significance.

RESULT

The descriptive analysis of the data showing mean and standard deviation, range, mean differences, 't' ratio and percentage of improvement on strength endurance of experimental groups are presented in table-I .

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Table – I: Descriptive Analysis of the Pre and Post Test Data and 'T' Ratio on Strength Endurance of Experimental Groups

Group	Test	Mean	Standard Deviation	Range	Mean Differences	't'ratio	Percentage of Changes
Strength Training	Pre test	30.07	1.67	6.00	3.60	13.21*	11.97
	Posttest	33.67	2.02	8.00			
Endurance Training	Pre test	28.27	3.33	11.00	5.87	15.09*	20.76
	Posttest	34.13	3.66	12.00			
Combined Training	Pre test	29.47	2.83	10.00	7.60	15.64*	25.79
	Posttest	37.07	2.37	9.00			
Control Group	Pre test	29.60	2.82	9.00	0.20	0.43	0.68
	Posttest	29.40	2.03	8.00			

Table t-ratio at 0.05 level of confidence for 14 (df) =2.15

**Significant*

Table-I shows that the mean, standard deviation, range and mean difference values of the pre and post test data collected from the experimental group on strength endurance. Further, the collected data was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post data. The obtained 't' values of strength training, endurance training and combined training groups are 13.21, 15.09 and 15.64 respectively which are greater than the required table value of 2.15 for significance at 0.05 level for 14 degrees of freedom. It revealed that significant differences existed between the pre and post test means of experimental groups on strength endurance. However, the obtained 't' values of control groups is 0.43 which is lesser than the required table value of 2.15 for significance at 0.05 level for 14 degrees of freedom. It revealed that no significant differences existed between the pre and post test means of control group on strength endurance.

The result of the study also produced 11.91% of improvement due to strength training, 20.76% of improvement due to endurance training and 25.79% of improvement due to combined training.

The pre and post test data collected from the experimental and control groups on strength endurance is statistically analyzed by using analysis of covariance and the results are presented in table–II.

Table – II: **Analysis of Covariance on Strength Endurance of Experimental and Control Groups**

	Strength Training Group	Endurance Training Group	Combined Training Group	Control Group	S o V	Sum of Squares	df	Mean squares	'F' ratio
Pretest Mean	30.07	28.27	29.47	29.60	B	26.45	3	8.82	0.32
SD	1.67	3.33	2.83	2.82	W	417.20	56	7.45	
Posttest Mean	33.67	34.13	37.07	29.40	B	449.13	3	149.71	21.97*
SD	2.02	3.66	2.37	2.03	W	381.60	56	6.81	
Adjusted Posttest Mean	33.10	34.98	36.98	29.20	B	489.83	3	163.28	72.34*
					W	124.15	55	2.26	

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(The required table value for significance at 0.05 level of confidence with degrees of freedom 3 and 55 is 2.77 and degree of freedom 3 and 56 is 2.77)

**Significant at .05 level of confidence*

Table-II shows that the pre-test means and standard deviation on strength endurance of strength training, endurance training, combined training and control groups are 30.07 ± 1.67, 28.27 ± 3.33, 29.47 ± 2.83 and 29.60 ± 2.82 respectively. The obtained 'F' value 0.32 of strength endurance is lesser than the required table value of 2.8277 at 3, 56 df at 0.05 level of confidence, which proved that the random assignment of the subjects were successful and their scores on strength endurance before the training were equal and there was no significant differences.

The post-test means and standard deviation on strength endurance of strength training, endurance training, combined training and control groups are 33.67 ± 2.02, 34.13 ± 3.66, 37.07 ± 2.37 and 29.40± 2.03 respectively. The obtained 'F' value of 21.97 on strength endurance is greater than the required table value of 2.77 at 3, 56 df at 0.05 level of confidence. It implied that significant differences exist between the four groups during the post test on strength endurance.

The adjusted post-test means on strength endurance of strength training, endurance training, combined training and control groups are 33.10, 34.98, 36.98 and 29.20 respectively. The obtained 'F' value of 72.34 on strength endurance is greater than the required table value of 2.77 of 3, 55 df at 0.05 level of confidence. Hence, it is concluded that significant differences exist between the adjusted post test means of strength training, endurance training, combined training and control groups on strength endurance.

Since, the obtained 'F' value in the adjusted post test means is found to be significant, the Scheffe's test is applied as post hoc test to find out the paired mean difference, and it is presented in table-III.

Table –III: **Scheffe'sPost Hoc Test for the Differences among Paired Means of Experimental and Control Groups on Strength Endurance**

Strength Training Group	Endurance Training Group	Combined Training Group	Control Group	Mean Difference	Confidence Interval
33.10	34.98			1.88*	1.58
33.10		36.98		3.88*	1.58
33.10			29.20	3.90*	1.58
	34.98	36.98		2.00*	1.58
	34.98		29.20	5.78*	1.58
		36.98	29.20	7.78*	1.58

**Significant at .05 level*

As shown in table-III the Scheffe's post hoc analysis proved that significant mean differences existed between strength and endurance training groups, strength and combined training groups, strength training and control groups, endurance and combined training groups, endurance training and control groups, combined training and control groups on strength endurance since, the mean differences 1.88, 3.88, 3.90, 2.00, 5.78 and 7.78 are higher than the confident interval value of 1.58 at 0.05 level of significance.

Hence, it is concluded that due to the effect of isolated and combined strength and endurance training the strength endurance of the subjects is significantly improved. It is also concluded that combined training is better than isolated endurance and strength training whereas isolated endurance training is better than isolated strength training in improving strength endurance of the kabaddi players.

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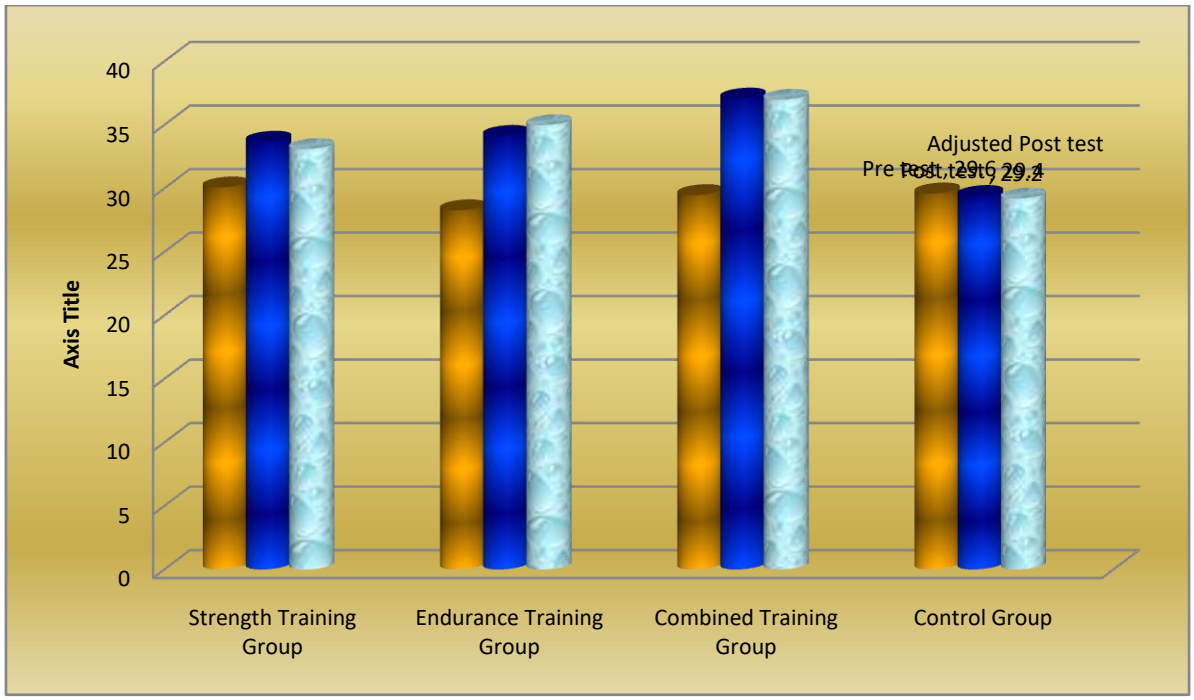
The pre, post and adjusted post test mean values of strength endurance of strength training, endurance training, combined training and control groups on strength endurance is graphically represented in figure-I.

Figure – I:**Diagram Showing the Mean Values on Strength Endurance of Experimental and Control Groups**



DISCUSSION

The results of this study suggest that twelve weeks of isolated and combined strength and endurance training have a detrimental effect on strength endurance of kabaddi players. The above findings can be substantiated by observations made by following renowned experts. It is well known that strength training increases muscle mass and strength. These findings agree with those of DeLorme (1945) who reported that a small number of repetitions with high resistance produced strength, whereas a large number of repetitions against low resistance increased endurance. These twoprinciples are the basis of isotonic strength training.

Combined training produced improvements in aerobic capacity and endurance performance, especially when endurance training preceded strength training in the same session (Chtara*et al*., 2005). Millett et al., (2002) concluded that the addition of heavy weight training to an endurance training program did not affect VO_2 kinetics in well-trained athletes. The researchers found that a greater number of fast-twitch motor units were recruited to compensate for the decrease in power output caused by the fatigued muscle. Recent research has shown that concurrent strength and endurance training may be beneficial for untrained males (McCarthy *et al*., 1995).

Performing exercises that involve a low number of repetitions on a load that is of high resistance effectively increases strength (Dudley *et al*., 1985; Sale *et al*., 1990). It is of importance that athletes have high levels of not only strength but also endurance. For this reason many athletes' training programs involve simultaneous strength and endurance training. Nelson et al., (1990) conducted a study on previously untrained subjects in which one group performed strength training 4 days/wk for 20 weeks while another group performed the same routine but also performed endurance on the same days. The results indicated that

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although both groups showed increases in force production, yet the strength-training group showed greater improvements. The same results were also found by (Kraemer et al., 1995).

CONCLUSION

The result of the study revealed that it is concluded that due to the effect of isolated and combined strength and endurance training the strength endurance of the subjects is significantly improved. It is also concluded that combined training is better than isolated endurance and strength training whereas isolated endurance training is better than isolated strength training in improving strength endurance of the kabaddi players. The result of the study also produced 11.91% of improvement due to strength training, 20.76% of improvement due to endurance training and 25.79% of improvement due to combined training. Hence, training for strength endurance generally emphasizes participation in long-duration low or moderate intensity exercise during the base or preparation phase of the season, with the inclusion of shorter-duration high-intensity efforts as the competitive phase approaches.

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EFFECT OF RESISTANCE TRAINING ON THE SELECTED MOTOR FITNESS COORDINATIVE ABILITIES VARIABLES OF MALE HIGH SCHOOL KABADDI PLAYERS

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KABADDI

Kabaddi is aptly known as the "Games of The mass" due to its popularity, simple, easy to comprehend rules, and public appeal. The game calls for no supplicated equipment what so ever, which it very popular sport in the developing countries. Though it is basically an outdoor sport played on clay court, of late the game is being played on synthetic surface indoors with great success. The duration of the game if 45 minutes for men & junior boys with a 5 minutes break in between for the teams to change sides in the case of women/girls & sub-junior boys, the duration of 35 minutes with a 5 minute break in between Kabaddi is a combative team game, played with absolutely no equipment, in a rectangular court, either outdoors with seven players on the ground in each side. Each side takes ultimate chances at offence and defense.

The basic idea of the game is to score paints by raiding into the opponents' court and touching as many defense players as possible without getting caught on a single breath. During play, the players on defensive side are called "antis" while the players of the offense is called the "raider."

Kabaddi is perhaps the only combative sports in which attack is an individual attempt while defense is a group effort. The attack in Kabaddi is known as "raid." The antis touched by the raider before the returns to how court. These players can resume play only when their side scores points against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent's raider.

STATEMENT OF THE PROBLEM

The present study was to find out the effect of resistance training on the selected motor fitness coordinative abilities variables of male high school kabaddi players.

SIGNIFICANCE OF THE STUDY

4. The study will be helpful to know the effect of resistance training on the selected motor fitness, coordinative abilities variables of male high school kabaddi players.
5. The study will be helpful to prepare develop training schedule to improve the effects of resistance training on the selected motor fitness coordinative abilities variables of male high school kabaddi players.
6. The study will be helpful to kabaddi players and coaches for coaching purpose.

HYPOTHESES

1. It was hypothesized that there may be a significant differences due to the effect of resistance training on the selected motor fitness variables namely leg explosive strength of male high school kabaddi players.
2. It was hypothesized that there may be a significant differences due to the effect of resistance training on the selected coordinative ability variables namely space orientation ability of male high school kabaddi players.

DELIMITATIONS

11. This study is confined to thirty school male kabaddi players from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu.

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12. The subjects were selected from the age group of 15 to 17 years.
13. Only selected motor fitnesscoordinativeabilitiesvariables were chosen for this study
14. The duration of the experimental period was for eight weeks.
15. The study will be confined only to the selected resistance training exercises.

LIMITATIONS

3. The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study will not be taken into consideration.
4. Hereditary, social and other psychological factors could not be controlled.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of resistance training on the selected motor fitness coordinative abilities variables of male high school kabaddi players. 30 subjects were selected randomly from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu. The age of the subjects ranged from 15 to 17 years. They were divided into two groups of 15 in each. One group acted as the experimental group. The experimental group was undergone the training for 8 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Resistance training

DEPENDENT VARIABLES

- **MOTOR FITNESS VARIABLES**
  3. Leg explosive strength

- **COORDINATIVE ABILITY VARIABLES**
  1. Space orientation ability

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Leg explosive Strength	Standing broad jump	In meters
2.	Space orientation ability	Numbered medicine ball run test	In seconds

EXPERIMENTAL DESIGN

The present study is to find out the effect of resistance training on the selected motor fitness coordinative abilities variables of male high school kabaddi players. 30 subjects were selected randomly from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu. The age of the subjects ranged from 15 to 17 years. They were divided into two groups each consisting of 15 namely experimental group and control group. The experimental group underwent the resistance training for 8 weeks. The training was given three days in a week and the training session was from 4:00 pm to 5:00 pm. The control group was not involved in any resistance training. They were engaged in their usual activities. All the subjects were tested in the selected motor fitness variables namely leg explosive strength and coordinative abilities variables namely space orientation ability. The pre- test was taken before the start of resistance training and post-test was taken after 8 weeks resistance training.

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TRAINING PROGRAMME

The experimental group will undergo eight weeksof specific drills training 3 days per week. Each training session was for one hour. The tests were taken before and after the training programme.

Resistance Training

Dumbbell bench press, Dumbbell curls, Concentration curls, Hammer curls, Reverse wrist curls, Wrist curls, Dumbbell triceps extensions, One arm dumbbell triceps extensions, Seated dumbbell triceps extensions, Triceps kickbacks, Lying dumbbell press, Front dumbbell press, Push ups, One arm dumbbell rows, Chin ups, Sit ups, Crunches, Incline leg raises, Hanging leg raises, Dumbbell side bends, Good mornings (with stick), Standing calf raises, One leg toe raise (with dumbbell), Bridging and Floor hip abduction.

STATISTICAL TECHNIQUES

The present study paid its attention mainly on testing the effect of resistance training on the selected motor fitness coordinative abilities variables of male high school kabaddi players. The Statistical tool used for this present study is described here. The significance of the mean difference between the pre-test and post-test values of the variables was found out by applying ANCOVA.

Table-III: **COMPUTATION OF ANALYSIS OF COVARIANCE ON LEG EXPLOSIVE POWER AMONG EXPERIMENTAL AND CONTROL GROUPS**

Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	Obtained 'F'
Pre-test Mean	1.76	1.70	BG	0.02	1	0.02	1.59
			WG	0.45	28	0.01	
Post-test Mean	1.85	1.71	BG	0.16	1	0.16	8.86*
			WG	0.51	28	0.02	
Adjusted post-test Mean	1.83	1.74	BG	0.05	1	0.05	52.03*
			WG	0.03	27	0.01	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 28 and 1 & 27 degree of freedom = 4.20 & 4.21

The table-XIV shows that the pre-test mean value on leg explosive powerof experimental group and control group are 1.76 and 1.70 respectively. The obtained 'F' ratio of pre test mean is 1.59 which is lesser than the required table value of 4.20for df 1 and 28 at 0.05 level of confidence onleg explosive power.

The post-test mean value on leg explosive power of experimental group and control group are 1.85and 1.71 respectively. The obtained 'F' ratio of post-test mean is 8.86 which are greater than the required table value of 4.20 for df 1 and 28 at 0.05 level of confidence on leg explosive power.

The adjusted post-test mean value on leg explosive power of experimental group and control group are 1.83 and 1.74 respectively. The obtained 'F' ratio of adjusted post-test mean is 52.03 which is greater than the required table value of for 4.21df 1 and 27 at 0.05 level of confidence on leg explosive power.

The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on leg explosive power.

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FIGURE-1: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON LEG EXPLOSIVE POWER

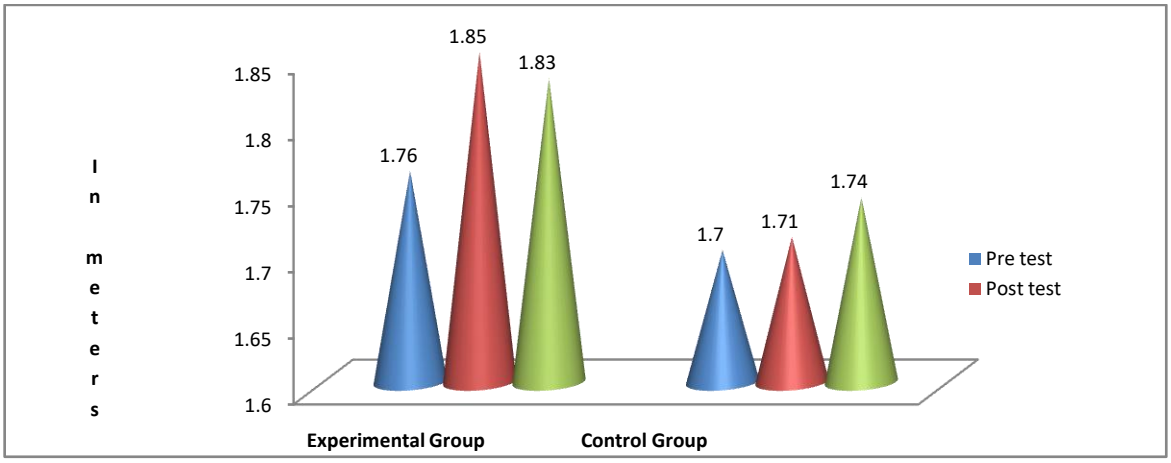

Table-XVII: **COMPUTATION OF ANALYSIS OF COVARIANCE ON SPACE ORIENTATION ABILITY AMONG EXPERIMENTAL AND CONTROL GROUPS**

Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	F-ratio
Pre Test mean	9.57	9.66	Between	0.67	1	0.67	0.10
			Within	18.49	28	0.66	
Post test mean	8.76	9.65	Between	6.05	1	6.05	7.72*
			Within	21.96	28	0.78	
Adjusted post test mean	8.80	9.62	Between	4.92	1	4.92	20.40*
			Within	6.52	27	0.24	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 28 and 1 & 27 degree of freedom = 4.20 & 4.21

The table-IV shows that the pre-test mean value on space orientation ability of experimental group and control group are 9.57 and 9.66 respectively. The obtained 'F' ratio of pre test mean is 0.10 which is lesser than the required table value of 4.20 for df 1 and 28 at 0.05 level of confidence on space orientation ability.

The post-test mean value on space orientation ability of experimental group and control group are 8.67 and 9.65 respectively. The obtained 'F' ratio of post-test mean is 7.72 which are greater than the required table value of 4.20 for df 1 and 28 at 0.05 level of confidence on space orientation ability.

The adjusted post-test mean value on flexibility of experimental group and control group are 8.80 and 9.62 respectively. The obtained 'F' ratio of adjusted post-test mean is 20.40 which is greater than the required table value of for 4.21 df 1 and 27 at 0.05 level of confidence on space orientation ability

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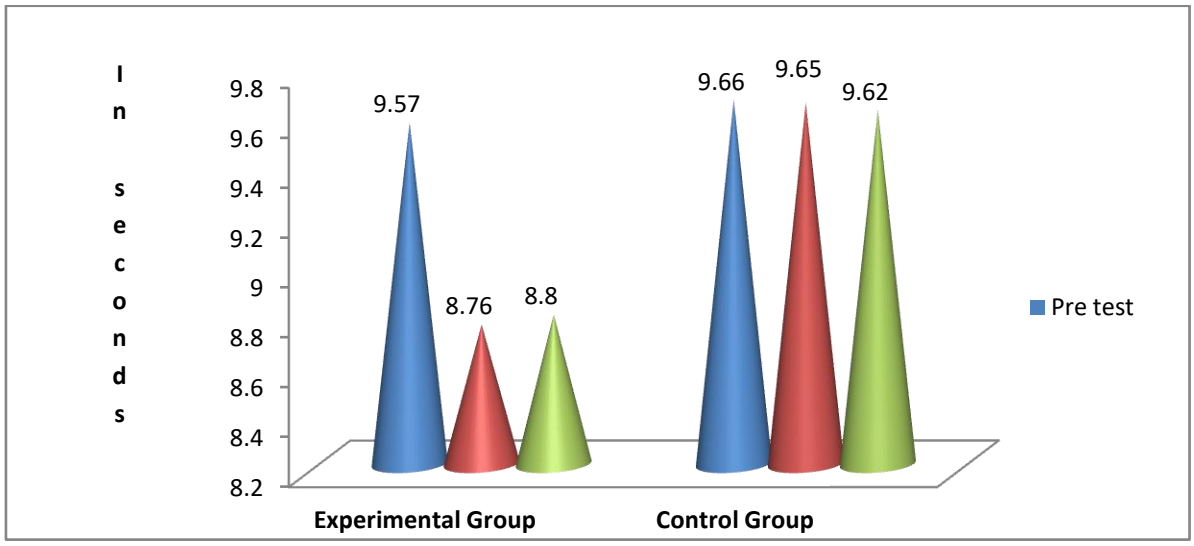
The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on space orientation ability.

FIGURE-2: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON SPACE ORIENTATION ABILITY



DISCUSSION ON FINDINGS

The result of the study shows that the experimental group that had undergone selected resistance training and significant improvement on selected motor fitness variables namely leg explosive strength and coordinative abilities variables namely space orientation ability. This may be due to the effect of resistance training.

CONCLUSIONS

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn.

- It was concluded that experimental group significantly improved on motor fitness variables namely leg explosive strength.
- It was concluded that experimental group significantly improved on coordinative abilities variables namely space orientation ability.

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EFFECT OF CIRCUIT TRAINING ON SELECTED BIOMOTOR VARIABLES AMONG FEMALE BASKETBALL PLAYERS

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INTRODUCTION

Circuit training method, was developed by R.E. Morgan and G.T. Adamson in 1953 at the University of Leeds, England. This type of conditioning involves almost all the training factors. Circuit training can be designed to develop strength, power, muscular endurance, speed, agility, and neuromuscular coordination, flexibility, and cardiovascular endurance.

Circuit training is formal type of training in which an athlete goes through a series of selected exercises or activates that are performed in sequence or in a circuit. Circuit can be set up inside gymnasiums, exercise rooms, or outside on courts and fields.

There are usually six to ten stations in a circuit. The athlete performs a specific exercise at each station and then goes to the next station. The idea is to progress through the circuit as rapidly as possible, attempting to improve either by decreasing the total time it takes to complete the circuit or by increasing the amount of work done at each station or both. The stations are distributed through the area earmarked to circuit training. The greater the distance between stations, the greater the degree of cardiovascular conditioning as the individual runs from one station to next.

Basketball game played generally indoors by two opposing teams of five players each. Basketball was conceived in 1891 by Dr. James Naismith, a physical education instructor at the YMCA College in Springfield, Massachusetts. As a way to condition outdoor athletes during the winter months.

Today basketball is the fastest game. It is also the fastest growing sports in the world. Is for everyone and every occasion. A number of U.S. colleges adopted the game between about 1893 and 1895. In 1934the first college games were staged in New York City's Madison square garden, and college basketball began to attract heightened interest. By the 1950s basketball had become a major college sport, thus paving the way for a growth of interest in professional basketball.

In 1956 a basketball Hall of fame was founded in Springfield, Massachusetts. Its rosters include the names of great players, coaches, referees, and people who have contributed significantly to the development of the game.

STATEMENT OF THE PROBLEM

The present study was to findout the effect of circuit training on selected bio motor variables among female basketball players

HYPOTHESES

It was hypothesized that there may be significant differences due to circuit training on the selected bio-motor variables namely agility and muscular endurance.

SIGNIFICANCE OF THE STUDY

1. The study will be helpful to know the effect of circuit training on selected bio-motor variables among female basketball players.
2. The study will be helpful to prepare training schedule to improve the effect of circuit training on selected bio-motor variables among female basketball players.

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3. The study will be helpful to realize basketball players and coaches for their coaching purpose.

DELIMITATIONS

The following delimitations are considered for the study

1. This study is confined to 24 female basketball players as subjects.
2. The subjects were selected from Govt.Womens Degree College, Chirala A.P
3. The subjects were selected only from the age group of 18 and 21 years.
4. The duration of the training was three days per week and six weeks in total.
5. The study is confined only to the selected circuit training.

LIMITATIONS

The following limitations are considered for the study.

1. The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study could not be taken into consideration.
2. Hereditary, social and other psychological factors could not be controlled.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of circuit training on selected bio motor variables among female basketball players.24 subjects were selected randomly from Govt.Womens Degree College, Chirala Andhra Pradesh. The age of the subjects ranged from 18 to 21 years. They were divided into two groups of 12 in each. One group acted as the experimental group. The experimental group was undergone the circuit training for 6 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Circuit training

DEPENDENT VARIABLES

- **PHYSICAL FITNESS VARIABLES**
  1. Agility
  2. Muscular endurance

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Agility	4 X10 Meters Shuttle run	In seconds
2.	Muscular endurance	Bent knee sit ups	In numbers

EXPERIMENTAL DESIGN

The present study is to find out the effect of circuit training on selected bio motor variables among female basketball players. 24 subjects were selected randomly from Govt.Womens Degree College, Chirala Andhra Pradesh. The age of the subjects ranged from 18 to 21 years. They were divided into two groups each consisting of 12 namely experimental group and control group. The experimental group underwent the circuit training for 6 weeks. The training was given three days in a week and the training session was from 4:00 pm to 5:00 pm. The control group was not involved in any circuit training. They were engaged in their usual activities. All the subjects were tested in the selected bio-motor variables namely agility and muscular endurance. The pre- test was taken before the start of circuit training and post-test was taken after 6 weeks circuit training.

TRAINING SCHEDULE

The six weeks training schedule as shown in table from II

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TABLE II: TABLE SHOWING THE TRAINING PLAN FOR 1 TO 6 WEEKS

Day	Session	Aim	Training Means	Training Method	Training Intensity
Mon	Evening	Circuit training and Technique teaching game skills	1.warming up 2.Circuit training exercises 3. Arm action 4. Half squat 5.Cool down	continuous method Demonstration method	60%
Wed	Evening	Circuit training and Technique teaching game skills	1. warming up 2.Circuit training exercises 3.low dribble 4.speed dribble 5. Cool down	continuous method Demonstration method	80%
Fri	Evening	Circuit training and Technique teaching game skills	1. warming up 2.Circuit training exercises 3. one hand shooting 4.two hand shooting 5. Cool down	continuous method Demonstration method	40%

Weekly average intensity = Mon+Wed+Fri =60+80+40 =180/3= 60%

LIST OF EXERCISES

E shape run, T shape run, Tuck jump, High knee action, Ladder box run, Small hurdle jump, Change of direction run, Burpee jump, Straight leg pushes, Bicycle crunches, Push-ups, Abdominal crunches, Good morning with stick, Sit-ups, Heel raising, Half squat, Full squat

STATISTICAL TECHNIQUES:

The present study paid its attention mainly on testing the effectiveness of the circuit training on selected bio-motor variables among female basketball players. The Statistical tool used for this present study is described here. The significance of the mean difference between the pre-test and post-test values of the variables was found out by applying ANCOVA test.

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TABLE-III: COMPUTATION OF ANALYSIS OF COVARIANCE ON AGILITY AMONG EXPERIMENTAL AND CONTROL GROUPS

Test	Circuit Training Group	Control	Source of variance	Sum of square	df	Mean square	Obtained 'F'
Pre-test Mean	11.73	11.64	BG	0.04	1	0.04	0.05
			WG	19.93	22	0.90	
Post-test Mean	10.78	11.71	BG	5.19	1	5.19	7.17
			WG	15.94	22	0.72	
Adjusted post-test Mean	10.76	11.73	BG	5.72	1	5.72	12.20
			WG	9.86	21	0.47	

Significant at 0.05 level of confidence.

Table value at 0.05 level of significance for 1 & 22 and 1 & 21 degree of freedom is = 4.30 & 4.32

Table-IX shows that the pre-test mean value on agility of experimental group and control group are 11.73 and 11.64 respectively. The obtained 'F' ratio of pre test mean is 0.05 which is lesser than the required table value of 4.30 for df 2 and 22 at 0.05 level of confidence onagility.

The post-test mean value on agility of experimental group and control group are 10.78 and 11.71 respectively. The obtained 'F' ratio of post-test mean is 7.17 which are greater than the required table value of 4.30 for df 2 and 22 at 0.05 level of confidence on agility.

The adjusted post-test mean value on agility of experimental group and control group are 10.76 and 11.73 respectively. The obtained 'F' ratio of adjusted post-test mean is 12.20 which is greater than the required table value is 4.32 df 2 and 21 at 0.05 level of confidence on agility.

The result of the study indicates that there was a significant difference among the adjusted post-test means of experimental group and control group on agility.

FIGURE-1: BAR DIAGRAM SHOWING THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON AGILITY

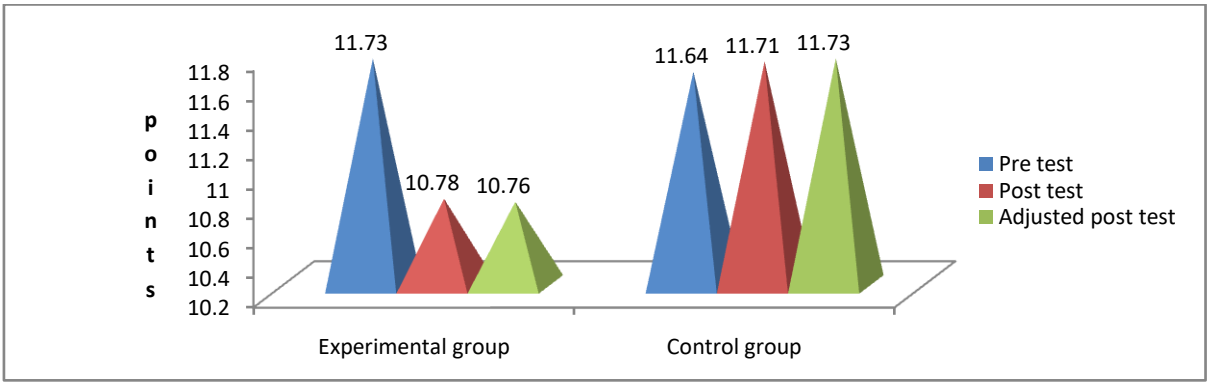

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TABLE-IV: COMPUTATION OF ANALYSIS OF COVARIANCE ON MUSCULAR ENDURANCE AMONG EXPERIMENTAL AND CONTROL GROUPS

Test	Circuit Training Group	Control	Source of variance	Sum of square	df	Mean square	Obtained 'F'
Pre-test Mean	29.91	29.16	BG	3.37	1	3.37	0.17
			WG	434.58	22	19.75	
Post-test Mean	38.91	30.25	BG	130.66	1	130.66	4.49
			WG	639.16	22	29.05	
Adjusted post-test Mean	38.73	30.65	BG	95.33	1	95.33	6.73
			WG	297.35	21	14.16	

***Significant at 0.05 level of confidence.**

Table value at 0.05 level of significance for 1 & 22 and 1 & 21 degree of freedom is = 4.30 & 4.32

Table-XI shows the pre-test mean value on muscular endurance of experimental group and control group are 39.91 and 39.16 respectively. The obtained 'F' ratio of pre test mean is 0.17 which is lesser than the required table value of 4.30 for df 2 and 22 at 0.05 level of confidence onmuscular endurance.

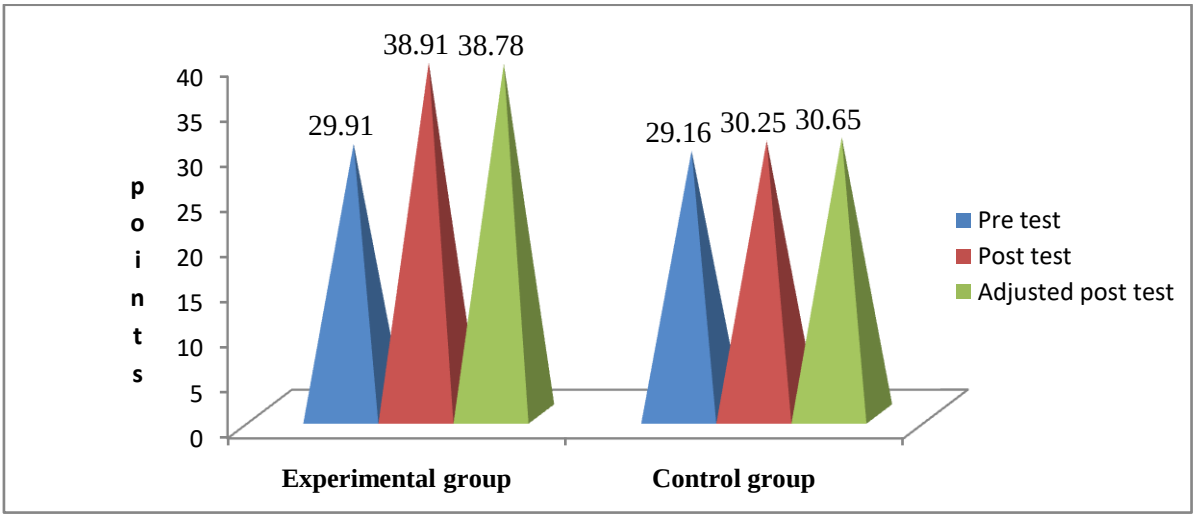
The post-test mean value on muscular endurance of experimental group and control group are 43.91 and 39.25 respectively. The obtained 'F' ratio of post-test mean is 4.49 which are greater than the required table value of 4.30 for df 2 and 22 at 0.05 level of confidence on muscular endurance.

The adjusted post-test mean value on muscular endurance of experimental group and control group are 43.95 and 39.26 respectively. The obtained 'F' ratio of adjusted post-test mean is 6.73 which is greater than the required table value is 4.32 df 2 and 21 at 0.05 level of confidence on muscular endurance.

The result of the study indicates that there was a significant difference among the adjusted post-test means of experimental group and control group on muscular endurance.

The mean values of experimental group and control group on muscular endurance are shown in figure-2

FIGURE-2: BAR DIAGRAM SHOWING THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON MUSCULAR ENDURANCE



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DISCUSSION ON FINDINGS

The result of the study shows that the experimental group that had undergone circuit training had improved bio-motor variables namely agility and muscular endurance. This may be due to the effect of circuit training.

From the result of the present study, it is concluded that the experimental group improved in bio-motor variables.

CONCLUSIONS

Based on the statistical analysis and the limitation of the study, the following conclusions are drawn.

- It was concluded that experimental group significantly improved on bio-motor variables namely agility and muscular endurance.

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EFFICACY OF RESISTANCE TRAINING ON SELECTED BODY COMPOSITION VARIABLES OF COLLEGE MEN

GUDE NARASIMHA RAO M.P.Ed., APTS SET

ABSTRACT

The purpose of this study was to find out the efficacy of resistance training on selected body composition variables namely BMI and fat percentage in trunk, of college men. To achieve this purpose Forty college men fromJawaharBharathi College, Kavali, S.P.S.R. Nellore, Andhra Pradesh were selected as subjects and their age ranged from 17 to 22 years. They were divided into two groups of twenty each, group I Underwent Resistance Training (RTG), and group II was considered as Control Group (CG) that did not participate in any special training apart from their regular routine activities. Resistance training was given to the experimental group for the period of twelve weeks and five days per week. The pre and post- tests were conducted before and after the training for twelve weeks. The obtained data were statistically analysed by paired 't' test to find out the significant difference. The finding of this study reveals that the resistance training influenced the body composition variables of college men.

Keywords: Resistance training, BMI, FAT % IN TRUNK.

INTRODUCTION

The value of physical activities is recognized as an invaluable asset for human life. The reason can be attributed to it as a need for human growth, as a preventive measure of deadly diseases, its rehabilitative characteristics and as a remedy for stress. Thus, the participation in physical activities is the need of the hour. But people's attitude towards participation in resourceful physical activities is not a significant one. In studying the factors behind this, it was observed that people who are in a state of approach and avoidance, conflict in this regard, as they have a positive approach towards the need for physical activities, whereas, because of the ever changing human needs of this competitive world, they are avoiding participation in physical activities on the grounds of lack of time for participation and social and economic issues. However, no compromise can be made as participation in physical activities is a very basic need for healthy existence. Without possessing health, plentiful wealth would be futile not only to the concerned individual but also to the society. Hence, it is the duty of physical educationists to find the remedy for these crises and to motivate people towards participation in physical activities by identifying the physical activities that are most feasible in terms of easy adaptability, consumption of minimum time, freedom from injury and an activity for both body and mind.

Earlier, the living conditions of the people necessitated walking. That itself
Is one of the means of physical activity for maintaining fitness. Now a day, the Major concern is preferring vehicles as a mode of transport even for covering a Short distance. Scientific advancements in all cases such as machines, communication devices, computers and other electronic amenities have greatly diminished the means of health prompting levels of physical activity from our lives. Specifically, to note that the students during the school life and college life are mostly concerned with their academics, ignoring the basic means of physical fitness that are most essential for their future course of action. It drags them to learn sedentary activities which have become commonplace. The average Indian has become terribly sedentary. He lacks the required self motivation to keep himself fit, and by middle age, sadly becomes an unfit citizen.

Although the physical performance benefits of resistance training have been recognized for many years, knowledge of its value for health and fitness, disease prevention, and rehabilitation is relatively new. Recognized adaptations to resistance training that promote health include the development and maintenance of muscle mass, increased bone mineral density, modest improvements in cardio respiratory fitness,

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reductions in body fat, lowered blood pressure in hypertensive individuals, reduced glucose-stimulated plasma insulin concentrations, improved blood lipid-lipoprotein profiles, enhanced physical function, and a reduced risk of orthopedic injury. This text summarizes what is currently known about prescribing resistance training exercises for the development of health and prevention and rehabilitation of a variety of injuries, medical conditions, and chronic diseases. We believe this information will be a valuable complement to the guidelines established for prescribing resistance training programs

METHODOLOGY

To achieve the purpose of the study forty (40) male college students were selected as subjects from JawaharBharathi College, Kavali, S.P.S.R. Nellore, Andhrapradesh. The variables selected for the study are body composition variables namely BMI and fat percentage in trunk. They were measured by usingthe BMI formula (BMI = Weight in Kg/Height in meters2) andTanita BCM 545. Their age was ranged between 17-22 years. They were randomly divided into two groups of each twenty. The segmented group were named as resistance training group N = 20 (RTG) and control group N = 20 (CG). Treatment was given for twelve weeks, five days a week and a session on each day to the experimental group. The control group was not given any treatment.The pre and post- tests were conducted before and after the training for twelve weeks. The obtained data were statistically analysed by paired 't' test to find out the significant difference.

TABLE – I: COMPUTATION OF't' RATIO BETWEEN PRE AND POST TESTS ON BMI FOR EXPREMENTAL AND CONTROL GROUPS

GROUP	Test	M	σ	σDM	DM	T
EXPERIMENTAL	Pre Test	23.29	3.90	0.29	1.18	4.13*
	Post Test	22.11	2.96			
CONTROL	Pre Test	23.88	3.94	0.17	0.04	0.26
	Post Test	23.92	3.85			

* significance at 0.05 level.

The table I indicates that there was a significant reduction on theBMI through the resistance training. Itreveals that the obtained t-ratio 4.13is greater than the required table t-ratio of 2.09 at 0.05 level of confidence. So there was a significant reduction on theBMI between pre and posttests of experimental group, whereas control group showed no significant reduction. Hence the results indicate that the significant reduction on theBMI was due to the resistance training alone.

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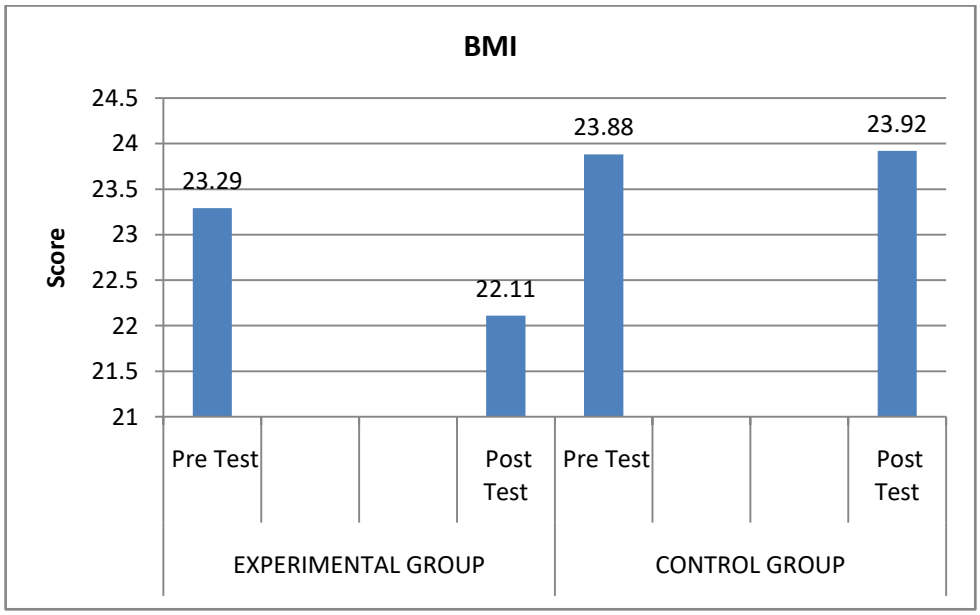

FIGURE – I: THE FIGURE SHOWING THE MEAN DIFFERENCE OF PRE AND POST-TESTS SCORES ONBMI OF EXPERIMENTAL AND CONTROL GROUPS

TABLE – II: COMPUTATION OF 't' RATIO BETWEEN THE PRE AND POST TEST ON FAT PERCENTAGE IN TRUNK FOR EXPREMENTAL AND CONTROL GROUPS

GROUP	Test	M	σ	σDM	DM	t
EXPERIMENTAL	Pre Test	11.61	4.62	0.19	1.06	5.67*
	Post Test	10.55	4.08			
CONTROL	Pre Test	11.94	4.491	0.0062	0.0060	0.97
	Post Test	11.95	4.492			

* significance at 0.05 level.

The table II indicates that there was a significant reduction on thefat percentage in trunk through the resistance training. Itreveals that the obtained t-ratio 5.67is greater than the required table t-ratio of 2.09 at 0.05 level of confidence. So there was a significant reduction on thefat percentage in trunk between pre and posttests of experimental group, whereas control group showed no significant reduction. Hence the results indicate that the significant reduction on thefat percentage in trunk was due to the resistance training alone.

FIGURE – II

FIGURE SHOWING THE MEAN DIFFERENCE OF PRE AND POST-TESTS SCORES ONFAT PERCENTAGE IN TRUNKOF EXPERIMENTAL AND CONTROL GROUPS

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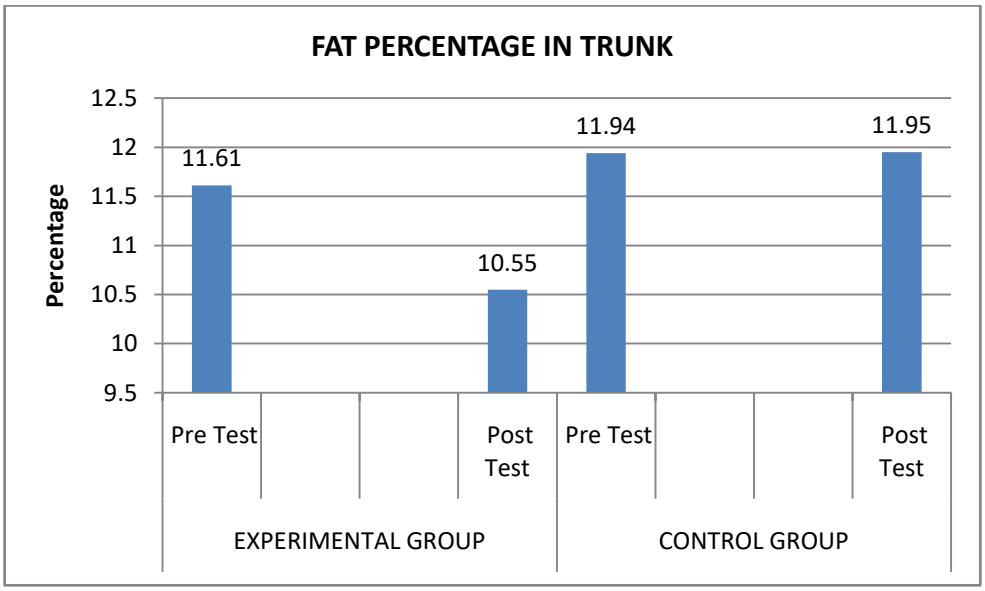

DISCUSSION ON FINDINGS

The result of the study reveals that the twelve weeks of resistance training programme on the selected dependent variables there was a significant reduction on BMI through the resistance training. Itreveals that the obtained t-ratio 32.65is greater than the required table t-ratio of 2.06 at 0.05 level of confidence. So there was asignificant reduction on BMI between pre and posttests of experimental group, whereas control group showed no significant improvement. Hence the result indicates that the significant reduction on BMI was due to the resistance training alone.

The result of the study reveals that the twelve weeks of resistance training programme on the selected dependent variables there was a significant reduction on fat percentage through the resistance training. Itreveals that the obtained t-ratio 32.65is greater than the required table t-ratio of 2.06 at 0.05 level of confidence. So there was asignificant reduction on fat percentage between pre and posttests of experimental group, whereas control group showed no significant improvement. Hence the result indicates that the significant reduction on fat percentage was due to the resistance training alone.

CONCLUSIONS

It was concluded that there was a significant reduction on the selected variables namely BMI andfat percentage in trunk by the application of resistance training program.

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EFFECT OF RESISTANCE TRAINING AND PLYOMETRIC TRAINING IN SERIES AND PARALLEL ON SPEED AND AGILITY AMONG WOMEN STUDENTS

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ABSTRACT

Aim of the Study find out the assess Effect of Resistance training and Plyometric training in series and parallel on speed and agility among women students. The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=45) were randomly assigned to three equal groups of fifteen The selected subjects were divided into three equal groups and each group consisted of fifteen subjects. Group I underwent series training of resistance and plyometric training [resistance training for first six weeks and plyometric training for remaining six weeks], Group II underwent parallel training of resistance and plyometric training [resistance and plyometric training s in alternate days and alternate weeks]. Group III acted as control who did not participate in any special training apart from their regular physical education programme in the curriculum. experimental period and after the experimental period of twelve weeks to determine the training effects. The subjects were re-tested after three weeks of cessation of training to found the detraining effects. To identify the significant difference among the groups due to training and detraining mean gain method was followed.

Key Words: Speed and Agility.

Introduction

Swami Vivekananda has stressed that “What India need today is not the BhagwatGeeta but the football ground.

Physical fitness is to the human body what fine-tuning is to an engine. It enables us to perform up to our potential. Fitness can be described as a condition that help us for better look, pleasant feeling and of our best. Physical fitness is “the ability to perform daily task vigorously and alertly, with energy left over for enjoying leisure-time activities and meeting emergency demands”. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstance where an unfit person cold not continue, and is a major basis for good health and well-being.

Statement of the problem

The present investigation is intended Effect of Resistance Training and PlyometricTraining in series and parallel on speed and agility among women

Delimitations

1. The present study was delimited to forty five women students studying bachelor’s degree during the academic year 2013-2016
2. The age of the subjects was 17 to 23 years.
3. The variables tested were agility and Speed.

Limitations

The study was limited in the following factors.

1. Heredity, day to day activities, rest period, food habits, life style and family factors could not be controlled.

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2. The general mood of the subjects while have affected the performance and was recognized as a limitation.
3. All efforts made by the research scholar to motivate the students to put up their optimal performaces in various test items. But there were no objective measures available to make sure that each performed their optimum.

Methodology

In this chapter, the procedure and methods applied in the selection of subjects, selection of variable, selection of tests, instruments reliability, reliability of the data, competency of the tester, estimating 1 RM, pilot study, training programmers, orientation to the subjects collection of the data, tests administration, experimental design and statistical procedures has been explained.

Selection of Subjects

The purpose fo the study was to find out the effect of resistance training and plyometric training in series and paralle. On Speed and Agility. To achieve this purpose, forty five women students studying bachelor's degree during the academic year 2013-2016 inAcharyaNagarjuna University Affiliated Colleges. As per the records, their age ranged from 17 to 23 years. The selected subjects were divided into three equal groups and each group consisted of fifteen subjects. Group I underwent series training of resistance and plyometric training [resistance training for first six weeks and plyometric training for remaining six weeks], Group II underwent parallel training of resistance and plyometric training [resistance and plyometric training s in alternate days and alternate weeks]. Group III acted as control who did not participate in any special training apart from their regular physical education programme in the curriculum. Group I and Group II underwent their respective training programme for four days per week for twelve weeks. The subjects were free to withdraw their consent in case of felling of any discomfort during the period of their participation, but there were no drop outs in this study.

Selection of Tests

The present study was undertaken to assess the effects of resistance training and plyometric training in series and parallel on speed , agility, The investigator analysed various literatures and also condulted with physical education professionals touse most suitable tests to ensure the purpose of the study and represented in table -I

Table –I: The Selected Criterion variables and their Standardized Tests

Sl No.	Variables	Tests
1.	Speed	50 Mtrs Run
2.	Agility	Shuttle run

Reliability of the Data

The reliability of the data was established by test -restest method. Ten subject were randomly selected and they were tested twice on selected criterion variables under similar conditions by the same testers. The collected data were analysed by sung intra class correlation to find out the reliability of the data separately for each criterion variable and are presented in table.II

Table-II: Intra Class Co-Efficient Of Correlation Values on Selected Criterion Variables

S.No.	Variable	"R" Value
1.	speed	0.83
2.	Agility	0.81

*Significant at .01 level of confidence.

(The table value required for significant at .01 level of confidence is 0.767)

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Training Schedule

Resistance and Plyometric Training- Series

Week	Warm up	Training	Repetition	Rest in between repetion	Cool down	Total time
Week 1	5 min	Resistance	3	45-60 sec	5 min	35
Week 2	5 min	Resistance	5	45-60 sec	5 min	40
		Resistance	7	45-60		

Tests Administration

50 Metres run

Purpose :to measure speed.

Equipments : A 50 metres course, two stop watches, starting clapper.

Procedure

After a short warm –up the subjects took position behind the starting line. Best results are obtained when two subjects run at the same tome for competition. The starter used the command, on your mark and "GO", latter accompanied by a clap as a signal to the timer. The subjects run across the finish line.

Scoring

One trial is permitted, by using the stopwatch time was teken to the nearest one tenth of a second.

Shuttle Run

Purpose

The purpose of this test was to measure the agility of an individual to change the direction in the shortest period of time.

Equipments

Measuring tape, stip watches, [1/10th of a second] and wooden blocks.

Procedure

The performer stood behind the starting line on the signal "go" runs to the blocks picks up one, returns to starting line and places block behind then she then repeated the process with the second block allow some rest between the two trials.

Scoring

The score of each performance was the length of the time required to complete the course. The best trial was recorded to the nearest one tenth of a second.

Table – III: **Analysis of Covariance for the Pre and Post Tests Data on Speed of Control, Series Training and Parallel Training Groups**

Test	Control Group	Series Training Group	Parallel Training Group	Source of Variance	Sum of Squares	DF	Mean Squares	'F' Ratio
Pre Test								
Mean	9.65	9.67	9.75	Between	2.64	2	1.32	1.75
S.D	0.75	0.86	0.99	Within	31.69	42	0.75	
Post Test								
Mean	9.64	9.45	8.88	Between	4.71	2	2.35	3.36
S.D	0.70	.093	0.87	Within	29.27	42	0.70	

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Adjusted Post Test				Between	11.06	2	5053	69.12
Mean	9.64	9.33	8.69	Within	3.25	41	0.08	

* significant at .05 level of confidence

[The table value required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively]

The table III shows that the pre test mean value of control, series training and parallel training groups on speed are 9.65, 9.67 and 9.75 respectively. The obtained "F" ratio of 1.75 for pre test scores is less than the required table value of 3.22 for significance with df 2 and 42 at .05 level of confidence. The post test mean values of control, series training and parallel training groups on speed are 9.64, 9.45 and 8.88 respectively. The obtained "F" ratio of 3.36 for post test scores is greater than the required table value of 3.22 for significance with df 2 and 42 at .05 level of confidence. The adjusted post test mean values of control, series training and parallel training groups on speed are 9.64, 9.33 and 8.69 respectively. The obtained "F" ratio of 69.12 for adjusted post tests scores is greater than the required table value of 3.23 for significance with df 2 and 41 at 0.5 level of confidence.

The results of the study indicates that there is a significant difference, among control, series training and parallel training groups on speed.

To determine which of the three paired means had a significant difference, the scheffe's test was applied as post hoc test and the results are presented in table IV

Table-IV: The Scheffe's Test for Differences Between the Adjusted Post Test Paired Means on Speed

Adjusted post Test Means			**Mean difference**	**Confidence interval**
Control group	**Series Training group**	**Parallel training group**		
9.64	9.33	--	0.31*	0.26
9.64	--	8.69	0.95*	0.26
--	9.33	8.69	0.64*	0.26

* significant at .05 level of confidence

Table IV shows that the means difference values on speed between control group and series training group, control group and parallel training group and series training group and parallel training group are 0.31, 0.95 and 0.64 respectively which are greater than the confidence interval value of 0.26. The results of the study shows the confidence interval value of 0.26. the results of the study shows that significant difference exist between control group and series training group, control group and parallel training group and series training group, parallel training group on speed. However, the improvement of speed was significantly higher for the parallel training group than the series training group. It may be concluded tht parallel training is better than the series training in improving the speed.

Agility

The analysis of covariance for the pre and post tests data on agility of control group, series training group and parallel training group were analysed and are present in Table V

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Table –V: Analysis of Covariance for the Pre and Post Tests Data on Agility of Control, Series Training and Parallel Training Groups

Test	Control Group	Series Training Group	Parallel Training Group	Source of Variance	Sum of Squares	DF	Mean Squares	'F' Ratio
Pre Test								
Mean	10.43	10.47	10.48	Between	2.25	2	1.13	1.49
S.D	0.65	0.46	0.48	Within	32.02	42	0.78	
Post Test								
Mean	10.42	1.015	9.79	Between	3.11	2	1.56	4.73
S.D	0.66	0.55	0.49	Within	13.65	42	0.33	
Adjusted Post Test				Between	7.47	2	3.73	26.64
Mean	10.58	10.11	9.58	Within	5.65	41	0.14	

* significant at .05 level of confidence.

[The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.22 and 3.22 respectively].

The table V shows that the pre test mean values of control, series training and parallel training groups on agility are 10.43, 10.41 and 10.48 respectively. The obtained "F" ratio of 1.49 for pre test scores is less than the required table value of 3.22 for significance with of 2 and 42 at .05 level of confidence. The post test man values of control, series training and parallel training groups in agility are 10.42 10.15 and 9.79 respectively. The obtained "F" ratio of 4.73 for post test scores is greater than the required table value of 3.22 for significance with dif 2 and 42 at .05 level of confidence. The adjusted post test mean values of control, series training and parallel training h groups on agility are 10.58, 10.11 and 9.58 respectively. The obtained "F" ratio of 26.64 for adjusted post tests score is greater than the required table value of 3.23 for significance with df 2 and 41 at .05 level of confidence.

The results of the study indicates that there is a significant difference, among control, series training and parallel training groups on agility.

To determine which of the three paired means had a significant difference, the scheffe's test was applied as post hoc test and the results are presented in Table 4.4

Table-VI: The Scheeff's test for Differences Between the Adjusted post test Paired Means on Agility

Adjusted post Test Means			**Mean difference**	**Confidence interval**
Control group	**Series Training group**	**Parallel training group**		
10.58	10.11	--	0.47*	0.41
10.58	--	9.58	1.00*	0.41
--	10.11	9.58	0.53*	0.41

* significant at .05 level of confidence

Table VI shows that the mean difference values on agility between control group and series training group, control group and parallel training group and series training group and parallel training group are 0.47, 1.00 and 0.53 respectively which are grater than the confidence internal value of 0.41. The results of the study shows that significant difference exist between control group and series training significant difference exist

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between control group and series training group, control group and parallel training group and series training group and parallel training group on agility. However, the improvement of agility was significantly higher for the parallel training group than the series training in improving the agility.

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. There was a significant difference among control group, series training group and parallel training group on selected criterion variables namely speed, agility, in favour of parallel training group.
2. The series training and parallel training groups significantly improved speed, agility, when compared with control group.
3. Both parallel training and series training improved speed agility However, parallel training was found to be better than the series training.

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COMPARATIVE ANALYSIS OF PROGRESSIVE PLYOMETRIC TRAINING AND PROGRESSIVE PLYOMETRIC TRAINING FOLLOWED BY REVERSIBILITY ON SPEED

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ABSTRACT

This study was designed to analyze the effect of progressive plyometric training and progressive plyometric training followed by reversibility on speed. The achieve the purpose of this study, 45 men students from bachelor's degree course in the department of physical education and sports sciences, AcharyaNagarjuna University Ongole Campus, Ongole, Andhra Pradesh, India were selected as subject. The subject were assigned at random into three groups of fifteen each (n=15). Group-I underwent progressive plyometric training, Group II underwent progressive plyometric training followed by reversibility and Group III acted as control. Control group was restricted to participate in any specific training. The speed was selected as dependent variable. The pre and post test random group design was used as experimental design. The collected data from the three groups prior to and immediately after the training programme on selected criterion variable was statistically examined for significant difference, if any, by applying Analysis of Covariance (ANCOVA). Since three groups were involved whenever the 'F' ratio was found to be significant for adjusted means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. The results of the reveals that due to the influence of progressive plyometric training (2.94%) and progressive plyometric training followed by reversibility (2.90%) the speed was significantly improved. It is also concluded that progressive plyometric training followed by reversibility group is significantly better than progressive plyometric training followed by reversibility group in improving Speed.

Key Words: *Progressive plyometric training, Reversibility and Speed*

INTRODUCTION

Speed and strength are integral components of fitness found in varying degrees in virtually all athletic movements. Simply put the combination of speed and strength is power. For many years, coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt long before, jumping, bounding and hopping exercises have been used in various ways to enhance athletic performance. In recent years, this distinct method of training for power or explosiveness has been termed plyometric (Bompa*et al.*, 2005).

One form of training that theoretically proposes to bridge the gap between speed and strength is plyometric training. The concept of plyometric training has been the focus of controversy among sports scientists and trainers in recent years. The research literature does not provide all the answers, and practitioners report different levels of success using a variety of resistance modes and techniques. The challenge of human muscle power enhancement for sports performance is based on the use of a variety of

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training approaches and it is generally agreed in the literature that some form of resistance exercise involving near maximal efforts will improve power output.

Plyometric training is used in a wide variety of sports to increase athletic performance. Plyometrics is a form of training designed to increase muscular power. There has been little research conducted as to what constitutes optimal guidelines for a plyometricsprogram, however what has been proven is that it is an effective method of training for increasing muscular power where there already exists a solid strength base.

Among sport conditioning coaches, there is considerable discussion regarding the efficiency of training methods that improve body strength and power. But the best method for achieving improvement in muscular strength and muscular power are disputed. Plyometric training is well-established training method and vital necessary for athletes and players; however, there is a lack of information regarding the effect of progressive plyometric training and progressive plyometric training followed by reversibility on speed.

Through the study of science and various sports training, researchers have developed a greater understanding on how the human body reacts to exercise, training and many other stimuli. The effect of progressive plyometric training and progressive plyometric training followed by reversibility is useful research objectives and it has drawn the attention of the investigator. The present scientific study is one of the efforts to explore and suggest a best scientific method for the development of speed parameters.

METHODOLOGY

Subjects and Variables

The purpose of the study was to investigate the effect of progressive plyometric training and progressive plyometric training followed by reversibility on speed. To achieve the purpose of the study 45 male students studying bachelor's degree course in the department of physical education and sports sciences, AcharyaNagarjuna University Ongole Campus, Andhra Pradesh, India during the academic year 2014-2015 were selected as subjects at random by lot method from total of 100 students. They were divided into three groups of fifteen each (n=15). Group-I underwent progressive plyometric training, group-II underwent progressive plyometric training followed by reversibility and group III acted as control. Control group was restricted to participate in any specific training. The dependent variable selected was speed and it was assessed by conducting 50 meters run test. The purpose, nature and importance of experiment and testing periods were explained to the subjects. The data collected from the experimental and control groups as these students were new to plyometric training regime, the subjects cleared the minimum strength requirement test prescribed by Voight and Draovitch, which consisted of five push-ups, five squat thrust, standing long jump and skipping rope for thirty seconds.

Training Programme

During the training period, the experimental groups underwent their respective training programmes in addition to their regular physical education programme of the course of study as per the curriculum. Group-I had undergone progressive plyometric training for three days per week for twelve weeks and group II had undergone progressive plyometric training for three days per week for nine weeks and followed by reversibility for two days per week for remaining three weeks. The principle of overload for group-I had been applied at every four weeks up to the twelfth week to reach the high intensity whereas group-II was attained the high intensity at the ninth week itself and then for remaining three weeks the load was deliberately reduced. The duration of training sessions in all the days was between 45 minutes and an hour approximately, which included warming up and limbering down. Group III acted as control who did not participate in any specific training on par with experimental groups. However, they performed the regular

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physical education programme of the course of the study. The experimental groups underwent their respective training programs during evening hours under strict supervision of the investigator. To reduce the possibility of injury the training was conducted on the grassland. The training schedules for the experimental groups were designed in response to the pilot study and also based on the guidelines by Donald A. Chu (1992).

Statistical Procedure

The pre and post test random group design was used as experimental design in which forty-five men subjects were divided into three groups of fifteen each at random. No attempt was made to equate the group's in any manner. The subjects were tested on selected criterion variable speed prior to and immediately after the training programme. The collected data from the three groups prior to and immediately after the training programme on speed was statistically examined for significant difference, if any, by applying analysis of covariance (ANCOVA). Since three groups were involved whenever the 'F' ratio was found to be significant for adjusted means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. Magnitudes of improvements were computed for all the groups on selected criterion variables separately as suggested by Jerry Thomas and Jack Nelson. In all cases .05 level was fixed as level of confidence.

RESULT

The analysis of covariance on speed of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group have been analyzed and presented in table-1.

Table-I: **Analysis of Covariance on Speed of Progressive Plyometric Training Group, Progressive Plyometric Training Followed By Reversibility Group and Control Group**

	Progressive plyometric training group	**Progressive plyometric training followed by reversibility group**	**Control Group**	**S o V**	**Sum of Squares**	**df**	**Mean Squares**	**'F' ratio**
Pre test Mean	6.8	6.9	6.7	B	0.51	2	0.255	1.16
SD	0.48	0.51	0.41	W	9.24	42	0.220	
Post test Mean	6.6	6.7	6.7	B	0.08	2	0.040	0.19
SD	0.51	0.43	0.42	W	8.64	42	0.206	
Adjusted Post test Mean	6.6	6.4	6.8	B	0.57	2	0.285	20.36*
				W	0.59	41	0.014	
Magnitude of Improvement	**2.94%**	**2.90%**	**0%**					

***Significant at .05 level of confidence.*

The table value required for significance at .05 level with df 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively. (Speed performance in 1/10th of a second)

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Table-I shows that the pre test mean values of speed for progressive plyometric training group, progressive plyometric training followed by reversibility group and control group are 6.8, 6.9 and 6.7 seconds respectively. The obtained 'F' ratio of 1.16 for pre test is less than the table value of 3.22 for df 2 and 42 required for significance at .05 level of confidence. The post test mean values of speed for progressive plyometric training group, progressive plyometric training followed by reversibility group and control group are 6.6, 6.7 and 6.7 seconds respectively. The obtained 'F' ratio of 0.19 for post test is less than the table value of 3.22 for df 2 and 42 required for significance at .05 level of confidence. The adjusted post test mean values of speed for progressive plyometric training group progressive plyometric training followed by reversibility group and control group are 6.6, 6.4 and 6.8 seconds respectively . The obtained 'F' ratio of 20.36 for adjusted post test is more than the table value of 3.23 for df 2 and 41 required for significance a .05 level of confidence.

The magnitude of improvement of speed due to the influence of the respective training means of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group are 2.94%, 2.90% and 0% respectively.

The results of the study indicates that there is a significant difference among the adjusted post test means of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group on the development of speed.

To determine which of the three paired means had a significant difference, Scheffe's test was applied as post hoc test and the results are presented in table-II.

Table-II: **Scheefe's Test for the Differences between the Adjusted Post Test Paired Means on Speed**

Adjusted Means			**Mean Difference**	**Confidence Interval**
Progressive plyometric training group	**Progressive plyometric training followed by reversibility group**	**Control Group**		
6.6	6.4	-	0.20*	0.11
6.6	-	6.8	0.20*	0.11
-	6.4	6.8	0.40*	0.11

**Significant at .05 level of confidence.*
(Speed performance in 1/10th of a second).

Table II shows that the adjusted post test mean differences on speed between progressive plyometric training group and progressive plyometric training followed by reversibility group, progressive plyometric training group and control group and progressive plyometric training followed by reversibility group and control group as 0.20, 0.20 and 0.40 respectively. They are higher than the confidence interval value of 0.11 which shows significant difference at .05 level of confidence.

It may be concluded from the results of the study that there is a significant difference between the adjusted post test means of progressive plyometric training group and progressive plyometric training followed by reversibility group, progressive plyometric training group and control group and progressive plyometric training followed by reversibility group and control group on speed.

The mean values of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group on speed is graphically represented in figure-I.

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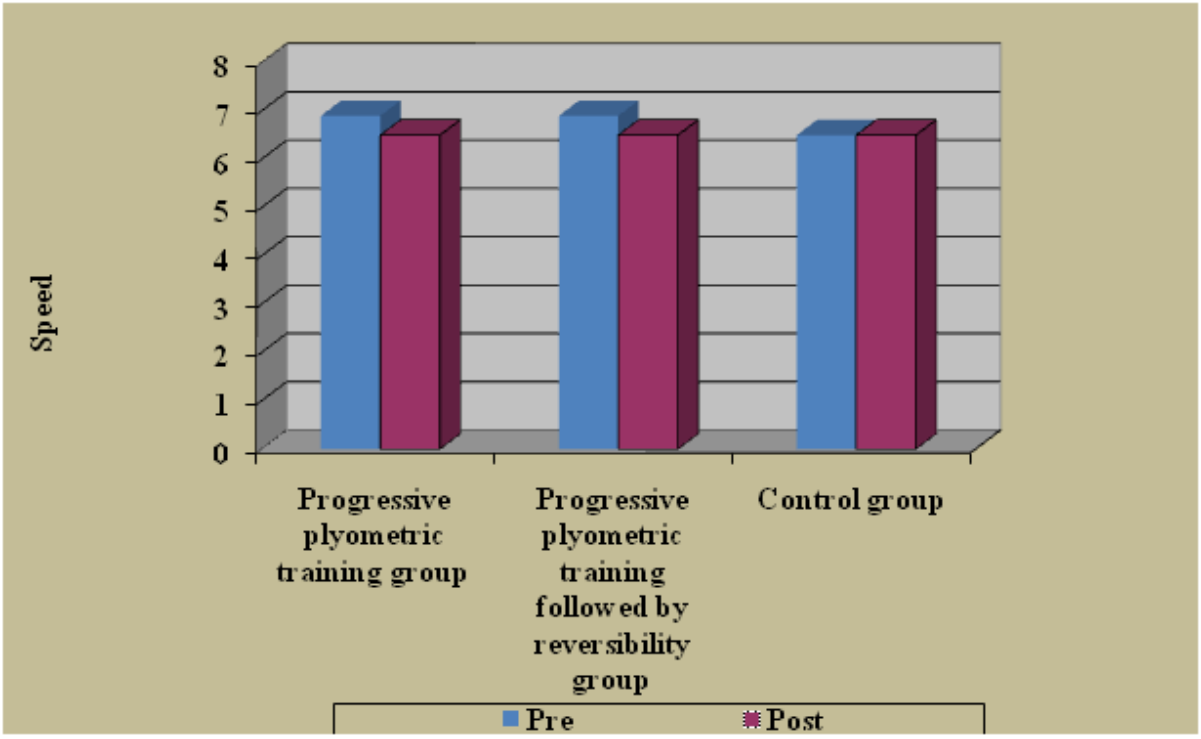
Figure-I: **Mean Values of Progressive Plyometric Training Group, Progressive Plyometric Training Followed By Reversibility Group and Control Group on Speed**



DISCUSSION

The results of the study indicates that both the experimental groups namely progressive plyometric training and progressive plyometric training followed by reversibility groups had significantly improved the selected dependent variable speed when compared to the control group as it did not participate in any of the special training programme apart from the regular physical education activities. These findings are also in agreement with the findings of Brown et al., (1986)who conducted a study to find out the effects of plyometric exercises on 15 year old subjects in which plyometric group experienced significant gain in Speed, stride frequency and stride length. According to Reddy,(1993) plyometric training increased speed, stride length, stride frequency and anaerobic power than that of the resistance training. Bompa (1999)experimented and suggested that plyometric exercise can often yield a significant gain in physical ability and optimization of athletic performance. Plyometric training influence the starting power and acceleration power during sprinting.

A wide variety of training studies shows that plyometric can improve performance in vertical jumping, long jumping, sprinting and sprint cycling. It also appears that a relatively small amount of plyometric training is required to improve performance in these tasks. Just one or two types of plyometric exercise completed 1-3 times a week for 6-12 weeks can significantly improve motor performance (Blackey& Southard, 1987; Gehriet al., 1998; Matavuljet al., 2001). In addition, several studies on plyometric training have demonstrated that a significant increase in sprinting (Chimera et al., 2004; Kotzamanidis, 2006) and distance-running performance. Also consistent with previous studies Abass (2009) found that plyometrics exercises (BWT) with depth jumping and rebound jumping characteristics are best used in developing muscle strength of the lower extremities.

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CONCLUSION

The results of the reveals that due to the influence of progressive plyometric training (2.94%) and progressive plyometric training followed by reversibility (2.90%) the speed was significantly improved. It is also concluded that progressive plyometric training followed by reversibility group is significantly better than plyometric training group in improving speed. From the perspective of the above-discussed results, progressive plyometric training followed by reversibility could well be recommended for healthy individuals aiming to improve not only their strength and power, but also other speed performances.

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NUTRITION AND FITNESS

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Abstract

The present study was aimed to examine the role of nutriti9on for fitness. Fitness implies a dynamic homeostasis, the ability to respond to life's physical, emotional and social demands. Exercise allays anxiety with resultant relaxation. It is a nature's sedative for the tense and tired individuals. Nutrition plays an important role in both training as well as competition. It is a firm belief that physical activity, athletic performance and recovery from exercise are enhanced by optimal nutrition. Hence, it is necessary that appropriate selection of foods and fluids, timing of intake, and supplement choices for optimal health and exercise performance is ensured.

Keywords: Nutrition, fitness, performance, exercise.

Introduction

Today, the competitive sportsman has been made aware of the role of nutrition. There is clear evidence that improved eating habits not only benefit health but alto influence an individual's endurance and capacity to perform exercise. Changing diet automatically make a person run faster or jump higher. Diet is just one of the many factors involved in improving athletic performance. More strenuous exercises increases food intake but within limits – only enough to offset the increased metabolism and, therefore, no weight increase follows.

Methodology: Fitness can be gauged through conducting various tests, i.e. performing tasks and measuring the score, which can be compared with standards and ranking can be done. The ranking is generally descriptive i.e. (1) Fair (2) Good (3) Very Good and (4) Excellent. The scores vary with weight, height, age, sex, etc.

Several commonly used terms with reference to sports are:

1. Flexibility
2. Coordination
3. Equilibrium
4. Speed
5. Agility
6. Strength
7. Endurance

Since, an athlete's success depends largely on is body's capacity for peak performance, energy metabolism plays a key role.

The body's ability to obtain energy from food nutrients and transfer the energy to the contractile elements in the skeletal muscles determines our capacity to swim, run, and cycle and ski long distances at high intensity. The energy is obtained from carbohydrates, fats and proteins.

Energy from Carbohydrates:

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The National Institute of Nutrition has recommended that about 55% of the energy requirement must be met through carbohydrates. If lower levels of carbohydrates are consumed, they may result in glycogen depletion, resulting in staleness that effects performance in training & competition.

A large proportion of unrefined complex CHO foods must be included in the daily diets of athletes. This includes whole – wheat flour, millets like jowar, bajra, ragi, legumes especially moong, matki, chawli, (Lesser of the gas forming legumes whole chana, vaal, rajmal etc.) vegetables and fruits. Athletes undergoing heavy training must consume about 10g of CHO per kilogram of body cut.

In order to improve the glycogen rescores in the body, CHO loading is practiced. In the first stage, CHO are depleted in the diet to about 100g or 400Kcal per day. In the second stage, 400 to 652g of CHO is fed. Which amounts to 1600 to 2500 Kcal per day. A particular combination of diet and exercise result in a significant "packing" of glycogen in muscles.

Energy from proteins:

According to RDA, a normal person is required to consume 0.8g to 1.0 g protein / kg body weight. Since, the consumption of calories for the different categories of sports events ranges between 50 to 80 cals / kg / day the amount of protein ingested by the athlete also rises proportionately. About 15% of energy requirement is met by proteins of which 55% must be met by animal protein.

Soya protein, nuts, oilseeds, legumes and pulses, milk and milk products can be used to fulfill the protein requirements. Training can bring on desired muscles growth and tone.

Energy from fats:

About 30% of energy requirement must be met through lipids. Of this, about 70% should come from the unsaturated fatty acids. It must be noted that significant reduction in the lipid content of the diet would compromise exercise performance. It would be difficult to increase carbohydrates and protein intake to bridge the energy gap caused by lowering lipid intake. This may affect the body weight and muscles mass of the athlete. Also adequate lipid intake helps to fulfill the essentially fatty acids and fat soluble vitamins through the diet.

Conclusion:

Energy and macronutrient needs especially carbohydrate and protein must be met during times of high physical activity to maintain body weight, replenish glycogen stores and provide adequate protein to build and repair tissue. The energy giving nutrients fed in the correct proportions along with those helping is the release of energy from them and the fluid required to adequately hydrate the body could optimize the athlete's performance. Training and regular fitness programs must accompany the dietary regimen.

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CORE STABILITY TRAINING FOR MUSCULOSKELETAL INJURY PREVENTION IN SPORT PERFORMANCE

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Introduction

Many sporting activities require complex coordination between the upper and lower extremities. The core (trunk, pelvis, and hip) functions as the central link between the upper and lower extremities, and stability of this region are proposed to be a requisite for optimal athletic performance and injury prevention. The kinetic chain theory describes core stability as the ability to control the position and motion of the trunk and pelvis relative to the extremities in order to allow for optimal force production, dissipation, and transfer to the extremities during movement.

Optimal core stability is dependent upon both muscle capacity (strength and endurance) and neuromuscular control. Neuromuscular control is defined as the ability to accurately orchestrate a synchronized muscular response to internal and external perturbations based on sensory information in order to control the position or movement of the body. These muscles are activated prior to extremity movement, which indicates that the core provides proximal stability upon which movement of the extremities occurs. Optimal core stability is important for performance of athletic tasks that result in perturbations of the athlete's body outside of their base of support.

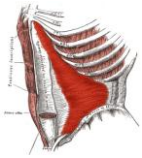
Definition:

Traditionally this term has referred to the active component to the stabilizing system including deep and local muscles that provide segmental stability. The superficial and global muscles that enable trunk movement and torque generation will also assist in stability in more physically demanding tasks.

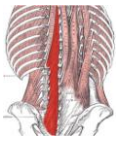
Clinically relevant anatomy:

Local muscles the local deep muscles have their origin or insertion on the lumbar vertebra therefore can exert a segmental stabilizing or stiffening effect. The mechanisms of the deep muscles and stability and stiffness are controversial but transverse abdominus may act like a canister with the diaphragm and pelvic floor muscles. This co-contraction increases the intra-abdominal pressure, which creates an extension moment at the spine and has been hypothesized as increasing stability and stiffness in particular via connections with the thoraco-lumbar fascia. The multifidus may increase the rotational segmental stability in a sagittal and horizontal plan.

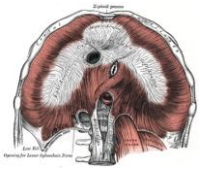
1. Transverse Abdominals



2. Lumbar muilifidus on the left of the spine



3. Inferior view of the diaphragm



4. Medial view of the left pelvic

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Normal function of the deep muscle system is impaired with back pain. There is strong evidence supporting the effectiveness of treatment aimed at normalizing this function by way of "specific motor control training" and"specific muscle activation".

Core muscles theory

The core can be thought of as a cylinder of muscles around the inner surface of the abdomen. There are 4 main muscle groups considered:

Transversusabdominis -The deepest of all the abdominal muscles lying under the oblique abdominals and rectus abdominus. It is this muscle that is considered to be the corset of muscle providing stability. It connects to the individual vertebrae of the lower (lumbar) spine and wraps right around each side to meet in the mid line of the front of the abdomen. When contracted it functions to both increase the pressure inside the abdomen and pull tightly on the vertebrae themselves to provide exceptional stability to the spine.

Multifidis - This deep back muscle lies on either side of the spine and again connects to each individual lumbar vertebrae. It functions in extending (bending back) the spine as well as being an essential postural muscle keeping the spine upright.

Diaphragm - The primary muscle for breathing, the domed diaphragm provides the top of the cylinder core. When the Transversus Abdominal contracts, the diaphragm tightens to maintain pressure in the abdomen and so provides stability to the spine.

Pelvic floor - The pelvic floor muscles provide a sling running from back to front, from the bottom tip of the spine (the tail bone) to the front of the pelvis. It contracts simultaneously with the transversusabdominus to form the bottom of the cylinder of muscles.

When these entire muscles contract together they keep the spine in its most stable position or the neutral zone, and aid in preventing injury. They are known to contract prior to any arm or leg movement and so they function in keeping the center, of the body rigid during all movement. Recent evidence has found that in people with low back pain these muscles fail to contract before limb movement and so the spine is vulnerable to injury. Thus retraining these muscles to contract at the right time is the fundamental theory of core stability.

Core contraction techniques to improve core stability: Core contraction technique 1

Whilst lying in the above position, imagine that a belt with10 notches is tied around your abdomen. Take a deep breath in and on exhalation visualize that the belt is being fastened up to the tenth notch. Using the above transversus palpation technique can you feel a tightening (not bulging) under our fingers. Now visualize leaving the belt off to the 3rd notch.

Core contraction technique 2

In the same position as above take a deep breath in. On exhalation focus trying to lower your belly button down towards the floor. Palpate for a contraction of the transversus. Now ease the contraction off to about 30% of its max. The above techniques focus on contracting transversusabdominus however it is common to find these exercises difficult. The next technique is focused on contracting the pelvic floor as an alternative.

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Core contraction technique 3

In the same position as above take a deep breath. On exhaling focus on 'drawing up' from the pelvic floor. Imagine that we wish to stop our self going to the toilet however make sure we do not over use the other abdominal muscles- this would result in a 'bulge' rather that a tightening under our fingers.

Choose one of these techniques and practice it until you can do it quite easily. It may take practicing each technique a few times before you decide which one works best for us. Once we achieve a good independent core contraction we are ready to begin the core stability program.

Beginners core strengthening exercises	Intermediate core strengthening Exercises	Advanced core strengthening exercises
Toe Pointing	Single leg stretch	Sidekicks advanced
Single leg Fall-out	Prone straight leg raise	Plank progression
Knee Extension	Hip flexion	Plank
Foot Lift	The clam	Front crawl

Benefits of core stability

Injury Prevention - Strengthening the core is essential to prevent all forms of injury around the lower back area. By training the core the rest of the muscles in the area i.e. the hamstrings, gluteus, abdominal and back muscles all work more efficiently and together. Risk of injury caused by over activity is reduced in any particular muscle group due to muscle imbalance.

Rehabilitation from injury - Core stability is an essential component of any rehabilitation program not only for low back pain, sacroiliac pain and Gilmore's Groin but also for other injuries such as hamstring strain and shoulder pain. By providing stability beneath the muscles that provide movement, core stability provides excellent rehabilitative properties for such injuries and is commonly used by physiotherapists and other injury therapists with patients.

Improving performance - Whether we enjoy an occasional gym session or whether we are an elite sports person, core stability should be part of your training regime. Working on our core can vastly improve balance. In addition it can greatly improve the torsion (twisting) strength that can vastly increase ability and performance in such sports as throwing, tennis**,** badminton**,** squash and swimming. The difference between having the edge in our chosen sport will time and time again come down to our ability to maintain the most efficient functioning of our core muscles, hence it has been coined the powerhouse of the athlete.

Summary:

There is no single muscle or single exercise for low back problems and motor control and core stability as a treatment. At minimum practitioners and sports personnel should be aware of key concepts in motor control and exercise and follow an evidence-based approach to exercise prescription. Currently there is strong evidence for specific motor control and specific muscle activation in isolation, progressing to more global and functional exercises.

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MODERN TRENDS IN FITNESS

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Abstract
Over the last decades, it has been observed that physical activity is crucial in improving physical and mental wellbeing. With the advancement in technology, there has been growing awareness in people drawing towards various activities to improve one's health. This paper discusses various techniques and trends that people are doing to be fit. Fitness Trends say that the path to pink health with new possibilities with some old techniques that are poised to make a comeback. Wearable technology, Body weight training, High-Intensity interval training, Educated, certified and experienced fitness professionals, strength training, Group training, Fitness programs, outdoor activities, dancing activities, worksite health promotion, recreation canters, wellness training stretching and flexibility activities, etc. Further technology plays a key role in wearable technology to keep people motivated and analysing the data to show trends and the status of their health and linking to their physicians directly. Fitness has become a lifestyle for people. This gives a clear picture on how people follow various trends in keeping fit with a combination of technology making their lives better if they take advantage of it. Also, modern trends show that natural ways to keep fit through apps, reminders and data analysis and its impact are in all sections of people be it children, young people, women, older people or worksite fitness.

Introduction
Like the fashion trends that change from time to time in the magazine covers. Fitness too evolved and gone into various directions. Electronic and print media has been playing the major role in improving the fitness and also promoting latest trends in fitness and how people look at fitness as a whole. These days how a person looks like and the fitness club people goes has become a status symbol. Popular and famous fitness centers in India include tall walkers, anytime fitness, gold's gym, etc.

With the availability and widespread access of internet, these days the interest in joining and marinating one's health in individuals is skyrocketing. Through many social networking platforms, the information about possible causes for a disease and tips to overcome, fitness and promotion of apps in mobiles has become widely popular.

The top trends in the recent years are

Wearable technology: One of the latest trends in the fitness world is wearable technology. Several tech giants already into production of wearable gadgets that attracted many people over the last few years. One of the reasons behind this is wearable devices offer many benefits. Some of them are

- Tracks fitness and health and also show daily statistics of steps taken, heart rate, sleep monitoring and smart alarm
- Information on incoming and outgoing calls, emails alert, tracing the phone, etc.

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- GPS Route tracking

Body weight training: These are strength training exercises that do not require any free weights or machines, but it depends on individuals own weight as it is against gravity and it enhances a range of bio motor activities like strength, power, endurance, speed, etc.

High-Intensity Interval training: High-intensity training helps to burn calories fast with short resting periods. Like boot camp classes to Pilates. There are a lot of videos stream on YouTube which is a 20 min rigorous high-intensity exercises which are usually a combination of exercises to burn fat fast and improve strength.

Educated certified and personal fitness professionals: personal trainers are increasing due to the interest among people to develop a body which suits his/her interest and depends on the body type it is difficult for an individual to attain a goal. Obese and skinny people are easily fit examples in this category.

Out door activities: There are several mobile based organizations like Meetups which offer several outdoor activities like kayaking, hiking, jogging or walking, biking with a guide for free of cost or a quarterly or yearly membership at low cost. These type of outdoor activities bring refreshment and health and makes them fit in their hectic daily life and also get them to meet different people with various backgrounds.

Group activities: Group training has gained popularity because of the expense that occurs die to personal training. Here a trainer instructs a group of four to 10 clients. People are ready to pay for a group training because it costs a way lot less when compares to the personal trainer and another benefit is when people start working in a group they develop the relationship and make friends with other people in a group.

Dancing activities: Like salsa, folk dances are being conducted by various managements at all levels. These dancing activities provide fun with health benefits like reducing weight and improve social interactions.

Yoga: It has been around for thousands of years and has become the latest trend in fitness as many people started realizing the importance of yoga to the mind body and soul. Several yoga gurus are available in and around us and live telecasting yoga done by spiritual gurus like Sad guru, Ravi Shankar, etc. Our prime minister of India promotes yoga, and he did yogasanams at many events to promote awareness.

Functional fitness: Functional fitness is a type of fitness which we encounter in our day to day activities like moving a furniture and planting water, planting seeds, doing house hold work. Even though we may not realize many of the Indian women who belong to generation has great life span because of their day to day activities with in their homes.

Wellness coaching: As argued to personal training, health and wellness coaching focuses on the more mental aspects of wellness, like goal-setting. These mentors provide support and encouragement for clients who want to meet individual goals in their health, like participating in rehabilitation or disease prevention.

Worksite health promotion: Several IT companies provide on site health promotion activities and install several health equipment and gym, indoor games to the people working in their institution as it provides a good balance and reduces stress and also improves performance.

Conclusion: So, as technology has become a part of every one's life. It has created major impact and many people are relying on technology to improve fitness. Also, exercise does not only mean weight lifting, gym but also functional fitness, worksite health promotion using wearable technology to track activities and joining outdoor activities , yoga's will also reduce stress and improve social interaction.

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SPORTS AND GAMES FOR HEALTH

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ABSTRACT
In today's world, more importance is given to education rather than sports especially in a country like India. Not because they didn't know the importance and benefits of sports and games, but they don't have enough time to play a game or stress due to today's education. In the western world, sports are a part of their curriculum because they improve physical and mental health but, sadly these days' sports have been commercialized. In this paper, we will illustrate the importance and the benefits of sports and its impact on today's life.

Introduction

To have a change from the monotony of daily life sports and games are very important for us. They keep us healthy and fit. They give us energy and strength. It helps in character building. Sports and games help the body to run efficiently and smoothly. Every muscle is involved in the activity when playing a sport. The sports organized by various countries is to promote brotherhood and peace among nations.

U. N sports for development and peace, physical activity plays a major role in the development of overall health and keeps people physically and mentally fit. Sports does benefit to all generations including older generation. However, it is good to start early especially for kids. They should participate in school sports activities.

Health benefits of sports for mind, body, and soul:

The stretching ability is increased by playing the sport. The heart benefits the most from playing sport as it helps in pumping more blood to every part of the body.

These following exercises are especially useful for cardiovascular health.

Running is a good way to shed extra pounds, and it strengthens the walls of the heart. Running intervals are a way to challenge your cardiovascular fitness.

You want to work hard enough to spike heart rate levels and take minimal rest between intervals – 10-second spikes of periods is a good place to start.

Weight Training: Resistance exercises increase your heart rate during reps and recover between sets. This also produces a different pattern of blood vessel responses than other types of exercise. When weight training, your muscles will ease the burden on your heart – give your heart a little "break.

To reduce the risk of chronic disease, healthy individuals should train at least two to three times a week. It reduces blood pressure, improves blood circulation to limbs, and improve overall health.

Swimming, tennis and Ping Pong:

These sports will increase

1)Strength

2)Flexibility

3)Balance

4)Coordination

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5)Muscle tone and strength.

High intensity/interval training: Doing intense workouts for 20 minutes and then with a little rest and repeating will increase the heart rate, dilate the vessels and burn more calories.

Yoga: One of the main risk factors for cardiovascular problems is stress. Stress plays a significant role in hardening the arteries and building of plaque and clots. Yoga relieves stress and stretches muscles.

Blood glucose control: Exercise reduces blood glucose level in two ways.It increases the insulin sensitivity so that cells can take up glucose or use available insulin**.** During muscle activity, the body needs energy(ATP) this includes a use of glucose and use it for energy whether insulin is available or not.

Lowers hypertension: The risk of getting hypertension increases with age but regular to moderate exercise can make a big difference.Older people can go for brisk walking, jogging, etc. becoming more active will reduces systolic blood pressure.Lowers cholesterol levels and improves blood circulation**.**Abdomen exercises like weight lifting, running and aerobics reduces and burns fat in the abdomen area and reduces cholesterol. Exercise increases blood flow and supplies more oxygen, Apart from oxygen it also provides more hemoglobin and the volume of blood.

Stronger Immunity: Regular exercise causes an increase in the white blood cells which increases immunity towards diseases. Playing sports increase the sweat production and also removes toxins through sweat and controls the body temperature, the chances of bacterial growth also lessen.

Muscle Toning: sports and games increase endurance and also tones muscles which help in gaining a stronger body.

Stronger Bones: Sports plays a key role in strengthening the bones and makes bones less brittle. It guards against rheumatoid arthritis, osteoporosis and increases the bone density. Taking up sports

Other benefits of playing sports include..

Sports can bring positivity if played healthily.

Playing any game helps to build self-esteem

It contributes to respect people even if they have negative attitude towards you

It helps the person to think calmly and ability to respond in a right way during stress events

It helps to build healthy relationships with people from diverse backgrounds and helps you to work with them in a right way.

Conclusion:

It is essential to know that playing sport and games helps to keep both the body and mind fit which reflects the performance in studies in a right way. It is important to learn a sport under strict supervision and medical guidance necessary for people with health conditions as it sometimes worsens their condition if not done properly.

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EFFECT OF SYSTEMATIC HOCKEY ACADEMY TRAINING PROGRAM ON MORPHOLOGICAL PARAMETERS OF RDT HOCKEY ACADEMY PLAYERS

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Abstract
This study was intended to assess the changes on selected morphological parameters of RDT hockey academy players with a yearlong adaptation to supervised systematic training in the academy. For this purpose a group of 22 male hockey player from RDT hockey academy volunteered to participate in the study. The endomorphy, mesomorphy and ectomorphy were measured using Heath-Carter method. The testing of selected variables took place at the beginning of competitive phases of training during two periodized training year, with a span of one-year between initial and final data collection. The weighing scale, stadiometer, skin fold caliper, sliding caliper and flexible steel were used to measure criterion variables adopting standardized procedures. The data thus collected on selected criterion variables was subjected to statistical analysis, and it revealed that the selected morphological parameters of RDT hockey academy players altered considerably.

Introduction
Physical structure is an important factor that contributes to success in sporting activities. Physique is a structure upon which function of the body depends. Like function, the structure responds to systematic training by adaptation. It has been observed that anthropometric measurements changed over the course of a season. Many of these anthropometric measures were used to estimate somatotype. Somatotype is an overall description of physique, a continuum from leanness and linearity to roundness and heaviness. Morphological traits of athletes achieving highest results in particular sport discipline, create a specific "somatic model" for that discipline. Identification of specific characteristics of physique that may contribute to success in field hockey has been a subject of high interest for sport scientists and coaches.

It is very important as a coach of young players to be aware of the players' development stage and understand how the youth players can be trained not to impair their development (Bangsbo, 1994). Children are not small adults and should definitely not to be trained in the same way as adults (Bangsbo, 1994). The training process can solve motor and functional ability tasks simultaneously during the period of training. The maintenance of fitness during a season is a key target for every team (Koutedakis, 1995) but this is a complex process reflecting the diverse physical demands of the game. The purpose of this study was to assess the changes on selected morphological parameters of RDT hockey academy players with a yearlong adaptation to supervised systematic training in the academy.

Methods
Subjects: The subjects considered in the present study were twenty-two male hockey players from the RDT Hockey Academy, Anantapur, Andhra Pradesh, during the period 2008 – 2010. All the players had been part of the team for a minimum of 2 years. In this study the written informed consent were sought from the players to participate in this study, and they provided the same.

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Testing procedure: The testing of selected criterion variables took place at the beginning of competitive phases of training during two periodized training year, with a span of one-year between initial and final data collection. The study was confined to the criterion variables namely: endomorph, mesomorph and ectomorph. *Statistical analyses:* Descriptive statistics were calculated for all variables. A paired *t* test was utilized to determine significant differences for each variable between the testing years. Significance level was set at $P \leq 0.05$. All statistical analyses were conducted using SPSS 11.5 version.

Results

The RDT academy hockey player's endomorph, mesomorph and ectomorph were assessed and the results of the statistical analysis are presented in table 1.

Table 1: Paired Samples T test on Selected Morphological Parameters

Variables	Testing Years	Mean	Standard deviation	Std. Error Mean	Paired Differences		*t*	Sig.
					Mean	Std. Deviation		
Endomorph	2008 -09	1.7800	.629	.134	.438	.531	3.868	.001
	2009 -10	1.3418	.274	.058				
Mesomorph	2008 -09	3.0441	.662	.141	.479	.438	5.133	.000
	2009 -10	3.5236	.626	.133				
Ectomorph	2008 -09	4.8959	.845	.180	.479	.605	3.713	.001
	2009 -10	4.4168	.658	.140				

The above tableexhibits the existence of significant difference between testing years for endomorph ($t = 3.868$, $p = 0.001$), mesomorph ($t = 5.133$, $p = 0.000$), and ectomorph ($t = 3.713$, $p = 0.001$). This implies that systematic hockey academy training program had a statistically significant influence on selected morphological parameters of RDT hockey academy players.

Discussion

The components of somatotype certainly play an important role in physical activity and vice versa. Many studies have reported that the somatotype of players alter in relation to different level of performance, and systematic training modalities in particular. This study reveals a statistically significant increase on mesomorph in RDT academy hockey players with a yearlong adaptation to supervised systematic training in the academy. And a corresponding decrease on endomorph and ectomorph were noted. This finding upholds the views of some (Carter & Heath, 1990; Tanner, 1964) that competitor'smorphological traits were developed in the course of specific training.

Conclusion

It shows that morphological traits of the field hockey players may adapt with systematic training and monitoring of the changes in morphological traits is essential among youngsters, and it helps the coaches to identify the ideal body build of hockey players and sets a platform for selection of players for training and competition.

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ANALYSIS OF SELECTED PHYSIOLOGICAL ADAPTATIONS TO CIRCUIT TRAINING AMONG UNTRAINED MALE COLLEGE STUDENTS

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Abstract

The purpose of this study was to examine the selected physiological adaptations to eight weeks of supervisedcircuit training programme among untrained male college students. For this purpose 30 untrained male students of Government Degree College, Palamaneru, Chittoor District, Andhra Pradesh, aged 18 to 22 years took part in the study. The participants were randomly assigned to either circuit training (n=15) or control (n=15) groups. The training regimen lasted for eight weeks. The selected criterion variables namely: cardiorespiratory endurance, vital capacity and vital index were assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the significant difference existing between pretest and posttest data on selected criterion variables. The analysis of data revealed that eight weeks of circuit training had a statistically significant influence on selected physiological variables.

Introduction

Sportsmen and women must participate in year round conditioning programs to have the utmost efficiency, consistent improvement and balanced abilities. For that they must put their bodies under a certain amount of stress to increase physical capabilities. Physical exercise is extremely important for maintaining physical fitness including healthy weight; building and maintaining healthy bones, muscles, and joints; promoting physiological well-being; and strengthening the immune system. To improve or maintain a desired level of physical fitness, there is a need to constantly administer an adequate training intensity while exercising. Circuit training is one of the effective means to improve all round physical and cardiovascular fitness.

The effects of resistive type exercise on health status have been largely overlooked. Traditionally, strength training has been seen as a means of improving muscular strength and endurance (*muscle mass*) and power, but not as a means for improving health.According to the reports of American College of Sports Medicine there is increasing evidence that strength training plays a significant role in many health factors. To know the efficacy of circuit training and its significant contribution to one's level of fitness, it was decided to take up this study. We hypothesized that significant adaptations on selected physiological variables may subsist as a result of supervisedcircuit training programme for eight weeks among untrained male college students.

Methodology

Subjects and Variables: For the purpose of this study, thirty untrained male students from Government Degree College, Palamaneru, Chittoor District, Andhra Pradesh, in the age group of 18 to 22 years were recruited with theirconsent. All of them were healthy, nonsmoking and with a negative medical history. The selected subjects were randomly assigned to both the circuit training and control groups of 15 each. The selected criterion variables were assessed using standard tests and procedures, before and after the training regimen. The instruments used for testing the dependent variables were standard and reliable as they were purchased from the reputed companies. The variables and tests used are presented in table 1.

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Table 1: Criterion Variables and Test

SL. No.	Variables	Tests / Instruments	Unit of Measurement
1.	Cardiorespiratory Endurance	Cooper's 12 minutes Run/Walk	Metres
2.	Vital Capacity	Wet Spirometer	ml
3.	Vital Index	$\frac{\text{Vital Capacity}}{\text{Body Surface Area}}$	ml / m^2

Training Protocol

The experimental group underwent the circuit training programme for eight weeks. The training regimen for circuit training group consistedof two to three circuits of 35 to 50 seconds duration of eight exercises a day, three daysa week at 60% to 75% of VO_2max, with three to five minutes recovery between circuits. The control group did not participate in any specialized training during the period of study.

Experimental Design and Statistical Procedure

The experimental design used for the present investigation was random group design involving thirty subjects for training effect. Analysis of covariance (ANCOVA) was used as a statistical technique to determine the significant difference, if any, existing between pretest and posttest data on selected dependent variables. The level of significance was accepted at $P < 0.05$.

Results and Discussions

The height and weight of the selected subjects averaged 168.3 ± 4.12 cm, and 63.7 ± 3.52kg respectively. The descriptive analysis of data collected on selected physiological variables before and after eight weeks of circuit training is presented in table 2.

Table 2: Computation of Mean and Standard Deviation on Selected Physiological Variables

Variables	Groups	Pretest		Posttest	
		$\bar{\chi}$	σ	$\bar{\chi}$	σ
Cardio Respiratory Endurance	Experimental	2429.33	115.17	2861.33	132.93
	Control	2434.67	93.42	2535.33	85.09
Vital Capacity	Experimental	2543.33	57.84	2916.67	77.15
	Control	2540.00	60.36	2526.67	52.16
Vital Index	Experimental	1477.75	98.20	1687.96	83.64
	Control	1459.21	104.31	1445.89	81.25

Analysis of covariance was used to determine the significant impact of circuit training on selected physiological variables and it is presented in table 3.

Table 3: Analysis of Covariance on Selected Physiological Variables of Circuit Training and Control Groups

Variables	Groups	Adjusted Mean	SOV	Sum of Squares	df	Mean Square	'F' ratio
Cardio Respiratory Endurance	Experimental	2863.97	B	822472.58	1	822472.58	459.879*
	Control	2532.70	W	48288.22	27	1788.45	
Vital Capacity	Experimental	2915.94	B	1131323	1	1131323	296.797*

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	Control	2527.39	W	102917.9	27	3811.78	
Vital Index	Experimental	1681.29	B	388904.4	1	388904.4	252.735*
	Control	1452.56	W	41547.14	27	1538.78	

Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21

* Significant at 0.05 level.

The findings of the study shows that significant difference existing between circuit training and control groups on cardiorespiratory endurance, vital capacity and vital index, since the obtained 'F' ratio of 459.879, 296.797 and 252.735 respectively were greater than the required table value of 4.21 for significance at 0.05 level of confidence for df of 1 and 27.

It appears that regular participation in physical exercises initiate a disruptionin systemic homoeostasis, which is followed by an adaptive phase results in the betterment of cardiorespiratory endurance, vital capacity and vital index, which might be due to the progressive loading of intensity.

The literature thoroughly supports the evidence that exercise intensity is directly related to the change in VO_2max (Gossard*et al*., 1986). Higher doses of aerobic exercise produce greater increases in VO_2max, although these improvements are not proportionately greater. Studies have shown improvement in aerobic capacity from participation in circuit weight training (Kass&Castriotta, 1994; Peterson, Miller, Quinney, & Wenger, 1988). The researches of Mehrotra*et al*. (1998) and Gautrin*et al*. (1994) were in par with the increases on vital capacity and vital index as result of physical training in this study.

Conclusions

The result of this study demonstrated that, circuit training with repeatedbouts of a combination of physical exercise has significant impact on cardiorespiratory endurance, vital capacity and vital index.

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MODERN TRENDS IN FITNESS

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Abstract
From the ancient to modern times, the nature of fitness activities has varied. We can choose any form of exercise that is suitable for our particular need. Watchers of fitness trends say that the road to better health is paved with new possibilities along with some old ones that are poised to make a comeback. Educated, certified and experienced fitness professionals; strength training; fitness programmes for older adults; exercise and weight loss; children and obesity; personal training; core training; group personal training; Zumba and other dance workouts; functional fitness; yoga; comprehensive health promotion programmes at worksite; boot-camp; outdoor activities; reaching new markets; spinning; sport-specific training; worker incentive programmes; wellness coaching; and physician referrals are among the fitness trends included in worldwide surveys. However, trends related to fitness in India could be the same or different. Hence, the present paper makes an attempt to analyze the latest fitness trends in India. It can be concluded from the analysis of data regarding recent fitness trends in India that yoga dominates the fitness activity list, followed by numerous other activities including running, Zumba and sh'bam, boot camp, boxing, kickboxing, cycling, swimming, TRX, ass-pocalypse, ballet, biking, bokwa fitness, dance-iso-bic, masala bhangra, outdoor activities, Pilates, planks, push-ups, sofa workouts, stairs Workouts, tabata training, and twerking. The body weight/ gym-specified/ strength training as well as high intensity interval training dominate the preferred workouts; followed by mixed work-outs, cross training work-outs, express work-outs, functional fitness, natural body movements, personalized training, and stay-at-home workouts. General areas that featured in the latest fitness trends in India demonstrates that the fitness is making an impact on all sections of the society be it children, women, older adults, senior citizens, worksite fitness. Fitness is becoming the lifestyle of the masses. People are doing exercise for weight-loss, combining diet with exercising; prefer sweating, making groups participate in fitness activities and wellness programmes. Technology is another area which has a high impact on the lives of people. They are using wearable technology for workout tracking and following numerous mobile friendly apps.

Keywords: fitness, India, survey, obesity;

Introduction: For centuries, the human race struggled to overcome food scarcity, disease, and a hostile environment. With the onset of the industrial revolution, the great powers understood that increasing the average body size of the population was an important social and political factor. The military and economic might of countries was critically dependent on the body size and strength of their young generations, from which soldiers and workers were drawn. Moving the body mass index (BMI) distribution of the population from the underweight range toward normality had an important impact on survival and productivity, playing a central role in the economic development of industrialized societies. Historical records from developed countries indicate that height and weight increased progressively, particularly during the 19th century. During the 20th century, as populations from better-off countries began to approach their genetic potential for longitudinal growth, they began to gain proportionally more weight than height, with the resulting increase in

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average BMI. By the year 2000, the human race reached a sort of historical landmark, when for the first time in human evolution the number of adults with excess weight surpassed the number of those who were underweight. Excess adiposity/body weight is now widely recognized as one of today's leading health threats in most countries around the world and as a major risk factor for type 2 diabetes, cardiovascular disease, and hypertension. Although obesity did not attract the attention of the mass media until recent decades, its prevalence in industrialized countries began to increase progressively early in the last century. By the 1930s, life insurance companies were already using body weight data to determine premiums, having identified an association between excess weight and premature death. In the early 1950s, Breslow proposed a direct link between the increasing prevalence of obesity and the also-increasing rates of cardiovascular disease in the US population, a theme that was reemphasized by the US government in reports in the 1960s and 1970s. Clear evidence of the alarming trend in obesity rates was provided by the regular, nationally representative surveys performed from the 1960s on. These data showed the continuing rise in obesity prevalence over the past 30 years. By the year 2000, 65 percent of the adult population had a BMI (weight/height ^{2}) above 25, and 30 percent had a BMI above 30.

Top 22 Trends

1. Wearable Technology

Topping the list is wearable technology like **fitness trackers**, pedometers and heart rate monitors. The market for these products is booming and shows no signs of slowing down; in fact, sales are expected to hit over $4 billion during 2017.But if you're buying wearable technology to lose weight, you might want to hold off. A recent study found that overweight participants in a randomized clinical trial who wore a wearable device actually lost less weight than another group who followed the same food and fitness plan without a fitness tracker. This might be because people overeat after seeing exactly how much they exercised or moved that day or the exact opposite — someone who didn't break a sweat one day might have gotten discouraged. But that doesn't mean technology isn't useful for reaching your health goals. While I wouldn't recommend wearing wireless devices beyond a short workout due to the exposure to **electromagnetic radiation**, using your Smartphone to track your workouts or how much you're eating can help you gauge patterns. If you're a data geek, you can mine through days, weeks or even months of info to notice patterns in your habits. One caveat: long-term use of wireless networks may have adverse effects on your health and increase the risk of things like oxidative stress, headaches and a decrease in cognition, while exposure to lights and technology right before bedtime can disrupt sleep patterns and decrease quality sleep. Use your judgment on how much you rely on the devices and remove them — or at least put them into airplane mode— when it's time to rest.

1. Body weight training. Yep, the secret is out. Bodyweight training is one of top exercise trends, and for good reason. With money woes still a concern for many as we enter the New Year, inexpensive fitness programs seem to be very popular. Because body weight training does not require a lot of equipment, basically you use your own body as the weights to strengthen your core muscles; it can be an inexpensive way to whip yourself into shape. This form of training can be found in most gyms and fitness clubs and many of the programs are designed to be much more than just push-ups and pull-ups.

2. High-intensity interval training. High intensity and fast-paced, this workout usually calls for short bursts of high-intensity exercise followed by a short recovery time. Due to its efficiency at burning calories and building muscles it has become a favorite in the world of fitness; some health professionals warn however that there is an increased chance of injury with this type of exercise.

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3. Educated, certified, and experienced fitness professionals. As the fitness industry continues to grow in leaps and bounds, especially here in the U.S., there has been a surge in demand for fitness professionals who are at the top of their field. More colleges and universities are now offering accreditation and certification programs for specialties in health and fitness. Maybe you can check off two new resolutions at the same time and get fit while starting a new career path.

4. Strength training. Strength training is not just a "guy" thing or just for athletes in training. All men and women and even children can benefit from building stronger bones as well as controlling their weight and increasing energy levels. This type of training includes body weight, resistance tubing, free weights and weight machines. Strength training is seeing its time in the limelight. While people, particularly women, sometimes shy away from the weight room, strength training is critical to keeping our bodies healthy, especially as we age. It helps preserve muscle mass and increase your metabolism to burn more calories even when you aren't working out. One study found that in 10 weeks, inactive adults could see an increase in lean weight of more than 3 pounds and a reduction in fat weight of nearly 4 pounds, while increasing metabolic resting rate by 7 percent.

5. Personal training. As we all know, fitness programs are not one size fits all. While your friend might love the pulsing beat and comradely of a spin class, you might have more lone wolf tendencies and prefer a more solitary form of exercise. Hiring a personal trainer to design a custom fit plan tailored to your wants and needs as well as to be your personal cheering section might be just what you need to stay on track with your resolution. This exercise trend references the amount of college students studying kinesiology, an indication that they're planning on going into health fields. But you don't have to be a college student to take on your own health "personal training." Increasing health literacy is critical to preventing health problems and managing those that might arise. Being on this site is an awesome first step. Continuing to learn more about healthy food, treating ailments through natural remedies and improving your physical fitness through exercise is key to maintaining a healthy lifestyle.

6. Exercise and weight loss. If you are trying to lose inches off your waist as well as tone your body, then programs that combine exercise and weight loss might be the best option for you. Look for programs that emphasize the important balance between healthy eating and exercise. One study found that when participants thought of an exercise as pleasant, they had increased aerobic capacity and improved their physical health. And another discovered that incorporating laughter into physical activity programs for older adults improved their mental health, aerobic endurance and confidence in their ability to exercise. So whether you enjoy yoga, **Cross fit**, **barre** or just riding your bike, enjoy it! That's an exercise trend that will never go out of style.

7. Yoga. Name-say hey to another of 2017's fitness trends. Yoga certainly isn't new, but it's just as popular as ever. And it should be because the **benefits of yoga** are vast. It helps to decrease anxiety and stress, improves sleep quality, allows blood to flow through the body better, helps digestion and so much more. In fact, practicing **yoga changes your brain**. It increases the "chill-out" neurotransmitter in your brain, a chemical that's in low supply for people who suffer from depression and anxiety. It also helps counteract chronic pain. Ready to unroll your mat? This beginner's guide to yoga can help you find a style that suits you best. Yoga in all forms continues to be a favorite in the fitness community. Could it be its ability to continually invent itself that is so attractive? Yogis can do traditional forms like Vinyasa yoga or fly high with more modern versions like aerial yoga.

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8. Fitness programs for older adults. Age is just a number right? Fitness programs designed for the 60+ crowd are a growing part of the fitness industry. If you are a baby boomer who wants to stay fit and active, but don't want to be stuck in a class with twenty-something gymnasts, there are many fitness programs that are designed with you in mind.

9. Functional fitness. In many physical therapy programs, functional fitness is used to help a patient improve balance and coordination as well as strength and endurance by repeating physical activities of everyday life.

10. Group personal training. Group training makes trying a new exercise, like spinning or boot camp, more fun. Having an experienced instructor can help keep you motivated and push you to go that extra bit. And bringing along a friend or making new ones in class has an effect, too. A little friendly competition can increase motivation to work harder, like in this exercise bike study. Participants either exercised alone, exercised with a partner or exercised with a partner and were told that test results were based on who was weakest. While the solo riders were on the bike for 10.6 minutes, the ones with a partner stayed on for 19.8 minutes. And the ones who were told their performance relied on their partner? They stayed on for double the amount of time, or 21.9 minutes. So grab a friend and get to class. Training two or three people at the same time in a small group is becoming a popular solution for those looking for more individualized attention then you would get in a larger class, but without the higher cost of one on one session with a personal trainer.

11. Worksite health promotion. With the rising cost of healthcare, 2015 will see companies offering more health and fitness programs and services to keep their employees healthy.

12. Outdoor activities. It seems the call of the outdoors will never go out of style. If you prefer feeling the sun on your face and the wind at your back, maybe outdoor activities like running, hiking or skiing might be want you to need to get the blood pulsing again.

13. Wellness coaching. Wellness coaching incorporates health promotion, disease prevention, and rehabilitation. Some personal trainers offer wellness coaching as part of their services.

14. Circuit training. Circuit training, a group fog 6 to 10 exercises that are completed in a sequence, is very similar to high-intensity training, but is performed at a lower level of intensity.

15. Core training. This type of training focuses on strengthening the muscles of the abdomen, thorax, and back by exercising the hips, lower back, and abdomen. Common equipment used includes exercise balls, BOSU balls, wobble boards, and foam rollers.

16. Sport-specific training. Many athletes look for programs that help develop their sport-specific skills like throwing in baseball to increase strength and endurance during the off season.

17. Children and exercise for the treatment/prevention of obesity. With the increasing rate of obesity especially here in the United States, a focus has been placed on programs that help children maintain healthy lifestyles. Keep your kids active in 2015.

18. Outcome measurements. No matter what fitness regimen you choose, one thing you will notice in 2015 is the emphasis on outcome measurements. Healthcare professionals will be holding themselves more accountable for their ability to produce the desired health benefits for their clients. Look for clubs and studios that track the results of their programs.

19. Worker incentive programs. This survey suggests that many more companies are considering offering incentive programs to their workers for healthy behavior change in another effort to reduce healthcare costs.

20. Boot camp. More and more men and women are favoring this military style training that includes cardiovascular, strength, endurance and flexibility drills. This is a great option if you prefer intense, highly-structured workouts.

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21. Educated and Experienced Fitness Professionals. Working with an fitness professional, like a personal trainer, can be a great way to get tailored guidance and accountability to reach your fitness goals. In fact, working with a trainer on a one-to-one basis can actually change an individual's attitude toward fitness, helping to increase their physical activity. Because there are so many personal trainers out there, it's critical to find someone who is certified in their area of expertise and understands your goals and motivations. Here's a handy list of 10 things to consider before choosing a personal trainer.

22. Exercise is Medicine. My personal motto — and the one of this site— is that food is medicine. Well, it might be time to add to that, because exercise is medicine, too. This is one of the upcoming trends I'm most excited about. The **benefits of exercise** go so much farther than how you look physically. From boosting happiness levels to reducing your risk of heart disease, exercising can help. Tossing and turning at night? Find yourself forgetting where you've placed your keys? That's right, exercise is the answer. In fact, doctors are going so far as to prescribe exercise to patients in an effort to get them moving.

Conclusion: Likewise, many people are adopting the idea of exercise as medicine, and looking for a workout catered to addressing their individual health needs. People with a sedentary lifestyle and they have hypertension, cholesterol, obesity, overweight, diabetes, cardiovascular diseases, etc. And if you look around, each day there are more people with those diseases. What is my main recommendation for them? An active lifestyle!" With smarter workouts people can now target areas of specific concern and focus on recovery or prevention. All stakeholders, including gym owners, fitness franchises, equipment and nutrition manufacturers and distributors, trainers and educational institutions, professional associations and the government should come together and catapult the industry to a stage where it can flourish. Undoubtedly, fitness industry has great potential in a country like India.

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EFFECT OF SPECIFIC TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES OF MALE HIGH SCHOOL FOOTBALL PLAYERS

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Introduction

The desire to do one's best, to excel, to attain the highest standards of performance, to be supreme in his chosen field is a worthy human ambition which leads to better standards and personal growth. Excellence in any area does not come easily. The trail is hard and steep. There are numerous obstacles to overcome and barriers to push forth. Achievement of high skills in any field, (athletics, art, surgery, science, writing or teaching) demands commitment and sacrifice. In each activity physical fitness components plays an important role. The physical fitness components such strength, speed, power, endurance and precision of movements, which are highly essential for top performance in any sports, social and spiritual components of fitness, all of which are related to each other and are mutually, inter dependent. The findings of his performance make the individual to realize and understand his position and standard.Sports specific training can help to improve strength, flexibility and stamina whereby the player can improve his performance in specific sports (Ananda Kumar, 2006). For this specific training is in need to know all about developing physical conditioning, to improve performance and skills at a particular sport, Also understanding the needs of the game at the correct pace in order to meet sports requirements. Sports specific is the new trend when it comes to strength and conditioning programs for athletes. Training that is specific to the demands of a particular sport does have merit at the higher levels, assuming the athlete is developmentally sound.

STATEMENT OF THE PROBLEM

The present study was to findout the effect of specific training on the selected physical fitness variables ofmale high school football players from Swami Shivananda higher secondary school, periyanaickenpalayam, Coimbatore.

HYPOTHESES

It was hypothesized that there may be significant differences due to specific training on the selected physical fitness variables namely speed, and agility.

SIGNIFICANCE OF THE STUDY

1. The study will be helpful to know the effect of specific training on selected physical fitness variables of high school male football players.
2. The study will be helpful to prepare training schedule to improve the effect of specific training on the selected physical fitness variables of high school male football players.
3. The study will be helpful to realize football players and coaches for their coaching purpose.

DELIMITATIONS

The following delimitations are considered for the study

1. This study is confined to thirty school male football players from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu.
2. The subjects were selected only from the age group of 11 and 14 years.
3. Only selected physical fitness variables were chosen for this study
4. The duration of the experimental period was for six weeks.

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5. The study is confined only to the selected specific training.

LIMITATIONS

The following limitations are considered for the study.

1. The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study could not be taken into consideration.
2. Hereditary, social and other psychological factors could not be controlled.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of specific training on the selected physical fitness variables ofmale high school football players. 30 subjects were selected randomly from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu. The age of the subjects ranged from 12 to 14 years. They were divided into two groups of 15 in each. One group acted as the experimental group. The experimental group was undergone the training for 8 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Specific training

DEPENDENT VARIABLES

- **PHYSICAL FITNESS VARIABLES**

1. Speed
2. Agility

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Speed	30 meter dash	In seconds
2.	Agility	4 X 10 shuttle run	In seconds

EXPERIMENTAL DESIGN

The present study is to find out the effect of specific training on the selected physical fitness variables ofmale high school football players. 30 subjects were selected randomly from Ramakrishna Mission Vidyalaya Swami Sivananda Higher Secondary School, Coimbatore, Tamilnadu. The age of the subjects ranged from 12 to 14 years. They were divided into two groups each consisting of 15 namely experimental group and control group. The experimental group underwent the specifictraining for 6 weeks. The training was given three days in a week and the training session was from 4:00 pm to 5:00 pm. The control group was not involved in any specific training. They were engaged in their usual activities. All the subjects were tested in the selected physical fitness variables namely speed and agility. The pre- test was taken before the start of resistance training and post-test was taken after 8 weeks resistance training.

TRAINING PROGRAMME

The experimental group will undergo eight weeksof specific drills training 3 days per week. Each training session was for one hour. The tests were taken before and after the training programme.

STATISTICAL TECHNIQUES

't' ratio was calculated to findout the significance difference between the mean of pre and post test of the each group.

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TABLE-II: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND'T' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN SPEED

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	5.55	0.12	0.25	0.65	12.35	2.14
Experimental post test	5.43		0.23	0.60		
Control pre test	5.65	0.04	0.35	0.91	1.43	2.14
Control post test	5.61		0.34	0.90		

***significance at 0.05 level 0f confidence**

To find out the significant difference between pre test and post testonspeed't' ratio was employed and the level of significance was set at 0.05. The experimental group on speed pre test value was 5.55 and post test value was 5.43 respectively. The mean difference value was 0.12 and speed obtained't' ratio 12.35 was greater than the table value 2.14. So it was to be significant. The control group on speed pre test value was 5.65 and post test value was 5.61 respectively. The mean difference value was 0.04 and speed obtained't' ratio was 1.43 and is lesser than table value of 2.14. So it is found to be insignificant.

Pre test and post test results of experimental group on speed are showed in figure-1

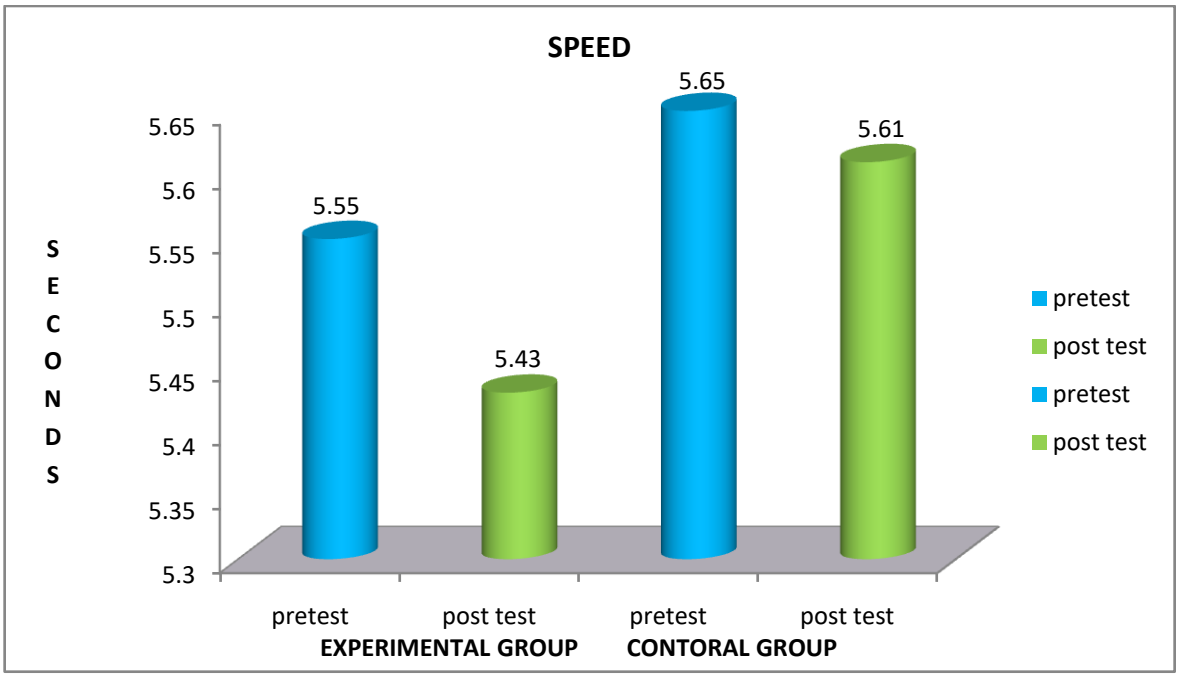

FIGURE-1: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP ANDCONTROL GROUP OF SPEED.

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TABLE-4.2: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND'T' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN AGILITY

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	18.42	0.21	0.42	0.10	12.18	2.14
Experimental post test	18.21		0.44	0.11		
Control pre test	18.53	0.03	0.67	0.17	1.83	2.14
Control post test	18.50		0.66	0.17		

***significance at 0.05 level of confidence**

To find out the significant difference between pre test and post testonagility't' ratio was employed and the level of significance was set at 0.05. The experimental group on agility pre testvalue was 18.42 and post test value was 18.21 respectively. The mean difference value was 0.21 and agility obtained't' ratio 12.18 was greater than the table value 2.14. So it was to be significant. The control group on agility pre test value was 18.53 and post test value was 18.50 respectively. The mean difference value was 0.03 and agility obtained't' ratio was 1.83 and is lesser than table value of 2.14. So it is found to be insignificant.

Pre test and post test results of experimental group on agility are showed in figure-II

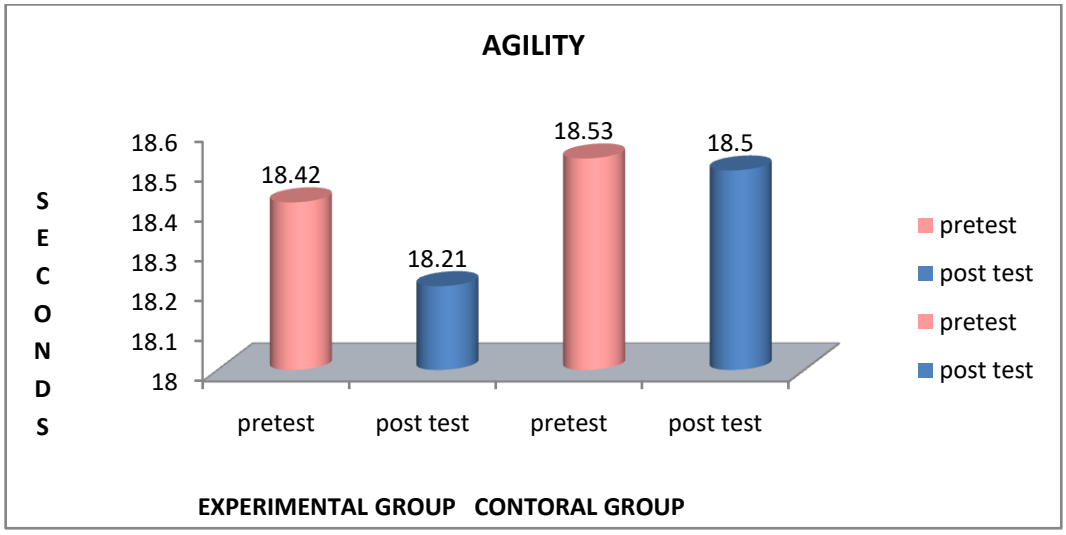

FIGURE-2: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP AND CONTROL GROUP OF AGILITY.

DISCUSSION ON FINDINGS

The result of the study shows that the specific training group had significant improvement on selected physical fitness variables namely speed and agilityof male high school football players. This may be due to the effect of specifictraining.

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CONCLUSIONS

Based on the statistical analysis and results of the study, the following conclusions are drawn.

It is concluded that effect of specific training significantly improved the physical fitness variables namely speed and agility.

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THE EFFECT OF YOGA ON HYPERTENSION

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INTRODUCTION

The incidence of blood pressure is, to a considerable extent, found to be a big bane to the Indian population that still reels under the pressure of poverty and low per-capital income rates. The Indian population living within and without the national borders still seems to be faced with the lurking danger of becoming an easy prey to what could be generally termed as Blood Pressure. Surprisingly enough, in spite of all advances in medical sciences and community health care, the estimated costs to treat these patients and the loss of revenue due to worker disability is very high. The cause or causes of arthrosclerosis and not exactly known, but there are a number of risk factors. Among them, there are the hemodynamic force of the blood stream. Diet, blood lipids and physical inactivity play an important role and the other influential factors include heredity, sex, age, race body constitution, hypertension, infection, smoking habit and emotional state, diseases like diabetes and obesity. In today's era, yogasanas has made an important place, by achieving success in various kinds of activities like sports and games, Asanas.

YOGASAN: The word yoga is derived from the Sanskrit root *yuj* meaning to bind, join, attach and yoke, to direct and concentrate one's attention on, to use and apply. It also means union or communion. It is the true union of our will with the will of god. "It thus means," says Mahadev Desai in his introduction to the Gita according to Gandhi, "The yoking of all the power of body, mind and soul to God" it means the discipline of the intellect, the mind, the emotions, the will, which that yoga presupposes; it means a poise of the soul which enables one to look at life in all its aspects evenly. According to *Swami SatyaandSaraswathi* "Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow." Regular practice of asana maintains the physical body in an optimum condition and promotes health even in an unhealthy body. Through asana practice, the dormant energy potential is released and experienced as increased confidence in all areas of life. Yoga is an ancient system of physical and psychic practice that originated during the Indus valley civilization in South Asia. The fundamental purpose of yoga is to foster harmony in the body, mind and environment. Yoga is a complete system of physical, mental, social and spiritual development. For generations, this philosophy was passed on from the master teacher to the student. The first written records of the practice of yoga appeared around 200 B.C. in *yogasutra of patanjali*. The system consisted of the eight fold path or Asthangayoga. In the west, several schools of yoga are popular and use some or all limbs of *Asthangayoga*described by *patanjali*.

BLOOD PRESSURE: Blood pressure (BP) is a force exerted by circulating blood on the walls of blood vessels, and is one of the principal vital signs. During each heartbeat, BP varies between a maximum (systolic) and a minimum (diastolic) pressure. The mean BP, due to pumping by the heart and resistance in blood vessels, decreases as the circulating blood moves away from the heart through arteries. It has its greatest decrease in the small arteries and arterioles, and continues to decrease as the blood moves through the capillaries and back to the heart through veins. Gravity, valves in veins, and pumping from contraction of skeletal muscles, are some other influences on BP at various places in the body. The term *blood pressure* usually refers to the pressure measured at a person's upper arm. It is measured on the inside of an elbow at the brachial artery,

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which is the upper arm's major blood vessel that carries blood away from the heart. A person's BP is usually expressed in terms of the systolic pressure and diastolic pressure, for example 120/80. (Klabunde, Richard 2005).

Hypertension Hypertension is a major health problem. Elevated systolic and diastolic blood pressure is associated with a higher risk. There is a one fold increase in developing these diseases when blood pressure is 140/90 mmHg (Bouchard and Despres, 1995). It is necessary for the fitness professional to also educate clients that reducing weight and lowering alcohol and salt intake may help reduce elevated blood pressure in many cases.

SYSTOLIC BLOOD PRESSURE: You have two blood pressures: the systolic that measures blood pressure when your heart contracts, and the much lower diastolic reading that measures the pressure when your heart relaxes. When your heart contracts, it pushes a huge amount of blood forward to your arteries. Your arteries are supposed to act like balloons and expand to accept the blood and prevent your blood pressure from rising too high. Having plaques in your arteries stiffens them and prevents them from expanding when your heart contracts, causing your blood pressure to rise higher than normal. The stiffer your arteries, the higher your blood pressure rises. Intense pressure on artery walls can cause damage that provides places for even more plaque to accumulate. It's a vicious circle: high blood pressure continues to cause plaque buildup, which narrows the arteries and increases blood pressure even more.

DIASTOLIC BLOOD PRESSURE Diastolic blood pressure measures the pressure in your blood vessels between heartbeats (when your heart is resting). Represented by the bottom number in a blood pressure reading, diastolic blood pressure is considered low when the blood pressure reading is below 60; a diastolic blood pressure reading higher than 90 is considered high. Lifestyle changes, such as losing weight, can help lower diastolic blood pressure.

BLOOD PRESSURE CHANGES IN TOPSY-TURVY POSTURES: Studies on eleven subjects during the maintenance of Sarvangasan showed the rise in the systolic blood pressure by 25%. In Shirshasana systolic blood pressure was found to rise by 4% to 10% and diastolic by 14 to 22%. During the five minutes maintenance period the maximum change was seen during the third minute. After reversing the asana it took one minute for the blood pressure to come back to normal level. Though the blood pressure increases in these two practices; it is much less, when compared to the effect observed in case of weight lifting where systolic blood pressure rises by 63%.

STUDIES ON THE YOGASANA : *Harinath* conducted a study to find out effects of Hatha yoga and Omkar meditation on cardio-respiratory performance, psychological profile, and melatonin secretion. For thirty healthy men in the age group of 25-35 years volunteered for the study. They were randomly divided in to two groups of 15 each. Group I subjects served as control and performed body flexibility exercises for 40 minutes and slow running for 20 minutes during morning hours and played games for 60 minutes during evening hours daily for 3 months. Group II subject's practices selected yogic asanas (postures) for 45 minutes and pranayama for 15 minutes during the morning, whereas during the evening hours these subjects performed preparatory yogic postures for 15 minutes, pranayama for 15 minutes, and meditation for 30 minutes daily, for 3 months. Orthostatic tolerance, heart rate, blood pressure, respiratory rate, dynamic lung function (such as forced vital capacity, forced expiratory volume in 1 second, forced expiratory volume percentage , peak expiratory flow rate and maximum voluntary ventilation), and psychological profile were measured before and after 3 months of yogic practices. Serial blood samples were drawn at various time intervals to study effects of these yogic practices and omkar meditation on melatonin levels. Yogic practices for 3 months resulted in an improvement

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in cardio-respiratory performance and psychological profile. The plasma melatonin also showed an increase after three months of yogic practices. The systolic blood pressure, diastolic blood pressure, mean arterial pressure, and orthostatic tolerance did not show any significant correlation with plasma melatonin. However the maximum right time melatonin levels in yoga group showed a significant correlation with well-being score. The *Framingham* study has shown that the systolic (heart contraction) blood pressure is far more important than the diastolic (relaxation) blood pressure in estimating your risk for a heart attack or stroke. Diastolic blood pressure is a weaker predictor of your susceptibility for a heart attack. Your risk is increased further if you have high blood cholesterol, sugar or insulin levels; an enlarged heart; or if you are overweight. Over time, high blood pressure can cause serious damage to your cardiovascular system, kidneys and other organs. *WB Kannel* Historic perspectives on the relative contributions of diastolic and systolic blood pressure elevation to cardiovascular risk profile. *American Heart Journal*, 1999, Vol 138, Iss 3, Part 2, Suppl. S, pp S205. A medical student checking blood pressure using a sphygmomanometer and stethoscope.

The Role of Oxygen in Yogasanas: Oxygen, like the other four substances (protein, fat, sugar and salt), is brought to the tissues by the circulation. Unlike the other foodstuffs, however, it does not enter the bloodstream through the digestive system, but through the respiratory system.

We can only breathe correctly and absorb the oxygen we need if our lungs are strong and in good working order. Not unless all the air-cells of the lungs take an active part in the breathing process can we be certain that they are in good health. Salabhasana is highly beneficial to the activity of these cells and the elasticity of the lungs. Similarly, *salabhasana* is helpful in preserving all the elasticity of the lung tissue. Strong respiratory muscles are developed by deep inhalation and exhalation exercises, such as salabhaasana and uddiyana-bandha. *Viparitakarani, sarvangasana*and*Matsyasana* keep the respiratory tract clear, so that the oxygen absorbed by the lungs is supplied in the required quantity to the tissue via the circulation.

Influence on Circulatory functions: The other system vitally connected with the supply of nourishment to the tissues is the circulatory system, because the work of carrying nutrition to the different tissues is done by the blood circulation through the human body. The circulatory system consists of the organs responsible for the circulation of blood, namely the heart, the arteries, the veins and the capillaries. Let us now examine the help yogic poses render to this circulatory system. The most important organ of the body circulation is the heart, because it is the contraction and relaxation of the heart that circulates the blood throughout the human body. The heart is made of the stronger muscular stuff, but it can always be made healthier by means of proper yogic exercises. *Bhujangasana, Shalabhasana*and*Dhunurasana* alternately exert an increased pressure on the heart and the same thing is done by the first stages of *Sarvangasana, Viparithakarani, Halasana*. This alternate increase and decrease of pressure brought about by the different Asanas promote the health of the heart and thus add to the efficiency of the circulatory system.

Influence on Respiratory Function: The fifth element of nourishment is oxygen. Like the other four elements of nourishment this elements is also carried to the tissues by the circulatory system. And as we have seen that the practice of Asanas keeps the circulatory system healthy, we feel convinced that there would be no difficulty in feeding the tissues with oxygen, one it is taken up by the blood in the necessary quantity. Proteins, fats, sugars and salts are taken by the blood current from the digestive system.

Physical and Mental Benefits of a Yogafit Workout: Physical exercise not only works our muscles but also triggers a variety of biochemical and physiological reactions. Yogafit, as a hybrid of yoga and exercise, confers a variety of physical and mental benefits and leads to improved health and vitality.

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The Benefits of YogaFit: A regular yogafit workout gives you all the benefits of a traditional yoga practice and more. Best results are achieved by practicing at least three times a week for 45 to 60 minutes each time. Here are the most common results, which can be visible very soon alter you start your yogafit practice. But remember, the longer and more consistently you practice, the more you will benefit from yogafit. Increased flexibility, Stronger muscles, Better body tone, Elongated muscles without bulk, Relaxed and clear mind,Reduced stress, Increased body awareness, Natural weight loss, Strengthened immune system,Improved posture

In addition to the benefits of a traditional yoga practice, a regular yogafit workout will also help you specifically in your athletic endeavors in the following ways:

- Helps prevent injuries by keeping your muscles supple
- Supports a more effective metabolic exchange during all physical activities by teaching better breathing patterns
- Balance unevenness of other workouts by supplying a total body, mind workout that works all muscle groups
- Increases endurance, willpower, and discipline by working not only your body but also your mind

EFFECT OF YOGIC PRACTICES ON HUMAN BODY: The scientific research work to investigate the effects of various Yogic practices on the Human Body has been going on over last six decades. The Scientific Research Department of Kaivalyadhama, Lonavla, has a major contribution in this field. Apart from this institute, number of research groups in India as well as in other parts of the world is engaged in this activity.

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EFFECT OF ISOLATED AND COMBINED STRENGTH AND ENDURANCE TRAINING ON CARDIO RESPIRATORY ENDURANCE OF KABADDI PLAYERS

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ABSTRACT

The purpose of the study is to analyze the effect of isolated and combined strength and endurance training on cardio respiratory endurance of kabaddi players. To achieve the purpose of this study, sixty men kabaddi players studying in various colleges affiliated to Acharyanagarjuna University, GunturDistrict, Andhra Pradesh, India during the academic year 2016-2017 was selected as subjects. The subjects were selected in the age group of 18 to 22 years and they were randomly assigned into four equal groups of 15 each. Experimental group-I performed strength training, experimental group-II performed endurance training, experimental group-III performed combined strength and endurance training and group-V was acted as control. The cardio respiratory endurance was selected as dependent variable. The research design of the study was random group design. The data collected from the experimental and control groups on selected dependent variable was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the four groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since, four groups were involved, whenever the obtained 'F' ratio value in the adjusted post test mean was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. It is concluded that due to the effect of isolated endurance training and combined strength and endurance training the cardio respiratory endurance of the subjects is significantly improved however, due to the effect of isolated strength training the cardio respiratory endurance of the subjects is not significantly improved. The result of the study also produced 3.36% of improvement due to strength training, 6.89% of improvement due to endurance training and 9.17% of improvement due to combined training.

Key Words: *Isolated and combined strength and endurance training, cardio respiratory endurance, kabaddi*

INTRODUCTION

In the modern competitive sports, seriousness towards work and workouts plays important role in achieving high performance in competitions. Outstanding players have been found to be more sober, disciplined, practical, and tough-minded. Competitions now a day are so tough that only those achieve high performance who trains for long hours. Kabaddi is although game requiring high physical fitness and quick reflexes. One has to work hard and tolerate mental strain besides physical stress of training. There is no place for a tender minded person in competitive kabaddi. Self-discipline and confidence are other qualities that are required to obtain high performance in kabaddi. The kabaddi players face more man-to-man combats and hence require physical and mental toughness.

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Strength training is fast becoming the most popular exercise in the world today. For centuries, strength training was primarily used only for the strengthening and conditioning of certain athletes. Even in the sports world, many players and coaches did not emphasize the importance of strength training if their particular sport did not require them to have high levels of muscular strength in order to be competitive. However, in recent years the amount of information and research on strength training has exploded. Players of all types, from the professional to the weekend enthusiast now understand the potential benefits of partaking in strength training program. The amount and form of resistance used as well as the frequency of resistance exercises are determined by specific program goals.

The focus of endurance training is to progressively overload the cardio-respiratory system and not the musculoskeletal system. In response to an endurance training program, Type I and II muscle fibers have been shown to remain the same (Bell, 2000; McCarthy, 2002) increase (Nelson, 1990) and decrease in size (Kraemer, 1995). More consistent and well documented adaptations to endurance training include increases in capillary and mitochondrial densities (Crenshaw, 1991) as well as oxidative enzyme activity (Bell, 2000; Nelson, 1990) all of which contribute to the enhanced delivery, extraction, and utilization of oxygen by skeletal muscle. Depending on the intensity of training, adaptation may occur in the central heart, lungs, and circulation or peripheral within the muscle components.

Working on strength and endurance at the same time, whether be in the same session, alternative days, alternative sessions, etc. Countless numbers of recreational workout enthusiasts complete their strength and endurance training workouts during the same training session, or within hours of one another. Many people, athletes and non-athletes, take part in a combination of resistance and endurance training. These people are expecting to experience the benefits that these two different types of training have to offer. A number of studies have shown that performing these two types of training simultaneously can be detrimental to the gains that might be made in performing one type of training alone (Bell *et al*., 2000). The researcher is felt that there is a need to confirm the beneficial effects of isolated and combined strength and endurance training on cardio-respiratory endurance of kabaddi players. Moreover, very little research had been done on kabaddi players, which motivated the investigator to take up the study.

METHODOLOGY

Subjects and Variables

To achieve the purpose of this study, Sixty men kabaddi players studying in various colleges affiliated to Acharya Nagarjuna University, Guntur District, Andhra Pradesh, India during the academic year 2016-2017 was selected as subjects. The subjects were selected in the age group of 18 to 22 years and they were randomly assigned intofourequalgroupsof15each.Experimental group-I performed strength training, experimental group-II performed endurance training, experimental group-III performed combined strength and endurance training and group-V was acted as control. The cardio respiratory endurance was selected as dependent variables for the study and it was assessed by Cooper's 12 minutes run and walk test.

Training Protocol

Training programme will be administered to the kabaddi players for twelve weeks with three training units per week. Theexperimental group-I performed strength training, group-II performed endurance training, and group-III performed combined strength and endurance training. The strength training program was a total body workout consisting of 3 sets of 6-10 repetitions on 5 exercises that trained all the major muscle groups. A percentage of each subject's one-repetition maximum for each exercise was used to determine the intensity of each week. The intensity and number of repetitions performed for each exercise was progressively increased.

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The endurance training consists of 20-40 minutes running with 65- 80% HRR. The running intensity was determined by a percentage of heart rate reserve (HRR). The intensity was increased as training progressed. Combined strength and endurance training group performed strength training during every odd numbered week and endurance training during every even numbered week.

Collection of the Data

The data on the selected biomotor and psychomotor variables were collected prior to the commencement of experiment (pre test) and after twelve weeks of training period (post test). Both the pre and post tests were administered under identical conditions, with same apparatus, testing personal and testing procedures.

Statistical Technique

The data collected from the experimental and control groups on selected dependent variables was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the four groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since, four groups were involved, whenever the obtained 'F' ratio value in the adjusted post test mean was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. The level of confidence is fixed at 0.05 for significance.

RESULT

The descriptive analysis of the data showing mean and standard deviation, range, mean differences, 't' ratio and percentage of improvement on cardio respiratory endurance of experimental groups are presented in table-I.

Table – I:**Descriptive Analysis of the Pre and Post Test Data and 'T' Ratio on Cardio Respiratory Endurance of Experimental Groups**

Group	Test	Mean	Standard Deviation	Range	MeanDifferences	't'ratio	Percentage of Changes
Strength Training	Pre test	2066.00	148.60	460.00	69.33	10.10*	3.36
	Post test	2135.30	137.21	440.00			
Endurance Training	Pre test	2108.70	111.86	360.00	145.30	10.81*	6.89
	Post test	2254.00	99.12	310.00			
Combined Training	Pre test	2122.00	118.76	380.00	194.60	14.83*	9.17
	Post test	3216.70	89.34	260.00			
Control Group	Pre test	2067.30	187.22	600.00	24.70	0.97	1.19
	Post test	2092.00	214.42	650.00			

Table t-ratio at 0.05 level of confidence for 14 (df) =2.15

**Significant*

Table-I shows that the mean, standard deviation, range and mean difference values of the pre and post test data collected from the experimental group on cardio respiratory endurance. Further, the collected data was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post data. The obtained 't' values of strength training, endurance training and combined training groups

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are 10.10, 10.81 and 14.83 respectively which are greater than the required table value of 2.15 for significance at 0.05 level for 14 degrees of freedom. It revealed that significant differences existed between the pre and post test means of experimental groups on cardio respiratory endurance. However, the obtained 't' values of control groups is 0.97 which is lesser than the required table value of 2.15 for significance at 0.05 level for 14 degrees of freedom. It revealed that no significant differences existed between the pre and post test means of control group on cardio respiratory endurance.

The pre and post test data collected from the experimental and control groups on cardio respiratory endurance is statistically analyzed by using analysis of covariance and the results are presented in table–II.

Table – II:**Analysis of Covariance on Cardio Respiratory Endurance of Experimental and Control Groups**

	Strength Training Group	Endurance Training Group	Combined Training Group	Control Group	SoV	Sum of Squares	df	Mean squares	'F' ratio
Pretest Mean SD	2066.00	2108.70	2122.00	2067.30	B	36873.33	3	12291.11	0.59
	148.60	111.86	118.76	187.22	W	1172466.67	56	20936.91	
Posttest Mean SD	2135.30	2254.00	2316.70	2092.00	B	485578.33	3	161859.44	7.84*
	137.21	99.12	89.34	214.42	W	1156506.68	56	20651.91	
Adjusted Posttest Mean	2158.00	2238.00	2289.00	2113.00	B	271657.19	3	90552.40	23.81*
					W	209219.14	55	3803.98	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 3 and 55 is 2.77 and degree of freedom 3 and 56 is 2.77)

**Significant at .05 level of confidence*

Table-II shows that the adjusted post-test means on cardio respiratory endurance of strength training, endurance training, combined training and control groups are 2158.00, 2238.00, 2289.00 and 2113.00 respectively. The obtained 'F' value of 23.81 on cardio respiratory endurance is greater than the required table value of 2.77 of 3, 55 df at 0.05 level of confidence. Hence, it is concluded that significant differences exist between the adjusted post test means of strength training, endurance training, combined training and control groups on cardio respiratory endurance.

Since, the obtained 'F' value in the adjusted post test means is found to be significant, the Scheffe's test is applied as post hoc test to find out the paired mean difference, and it is presented in table-III.

Table –III:**Scheffe'sPost Hoc Test for the Differences among Paired Means of Experimental and Control Groups onCardio Respiratory Endurance**

Strength Training Group	Endurance Training Group	Combined Training Group	Control Group	Mean Difference	Confidence Interval
2158.00	2238.00			80.00*	64.92

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2158.00		2289.00		131.00*	64.92
2158.00			2113.00	45.00	64.92
	2238.00	2289.00		51.00	64.92
	2238.00		2113.00	125.00*	64.92
		2289.00	2113.00	176.00*	64.92

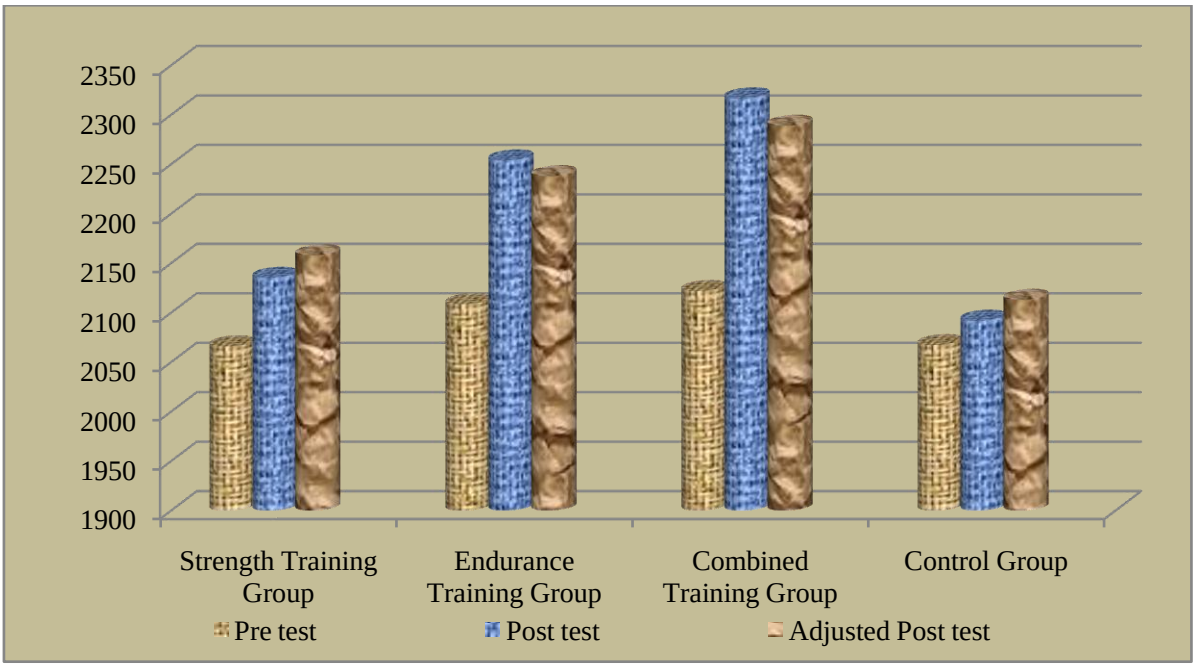
**Significant at .05 level*

As shown in table-III the Scheffe's post hoc analysis proved that significant mean differences existed between strength and endurance training groups, strength and combined training groups, endurance training and control groups, combined training and control groups on cardio respiratory endurance since, the mean differences 80.00, 131.00, 125.00 and 176.00 are higher than the confident interval value of 64.92 at 0.05 level of significance. However, there was no significant difference exist between strength training and control groups, endurance and combined training groups,, since, the mean differences 45.00 and 51.00 are lesser than the confident interval value of 64.92 at 0 .05 level of significance.

Hence, it is concluded that due to the effect of isolated endurance training and combined strength and endurance training the cardio respiratory endurance of the subjects is significantly improved however, due to the effect of isolated strength training the cardio respiratory endurance of the subjects is not significantly improved. It is also concluded that combined training and isolated endurance training are significantly better than isolated strength training in improving cardio respiratory endurance however, there is no significant differences found between combined training and isolated endurance training.

The pre, post and adjusted post test mean values of experimental and control groups on cardio respiratory endurance is graphically represented in figure-I

Figure – I: **Diagram Showing the Mean Values on Cardio Respiratory Endurance of Experimental and Control Groups**



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DISCUSSION

The result of the study indicates that the cardio respiratory endurance of the experimental group improved significantly by underwent the twelve weeks of isolated and combined strength and endurance training. These results are conformity with the following findings. Concurrent training improves endurance performance, both with trained cyclists (Paton & Hopkins, 2005) and other trained athletes (Hoff *et al*., 1999; Johnston *et al*., 1997; Millet *et al*., 2002; Paavolainen*et al*., 1999). Paton and Hopkins (2005) found that 1- and 4-km time trial performance increased could have also been a result of high intensity interval training being employed in addition to resistance training. It has been well documented by Senthil*et al*., (2011) that the effects of concurrent strength and endurance training significantly improved the Cardio-respiratory endurance when compared with control group.

According to the NSCA, including strength training in an endurance training program can improve the ability of the heart, lungs and circulatory system to perform under conditions of high pressure and force production (NSCA, 2000). Hickson, (1980) found that strength training did increase the time to exhaustion in high-intensity cycling and running. Therefore, Hickson (1980) concluded, strength training might be beneficial in endurance events where a "sprint finish" was needed.

Combined training lead to increases in aerobic capacity might be related to the increase in fat-free mass and the muscle hypertrophy elicited by strength training and potentially to the short rest periods and high intensity of the strength program. The progressions were made without changes in VO_2max, suggesting increases in muscle power and running economy. Strength training may decrease ground contact time by improving the stretch-shortening cycle, thus enhancing running economy (Paavolainen*et al*., 1999). Improvements in endurance training can occur with some type of strength training through benefits garnered from neuromuscular characteristics, running economy or anaerobic capacity (Jung, 2003).

CONCLUSION

The result of the study revealed that due to the effect of isolated endurance training and combined strength and endurance training the cardio respiratory endurance of the subjects is significantly improved however, due to the effect of isolated strength training the cardio respiratory endurance of the subjects is not significantly improved. It is also concluded that combined training and isolated endurance training are significantly better than isolated strength training in improving cardio respiratory endurance however, there is no significant differences found between combined training and isolated endurance training. The result of the study also produced 3.36% of improvement due to strength training, 6.89% of improvement due to endurance training and 9.17% of improvement due to combined training.Hence, in order to maintain optimal training levels and take advantage of the potential benefits, it is suggested that combined strength and endurance training sessions not be missed by kabaddi players.

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SIGNIFICANCE OF TRADITIONAL SPORTS WITH A FITNESS COMPONENT

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A sedentary lifestyle is related to health problems and may diminish children's personal development. Nevertheless, even though the attainment of appropriate physical fitness levelsby participating in physical activities and organized sports has been shown to be beneficial for health, reducing morbidity and mortality. Participation physical activities has diminished over the last few decades. This decrease is noteworthy in primary school students who are also able to benefit from physical activities.

Because physical activities in childhood predict physical activities in adulthood and along with physical education help establish a healthy lifestyle. It is important to foster elementary school students' interest in them. Appropriate physical environments, such as the availability and effects of traditional games.Condition of sport facilities have been related to children's physical activity levels during school year. Among the multiple motor skills, change of direction ability while spring over ap re-planned course is considered a primordial quality in many physical activities and a prerequisite for successful participation in sports. Furthermore, it is considered a multifactorial fitness attribute of team sport players. It does notimplyany decision making task, but is a necessary component, along with quickness and choice reaction, for the development of agility. The change of direction ability can be tested with several different reliable tests such as the agility ladder, hexagon test, tests and shuttle run.

Since at a younger school age motricity exercise programs have been shown to have an influence on the children's basic motor skills, the programs to improve the Change of direction ability in elementary school children could have a beneficial effect on these basic motor skills.

However, despite the wide utilization of traditional games in physical education classes, a few studies have assessed theeffects of intervention programs, based on traditional games, on the motor skills of the students. The effect of intervention programs based on applied games an abdominal muscle strength and aerobic capacity has been studies previously. Education students, and to assess the effects of this intervention program according to their age and gender factors.

Have you given thought or begun to investigate how you can infuse more fitness activities into your traditional physical education classes, wellness activities, or recreational sessions? There is a powerful undercurrent right now in India to incorporate fitness pursuits into physical education classes. With all of the focus appropriately on enhancing and improving fitness in India, most professional physical educators are striving to add fitness components to the more traditional sport activities typically taught in PE classes. Are you asking, "How can I add more fitness to my PE classes without compromising my traditional activities?" Many Wellness and PE teachers have been trying to figure out how to do this, and thankfully many teachers have already figured out ways to do just that. With all of the nutritional hazards, sedentary trends, and climbing BMI's in our nation, it is more important than ever that we help our children be more active and fit. Here are a few specific ways that creative professionals have incorporated fitness into their current PE and Wellness classes:

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- **"Perpetual practice"** is a term we use to add activity to traditional sport classes. Simply put, take the practice session and skill sessions and add a perpetual movement component to them. Take every opportunity to morph the static and "standing around and waiting" practice lines into constantly moving practice lines. Students should no longer be standing around waiting to practice; they should be jogging and moving throughout the entire session. It takes a little more planning and a little more set up; however, it is worth the effort. Just about every practice session in every traditional sport can be adjusted to be constantly moving if you give it some thought and preparation. Keeping kids moving while they practice skills can be fun fitness if you plan for it.
- Incorporate **"Hybrid" Traditional Sports**. How you ask? Traditional sports such as soccer and basketball have a fitness component internally built in to them. However, you can add a perpetual movement component to traditional sports such askho-kho, kabaddi, football, volleyball, and most others by adding modified versions. Football and most sports, can be played in a similar fashion to ultimate Frisbee or Speedball, where the football can be run, thrown, and defended but in a non-stop format. You are still utilizing the major rules and skills, but in a manner of perpetual movement. Try it, the kids love it!
- **Utilize "Multi-Sports**." Having already mentioned Speedball and Ultimate Frisbee, these fitness-skill activities and others like them are perfect examples of incorporating activities that require multiple skill sets from traditional sports into fun fitness games for PE/Wellness classes. These Multi-sport activities have traditional skill practice embedded within them already, but more importantly host a fitness and constant movement foundation.

The above mentioned methods and standard practices may help to promote physical fitness awareness among school going children at elementary level where Physical Education activities neglected and can be improved.

Climbing, walking, running, throwing natural faculties of each and every individual, mingled with minor games activities, visualizes the significance of sports and games activities influence on many young children at early stages of children. They can perform day to day responsibilities with ease and comfort. The active participation also gives a chance to concentrate more on their studies and meet their family responsibilities, society in general help to build a strong healthy nation ultimately serves the aim and objective of physical education as a whole.

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MODERN TRENDS IN FITNESS

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INTRODUCTION:

Physical fitness is a state of health and wellbeing and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition moderate-vigorous physical exercise and sufficient rest.

Before the industrial revolution, *fitness* was defined as the capacity to carry out the day's activities without undue fatigue. However, with automation and changes in lifestyles *physical fitness* is now considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypokinetic diseases, and to meet emergency situations.

MODERN TRENDS IN FITNESS:

1. Wearable technology

Fitness trackers and smartwatches have been hot holiday gifts for the last few yearsand in fact, it will only get bigger. "In past years, there were questions about the accuracy of this technology," "But brands have upped their games and the especially accurate wearables have kept this trend around. "Today's wearables track distance, and provide heart rate readings, GPS route tracking, move reminders, and so much more.

2. Body weight training

It's easy to see why no-equipment workouts are so popular: They're relatively easy to learn, they can be modified to suit any ability level, and they can be done just about anywhere. Pushups and pull-ups are classic bodyweight moves, but there are plenty more to choose from, like squats, lunges and planks just to name a few.

3. HIIT (High Intensity Interval Training)

HIIT's helps you torch calories fast by alternating quick bursts of high-intensity exercise with short rest periods. It can be found in all types of workouts, from Pilates to CrossFit and boot camp classes. "High profile fitness companies are huge proponents of this form of exercise,"To try a high intensity interval training workout yourself, spend 20 to 30 minutes total combining repeated shorts bursts of work with short break periods, like 45 seconds of burpees with 15 seconds of rest followed by 45 seconds of squats.

4. Educated, certified, and experienced fitness professionals

The number of people who want to become personal trainers keeps growing, and they have more options than ever to earn accreditation. "Overall, people who work in the fitness industry are much more accountable and professional than previously," Not only is there continued growth in college and university programs, but there are more than 250 third-party certification organizations committed to teaching personal trainer's best practices. As for the future of personal trainers and fitness professionals, the U.S. Department of Labor Bureau of Labor Statistics predicts these occupations to only increase in popularity, with employment of fitness professionals to rise 8% between 2014 and 2024.

5. Strength training

Gone are the days when the biggest fitness buffs out there stuck to cardio. Today, they know they can't miss strength training's science-backed benefits, such as, building muscle mass, and protecting against diabetes,

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back pain, and more. Plus, a growing number of women have come to realize that lifting weights won't necessarily make them bulky, and in fact will help them burn more fat and boost metabolism

6. Exercise Is Medicine

Regular exercise lowers your risk of heart disease, stroke, cancer, dementia, and other chronic diseases, and serves as a powerful stress-reducer and mood-booster. That's why the ACSM and the American Medical Association co-launched Exercise Is Medicine, a global movement that encourages physicians to refer patients to fitness professionals in their communities, and likewise, encourages fitness professionals to make connections with physicians. With health care costs on the rise, and with the future of the U.S. health insurance industry uncertain, using exercise as a preventive health tool is perhaps more important than ever.

7. Yoga

Yoga has been around for thousands of years and has been a modern fitness trend for at least a decade, so how does it continue to be so popular? ACSM notes that while traditional Ashtanga, Hatha, and Vinyasa classes are readily available, fitness pros are also constantly finding new ways to reinvent yoga

8. Personal training

Personal training is a perennial trend and not much has changed about it over the years—these professionals generally provide one-on-one sessions that provide a more immersive and personalized experience for fitness seekers. But one important shift is happening in the industry: More education. A growing number of fitness professionals are seeking out formal education in kinesiology and exercise science, and credentialing is becoming more important to the facilities that employ them.

9. Exercise and weight loss

Achieving a healthy weight will never go out of style, and a healthy diet combined with regular exercise is the best way to reach your weight loss goal. In fact, using fitness to shed fat has appeared on the ACSM's annual list since the survey's inaugural year in 2006. "Most of the well-publicized diet plans integrate exercise in addition to the daily routine of providing prepared meals to their clients," says the survey.

10. Fitness programs for older adults

Baby Boomers ushered in an unprecedented fitness revolution back in the '80s, and now, they're reaching retirement age and still enjoying the perks of physical activity, the survey suggests. More businesses are tailoring classes to better serve this aging population. "Even the frail elderly can improve their balance and ability to perform activities of daily living when given appropriate functional fitness program activities," the survey says.

11. Functional fitness

Functional training gives you the type of strength that really matters: the kind that lets you move furniture, lift a suitcase into an overhead bin, or carry your toddler. In other words, it improves your coordination, balance, force, power, and endurance and helps enhance your ability to perform normal daily activities.

12. Group personal training

This trend mixes the effectiveness of a one-on-one personal trainer with the economic sensibilities of a group class. Between two and four people can elect to use a group personal trainer, who can focus on this small group while not charging the same high prices they would for a purely individual session.

13. Wellness coaching

Health and wellness Coaching focuses on the more mental aspects of wellness, like goal-setting. These coaches provide support and encouragement for clients who want to meet certain goals in their health, like

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participating in rehabilitation or disease prevention. Recently, personal trainers have implemented the techniques of wellness coaches into their fitness practices, blending the two trends into one.

14. Worksite health promotion

Companies are beginning to realize that a healthy employee is a happy, more productive employee—and that creating programs and services that promote positive behaviors like working out, quitting smoking, and losing weight ultimately controls rising health care costs. If your company already offers things on-site yoga, gym reimbursement, or Weight Watchers, ACSM predicts you'll see more of that in 2017.

15. Smartphone exercise apps

Fitness smartphone apps will continue to be trendy in 2017. Whether you're looking for meal planning help or programs that let you work out in your own home, there's probably an app out there for you. Like wearables, these apps have been questioned for their accuracy, but younger gym-goers and fitness lovers don't seem to mind. It's projected that as these apps become more accurate, usage will rise too.

16. Circuit training

While like HIIT, the survey defines circuit training as a lower-intensity option when compared to its non-stop work counterpart. Typically, 10 exercises are chosen and completed one after another in a circuit with rest between each exercise. Then, the circuit is repeated. For beginners who want to get in a workout but find high-intensity interval training intimidating, circuit training could be the answer

17. Flexibility and mobility rollers

Stretching before and after a workout has been considered useful for some time now, but foam rollers, which offer more deep-tissue massage action, have become popular in the last few years. These tools, which come in smooth or raised-bump cylinders, improve circulation and relieve muscle tension.

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BETTER HEALTH AND FITNESS MANAGEMENT THROUGH PHYSICAL EDUCATION

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ABSTRACT

If health is defined 'as a state of complete physical, mental and social well being and not merely the absence of disease or infirmity' it is only possible through physical education. It helps in developing physical & social skills, mental wellness, self discipline and stress reduction. It also strengthens the relationships, improves self-confidence & self-esteem and ultimately leads to a healthy life style. Over a period of time physical education has been given a low priority for various reasons and this resulted in lowering the standards of physical fitness and general health of the public. Now, it is time to propagate the importance of physical education in younger generation and other groups of general public so that necessary physical activity be carried out with latest technologies along with a intake of proper balanced diet for a positive and healthy life styles. In this paper we enumerate the advantages of physical education and factors that revolve around it.

1. INTRODUCTION

In India physical education has been an integral part of its education curriculum since ages.Vedic period had a rich tradition of sports and games though mainly played for maintaining physical fitness. In Indus Valley Civilization the weapons that were involved in battles and hunting were part of the physical fitness events. Physical education develops physical skills like sensory and motor skills, improves hand and eye coordination, cardio vascular health, flexibility and strength. Nowadays lot of educational institutions had to cut back on physical education due to financial constraints and also to raise the test scores of students. Also, with the invention of modern gadgets like computers, video games, Television, electronic devices, mobiles and whatsapp messages the life has become more of static nature and mobility curtailed to a greater extent thereby effecting physical fitness.

2. BENEFITS OF PHYSICAL EDUCATION

a) ***To develop Physical Skills:*** The development of healthy young bodies is the major benefit of physical education. A good programme of fitness includes activities of cardiovascular work that improves coordination, flexibility and strength apart from reducing obesity. Physical education is essential in enhancing reflexes and motor skills. The improved hand-eye coordination as well as good movement of the body helps in developing a healthy overall posture.

b) ***To Improve Social Skills:*** People who are exposed to various types of sports develop team work, sportsmanship and other social skills. Sports give young people an opportunity to go out and make new friends. Sooner or later they work together for a common goal through team work. Developing social skills will be good for children throughout their lives in both professional and personal endeavours.

c) ***Better Performance in Academics:*** Physical education also promotes healthy minds. Improved academic performance is the result of scattered physical activities throughout the day which improves concentration ability. With increased concentration abilities, students will get engaged in problem solving activities and focus on academic tasks.

d) ***Promotes Healthy Lifestyle:*** Peer pressure, expectations of family members, part time jobs, extra work loads, achievement of targets, heavy homework and curriculum etc., are causing lot of stress and work

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involvement on the people at academic institutions and work places. However, this stress can be relieved if one participates in recreational activities and sports as well as other forms of physical fitness programmes. Classes in physical education teach students about healthy routines and health-related fitness. Physical exercises also lower the feelings of depression and anxiety and provides people with emotional benefits. Study reveals that muscles, joints and bones are stronger in people who regularly exercise.

e) ***Physical Fitness Increases Self-Esteem****:* Students who go through the physical education regularly experienced an increase in academic performance, stress management, weight control, social development and self-esteem. Physical education provides positive influence on student's self-esteem, character and personality. It also enhances communication and other required skills to cooperate and get along with other people of varying personalities and ethnic backgrounds.

f) ***Life skills:*** Physicaleducation provide a chance to people to learn, how to keep themselves healthy with skills that last their entire lives. It also helps students to improve their mood and motivates them to excel in various fields. The alarming trend of obesity can be reversed by introducing physical education at academic institutions and work places.

3. **SPORTS AND GAMES FOR HEALTH**

The chief object of sports and games is, of course, body exercise. It is rightly said that, "A sound body has a sound mind." Therefore, healthy body is essential for success in life. To keep healthy, one must take an active interest in sports and games. The great advantage of sports is that they combine exercise with thrill, excitement and sensation. Hockey, football, cricket, tennis, badminton, rowing, swimming etc., not only give exercise to body parts but also provide a good deal of excitement and entertainment. Thus games and sports play an important role in physical and mental development.

4. **PSYCHOLOGICAL WELL BEING**

Well being is a concept that encompasses a well-rounded, balanced and comprehensive experience of life. It includes health in social, physical, mental, emotional, career and spiritual domains. When things aren't going right in any of these areas we may experience greater stress, worry and anxiety. In such cases, Physical activity becomes an outlet for releasing stress, tension & anxiety and facilitates emotional stability and resilience.

5. **WOMEN AND FITNESS**

At present, women in India face multitude of fitness problems which ultimately result in poor health. The women generally suffer from malnutrition, cardiovascular problems, mental health, reproductive health and cancer (breast etc). As per the research there is a strong evidence that regular physical activity can lower risk of heart diseases, stroke, high blood pressure, diabetes, metabolic syndrome, breast cancer and depression. Regular activity can help prevent unhealthy weight gain and also help with weight loss. In India especially after child birth the women put on lot of weight because of lack of physical activities. Regular physical activity can help in preventing weight gain as well as weight loss. The women must be exposed to aerobics, muscle and bone strengthening exercises at least 3 times in a week.

6. **ROLE OF HEALTH AND FITNESS CLUBS**

A health club (also known as fitness club, fitness centre, health spa and commonly known as gym) is a place that houses exercise equipment for the purpose of physical exercise. The facilities and services offered by these health club includes, Main work out area with weights and exercise machines, Cardiovascular training related equipment, group exercise classes, sports facilities including swimming etc., and personal training. Other facilities like sauna, steam room, yoga, martial arts and aqua aerobics are being offered in modern health clubs. These clubs play an important role in physical education as certified fitness instructors are

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accessible to members for training/fitness/nutrition/health advice and consultation. But these clubs charge hefty fees which a common man can't afford. Therefore, it is the responsibility of govt to establish such health centres in the community halls so that they are accessible for everyone.

7. **USING TECHNOLOGY TO PROMOTE FITNESS**

Technology is a double-edged sword. Computers, for example contribute to sedentary leisure-time behaviours. On the other hand, technology has been used to promote physical activity and change exercise behaviour. For years, pedometers, accelerometers, heart rate monitors have been used as motivational tools. Newer technologies and approaches being used to promote physical activity include global positioning system, Geographic Information System, Interactive Video Games and Persuasive Technology.

8. **PHYSICAL THERAPY**

Physical therapy helps a patient to restore the use of muscles, bones and nervous system through the use of heat, cold, massage, whirlpool baths, ultra sound, exercises and other physical techniques. The physical education provides deep insight into various therapies used for rehabilitation.

9. **FITNESS, NUTRITION AND BALANCED DIET**

Small changes in the diet plan make people physically fit and healthy. Appropriate nutrients and balanced diet are essential to lead a healthy life. Some of the healthy eating goals include, taking more fruits & vegetables, eating whole grain food articles, consuming low fat milk, taking lean protein foods, reducing sodium intake, consumption of more sea food, avoiding sugar syrups and cutting on solid fats.

10. **FOLK GAMES AND FITNESS**

A large number of folk games have been played right from many centuries. The games like kabaddi, goli, kho-kho, gillidanda, kite flying, camel and boat races, wrestling, hopscotch and many other indoor games are the popular folk sports of India which still exists. These folk sports act as learning aids. They teach us many things while playing like to learn to win & loose, develop sensory skills, count, add, improve motor skills, identify colours, improve hand-eye coordination and finally to have fun. These folk games help immensely to build speed, stamina and strength especially in young children.

11. **CONCLUSION**

For decades, physical education has been in vogue in academic institutions and public meeting places like community halls etc., However, over a period of time the importance of this aspect has been lowered because of various reasons like economy constraints, increased stress on academics, non availability of play fields, lack of interest from Govt and many other contributing factors. Quality physical education programmes are needed in academic institutions and public community halls to increase the physical competence, health related fitness, self responsibility, obesity reduction, stress reduction, connectivity and to lead a positive life style. Now, time has come to leave the sedentary life and spearhead the campaign of physical fitness with the motto 'Let's Move'

Therefore, the need of hour is to spread the physical education to all groups and levels of people through the efforts of academic institutions, government agencies and NGOs.

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THE ROLE OF HEALTH AND FITNESS CLUBS

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ABSTRCT
Physical exercise helps your to achieve wellness. It is part of healthy living. Anybody interested in natural health should regularly participate in moderate forms of physical exercise, like fitness walking. An active lifestyle is even better than physical exercise in improving your natural health and fitness. Physical exercise helps you to achieve wellness. It is part of healthy living. Anybody interested in natural health should regularly participate in moderate forms of physical exercise, like fitness walking. An active lifestyle is even better than physical exercise in improving your natural health and fitness.
KEYWORDS: Primary Components of Fitness - Secondary Components of Fitness, Health and Wellness, Benefits of Physical Activity, Activity Guidelines

"Fitness – If it came in a bottle,
Everybody would have a great body" Cher.

Primary Components of Fitness
The four primary components (also known as the components of health related fitness) that are important to improved physical health are as follows:
• **Cardio respiratory capacity** is the ability of the body to take in oxygen (respiration), deliver it to the cells (circulation), and use it at the cellular level to create energy (bioenergetics) for physical work (activity). In fitness, we also refer to cardio respiratory capacity as aerobic capacity. This capacity includes aerobic endurance (how long), aerobic strength (how hard), and aerobic power (how fast). Some of the long-term adaptations of cardio respiratory training are: decreased resting heart rate, decreased risk of cardiovascular disease, improved endurance, increased stroke volume and cardiac output.
• **Muscular capacity** refers to the spectrum of muscular capability. This includes muscular endurance (i.e., the ability to apply force over a long period of time or to complete repeated muscle contractions); muscular strength (i.e., the ability to generate force, or the maximum amount of force that a muscle can exert in a single contraction); and muscular power (i.e., the ability to generate strength in an explosive way). Some of the long-term adaptations of improving muscular capacity are increased strength, improved muscular endurance, increased basal metabolic rate, improved joint strength, and overall posture.
• **Flexibility** is the range of movement or amount of motion that a joint is capable of performing. Each joint has a different amount of flexibility. Some of the long-term adaptations of improved flexibility are decreased risk of injury, improved range of motion, improved bodily movements, and improved posture.
• **Body composition** is the proportion of fat-free mass (muscle, bone, blood, organs, and fluids) to fat mass (adipose tissue deposited under the skin and around organs). Some of the long-term adaptations of improving body composition are decreased risk of cardiovascular disease, improved basal metabolic rate, improved bodily function, and improved BMI.
Secondary Components of Fitness

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The secondary components of fitness (also known as the components of performance based fitness) are involved in all physical activity and are necessary for daily functioning. Athletes experience different levels of success depending on how well these secondary fitness components are developed. Although the primary components of fitness are thought to be the most important, we should not ignore the secondary components because of their importance in the completion of daily tasks. The secondary components include the following.

- **Balance** is the ability to maintain a specific body position in either a stationary or dynamic (moving) situation.
- **Coordination** is the ability to use all body parts together to produce smooth and fluid motion.
- **Agility** is the ability to change direction quickly.
- **Reaction time** is the time required to respond to a specific stimulus.
- **Speed** is the ability to move rapidly. Speed is also known as velocity (rate of motion).
- **Power** is the product of strength and speed. Power is also known as explosive strength.
- **Mental capability** is the ability to concentrate during exercise to improve training effects as well as the ability to relax and enjoy the psychological benefits of activity (endorphins).

Health and Wellness

Health is a dynamic process because it is always changing. We all have times of good health, times of sickness, and maybe even times of serious illness. As our lifestyles change, so does our level of health.

Those of us who participate in regular physical activity do so partly to improve the current and future level of our health. We strive toward an optimal state of well-being. As our lifestyle improves, our health also improves and we experience less disease and sickness. When most people are asked what it means to be healthy, they normally respond with the four components of fitness mentioned earlier (cardiorespiratory ability, muscular ability, flexibility, and body composition). Although these components are a critical part of being healthy, they are not the only contributing factors. Physical health is only one aspect of our overall health.

The other components of health (Greenberg, 2004, p. 7) that are just as important as physical health include the following:

- **Social health**-The ability to interact well with people and the environment and to have satisfying personal relationships.
- **Mental health**-The ability to learn and grow intellectually. Life experiences as well as more formal structures (e.g., school) enhance mental health.
- **Emotional health**-The ability to control emotions so that you feel comfortable expressing them and can express them appropriately.
- **Spiritual health**-A belief in some unifying force. It varies from person to person but has the concept of faith at its core.

Wellness is the search for enhanced quality of life, personal growth, and potential through positive lifestyle behaviours and attitudes. If we take responsibility for our own health and well-being, we can improve our health on a daily basis. Certain factors influence our state of wellness, including nutrition, physical activity, stress-coping methods, good relationships, and career success.

Each day we work toward maximizing our level of health and wellness to live long, full, and healthy lives. The pursuit of health, personal growth, and improved quality of life relies on living a balanced life. To achieve balance, we need to care for our mind, body, and spirit.

If any of these three areas is consistently lacking or forgotten about, we will not be at our optimal level of health. We are constantly challenged with balancing each of these three areas throughout life.

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As fitness professionals, we have a responsibility to guide and motivate others to improve their level of health and wellness. We can promote a holistic approach to health (mind, body, and spirit), not just encourage physical activity. As good role models, we should demonstrate positive health behaviours that assist in improving our own health and the health of others. If our focus is strictly on the physical benefits of exercise, we are doing a disservice to our clients and we are not fulfilling our professional obligation.

Benefits of Physical Activity

As fitness professionals, we spend a great deal of time inspiring and assisting others in their pursuit of improved health. Education is an important aspect of this. We must promote the benefits of regular activity and help people understand why they should be active.

Figure 1.2 will help you educate your clients about the benefits of activity and why each of these benefits is important to long-term health.

Activity Guidelines

Health Canada introduced Canada's Physical Activity Guide to Healthy Active Living to help Canadians make wise choices about physical activity as a way to improve health. Scientists say you should accumulate 60 minutes of physical activity every day to stay healthy or improve health. The recommendations in the Physical Activity Guide are as follows:

• Endurance-On 4 to 7 days a week, perform continuous activity for your heart, lungs, and circulatory system. Time required for improvements depends on effort.

• Flexibility-On 4 to 7 days a week, perform gentle reaching, bending, and stretching to keep muscles relaxed and joints mobile.

• Strength-On 2 to 4 days a week, perform resistance exercise to strengthen muscles and bones and improve posture.

The American College of Sports Medicine (ACSM) has also developed activity guidelines for improving health:

• Perform 30 minutes or more of moderate-intensity physical activity on most days of the week for cardiovascular health. The 30 minutes need not be continuous.

• Performing 1 set of 8 to 12 repetitions of resistance training for the entire body is necessary to maintain and develop muscular strength and endurance.

• Flexibility training should be performed daily, including stretches for all major muscle groups, in order to maintain mobility.

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EFFECTIVENESS OF RESISTED AND UNRESISTED SPRINT TRAINING ON MAXIMUM OXYGEN CONSUMPTION AND ANAEROBIC POWER

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Abstract

The purpose of this study was to evaluate the resisted and unresisted sprint training on maximum oxygen consumption and anaerobic power. For this purpose, 45 male students from the department of physical education, Sri Krishnadevaraya University, Anantapur, aged 21 to 24 years took part in the study. The subjects confined to this study were randomly segregated into three groups of 15 each. Group-I underwent resisted sprint training, group-II followed unresisted sprint training and group-III acted as control. The training regimen lasted for twelve weeks. The maximum oxygen consumption and anaerobic power were selected as criterion variables, and they were assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the statistical significance of resisted and unresisted sprint training on selected criterion variables, and to assess the difference in the effectiveness of independent variables. The analysis of data reveals that both the experimental treatments had significant impact on maximum oxygen consumption and anaerobic power, furthermore the findings reveals that there is a significant difference in the level of effectiveness of resisted and unresisted sprint training.

Introduction

Running velocity is a key factor in the success of most sports as it is the fastest athletes who win the race or any opponent. Improvement of running velocity is considered more difficult compared to other physical abilities, such as strength and endurance, as it is also significantly affected by hereditary factors (Bouchard, Malina&Perusse, 1997; Simoneau& Bouchard, 1998). Good performance in a run require to start fast as well as achieve and maintain as high a speed as possible, and is divided into secondary phases: acceleration phase, maximum speed achievement, maintenance phase and deceleration phase.

Athletic training programs are designed to enhance performance of all phases of sprinting and include a combination of plyometric training, sprint training (non-resisted, uphill and downhill running, resisted [chutes, sleds, weighted vests] and assisted towing), and resistance training (Alcaraz*et al*., 2008; Callister*et al*., 1988; De Villarreal, Gonzalez-Badillo&Izquierdo, 2008; Kristensen, Van Den Tillaar and Ettema, 2006; Spinks, 2007; Zafeiridis*et al*., 2005).

Resisted sprint training includes modalities designed to create an overload effect such as the parachute, sled, harness, or weighted vest. The objective of the overload is to elicit a greater neural activation and to increase the recruitment of fast-twitch muscle fibers.

There are athletic training programs that are designed to enhance performance of all phases of sprinting, which includes a combination of plyometric training, sprint training (*non-resisted, uphill and downhill running, resisted [chutes, sleds, weighted vests] and assisted towing*), and resistance training. These training regimens may induce the adaptation process of aerobic and anaerobic energy metabolism for better. However, there is scarcity for studies in comparing the influences of resisted and unresisted sprint training on energy

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metabolism. Hence, in this investigation an attempt is made to evaluate the effectiveness ofresisted and unresisted sprint training on maximum oxygen consumption and anaerobic power.

Thereby, it was hypothesised that:

a. There would be a significant improvement on maximum oxygen consumption and anaerobic power due to experimental treatments, and

b. There would be a significant difference in the level of effectiveness between experimental groups on selected criterion variables.

Methodology

Subjects

To achieve the purpose of the study, 45 male students were selected at random as subjects from the department of physical education, SriKrishnadevaraya University, Anantapur, and they were aged 21 to 24 years. The selected subjects neither have the experience of organised fitness training nor participating in any other special coaching programme. The subjects confined to this study were randomly segregated into three groups of 15 each. Group-I underwent resisted sprint training, group-II followed unresisted sprint training and group-III acted as control. The training regimen lasted for twelve weeks.

Variables

The independent variables used in the present study were resisted and unresisted sprint training. The criterion variables chosen for the present study were maximum oxygen consumption and anaerobic power, and these were assessed by means of one-mile run andrunning based anaerobic sprint test.

Training Protocol

The unresisted sprint training group performed flat running alone, while the resisted sprint training group performed with external load. Both the experimental groups performed their training distance comprised of 30-80 metres run based on their target personnel best, with the initial intensity fixed at 75% for resisted sprint training and 85% for unresistedsprint training. Thereafter, the training intensity was increased once in three weeks by 5%. The rest interval between repetitions was 3-5minutes, where they stay active and between sets they performed other balance or trunk activities for 10-15min.

Experimental Design

The experimental design used for the present study was random group design involving 45 volunteers as subjects.

Statistical Techniques

Analysis of covariance was computed for the data collected from experimental and control groups. Further, since three groups were involved, whenever the *F* ratio was significant, Scheffé S post hoc test was used to determine which of the paired means differed significantly. In all cases, the level of confidence was fixed at 0.05 for significance.

Results and Discussion

The descriptive analysis of data collected on selected criterion variables before and after twelve weeks of training is presented in Table 1.

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Table 1: Computation of Mean and Standard Deviation on Maximum Oxygen Consumption and Anaerobic Power

Variables	Groups	Pretest		Posttest	
		$\bar{X}$	σ	$\bar{X}$	σ
VO_2max	Control	2.993	.155	3.087	.110
	Resisted	2.895	.136	3.240	.102
	Unresisted	2.917	.134	3.329	.297
Anaerobic Power	Control	227.6	4.188	231.0	4.986
	Resisted	222.7	6.777	317.8	11.663
	Unresisted	223.7	3.634	293.4	23.148

Analysis of covariance was used to determine the significant influence of resisted and unresisted sprint training on maximum oxygen consumption and anaerobic power and it is presented in Table 2.

Table 2 :Analysis of Covariance on Maximum Oxygen Consumption and Anaerobic Power of Control and Experimental Groups

	Control Group	Resisted Sprint Training Group	Unresisted Sprint Training Group	Source of Variance	Sum of Squares	df	Mean Squares	F Ratio
VO_2max	3.099	3.232	3.326	Between	0.368	2	0.184	4.976*
				Within	1.514	41	0.037	
Anaerobic Power	229.834	318.583	293.783	Between	53160.70	2	26580.35	113.735*
				Within	9581.91	41	233.70	

*Significant at 0.05 level of confidence

The table value required for significance for the df of 2, 41 is 3.22 .

Table 2 demonstrates that the adjusted posttest means on maximum oxygen consumption and anaerobic power among groups were found to be significantly varied, since the obtained *F* ratio of 4.976 and 113.735 respectively were greater than the required table value of 3.22 for the degrees of freedom 2 and 41at 0.05 level of confidence. Since, the obtained *F* ratios on maximum oxygen consumption and anaerobic power were found to be significant, the post hoc tests were applied and it was given in Table 3 and 4.

Table – 3: Scheffé S Test on Maximum Oxygen Consumption among Groups

Adjusted Post Test Means				Confidence Interval
Control Group	Resisted Sprint Training Group	Unresisted Sprint Training Group	Mean Difference	
3.099	3.232		0.1330	0.178
3.099		3.326	0.227*	0.178
	3.232	3.326	0.0940	0.178

*Significant at 0.05 level of confidence

Table 3 shows that unresisted sprint training group is significantly effective in improving maximum oxygen consumption as compared to control and resisted sprint training groups.

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Table – 4: Scheffé S Test on Anaerobic Power among Groups

Adjusted Post Test Means				Confidence Interval
Control Group	Resisted Sprint Training Group	Unresisted Sprint Training Group	Mean Differences	
229.834	318.583		88.749*	14.16
229.834		293.783	63.949*	14.16
	318.583	293.783	24.800*	14.16

*Significant at 0.05 level of confidence

Table 4 demonstrates that both the experimental groups are significantly effective in improving anaerobic power as compared to control group. Further, it shows that the resisted sprint training is considerably better than the unresisted sprint training group in enhancing anaerobic power.

The findings of this study exhibits that 12 weeks of resisted and unresisted sprint training significantly enhanced the capability of maximum oxygen consumption and anaerobic power. These findings were substantiated by the previous research findings of some (MacDougall *et al*. 1996; Wenzel, 1992; Medbo& Burgers, 1990) that a relatively brief period of sprint training increased aerobic and anaerobic capacities in initially untrained individuals.

Conclusion

It was found that both the resisted and unresisted sprint training may develop the capability of maximum oxygen consumption and anaerobic power,of which resisted sprint training contributes to the better development of anaerobic power, on the other hand unresisted sprint training enhanced maximum oxygen consumption than the counterparts.

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PHYSICAL FITNESS STATUS OF SCHOOLBOYS ADAPTED BY RDT HOCKEY ACADEMY IN THE RAYALASEMA DISTRICT OF ANDHRA PRADESH

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Abstract
This investigation was purported to evaluate the Physical Fitness Status of Schoolboys adapted by RDT Hockey Academy in the Rayalasema District of Andhra Pradesh, India. For this reason, 916 schoolboys from thirty-two (32) schools in four (4) different districts adapted by RDT hockey academy in the Rayalasema District of Andhra Pradesh, India were considered as subjects. These subjects were in the age group of 11 to 16 years, and they were assessed for their physical fitness status. The fitness parameters were restrained to height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance using standardized tests and procedures. The data collected were subjected to statistical analysis by means of One-way ANOVA, and Bonferroni corrections post hoc test. The confidence interval was fixed at $P<0.05$ in all cases. The research findings ensure statistically considerable age difference on selected variables, and it implies that age differences influence almost all fitness parameters.

Introduction
In India, for centuries of years from Vedic age to till date, the gurukuls and schools have played a vital role in the provision of physical activity to children and youth. Now a day, physical education is a mandated part of the school curriculum that too particularly in the State of Andhra Pradesh, India, and it is obligatory to assess and report the level of school student's fitness. The educational aspects of physical education are to develop the knowledge, behavioral skills, and motor skills necessary to develop and maintain a physically active and healthy lifestyle. As such, the priority for physical education is seen as providing opportunities for students to engage in enjoyable physical activity, to become physically fit, and to learn generalizable motor and behavioral skills (McKenzie, 2003). Yet, participation in physical education was reduced by substitutions of other activities for physical education and student exemptions.

Customarily, the role of schools in providing and promoting physical activity has been during the school day and on the school campus immediately after school hours. Although there have been exceptions, school-based programs usually have been sponsored by the schools themselves and supervised by school employees. However, enormous potential appears to exist for schools to expand their role in providing students with additional physical activity by building institutional relationships with community-based providers of physical activity. Such relationships could manifest in several ways. Schools can make their facilities available to community based organizations during after-school, weekend, and summer vacation. Also, schools can collaborate with community organizations in promoting physical activity programs to students and their parents. Because transportation can be a barrier to students' participation in after-school programs, schools can collaborate with community organizations, including transit authorities, to ensure that students have the opportunity to participate in programs beyond the school day.

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Although school-community linked physical activity programs offer much promise, little research has addressed the efficacy of such initiatives for increasing physical activity in children and youth. The nurturing of young players was carried out by Rural Development Trust (RDT), an NGO based in Anantapur, Andhra Pradesh, India. RDT Hockey academy benefited many young players across Andhra Pradesh, by adapting the students of various schools. Thereby, an attempt was made to record and report the physical fitness status of schoolboys of different ages adapted by RDT hockey academy in the Rayalasema district of Andhra Pradesh.

Methodology

In this study, nine hundred and sixteen (916) male school students, aged 11 to 16 years were selected as subjects, at random from the schools adapted by RDT hockey academy spread across the district of Rayalasema, Andhra Pradesh, India. The selected subjects were tested for their physical characteristics (*height and weight*) and fitness capabilities (*speed, explosive power, flexibility, agility and cardiorespiratory endurance*) using standardized tests and procedures. The data collected were subjected to statistical analysis by means of One-way ANOVA, and Bonferroni corrections post hoc test. The confidence interval was fixed at $p < 0.05$ in all cases.

Results

The data on height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance were analysed for statistical significant age difference using one-way ANOVA. Thereafter, post hoc tests were performed using Bonferroni corrections. All those results were tabulated in tables from 1 through 3

Table – 1: Mean and Standard Deviations on Anthropometric Measurements and Physical Fitness Components

Variables	Descriptive	Age Groups					
		11 yrs	12 yrs	13 yrs	14 yrs	15 yrs	16 yrs
	N	112	222	249	196	99	38
Height	Mean	137.34	142.38	147.54	150.82	155.35	161.66
	SD	7.05	7.94	9.11	9.32	8.96	7.19
Weight	Mean	27.74	31.03	34.22	37.21	41.19	46.11
	SD	4.98	6.27	7.31	7.00	7.90	7.25
Speed	Mean	5.78	5.75	5.54	5.41	5.51	5.45
	SD	.52	.57	.63	.64	.57	.52
Explosive Power	Mean	1.48	1.55	1.61	1.68	1.72	1.87
	SD	.16	.18	.21	.25	.23	.23
Flexibility	Mean	3.63	4.15	5.59	5.69	7.00	7.53
	SD	2.86	3.34	4.09	4.21	4.94	5.36
Agility	Mean	18.40	17.81	17.08	16.56	16.74	15.61
	SD	1.48	1.70	1.62	1.74	1.89	1.47
Cardiorespiratory Endurance	Mean	3.79	3.67	3.51	3.48	3.44	3.51
	SD	.58	.55	.53	.68	.72	.67

The descriptive statistics depicted in Table 1 reveals that all the variables confined to this study improved with age of the schoolboys. However, the speed, agility and cardiorespiratory endurance of the schoolboys were slightly impinged at the age of 15 and 16 years, which might be the result of academic stress, lack of

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motivation, sports performance saturation, gain in body mass, so on and so forth that needs to be investigated further.

Table – 2: Analysis of Variance on Anthropometric Measurements and Physical Fitness Components

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Height	Between Groups	33166.969	5	6633.394	90.449	.000
	Within Groups	66737.778	910	73.338		
Weight	Between Groups	18807.955	5	3761.591	80.890	.000
	Within Groups	42317.551	910	46.503		
Speed	Between Groups	18.145	5	3.629	10.275	.000
	Within Groups	321.401	910	.353		
Explosive Power	Between Groups	7.380	5	1.476	33.143	.000
	Within Groups	40.528	910	.045		
Flexibility	Between Groups	1127.764	5	225.553	14.216	.000
	Within Groups	14437.968	910	15.866		
Agility	Between Groups	446.681	5	89.336	31.856	.000
	Within Groups	2551.975	910	2.804		
Cardiorespiratory Endurance	Between Groups	12.098	5	2.420	6.599	.000
	Within Groups	333.643	910	.367		

Table 2 shows that statistically significant difference exists between different ages on height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance as the obtained F (5, 910) = 90.449, 80.890, 10.275, 33.143, 14.216, 31.856 and 6.599 respectively , ($p < 0.05$). Since, six different age categories were considered in this study, the statistical analysis was further continued to post hoc test using Bonferroni corrections to find out the paired mean differences, and it was given Table 3.

Table – 3: Post Hoc Tests on Anthropometric Measurements and Physical Fitness Components

Age in Years		Height	Weight	Speed	Explosive Power	Flexibility	Agility	Cardio Respiratory Endurance
I	J							
11	12	05.039*	03.286*	0.0270	0.0680	0.5150	0.584*	0.1130
	13	10.199*	06.476*	0.237*	0.125*	1.952*	1.319*	0.281*
	14	13.477*	09.473*	0.370*	0.199*	2.055*	1.843*	0.308*
	15	18.014*	13.451*	0.269*	0.238*	3.366*	1.657*	0.344*
	16	24.319*	18.364*	0.3260	0.388*	3.892*	2.789*	0.2810
12	13	05.160*	03.190*	0.210*	0.0570	1.438*	0.735*	0.168*
	14	08.438*	06.187*	0.343*	0.132*	1.540*	1.259*	0.196*
	15	12.975*	10.165*	0.242*	0.170*	2.851*	1.074*	0.232*
	16	19.280*	15.078*	0.2990	0.321*	3.378*	2.206*	0.1690
13	14	03.278*	02.997*	0.1330	0.075*	0.1020	0.524*	0.0280

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	15	07.815*	06.975*	0.0310	0.113*	1.414*	0.3380	0.0640
	16	14.120*	11.888*	0.0890	0.264*	1.9400	1.470*	0.0010
14	15	04.537*	03.978*	0.1010	0.0380	1.3110	0.1860	0.0360
	16	10.842*	08.891*	0.0440	0.189*	1.8380	0.947*	0.0270
15	16	06.304*	04.913*	0.0580	0.151*	0.5260	1.132*	0.0630

From Table 3, it is understood that almost each of the paired mean differences on height, weight and agility varied between ages. It is also found that the adjacent age categories didn't vary considerably between them with regard to speed, explosive power, flexibility and cardiorespiratory endurance, while the speed, flexibility and cardiorespiratory endurance of the boys aged 14 to 16 years were not good enough as it is supposed to be.

Partaking in games and sports has long been assumed to provide health benefits to young players. In spite of certain reservations about this conjecture, the studies of some (Rossi *et al*., 2004; Skolnick, 1993; Aaron *et al*., 1995) have shown that health benefits accrue to young people who participate in sports. The results of the present study exhibit a mixed trend influence of sports participation.

Conclusion

The findings of this study reveal that most of the boys adapted by RDT hockey academy are getting taller and heavier with age, which ensures that the growth and development process were not hindered by means of systematic training program adopted in the academy. But, the result of this study necessitates rigorous training regimen for improving the physical fitness status of boys with regard to their age, as most of the fitness parameters level were not evidently varied among age categories of schoolboys adapted by the hockey academy.

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CONSTRUCTION OF PHYSICAL FITNESS NORMS FOR BOYS

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Abstract
The purpose of this study was to revive physical fitness norms for schoolboys in classes sixth through tenth from the district of Vizagapattinam in Andhra Pradesh, India. For this purpose eight hundred and eighty six schoolboys aged between eleven and fifteen were selected at random from schools spread across the district of Vizagapattinam. To measure the physical fitness of the selected subjects, the battery of fitness test adopted by Sports Authority of Andhra Pradesh was followed. The data thus collected was subjected to statistical analysis, and the age-wise norms for boys in terms of percentile scales were constructed for each variable tested. It is recommended that the normative scale constructed in this study may be used to evaluate the status of physical fitness of schoolboys.

Introduction: The national concern for raising the status of India in the international sports field provided a base for political support for providing an organizational structure for a firm footing for physical education and many state governments had come forward to accept physical education as a subject in their school curriculums.

Physical fitness plays an important place in the curriculum of physical education. Physical fitness tends to be defined by the contemporary advancements in skills imparted to the individuals, with insights towards probable future trends. Mathews (1978) elaborated physical fitness as the "capacity of an individual to perform given physical tasks involving muscular effort."

Physical fitness is a positive quality, extending on a scale from death to abundant life. All living individuals thus have some degree of physical fitness, which varies considerably in different people and in the same person from time to time. The use of fitness tests has been strongly recommended in schools because it is assumed that they motivate children to become more fit. Fox and Biddle recommended that (i) the fitness test be selected with great care because it communicates to the children and their parents, what fitness is, (2) the fitness testing in children can serve a number of purposes within school and research contexts.

Within the school setting, purposes include:

- programme evaluation
- motivation
- identification of children in need of improvement
- identification of children with potential
- screening
- diagnosis of fitness needs for individual exercise prescription and improvement
- the promotion of physical activity, goal setting, self-monitoring and self-testing skills
- cognitive and affective learning

(Pate, 1994; Whitehead, Pemberton & Corbin, 1990).

In terms of research, fitness testing is considered important for the following reasons:

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- to achieve a better understanding of fitness phenomena and their demography
- to investigate the effects of training on children's fitness
- in the public health context, to survey the fitness levels of children on a large scale in order to provide baseline measures from which to analyse the health related fitness of a population

(Fox & Biddle, 1986).

Fitness tests are generally based on one of two standards: (1) criterion-referenced standards or (2) norm-referenced standards. Norm-referenced fitness standards rank an individual's performance on a fitness test relative to all other individuals in the group (Plowman, Sterling, Corbin, Meredith, Welk, & Morrow, 2006). Test developers determine norms and set arbitrary percentiles to use as standards for individuals to achieve (Welk, Morrow, &Falls, 2002); standards based on what a group of peers have achieved. Using norm-referenced standards allows children to be evaluated in relation to their peers, but does not tell us how fit is fit enough (Looney &Plowman, 1990).

Norm-referenced standards are aptly described by Welk, Morrow, and Falls, (2002), "Consider whether it is 'good' for you to achieve 'average' fatness if the average person is fat". Criterion-referenced standards measure health-related fitness by comparing the student's level of fitness to a health standard, with a minimum level of performance needing to be attained before the student is considered healthy (Welk, Morrow, &Falls, 2002). Criterion-referenced evaluations are concerned with the information the fitness test score provides about an individual's health status and whether or not they have achieved the standard, not how well they do compared to their peers (Welk, Morrow, &Falls, 2002).

Physical education teachers working in schools are in best position to help the nation in raising the fitness level of youths. They need tests to assess the physical fitness of students. Norms, if prepared can make testing more scientific and accurate. Although, in the State of Andhra Pradesh tests to evaluate the status physical fitness of school students exists, the revival of the norms persists as the certain traits, characteristics and abilities of children today differ from those of children a number of years ago. Johnson and Nelson (1988) viewed that norms are only temporary and must be periodically revised.

And thereby, the purpose of this study was to develop physical fitness norms for schoolboys of Vizagapattinam district.

Methodology: In this study, eight hundred and eighty six male school students of classes six to nine, and aged 11 to 15 years were selected at random from schools spread across the district of Vizagapattinam, Andhra Pradesh, India.

The study was confined to the use of battery of fitness test adopted by Sports Authority of Andhra Pradesh for measuring physical fitness of schoolboys of classes six to nine of Vizagapattinam district. Though, the investigator didn't validate these fitness test batteries for the purpose of this study, its long-standing use and adoption in numerous research studies conducted in India formed the basis for selection of this test.

The statistical technique used for the analysis of data was percentile scale.

Results: The descriptive analysis of data on criterion variables confined to this study was presented in table – 1. Thereafter, the physical fitness norms for boys aged 11 to 15 years for different physical fitness variables were given in tables 2 to 9.

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Table – 1: Mean and Standard Deviations of Different Physical Fitness Variables

Variables	Descriptive	Age Groups			
		11-12 yrs	12-13 yrs	13-14 yrs	14-15 yrs
Height	Mean	136.14	138.12	145.05	152.78
	SD	7.58	7.45	10.97	9.57
Weight	Mean	27.63	30.44	33.10	39.57
	SD	4.21	4.80	6.78	7.71
30 m Dash	Mean	5.07	5.03	4.72	4.52
	SD	0.47	0.41	0.39	0.49
Standing Broad Jump	Mean	1.46	1.49	1.64	1.73
	SD	0.14	0.16	0.19	0.23
Medicine Ball Throw	Mean	2.21	2.34	2.24	2.74
	SD	0.39	0.44	0.51	0.61
Agility	Mean	17.61	17.34	16.97	16.53
	SD	1.16	0.99	0.91	1.12
Flexibility	Mean	3.68	4.19	4.67	7.51
	SD	3.48	3.36	3.51	5.02
800 m Run	Mean	4.12	4.14	3.54	3.59
	SD	0.74	0.87	0.65	0.60

Table – 2: PERCENTILE SCALE (Height)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	145	147.7	162	166
80	142	143	155	162
70	141	143	153	161
60	140	142	150	159
50	138	139	146	156.2
40	135	137.5	142	153.5
30	134	135	140	150
20	132.9	134	138	146.1
10	130	131	135	144

Table – 3: PERCENTILE SCALE (Weight)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	34	39	45	50

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80	31	35	39	47.6
70	30	34	37	45.75
60	29	33	36	45
50	28	30	33	42.2
40	27	29.5	31	39
30	26	29	30	38
20	25	26.75	27	34
10	24	26	27	32

Table – 4: PERCENTILE SCALE (30 m Dash)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	4.48	4.58	4.16	3.79
80	4.57	4.68	4.45	4.05
70	4.61	4.71	4.49	4.17
60	4.72	4.82	4.55	4.26
50	4.95	4.90	4.64	4.40
40	5.07	5.00	4.74	4.54
30	5.23	5.05	4.83	4.68
20	5.35	5.21	4.94	4.86
10	5.49	5.39	5.04	4.98

Table – 5: PERCENTILE SCALE (Standing Broad Jump)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	1.64	1.73	1.93	2.04
80	1.58	1.63	1.78	1.92
70	1.57	1.59	1.72	1.87
60	1.54	1.55	1.70	1.85
50	1.49	1.51	1.66	1.81
40	1.47	1.49	1.63	1.75
30	1.43	1.45	1.58	1.70
20	1.39	1.42	1.56	1.61
10	1.35	1.38	1.51	1.54

Table – 6: PERCENTILE SCALE (Medicine Ball Throw)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	2.71	2.94	3.01	3.53
80	2.56	2.66	2.73	3.28
70	2.43	2.55	2.48	3.15
60	2.33	2.46	2.37	3.09

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50	2.27	2.37	2.23	2.95
40	2.19	2.28	2.07	2.85
30	2.12	2.18	1.96	2.58
20	1.95	2.11	1.92	2.39
10	1.88	1.97	1.82	2.13

Table – 7: PERCENTILE SCALE (Agility)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	16.18	16.16	15.83	15.37
80	16.54	16.54	16.25	15.62
70	16.68	16.69	16.34	15.76
60	16.94	16.73	16.44	15.85
50	17.22	16.94	16.70	16.06
40	17.51	17.19	16.88	16.31
30	17.80	17.43	17.07	16.66
20	18.08	17.72	17.31	16.89
10	18.47	18.08	17.57	17.28

Table – 8: PERCENTILE SCALE (Flexibility)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	8.7	8	9	14.3
80	7	7	8	12
70	6	6	7	11
60	6	6	7	11.75
50	4.8	5	6	9
40	3	4.5	4	7
30	2	3	3	6
20	1	2	2	4
10	0	0	0	0

Table – 9: PERCENTILE SCALE (800 m Run)

Test Score Numbers				
P	**11-12 yrs**	**12-13 yrs**	**13-14 yrs**	**14-15 yrs**
90	3.32	3.35	3.25	3.13
80	3.45	3.41	3.31	3.27
70	3.49	3.44	3.39	3.34
60	3.54	3.48	3.43	3.40
50	4.03	3.57	3.54	3.51
40	4.09	4.05	4.02	3.58
30	4.23	4.12	4.08	4.03
20	4.35	4.19	4.14	4.11
10	4.43	4.46	4.37	4.29

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Conclusion

The findings of this study reveal that this renewed norm is not as stringent as the norm framed by the sports authority of Andhra Pradesh. Further, it that the boys nowadays are much shorter, lighter, slower, with less power, strength, agility, flexibility, and endurance. Hence, it is recommended that the normative scale thus constructed in this study may be used to evaluate the status of physical fitness of schoolboys in the district of Vizagapattinam.

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RDT HOCKEY ACADEMY ADAPTED SCHOOLBOYS PHYSICAL FITNESS STATUS IN THE RAYALASEMA DISTRICT OF ANDHRA PRADESH

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Abstract
This investigation was purported to evaluate the Physical Fitness Status of Schoolboys adapted by RDT Hockey Academy in the Rayalasema District of Andhra Pradesh, India. For this reason, 916 schoolboys from thirty-two (32) schools in four (4) different districts adapted by RDT hockey academy in the Rayalasema District of Andhra Pradesh, India were considered as subjects. These subjects were in the age group of 11 to 16 years, and they were assessed for their physical fitness status. The fitness parameters were restrained to height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance using standardized tests and procedures. The data collected were subjected to statistical analysis by means of One-way ANOVA, and Bonferroni corrections post hoc test. The confidence interval was fixed at $P<0.05$ in all cases. The research findings ensure statistically considerable age difference on selected variables, and it implies that age differences influence almost all fitness parameters.

Introduction
In India, for centuries of years from Vedic age to till date, the gurukuls and schools have played a vital role in the provision of physical activity to children and youth. Now a day, physical education is a mandated part of the school curriculum that too particularly in the State of Andhra Pradesh, India, and it is obligatory to assess and report the level of school student's fitness. The educational aspects of physical education are to develop the knowledge, behavioral skills, and motor skills necessary to develop and maintain a physically active and healthy lifestyle. As such, the priority for physical education is seen as providing opportunities for students to engage in enjoyable physical activity, to become physically fit, and to learn generalizable motor and behavioral skills (McKenzie, 2003). Yet, participation in physical education was reduced by substitutions of other activities for physical education and student exemptions.
Customarily, the role of schools in providing and promoting physical activity has been during the school day and on the school campus immediately after school hours. Although there have been exceptions, school-based programs usually have been sponsored by the schools themselves and supervised by school employees. However, enormous potential appears to exist for schools to expand their role in providing students with additional physical activity by building institutional relationships with community-based providers of physical activity. Such relationships could manifest in several ways. Schools can make their facilities available to community based organizations during after-school, weekend, and summer vacation. Also, schools can

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collaborate with community organizations in promoting physical activity programs to students and their parents. Because transportation can be a barrier to students' participation in after-school programs, schools can collaborate with community organizations, including transit authorities, to ensure that students have the opportunity to participate in programs beyond the school day.

Although school-community linked physical activity programs offer much promise, little research has addressed the efficacy of such initiatives for increasing physical activity in children and youth. The nurturing of young players was carried out by Rural Development Trust (RDT), an NGO based in Anantapur, Andhra Pradesh, India. RDT Hockey academy benefited many young players across Andhra Pradesh, by adapting the students of various schools. Thereby, an attempt was made to record and report the physical fitness status of schoolboys of different ages adapted by RDT hockey academy in the Rayalasema district of Andhra Pradesh.

Methodology

In this study, nine hundred and sixteen (916) male school students, aged 11 to 16 years were selected as subjects, at random from the schools adapted by RDT hockey academy spread across the district of Rayalasema, Andhra Pradesh, India. The selected subjects were tested for their physical characteristics (*height and weight*) and fitness capabilities (*speed, explosive power, flexibility, agility and cardiorespiratory endurance*) using standardized tests and procedures. The data collected were subjected to statistical analysis by means of One-way ANOVA, and Bonferroni corrections post hoc test. The confidence interval was fixed at $p < 0.05$ in all cases.

Results

The data on height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance were analysed for statistical significant age difference using one-way ANOVA. Thereafter, post hoc tests were performed using Bonferroni corrections. All those results were tabulated in tables from 1 through 3.

Table – 1: Mean and Standard Deviations on Anthropometric Measurements and Physical Fitness Components

Variables	Descriptive	Age Groups					
		11 yrs	12 yrs	13 yrs	14 yrs	15 yrs	16 yrs
	N	112	222	249	196	99	38
Height	Mean	137.34	142.38	147.54	150.82	155.35	161.66
	SD	7.05	7.94	9.11	9.32	8.96	7.19
Weight	Mean	27.74	31.03	34.22	37.21	41.19	46.11
	SD	4.98	6.27	7.31	7.00	7.90	7.25
Speed	Mean	5.78	5.75	5.54	5.41	5.51	5.45
	SD	.52	.57	.63	.64	.57	.52
Explosive Power	Mean	1.48	1.55	1.61	1.68	1.72	1.87
	SD	.16	.18	.21	.25	.23	.23
Flexibility	Mean	3.63	4.15	5.59	5.69	7.00	7.53
	SD	2.86	3.34	4.09	4.21	4.94	5.36
Agility	Mean	18.40	17.81	17.08	16.56	16.74	15.61
	SD	1.48	1.70	1.62	1.74	1.89	1.47
Cardiorespiratory Endurance	Mean	3.79	3.67	3.51	3.48	3.44	3.51
	SD	.58	.55	.53	.68	.72	.67

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The descriptive statistics depicted in Table 1 reveals that all the variables confined to this study improved with age of the schoolboys. However, the speed, agility and cardiorespiratory endurance of the schoolboys were slightly impinged at the age of 15 and 16 years, which might be the result of academic stress, lack of motivation, sports performance saturation, gain in body mass, so on and so forth that needs to be investigated further.

Table – 2: Analysis of Variance on Anthropometric Measurements and Physical Fitness Components

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Height	Between Groups	33166.969	5	6633.394	90.449	.000
	Within Groups	66737.778	910	73.338		
Weight	Between Groups	18807.955	5	3761.591	80.890	.000
	Within Groups	42317.551	910	46.503		
Speed	Between Groups	18.145	5	3.629	10.275	.000
	Within Groups	321.401	910	.353		
Explosive Power	Between Groups	7.380	5	1.476	33.143	.000
	Within Groups	40.528	910	.045		
Flexibility	Between Groups	1127.764	5	225.553	14.216	.000
	Within Groups	14437.968	910	15.866		
Agility	Between Groups	446.681	5	89.336	31.856	.000
	Within Groups	2551.975	910	2.804		
Cardiorespiratory Endurance	Between Groups	12.098	5	2.420	6.599	.000
	Within Groups	333.643	910	.367		

Table 2 shows that statistically significant difference exists between different ages on height, weight, speed, explosive power, flexibility, agility and cardiorespiratory endurance as the obtained *F* (5, 910) = 90.449, 80.890, 10.275, 33.143, 14.216, 31.856 and 6.599 respectively , ($p < 0.05$). Since, six different age categories were considered in this study, the statistical analysis was further continued to post hoc test using Bonferroni corrections to find out the paired mean differences, and it was given Table 3.

Table – 3: Post Hoc Tests on Anthropometric Measurements and Physical Fitness Components

Age in Years		Height	Weight	Speed	Explosive Power	Flexibility	Agility	Cardio Respiratory Endurance
I	J							
11	12	05.039*	03.286*	0.0270	0.0680	0.5150	0.584*	0.1130
	13	10.199*	06.476*	0.237*	0.125*	1.952*	1.319*	0.281*
	14	13.477*	09.473*	0.370*	0.199*	2.055*	1.843*	0.308*
	15	18.014*	13.451*	0.269*	0.238*	3.366*	1.657*	0.344*
	16	24.319*	18.364*	0.3260	0.388*	3.892*	2.789*	0.2810
12	13	05.160*	03.190*	0.210*	0.0570	1.438*	0.735*	0.168*
	14	08.438*	06.187*	0.343*	0.132*	1.540*	1.259*	0.196*

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	15	12.975*	10.165*	0.242*	0.170*	2.851*	1.074*	0.232*
	16	19.280*	15.078*	0.2990	0.321*	3.378*	2.206*	0.1690
13	14	03.278*	02.997*	0.1330	0.075*	0.1020	0.524*	0.0280
	15	07.815*	06.975*	0.0310	0.113*	1.414*	0.3380	0.0640
	16	14.120*	11.888*	0.0890	0.264*	1.9400	1.470*	0.0010
14	15	04.537*	03.978*	0.1010	0.0380	1.3110	0.1860	0.0360
	16	10.842*	08.891*	0.0440	0.189*	1.8380	0.947*	0.0270
15	16	06.304*	04.913*	0.0580	0.151*	0.5260	1.132*	0.0630

From Table 3, it is understood that almost each of the paired mean differences on height, weight and agility varied between ages. It is also found that the adjacent age categories didn't vary considerably between them with regard to speed, explosive power, flexibility and cardiorespiratory endurance, while the speed, flexibility and cardiorespiratory endurance of the boys aged 14 to 16 years were not good enough as it is supposed to be.

Partaking in games and sports has long been assumed to provide health benefits to young players. In spite of certain reservations about this conjecture, the studies of some (Rossi *et al*., 2004; Skolnick, 1993; Aaron *et al*., 1995) have shown that health benefits accrue to young people who participate in sports. The results of the present study exhibit a mixed trend influence of sports participation.

Conclusion

The findings of this study reveal that most of the boys adapted by RDT hockey academy are getting taller and heavier with age, which ensures that the growth and development process were not hindered by means of systematic training program adopted in the academy. But, the result of this study necessitates rigorous training regimen for improving the physical fitness status of boys with regard to their age, as most of the fitness parameters level were not evidently varied among age categories of schoolboys adapted by the hockey academy.

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EFFICACY OF CONCURRENT STRENGTH AND PLYOMETRIC TRAINING ON SELECTED STRENGTH PARAMETERS

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Abstract
The underlying principle of this study was to assess the effectiveness of eight weeks concurrent strength and plyometric training in enhancing the capability on selected strength parameters. For the purpose of study, thirty male students from Government Degree College, Rayadurg, Anantapur District, Andhra Pradesh, aged 20 to 22 years took part in the study. The subjects were randomly assigned to either concurrent training (n=15) or control (n=15) groups. The training regimen lasted for eight weeks. The selected criterion variables namely: leg strength, explosive strength and elastic strength were assessed using standard tests and procedures, prior to and immediately after the training programme. Analysis of covariance was employed to establish degree of significant modification on chosen criterion variables. The findings of the study revealed that eight weeks of concurrent training has a statistically significant influence in developing the selected strength parameters.

Introduction
In today's age of scientific knowledge man is making rapid progress in all walks of life and it is true in the area of games and sports. Also scientific knowledge has revolutionalised the standards of human performance in sports disciplines. The athletes are now trained on scientific lines and using highly sophisticated technology for top performance in their specific sports, with minimum expenditure of energy and time.

So as to have the utmost efficiency, consistent improvement and balanced abilities, a sportsperson must participate in year round conditioning programs. For that they must put their bodies under a certain amount of stress to increase physical capabilities. Physical exercise is extremely important for maintaining physical fitness including healthy weight; building and maintaining healthy bones, muscles, and joints; promoting physiological well-being; and strengthening the immune system. To improve or maintain a desired level of physical fitness, there is a need to constantly administer an adequate training intensity while exercising. Different training modalities are used for the development of different features of physical fitness, as each sportsperson requires a different types and levels of physical composure.

Most weight training systems in use today is based on variation, of the De Lorne method. If properly carried out weight may improve speed, explosive power, strength and endurance.

Circuit weight training is one of the effective means to improve all round physical and cardiovascular fitness, whereas, plyometric training is one of the most effective methods for improving explosive power as stated by Fleck and Kraemer (2004). A wide variety of athletes can benefit from power training, particularly if it follows or coincides with a strength training program.

Although, plyometric training has received much attention recently, it had been a part of the training of athletes in a variety of sports for years. It is used in conjunction with other power development methods in a complete training programme to bridge the gap between maximum strength and explosive power. Scientific research has given us a fundamental understanding of the elastic properties of muscle and its training ability.

The effects of resistive type exercise on athletic performance have been largely evident. To know the efficacy of concurrent circuit weight training and plyometric training; and its commendable contribution to one's level

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of fitness, it was decided to take up this study. We hypothesized that concurrent strength and plyometric training may have significant affluence for the development of selected strength parameters.

Methodology

Subjects and Variables

For the purpose of this study, thirty male students from Government Degree College, Rayadurg, Anantapur District, Andhra Pradesh, in the age group of 20 to 22 years were recruited, with theirconsent. All of them were healthy, nonsmoking and with a negative medical history.The selected subjects were randomly assigned to both the concurrent training and control groups of fifteen each. The selected criterion variables were assessed using standard tests and procedures, prior to and immediately after the training regimen. The instruments used for testing the criterion variables were standard and reliable as they were purchased from the reputed companies, and moreover they were attuned and tested for its accuracy. The standard tests and instruments used for assessing the criterion variables are presented in table 1.

Table 1: Criterion Variables and Tests

SL. No.	Variables	Tests / Instruments	Unit of Measurement
1.	Leg Strength	Leg Dynamometer	Kilograms
2.	Explosive Strength	Standing Broad Jump	Centimetres
3.	Elastic Strength	Hopping for Distance	Seconds

Training Protocol

The experimental group underwent training regimen that consistedof six to eight exercises a session, two sessions a day, four daysa week for eight weeks. In the morning circuit weight training was administered with intensive sessions on Monday and Friday for upper and lower body respectively, and the extensive sessions on Tuesday and Thursday for lower and upper body respectively. In the evening plyometrics was incorporated with sessions contrary to that of in the morning, on the principles of load and specificity. The control group did not participate in any specialized training during the period of study.

Experimental Design and Statistical Procedure

The experimental design used for the present study was random group design involving thirty subjects. Analysis of covariance (ANCOVA) was used as a statistical procedure to establish the significant difference, if any, existing between pretest and posttest data on selected criterion variables. The level of significance was accepted at $P < 0.05$.

Results and Discussions

The descriptive analysis of data collected on selected strength parameters prior to and immediately after eight weeks of concurrent strength and plyometric training is presented in table 2.

Table 2: Computation of Mean and Standard Deviation on Selected Strength Parameters

Variables	Groups	Pretest		Posttest	
		$\bar{\chi}$	σ	$\bar{\chi}$	σ
Leg Strength	Control	96.67	11.41	95.73	7.81
	Experimental	95.20	8.71	99.13	5.83
Explosive Strength	Control	166.27	1.44	167.13	1.68
	Experimental	167.33	1.80	174.67	2.53
Elastic Strength	Control	8.29	0.048	8.25	0.039
	Experimental	8.23	0.053	8.12	0.043

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Analysis of covariance was employed to determine the significant impact of concurrent strength and plyometric training on selected strength parameters and it is presented in table 3.

Table 3: Analysis of Covariance on Selected Strength Parameters of Control Group and Concurrent Strength - Plyometric Training Group

Variables	Groups	Adjusted Mean	SOV	Sum of Squares	df	Mean Square	'F' ratio
Leg Strength	Control	95.29	B	137.73	1	137.73	14.80*
	Experimental	99.58	W	251.29	27	9.31	
Explosive Strength	Control	167.66	B	281.477	1	281.477	138.01*
	Experimental	174.13	W	55.066	27	2.039	
Elastic Strength	Control	8.25	B	0.032	1	0.032	132.73*
	Experimental	8.12	W	0.007	27	0.000	

Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21

* Significant at 0.05 level.

The findings of the study shows that significant difference existing between control group and concurrent strength-plyometric training group on leg strength, explosive strength and elastic strength, since the obtained '*F*' ratio of 14.80, 138.01 and 132.73 respectively were greater than the required table value of 4.21 for significance at 0.05 level of confidence for df of 1 and 27.It appears that regular participation in physical exercises initiate a disruptionin systemic homoeostasis, which is followed by an adaptive phase results in the betterment of the performance of leg strength, explosive strength and elastic strength, which might be due to the progressive loading of intensity.The findings of the study is in par with the views of some (Blackey& Southard, 1987; Gehri*et al*., 1998; Matavulj*et al*., 2001) that a relatively small amount of plyometric training is required to improve performance vertical jumping, long jumping, sprinting and sprint cycling. A conditioning program consisting of both plyometric training and resistance training can improve power performance in the vertical jump (Blackey& Southard, 1987; Adams *et al*., 1992; Bauer *et al*., 1990; Clutch *et al*., 1983) and 40yard sprint time (Olhemus*et al*.).

Conclusions

The result of this study demonstrated that, concurrent strength and plyometric training with repeatedbouts of a combination of physical exercise has significant impact on leg strength, explosive strength and elastic strength.

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THE ROLE OF SPORTS PARTICIPATION IN SOLIDARITY AMONG ADOLESCENTS: AN OVERVIEW OF GENDER AND AGE DIFFERENCE

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Abstract

The purpose of the study is to analyze the contribution of sports participation in the status of cohesiveness among adolescents with respect to gender and age differences of the participants. The objectives of this investigation are of two-fold: firstly, to determine the degree of relationship among group cohesion and its various aspects, and secondly, to examine the existence of gender and age difference among hockey players in their level of perceived group cohesion, individual attraction and group integration to task and social. To achieve these objectives, forty-seven hockey players from RDT hockey academy, Ananthapur, Andhra Pradesh, were considered. The participants of this study are further delimited to twenty-seven boys and twenty girls, and they were aged fourteen and fifteen years. Group Environmental Questionnaire is used to collect data pertaining to group cohesion and its different aspects. Correlation coefficient and two-way ANOVA is applied as a statistical tool. It is found that hockey player's group cohesion is significantly related to most of the aspects of cohesion, and it is also established that female hockey players of RDT hockey academy are more cohesive and attracted to group task than their counterparts. It is concluded that all the aspects of cohesion are not necessary to be alike for a group or groups.

Introduction

Sport and physical education is fundamental to the early development of children and youth and the skills learned during play, physical education and sport contribute to the holistic development of young people. Through participation in sport and physical education, young people learn about the importance of key values such as honesty, teamwork, fair play, respect for themselves and others and adherence to rules. It also provides a forum for young people to learn how to deal with competition and how to cope with both winning and losing.

The common wealth advisory body on sport reported that: Sport is an attractive vehicle for providing young people with the opportunity to shape their own lives. It is a resource efficient and cost-effective approach that can be easily replicable to adapt to local contexts.

Sport is a very powerful tool and has a great deal to offer to everyone – it can engage the talented and the less coordinated, the able and those with disabilities, youth and elderly, boys and girls, men and women. It can bring challenge, adventure, excitement and fun. It can also provide personal development, leadership and team-work skills.

The former United Nations Secretary-General Kofi A. Annan articulated that people in every nation love sport. Its values – fitness, fair play, teamwork, and the pursuit of excellence – are universal. At its best, it brings people together, no matter what their origin, background, religious beliefs or economic status. And when young people participate in sports or have access to physical education, they can build up their health and self-

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esteem, use their talents to the fullest, learn the ideals of teamwork and tolerance, and be drawn away from the dangers of anti-social activities viz. drugs and crime.

"***Sport has the power to change the world. The power to inspire, the power to unite people in a way little else can***" **– Nelson Mandela.**

Sport is a "school for life" which can contribute to personality development and the acquisition of fundamental social skills are as given in table – 1. The practice of well-organized sporting activities is widely accepted as beneficial to children and adolescents and has a positive impact on their physical, mental, psychological and social development (Bouchard, Shepard, & Stephens, 1994). Beyond the direct benefits of sport in schools and other curricula for formal education, sport can provide a unique tool for social development in a variety of ways.

Table – 1

Skills and Values Learned Through Sport	
Cooperation	Teamwork
Communication	Discipline
Respect for rules	Confidence
Respect for others	Resilience
Problem solving	Leadership
Fair play	How to win/lose
Sharing	How to manage competition
Self-esteem	Value of effort
Trust	Self-confidence
Honesty	Setting objectives
Self-respect	Socialization
Tolerance	Solidarity

Team sports provide children and youth with many opportunities to grow physically and socially, as well as emotionally. Moreover, physical activities with other children allow them to build social skills through peer interaction. Team sports participation can be an amazing tool that helps children grow and succeed in their everyday lives and in the future.

In fact, there are differences in skills, factors of condition, coordination, and also psychological and mental abilities that determine membership of elite athletes in all sport. Similarly, hockey players of different levels and ages have different inborn and learned abilities that ensure a high level of achievement.

Investigation on psychological factors that predicted the individuals performed well during competition are documented by few. Numerous studies have focused on the personality characteristics of athletes versus non-athletes, elite athletes versus the less elite, and athletes in one sport versus those in another. However, Alderman (1974) proposed that "little success has been attained in identifying an athletic type of personality". Apart from the psychological attributes namely: motivation and aggression, team cohesion have been examined in relation to team achievement, so as to indicate the magnitude of importance of teamwork.

Cohesiveness is an indicator of man's need to affiliate, was shown to be positively related to a team's performance (Bird, 1977; Nixon, 1977; Widmeyer, 1977). Ball and Carron (1976) found that post-season success was accounted for by the cohesion variables of mid-season teamwork or closeness, enjoyment and early-season self-motivation. The selection of potential predictors of hockey performance seemed, of

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necessity, to be somewhat arbitrary. Team cohesiveness appeared to be a useful concept but was limited to employment with teams, preferably of players with considerable familiarity with one another.

The variable that seems pertinent to this investigating is group cohesion. A successful team is likely to be associated with engender of cohesion.

Everyone wants to have a good team. Athletes intuitively know that they will not win in a competitive team sport without having a team. A group is not merely a collection of people. The latter is a crowd. Alvin Zander (cited in Eys et al., 2006) describes a group as a set of individuals who interact and depend on each other. He further describes group members as being willing to help other group members and relying on help from other group members. These group members refer to their group as *we* and other groups as *they*. To this end, coaches are advised to emphasize the reference to *we*, not *I* and *they*. The terms *group* and *cohesion* are tautological; If a group exists then cohesion exists.

Team cohesion exists where players are united in a common purpose (Cashmore, 2002). Social cohesion is something like athletes often spend time together or share common interests outside of their chosen sport, whereas task cohesion is the one where players are united to accomplish a specific task. In other words, the social mixing of a sports club is termed "Social Cohesion" and a group with shared formal goals who are normally successful as a group is referred to as "Task Cohesion".

A group's cohesion can include both task and social cohesion, or not. Group cohesion is a dynamic process where the group tends to remain together and united in the pursuit of its goal for the satisfaction of the affective needs of group members (Paskevich, Estabrooks, Brawley, and Carron, 2001). It is multidimensional, dynamic, instrumental, and affective. Individual and group aspects of cohesion are based on the beliefs and perceptions of individual group members. Group integration concerns the beliefs that individual members hold about the team. Individual attractions to the group relates to the member's beliefs about what attracted him to the team. These two categories are each subdivided into task and social orientations. These things together create an individual and group sense of team cohesion. A highly cohesive group is more likely to be united and committed to success that a group with low cohesion (Jarvis, 2006).

Task cohesion or group integration is an indication of how well the team operates as a working unit, while social cohesion or individual attraction refers to how well team members like each other and to the team's identity (Lavallee, Kremer, Moran, and Williams, 2004).

Based on literature review, the investigator is of the view that there is a need for more research in this important area of sports psychology as hardly studies have been conducted to find out differences in the level of cohesiveness among male and female hockey players of different ages, although studies on team cohesion in relation to team performance have been carried out. Thereby, the investigator directed his attention to analyze the contribution of sports participation in the status of cohesiveness among adolescents with respect to gender and age differences of the participants.

Objectives of the Study:

This investigation extends the debate by synthesizing and empirically testing and collecting the data from the study of RDT hockey academy players is all set to address thekey research objectives:

- To determine the degree of relationship among group cohesion and its various aspects.
- To examine whether significant difference exists among different categories (gender / age / gender x age) of hockey players in their perception of group cohesion, individual attraction and group integration to task and social.

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Methodology

For the purpose of this investigation, the researcher considered a total of forty-seven hockey players from RDT hockey academy, Ananthapur, Andhra Pradesh. The participants confined to this investigation are further delimited to twenty-seven boys and twenty girls, and they were aged fourteen and fifteen years.

Data Collection

The data pertaining to the perception of group cohesion and its different aspects [attraction to group task (AGT), attraction to group social (AGS), group integration task (GIT), and group integration social (GIS)] by the participants confined to this investigation was collected by means of Group Environmental Questionnaire (GEQ) meant for the purpose. The GEQ was evolved by Carron, Brawley and Widmeyer (1985) with four aspects consisting of eighteen items, and the 9-point Likert scale was used to rating the statements. The summation of all eighteen statement scores is the measures of general aspect of cohesiveness. The aspects which the statements can be grouped and the number of statement under each aspect have been shown in table- 2:

Table – 2: Aspects of Cohesion and the number of statements

S. No.	Aspect	No. of Statement	S. No. of the Statement
1.	Attraction to Group Task	4	2,4,6, and 8
2.	Attraction to Group Social	5	1,3,5,7 and 9
3.	Group Integration Task	5	10, 12, 14, 16 and 18
4.	Group Integration Social	4	11, 13, 15, and 17

Framework of Analysis

The data collected was tabulated and analyzed with the help of statistical techniques namely: Pearson product moment correlation and two-way analysis of variance, so as to examine the magnitude of relationship among cohesion and its aspects, and to evaluate the gender and age differences that may exist within each criterion variable.

Results

The data collected for the purpose of this investigation is subjected to statistical analysis and the results obtained thereby are presented in tables 3 through 8.As a first step to realize the objectives of this study, relationship between the group cohesion and different aspects of cohesion, and inter relationship among different aspects of cohesion were calculated using the statistical method of Pearson product moment correlation. The correlation coefficients thus obtained is presented in table-3

Table – 3: **INTER CORRELATION MATRIX OF GROUP COHESION WITH ITS ASPECTS**

	Group Cohesion	Attraction to Group Task	Attraction to Group Social	Group Integration Task	Group Integration Social
Group Cohesion	1.000				
Attraction to Group Task	0.597*	1.000			
Attraction to Group Social	0.444*	-0.147	1.000		
Group Integration Task	0.523*	0.471*	-0.206	1.000	
Group	0.240	-0.331*	0.138	-0.290*	1.000

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Integration Social					
$\bar{X}$	109.98	21.96	29.79	41.02	17.21
σ	7.64	4.69	4.32	3.80	3.89

* Correlation is significant at the 0.05 level.

Table – 3 reveals that the correlation coefficients of the group cohesion with the different aspects of cohesion vary from 0.597 for 'AGT' to 0.240 for 'GIS'.

Irrespective of gender and age differences, the correlation coefficient of group cohesion with 'AGT', 'AGS', and 'GIT' are significant at 0.05 level of confidence, since the obtained coefficient of correlation of 0.597, 0.444 and 0.523 are greater than the required table value of 0.288 for 45 degrees of freedom. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted in these cases. However, the correlation coefficient of group cohesion with 'GIS' is insignificant at 0.05 level of confidence, since the obtained coefficient of correlation of 0.240 is lesser than the required table value of 0.288 for 45 degrees of freedom. Consequently, the null hypothesis is accepted and the alternative hypothesis is rejected in this case.

Table – 4: **TWO-WAY ANOVA ON GROUP COHESION**

Gender	Age	$\bar{X}$	σ	N	Source	SS	df	MS	F ratio	Sig.
Male	14	107.471	8.589	17	Gender	356.311	1	356.311	6.634	.014
	15	107.800	7.584	10	Age	9.535	1	9.535	0.178	.676
Female	14	112.583	7.166	12	Gender*Age	4.003	1	4.003	0.075	.786
	15	114.125	2.588	8	Error	2309.627	43	53.712		

From table – 4, it is found that irrespective of age category statistically significant gender difference exists on the perception of group cohesion as the obtained F ratio of 6.634 is greater than the required table value of 4.07 for significance at 0.05 level of confidence. Conversely, irrespective of gender type no significant age difference exists on the perception of group cohesion as the obtained F ratio of 0.178 is lesser than the required table value of 4.07 for significance at 0.05 level of confidence. Further, it is noted that the interaction of gender and age didn't establish considerable difference on group cohesion.

Table – 5: **TWO-WAY ANOVA ON ATTRACTION TO GROUP TASK**

Gender	Age	$\bar{X}$	σ	N	Source	SS	df	MS	F ratio	Sig.
Male	14	21.059	5.562	17	Gender	183.860	1	183.860	9.645	.003
	15	19.100	4.841	10	Age	6.832	1	6.832	0.358	.553
Female	14	24.000	3.075	12	Gender*Age	14.835	1	14.835	0.778	.383
	15	24.375	1.188	8	Error	819.716	43	19.063		

Table – 5, shows that statistically significant gender difference exists on the perception of attraction to group task as the obtained F ratio of 9.645 is greater than the required table value of 4.07 for significance at 0.05 level of confidence. Conversely, no significant age difference exists on the perception of attraction to group task as the obtained F ratio of 0.358 is lesser than the required table value of 4.07 for significance at 0.05 level of confidence. Moreover, it is noted that the interaction of gender and age didn't ascertain considerable variation on attraction to group task.

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Table – 6: **TWO-WAY ANOVA ON ATTRACTION TO GROUP SOCIAL**

Gender	Age	$\bar{\chi}$	σ	N	Source	SS	df	MS	F ratio	Sig.
Male	14	29.588	4.374	17	Gender	2.983	1	2.983	0.151	.700
	15	30.500	4.403	10	Age	0.039	1	0.039	0.002	.965
Female	14	29.917	5.712	12	Gender*Age	7.903	1	7.903	0.400	.531
	15	29.125	1.246	8	Error	850.409	43	19.777		

Table – 7: **TWO-WAY ANOVA ON GROUP INTEGRATION TASK**

Gender	Age	$\bar{\chi}$	σ	N	Source	SS	df	MS	F ratio	Sig.
Male	14	40.294	4.455	17	Gender	5.906	1	5.906	0.395	.533
	15	41.400	2.459	10	Age	16.205	1	16.205	1.085	.303
Female	14	40.917	4.738	12	Gender*Age	0.141	1	0.141	0.009	.923
	15	42.250	1.832	8	Error	642.346	43	14.938		

Table – 8: **TWO-WAY ANOVA ON GROUP INTEGRATION SOCIAL**

Gender	Age	$\bar{\chi}$	σ	N	Source	SS	df	MS	F ratio	Sig.
Male	14	16.529	4.705	17	Gender	21.286	1	21.286	1.362	.250
	15	16.800	3.994	10	Age	2.185	1	2.185	0.140	.710
Female	14	17.750	3.957	12	Gender*Age	0.342	1	0.342	0.022	.883
	15	18.375	0.518	8	Error	671.960	43	15.627		

From tables 6 to 8, it is found that no significant gender difference, age difference and interaction effect subsists on the perception of attraction to group social, group integration task and group integration social as the obtained F ratios are lesser than the required table value for significance at 0.05 level of confidence.

Findings and Discussions

From the results of the investigation, it is observed that hockey player's group cohesion is significantly related to some of the aspects of cohesion viz. attraction to group task, attraction to group social, and group integration task. Furthermore, it is perceived that female hockey players of RDT hockey academy are more cohesive and attracted to group task than their counterparts.

The findings suggest that female hockey players have greater group cohesiveness as compared to male hockey players was probably due to the fact that female hockey players are more dependent, more understanding, sincere in accepting of others, sense of belongingness, and so on. The reason for the diminution in the cohesiveness of male hockey players may be due to the fact that they are ambitious, outgoing, independent, hard headed and are high in need for autonomy and need for dominance.

The findings of this investigation are par with the observations of previous studies. Carron (1982) viewed that a cohesive group has the characteristics namely: a collective identity, a sense of shared purpose and structured patterns of communication.

Perceptions of high team cohesion are strongly related to an athlete's sense of group unity, collectivity, and interdependence with other team members whereas perceptions of low team cohesion are related to an

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athlete's sense of group fragmentation, an individualistic orientation, and independence from other team members (Carron &Hausenblas, 1998).

Terry, Lane, Lane &Keohane (1999) found that high attraction to the group in terms of task cohesion, predicted low tension and anger, and high group integration for task cohesion predicted low depression. For social cohesion, they found that high attraction to the group predicted low tension, low depression and high vigor.

Conclusions:

It is not necessary that all the aspects of cohesion are to be alike for a group or groups. Though many of the qualities of an individual are inborn and refined during learning process, but some of the characteristics are seemed to be acquired in parts with specific sports situations. It is inevitable to extend the researches in recognizing the development of solidarity among adolescents through sports participation, as it would lead to a healthy life style and wellness of our kids.

Coaches, physical educationists, and sport psychologists would be well advised to assess team cohesion and develop team-building strategies to improve task cohesion. Specifically, coaches could work on making sure that team members are clear about and happy with team goals and the level of shared commitment.

"Great learning and superior abilities will be of little value...unless virtue, truth and integrity are added to them."— *Abigail Adams*

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ANALYSIS OF PHYSICAL FITNESS ON ATTENTION, MEMORY, AND DECISION MAKING IN BOYS AND GIRLS

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Abstract
A physical fit and active lifestyle is not only being widely recognized but is also becoming one of the most vital health prescriptions for both young and old individuals. Research studies have convincingly shown that staying physically active and fit substantially reduces the risk of death due to heart related illnesses.
Cognition is the scientific term for "the process of thought". Usage of the term varies in different disciplines; for example in psychology and cognitive sciences, The term cognition (Latin: *cognoscere*, "to know", "to conceptualize" or "to recognize") refers to a faculty for the processing of information, applying knowledge, and changing preferences.
The aim of this study was to determine whether there is a relationship between level of fitness and the information processing components of cognitive abilities like attention, memory and decision-making in children. Forty-seven children were selected for the study. Based upon a cycle ergo meter test. The maximal work rate of the cycle ergo meter was compared with VO2max measures of a treadmill test. The top twenty receiving the highest fitness scores and the twenty with the lowest scores were selected to complete the cognitive tests.
Procedures: Fitness tests are Movement ABC Test, Anthropometric Measures, Polar Heart Monitor. Cognitive tests are Attention Tasks, Decision Making Tasks, Memory Tasks, Executive Function. The primary purpose of this investigation was to examine the various components of information processing to determine whether Aerobic fitness level was related to Attention, Memory, and Decision making in children. In other words, were fit children better able to attend to the task, keep more in memory for a longer duration, make better decisions, or plan and solve problems effectively? The results of this study are arranged into five sections: Fitness level comparison, Attention, Memory, Decision making and Executive function.
Research studies have convincingly demonstrated a relationship between a physically fit, active lifestyle & cognitive functioning in the elderly population. Since this phenomenon has not been extensively studied in children, this study focused on the relationship of fitness and the components of cognition in children.

INTRODUCTION:A physical fit and active lifestyle is not only being widely recognized but is also becoming one of the most vital health prescriptions for both young and old individuals. Research studies have convincingly shown that staying physically active and fit substantially reduces the risk of death due to heart related illnesses. Despite all these proven benefits, the Health reports show that 80 % of Indians adults do not get enough physical activity to provide health benefits.

KEY WORDS: Fitness: Fitness Tests, Screening Tests, Anthropometrical Measures, Polar Heart Monitor, Cycle Ergometer. Cognition: Cognitive Tests, Psych E Evaluation, Reaction Time Board, Tower of Hanoi. Physical Exercise: Exercise Tests, Anthropometrical Measures, Physical Work Capacity Test. Psychological: Psychomotor Evaluation (Psych E) Discrete Simple Reaction Time, Discrete6-Choice Reaction Time, Dual Task-Tracking & Simple Reaction Time, Numeric Vigilance, Probed Memory.

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DEFINITION & MEANING: Cognition is the scientific term for "the process of thought". Usage of the term varies in different disciplines; for example in psychology and cognitive sciences, it usually refers to an indoemation processing view of an individual's psychological functions. The term cognition (Latin: *cognoscere*, "to know", "to conceptualize" or "to recognize") refers to a faculty for the processing of information, applying knowledge, and changing preferences.

AIM OF THE STUDY: The aim of this study was to determine whether there is a relationship between level of fitness and the information processing components of cognitive abilities like attention, memory and decision-making in children. Based on existing evidence from studies on adults, it was predicted that higher-fit children would perform better on attention, memory and decision-making tasks than their low-fit counterparts.

OBJECTS OF THE STUDY: It was predicted that higher-fit subjects would perform better than their lower-fit counterparts on: i) Attention (dual task tracking and discrete simple reaction time tasks), ii) Memory (numeric vigilance and probed memory tasks), iii) Decision making (discrete-6 choice reaction time tasks), and iv) Executive function (Tower of Hanoi).

METHODOLOGY: Forty-seven children were selected for the study. Based upon a cycle ergo meter test (Cycle ergo meter tests are highly related to field measures and are regarded as valid measures of VO2max. The maximal work rate of the cycle ergo meter was compared with VO2max measures of a treadmill test. The top twenty receiving the highest fitness scores and the twenty with the lowest scores were selected to complete the cognitive tests.

PROCEDURES: Fitness Tests: 1. Movement ABC Test, 2. Anthropometric Measures, 3. Polar Heart Monitor, and Cognitive Tests: 1. Attention Tasks, 2. Decision Making Tasks, 3. Memory Tasks, 4. Executive Function

TESTING INSTRUMENTS: 1.Detecto-Medic scale-Height & weight-cm &kg, 2.Bioelectrical Impedance-Body composition-% fat, 3.Heart Rate Monitor-Heartbeat-Beats/min, 4.Cycle Ergometer-Cardio-respiratory Fitness-VO2, 5.Discrete Simple RT (PsychE)-Attention–ms, 6.Discrete 6-CRT (PsychE)-Decision making–ms, 7.DualTask-Tracking SRT (PsychE)- Selective Attention, 8.Probed Memory (PsychE)-Memory capacity-% correct responses, 9.Numeric Vigilance (PsychE)-Memory duration - hits, misses, 10.Tower of Hanoi - Executive Function - Min/s

FITNESS TESTS: The fitness testing included initial screening movement ABC that exclude children with coordination problems. Anthropometric measures of height, weight and body composition were administered, followed by estimating the aerobic capacity using a cycle ergometer and polar heart rate monitor to measure heart rate. 1.Movement ABC test, 2. Anthropometric measures, 3. Polar heart monitor.

MOVEMENT ABC TEST: The M-ABC test identifies and evaluates movement problems. The Movement ABC Checklist is an initial screening instrument that identifies children who might have movement problems in school situations and need to be assessed further. In a study to examine reliability of four sections of M-ABC checklist (child moving-environment stationary, child moving-environment stable, child moving environment moving, child moving environment changing).

ANTHROPOMETRIC MEASURES: A Detecto-medic Scale and Bioelectrical Impedance scale was used for anthropometric measures. A Detecto and Bathroom scale -was used to measure the height (cm) and weight (kg) of the subject. A Bioelectrical Scale was used to measure the child's weight (kg) and calculate body fat percentage.

POLAR HEART MONITOR: The Polar Heart rate monitor was used to measure heart rate during exercise testing. The monitor used a watch and an elastic strap worn around the chest with a transmitter attached. The watch recorded the heart rate during exercise testing. Polar heart rate monitor as a measure of heart rate

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while exercising and resting. The students' heart rates were measured at the same time, using a polar monitor and electrocardiography (ECG) during hand grip exercise and mental arithmetic.

COGNITIVE TESTS: Subjects were required to perform six cognitive tests on a computer. Psych E software package was used to measure six cognitive Tests. 1.Attention and Selective Attention, 2.Decisionmaking, 3.Memorycapacity,and Memory duration, 4.And Executive function using the Tower of Hanoi.

ATTENTION TASKS: Dual task tracking: This task requires the subject to use a computer mouse to moving target (primary task) on the computer screen. At random intervals a stimulus in the form of an auditory beep (secondary task) was presented. The subject was asked to press the space bar of a computer keyboard as soon as hears the beep. Attending to tracking is the primary task while responding to the beep is the distracter.

DECISION MAKING TASKS: Discrete-6 choice reaction time tasks: The subject required to make a decision quickly by responding to a visual stimulus. After a random interval (1-10 s) one of the keys in the computer screen was highlighted, prompting the subject to lift the index finger of the dominant hand from the home key to press the corresponding response key on the response board. The subject received three practice trials followed by randomly ordered trials to each of the 6 response keys.

MEMORY TASKS: Numeric vigilance: This task required subject to identify duplicates of three-digit numbers shown on a computer screen by pressing the spacebar every time a duplicate appears. The three-digit numbers were presented on a computer screen at a rate of 100-three digit numbers per minute. Each of the three-digit number differed randomly from the previous pattern in one of the digits.

EXECUTIVE FUNCTION: Tower of Hanoi: The subject was instructed to use a computer mouse to move three circular discs from one tower to the right. The subject was allowed to move only one disc at a time and a large disc could never be placed on top of a smaller one. The discs should be moved from one tower to another in the least number of moves. The number of moves taken by each subject to move the pegs was recorded.

RESULTS: The primary purpose of this investigation was to examine the various components of information processing to determine whether Aerobic fitness level was related to Attention, Memory, and Decision making in children. In other words, were fit children better able to attend to the task appropriate cues, keep more in memory for a longer duration, make better decisions, or plan and solve. The results of this study are arranged into five sections: Fitness level comparison, Attention, Memory, Decision making and Executive function.

ATTENTION: General Attention: General attention was measured using visual simple reaction time (VSRT), visual simple movement time (VSMT), auditory simple reaction time (ASRT) and auditory simple movement time (ASMT).Reaction time board pick up Selective Attention: Selective attention was measured using secondary task reaction time (STRT), secondary task reaction time minus visual simple reaction time (STRT-VSRT) and time-on-task (TOT) for tracking task.

TABLE 1: Means (SD) for Attention across groups and tests

Group	VSRT	VSMT	ASRT	ASMT
Lower-Fit group	528.80	326.45	503.20	356.80
	131.04	96.40	139.95	138.91
Higher-Fit group	490.15	316.35	453.44	324.72
	96.71	84.43	113.88	209.18

DECISION MAKING: Decision Time: Decision time was measured by subtracting visual simple reaction time from visual choice reaction time, (VCSRT minus VSRT) and visual movement time (VSMT) determined whether the subjects continued to think as the moved.

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TABLE 2: Means (SD) for Decision Time across groups and tests

Group	Decision Reaction Time	Decision Movement Time
Lower-Fit group	102.52	(83.21)
	360.26	(104.66)
	N = 19	N=19
Higher-Fit group	109.50	(76.72)
	358.30	(80.39)
	N = 20	N=20

MEMORY: Memory Capacity: Memory capacity was measured using probed memory capacity of eight (P8) and ten (P10) letters to establish if there were differences in memory length for the two groups.Memory duration: Memory duration was measured using vigilance hits at 80-(V80H) and 100-(V100H) three-digit numbers per minute to establish if there were differences in memory duration for the two groups. Thus duration at 80-three-digit numbers per minute provides more time between presentations, Thus the 100-digit presentation should be superior to the 80-three-digit-numbers per minute.

TABLE 3: Means % correct hits (SD) for Memory capacity at P8 and P10

Group	Capacity 8	Capacity 10
Lower-Fit group	77.22	(12.62)
	69.44	(13.27)
	N=18	N=18
Higher-Fit group	77.65	(10.01)
	69.41	(10.44)
	N = 17	N = 17

EXECUTIVE FUNCTION: Executive Function The Tower of Hanoi measured the executive planning and problem-solving ability of subjects. Executive planning and problem-solving ability of subjects using time-to-complete (TOHTIME), number of errors (TOHERR) and number of moves (TOHMOVE) as dependent variables.

TABLE 4: Means (SD) for Planning and Problem solving Time across groups and tests

Group	Tower of Hanoi Time	Tower of Hanoi Error	Tower of Move
Lower-Fit group	43.00	34.78	150
	.366	12.60	5.20
Higher-Fit group	52.95	30.37	.950
	2.11	13.40	3.51

ANALYSIS: The independent variable was group (fit, unfit) Simple/Choice Reaction Time (SRT, CRT), Simple/Choice Movement Time (SMT, CMT), Discrete 6-Choice RT (D6CRT), Dual task-tracking RT (DT-TSRT), Probed Memory (PM), Numeric Vigilance (NV) and Tower of Hanoi. For memory capacity, a Group x memory capacity with repeated measures on memory length was computed. For memory duration, a Group x duration with repeated measures on time was computed. The design of the study was level of physical fitness with the following dependent variables: Discrete simple reaction time, Discrete 6 choice reaction time, a Dual task, numeric vigilance, and probed memory.

DISCUSSION: Research studies have convincingly demonstrated a relationship between a physically fit and active lifestyle and cognitive functioning in the elderly population. Since this phenomenon has not been extensively studied in children, this study focused on the relationship of fitness and the components of

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cognition in children. The few studies examining the relationship of fitness and cognitive functioning in children relied heavily on academic performance. The previous studies on adult-child relationships and ignored the most essential elements (attention, memory, decision making) of information processing. The few studies have looked into physical fitness and information processing have failed to address what aspects of information processing are responsible for the differences found in how children process information. To date, no studies have investigated the effect of physical fitness on attention, memory and decision making in children. Thus, the unique aspect of this study was that, it examined this relationship amongst children.

RECOMENEDATIONS: It is important for future studies to examine if the effect of physical fitness to cognition is general or specific to certain aspects of information processing. The sample size of twenty students per group may have been insufficient to enable the tests to reveal significance. Future studies might involve creating a cognitive instrument that is age appropriate and appealing to children. The instrument used has proved to be tiring and less interesting for children. Finally, future studies could examine the effect of physical fitness as measured by muscular strength or endurance or physical activity instead of aerobic fitness

CONCLUSIONS: There was a trend for the higher-fit to perform better than the lower-fit on simple and choice movement times, memory capacity and duration tests. Further studies need to continue to explore whether aerobic fitness levels have an impact on the components of children's information processing.

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ANALYSIS OF THE TRANSFORMATION ON HEART RATE AND STROKE VOLUME RESPONSES TO EXERCISE STRESS WITH AEROBIC AND ANAEROBIC TRAINING

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Abstract
The study was intended to evaluate the alterations on heart rate and stroke volume responses to exercise stress with aerobic and anaerobic training among untrained male college students. Forty-five untrained male college students, in the age group of twenty to twenty-five years were selected as participants, and they were segregated into three groups namely: control, aerobic and anaerobic training groups. The duration of experimentation period was restricted to twelve weeks and the frequency of training was thrice a week. The other independent variable confined to this study is aerobic exercise stress testing using Bruce treadmill protocol to evaluate its influence on heart rate and stroke volume. The data on heart rate and stroke volume were measured at rest and after exercise conditions from all the three groups, before and after twelve weeks of experimentation. The data thus collected was subjected to three-way factorial ANOVA with repeated measures on last two factors. The findings of the study revealed that the heart rate and stroke volume at rest and after exercise conditions of aerobic and anaerobic training groups altered significantly for better as a result of respective training, where aerobic training has the upper hand as compared to anaerobic training for its effectiveness on heart rate and stroke volume.

Introduction

Human beings acclimatize in a variety of ways depending upon the stresses to which it is exposed. Reactions to excessive stresses are modified by the individual attributes of each person. The length of exposure to stresses modifies the nature of changes and the resiliency of those changes. Thus, upon exposure to an active stress, the body undergoes a hierarchy of responsive changes, the physiological and biochemical changes to increase oxygen supply to body tissues are noticeable in those body systems that are directly related to oxygen delivery, but the changes probably occur in all organ systems.

In physiological response to acute exercise, there are several components that dictate what will be the magnitude and direction of the physiological response. The key components of “acute exercise” are the intensity at which the exercise is performed and the duration of the individual exercise bout (McArdle, Katch & Katch, 1996; Pollock & Wilmore, 1990). Typically the greater the intensity of exercise, the greater the degree of stress placed upon the physiological system. Relative to duration, typically extending the length of time of an exercise bout at any given intensity tends to amplify the physiological response; that is, as a person exercises longer and longer, one can see a gradual and further increase in the physiological and biochemical levels (Galbo *et al*., 1977).

Exercise, a common active stress, can elicit cardiovascular abnormalities not present at rest. Dynamic exercise is preferred for testing because it puts a volume stress rather than a pressure load on the heart and because it can be graduated. When dynamic exercise is begun or increased, oxygen uptake bythe lungs quickly increases. After the second minute, oxygenuptake usually remains relatively stable at eachintensity of exercise. During

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steady state of exercise, heart rate, cardiacoutput, blood pressure, and pulmonary ventilation are maintainedat reasonably constant levels (Rowell, 1986).

The body's response to dynamic exercise consists of acomplex series of cardiovascular adjustments to provide activemuscles with the blood supply appropriate for their metabolicneeds, to dissipate the heat generated by active muscles, andto maintain the blood supply to the brain and the heart.

Exercise is an incredibly important part of a healthy person's life. Exercising regularly helps to hone one's athletic skills by strengthening the muscles across the bodies, and also by enhancing the functioning of all internal organs.When the body engages in exercise training several times a week or more frequently, each of these physiologic systems undergoes specific adaptations that increase the body's efficiency and capacity. The magnitude of these changes depends largely on the intensity and duration of the training sessions, the force or load used in training, and the body's initial level of fitness.

Exercise is considered to be a more intensive physical activity than the normal activities of daily living. There are two main types of exercises: aerobic exercise and anaerobic exercise. Aerobic exercise is a physical activity that increases the activity of the pulmonary and cardiovascular systems. It requires an increase in oxygen to be used and transported to the muscle. Conversely, anaerobic exercise is physical activity of a short duration and of less intensity than aerobic exercise. It does not requires an increase in oxygen to be used and transported to the muscle.

Aerobic and anaerobic training focuses on very different results on the body, it is easy to assume there are many different adaptations the body must make if one were to choose to only exclusively train aerobic or anaerobic. There is a scarcity of research work carried out to identify the impact of training modalities on heart rate and stroke volume responses to exercise stress. Hence, the investigator proposed to examine whether heart rate and stroke volume responses to exercise could be significantly influenced by different training protocols.

Methods and Procedures

Forty-five untrained male college students, in the age group of twenty to twenty-five years were selected as participants, and they were segregated into three groups namely: control, aerobic and anaerobic training groups.The participants were selected fromVisakapattinam of Andhra Pradesh.

The aerobic and anaerobic training programs were used as experimental treatment. The duration of experimentation period was restricted to twelve weeks and the frequency of training was thrice a week. The other independent variable confined to this study is aerobic exercise stress testing using Bruce treadmill protocol to evaluate its influence on the criterion variables namely:heart rate and stroke volume.The data on heart rate and stroke volume were measured at rest and after exercise condition during both pretest and posttest. The standardized testing procedures and instruments used to collect the data on selected criterion variables were as presented in the table-1.

Table –1: Dependent Variables and their Respective Tests

Variables	Instruments/methods	Unit of Measurement
Heart rate	Digital blood pressure monitor	beats/min.
Stroke volume	Doppler Ultrasound	ml/beat

Experimental Design and Statistical Techniques

The experimental design used in this study was random group design involving forty-five untrained male college students, who were segregated into three groups of fifteen each. The data thus collected from experimental and control groups at rest and after exercise condition during pre and post test have been

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analyzed by three-way factorial ANOVA with repeated measures on last two factors. In all the cases level of confidence was fixed at 0.05 for significance.

Results of the Study

The data on heart rate have been analyzed by three-way factorial ANOVA (3x2x2) with repeated measures on last two factors and the results thus obtained are presented in table 2.

Table 2 also indicates that the three-way interaction of groups, training and exercise conditions confers the existence of significant difference on heart rate among groups in relevance to testing at rest and after exercise during pre and post tests.

Since, the interaction effect is significant, the simple effect test has been applied as follow up test and it ispresentedin table-3.

Table –2: Three Way Factorial ANOVA on Heart Rate

Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Groups	568.433	2	284.217	97.792*
Error (Group)	122.067	42	2.906	
Training	1513.800	1	1513.800	391.339*
Groups and Training	723.233	2	361.617	93.483*
Error (Training)	162.467	42	3.868	
Exercise	607377.422	1	607377.422	122095.653*
Group and Exercise	151.144	2	75.572	15.192*
Error (Exercise)	208.933	42	4.975	
Training and Exercise	245.000	1	245.000	69.778*
Training, Exercise and Group	160.033	2	80.017	22.790*
Error	147.467	42	3.511	

**Significant at .05 level of confidence*

(Table values required for significance at .05 level with df 1 & 42 and 2 & 42 are 4.07 and 3.23 respectively.)

Table-3exhibits thatheart rate did not vary significantly between groups during pretest period at rest and after exercise conditions, while, significant difference exists on heart rate between groups at rest and after exercise conditions during posttest period (*for which the post hoc test was performed and presented in table 4 & 5*).

In addition, it reveals that resting heart rate and the heart rate in response to exercise of aerobic and anaerobic training groups altered significantly for better as a result of respective training,while no significant changes on resting heart rate and the heart rate in response to exercise of control group were found. The heart rate of all the three groups elevated significantly in response to exercise during pretest and posttest period.

Table -3: The Simple Effect Scores on Heart Rate

Source of Variance	Sum of Squares	df	Mean Squares	"F" ratio
Groups at rest during pre test	2.023	2	1.0113	0.288
Groups after exercise during pre test	1.089	2	0.544	0.155
Groups at rest during post test	712.297	2	356.148	101.44*
Groups after exercise during post test	86.01958	2	43.00979	12.25001*

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Tests at rest and group I	1267.5	1	1267.5	361.0083*
Tests at rest and group II	997.6449	1	997.6449	284.1484*
Tests at rest and group III	0.133467	1	0.133467	0.038014
Tests after exercise and group I	246.5305	1	246.5305	70.2166*
Tests after exercise and group II	128.1313	1	128.1313	36.49424*
Tests after exercise and group III	2.133867	1	2.133867	0.607766
Tests during pre test and group I	97584.09	1	97584.09	27793.82*
Tests during pre test and group II	96673.58	1	96673.58	27534.48*
Tests during pre test and group III	97356.15	1	97356.15	27728.89*
Tests during post test and group I	110413.5	1	110413.5	31447.87*
Tests during post test and group II	109686.7	1	109686.7	31240.86*
Tests during post test and group III	96219.92	1	96219.92	27405.27*
Error	147.467	42	3.511	

*Significant at .05 level of confidence

(Table values required for significance at .05 level with df 1 & 42 and 2 and 42 are 4.07 and 3.23 respectively.)

Table -4: Scheffè S Test for the Differences between Paired Means on Heart Rateof Groups at Rest during Post Test

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
57.333	59.133		1.800*	1.739
57.333		70.067	12.734*	1.739
	59.133	70.067	10.934*	1.739

*Significant at .05 level of confidence

Table 4demonstrates that there is a significant difference among groups confined to this study on heart rate at resting condition during posttest period. It is inferred that the heart rate of aerobic training group is significantly better than anaerobic training group at resting condition during posttest period.

Table – 5: Scheffè S Test for the Differences between Paired Means on Heart Rate of Groups after Exercise during Post Test

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
178.667	180.067		1.400	1.739
178.667		183.333	4.666*	1.739
	180.067	183.333	3.266*	1.739

*Significant at .05 level of confidence

Table 5reveals that significant differences exists between aerobic training and control groups; and anaerobic training and control groups on heart rate after exercise condition during posttest period. It is found that the heart rate in response to exercise during posttest of aerobic and anaerobic training groups didn'tdiffer significantly.

The data on stroke volume have been analyzed by three-way factorial ANOVA (3x2x2) with repeated measures on last two factors and the obtained results are presented in table-6.

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Table –6: Three Way Factorial ANOVA on Stroke Volume

Source of Variance	Sum of Squares	df	Mean Squares	Obtained "F" ratio
Groups	4051.744	2	2025.872	185.509*
Error (Group)	458.667	42	10.921	
Training	8120.450	1	8120.450	757.909*
Groups and Training	4003.300	2	2001.650	186.8218*
Error (Training)	450.000	42	10.714	
Exercise	143312.450	1	143312.450	23993.315*
Group and Exercise	138.433	2	69.217	11.588*
Error (Exercise)	250.867	42	5.973	
Training and Exercise	107.339	1	107.339	41.259*
Training, Exercise and Group	49.144	2	24.572	9.445*
Error	109.267	42	2.602	

*Significant at .05 level of confidence

(Table values required for the df of 1 & 42 and 2 & 42 are 4.07 and 3.23 respectively)

Table 6 indicates that significant differences exist in the three way interaction of groups, training and exercise conditions on stroke volume. Since, the interaction effect is significant, the simple effect test has been applied as follow up test and it is presented in table-7.

Table – 7:The Simple Effect Scores on Stroke Volume

Source of Variance	Sum of Squares	df	Mean Squares	"F" ratio
Groups at rest during pre test	3.355344	2	1.677672	0.644763
Groups after exercise during pre test	3.466333	2	1.733167	0.66609
Groups at rest during post test	1464.874	2	732.4372	281.4901*
Groups after exercise during post test	2649.617	2	1324.809	509.1502*
Tests at rest and group I	2881.2	1	2881.2	1107.302*
Tests at rest and group II	1888.141	1	1888.141	725.65*
Tests at rest and group III	0.3	1	0.3	0.115296
Tests after exercise and group I	4368.121	1	4368.121	1678.755*
Tests after exercise and group II	3141.644	1	3141.644	1207.396*
Tests after exercise and group III	0.833167	1	0.833167	0.320202
Tests during pre test and group I	23352.3	1	23352.3	8974.75*
Tests during pre test and group II	22632.51	1	22632.51	8698.119*
Tests during pre test and group III	21816.09	1	21816.09	8384.353*
Tests during post test and group I	27300.8	1	27300.8	10492.24*
Tests during post test and group II	26581.6	1	26581.6	10215.84*
Tests during post test and group III	21924.06	1	21924.06	8425.849*
Error	109.267	42	2.602	

*Significant at .05 level of confidence

(Table values required for significance at .05 level with df 1 &42 and 2 and 42 are 4.07 and 3.23 respectively.)

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Table 7 indicates that stroke volume did not vary significantly between groups during pre test period at rest and after exercise conditions, however, significant difference exists on stroke volume between groups at rest and after exercise conditions during posttest period (*for which the post hoc test was performed and presented in table 8&9*).

The result of the study also indicates that stroke volume at rest and in response to exercise of aerobic and anaerobic training groups altered significantly for better as a result of training. However no significant changes on stroke volume were found among tests at resting and in response to exercise condition of control group. Furthermore, the findings indicates that stroke volume of all the three groups elevated significantly in response to exercise during pretest and posttest period.

Table -8: The Scheffè S Test for the Differences between Paired Means on Stroke Volume of Groups at Rest during Post Test

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
84.200	81.067		3.133*	1.497
84.200		65.733	18.467*	1.497
	81.067	65.733	15.334*	1.497

*Significant at .05 level of confidence

Table 8 shows that significant differences exists between aerobic and anaerobic training groups, aerobic training and control groups and anaerobic training and control groups on stroke volume at resting condition during post test period. It is inferred from the result of the study that the stroke volume at resting condition of aerobic training group is significantly better than anaerobic training group during post test period.

Table – 9: The Scheffè S Test for the Differences between Paired Means on Stroke Volume of Groups after Exercise during Post Test

Aerobic Training Group	Anaerobic Training Group	Control Group	Mean Difference	Confidence Interval
144.533	140.600		3.933*	1.497
144.533		119.800	24.733*	1.497
	140.600	119.800	20.800*	1.497

*Significant at .05 level of confidence

Table 9 shows that significant differences exists between aerobic and anaerobic training groups, aerobic training and control groups and anaerobic training and control groups on stroke volume after exercise condition during post test period. It is inferred from the result of the study that the stroke volume in response to exercise of aerobic training group is significantly better than anaerobic training group during post test period.

Discussions on Findings

The results of the present study are in conformity with the findings of the previous research studies. It is fact that numerous physiological variables change as a result of exercise to maintain homeostasis and muscular work. Increased aerobic fitness is also indicated by a lower heart rate at matched submaximal work rates (McInnis & Balady, 1994).

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Heart rate is acutely elevated immediately following a work bout (Fleck, 1988). Interestingly, in terms of chronic adaptations, there appears to be a reduction in heart rate from training, which is considered beneficial (Stone *et al*., 1991).

Piira and others (2010) assessed the heart rate (HR) dynamics and found that cardiac vagal outflow is attenuated and vasomotor sympathetic activity elevated during exciting sports events.

The stroke volume in highly trained persons can continue to increase up to near maximal rates of work (Scruggs *et al*., 1991; Gledhill, Cox & Jamnik, 1994). Several factors contribute to the increase in stroke volume from sports training. The athlete's heart structure augments stroke volume. Left ventricular end-diastolic internal diameter and left ventricular end-diastolic wall thickness increase in parallel so that their ratio is not significantly altered (**White, *et al*., 1987)**. Stroke volume increases in parallel with the increased end-diastolic volume so that muscle fiber shortening is maintained.

Conclusions

Based on the findings of the study it was concluded that the heart rate and stroke volume at rest and after exercise conditions of aerobic and anaerobic training groups altered significantly for better as a result of respective training, where aerobic training has the upper hand as compared to anaerobic training for its effectiveness on heart rate and stroke volume.

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EFFECTS OF PLYOMETRIC AND SPEED TRAINING EXERCISES ON RELATED FITNESS AND PHYSIOLOGICAL VARIABLES OF MALE FOOTBALL TRAINEES OF AMBO FIFA GOAL PROJECT ACADEMY IN ETHIOPIA

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Introduction

Football is a team sport that enthused by most people in every corner of our today's world. Because of it have so many benefits like to induce physical and physiological fitness, as a means of better income and social interaction, and political superiority etc. To realize these needs for their citizens' governments of numerous countries, scientist, researchers, and professionals from different sectors sweat a lot for looking different strategies through which they equip their youth with likely physical and physiological performance. So the most important and vital to achieve this need is the training methods that arranged for the trainees. Training methods is one of the most fundamental and backbone of any sport activities as individually or in group. Therefore; different types of sport training methods are formulated by scientists and researchers on the bases of excepted physical and physiological fitness of trainees. Plyometric and speed training methods are parts of these sport training methods that help to improve explosive power, jumping and sprint ability, speed, quickness, and agility of trainees. Then most professional coaches, sport trainers and trainees are included these training methods in their training program starting from infant training age of trainees especially for football trainees.

Plyometric and speed training exercise are thought to stimulate various changes in the neuromuscular system, enhancing the ability of the muscle groups to respond more quickly and powerfully to slight and rapid changes in muscular length (Johnson.B.,Salzberg,C.,Stevensen,D. 2011). The fundamental reason to train with plyometics and speed exercises are specifically to reduce the ground contact time that an athlete spends when running or jumping. This reduced as the athlete matures, gets stronger, and practices the skills of their game. Not only this, the other important feature of plyometric and speed training exercise were the conditioning of the neuromuscular system to allow for faster and more powerful muscular response during and movement activities (Markovic, G., Jukic, I., Milanovic, D., &Metiko, D. 2007).The literature reveals that football trainees running speed can be improved following several types of training interventions such as sprints training, towing, over speed and specific plyometric exercises.

Over all this study is intended to find out the integrated effects of plyometric and speed training exercises on the related fitness and physiological variables of youth male football trainees in parallel with their regular training program.

Statement of the Problem

The ultimate goal of designing and practicing any sport training program were primarily to improve the physical and physiological fitness performance of trainees. Naturally the trainees have their own innate performance which they get genetically form their ancestors to practice the sport activities; but the key problem here is, arranging the training programs that relevant with the over status of trainees to bring out their natural talent and ability that they have in to the phonetic (physical). It is not easy task to prepare the training program that induces the expected change on the physical and physiological performance of trainees.

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The focus of this study was find out the effect of plyometric and speed training exercises; science both training techniques were used by most coaches, athletes and trainers in all types of sports to increase sprint ability, strength and explosiveness. Plyometric consists of a rapid stretching of a muscle (eccentric action) immediately followed by a concentric or shortening action of the same muscle and connective tissue (Baechle and Earle, 200). Speed is the proper technique done very quickly. All we do when we are making players faster is teach them the proper mechanics (techniques) that has them run and move faster, this is physical speed. In football specific speed training we do all this in relation to the demands and specific situations of the actual game.

Hypothesis

There would be statistically significant improvement on related fitness and physiological variables of youth football trainees due to integrated plyometric and speed training exercise.

It was hypothesized that there could be significant difference between training and control group on sprint, explosive power, jumping, speed, agility& quickness performance, & aerobic capacity.

Delimitation

Thirty (n=30) male football trainees were selected and segregated in two groups training and control group. The trainees were selected from Ambo FIFA goal project football academy in Ethiopia entry 2013/14. The related fitness and physiological variable selected as criterion variables for the study were only: 30m shuttle sprint, Push up, Sit up, Stand Broad Jump, Illinois agility test, Sit-Reach test, for related fitness and Vo2max, resting heart rate, systolic and diastolic blood pressure are considered as physiological variables.

Limitation

Absence of training manual, curriculum and syllabus arranged by academy for the regular training program of trainees for adjustment. The heterogeneity, motivation, awareness and interest of trainees are some factors considered as limitation of this study

Significance of the Study

Plyometric and speed training exercises inducing the elastic properties of the muscle fibers and connective tissue in a way that allows the muscle to store energy during the deceleration phase and release that energy during the acceleration period (Asmussen, 1974; Bosco, et.al., 1982; Kaneko, et. al., 1983). They are an effective mode of training as they improves motor learning and neuromuscular efficiency promoting the excitability, sensitivity, and reactivity of the neuromuscular system to increase the rate of force production (power), sprint ability, motor unit recruitment, firin frequency (rate of coding), and synchronization. So, these overall effects that influence our body performance bring out these training methods significantly appropriate for football trainees especially at early training age in academy, school and related training center.

Methods and Procedures of the Study

In football, spritning and explosive actions such as jumping, springing, running forward-backward, throwing and changes of directions are essential to optimal performance not only in elit, but also in childrens and youth trainees. For the purpose of this study, thrity (n=30) trainees age(16±0.6 years), height(1.68±0.2cm), body mass(62±0.8kg) of male youth football trainees of Ambo FIFA goal project academy of Ethiopia were selected. Fifiteen (n=15) were taken as training group(TG) and fifteen (n=15) of them also taken as control group (TG) by simple random sampling techniques. All trainees are from the same group 2013/14 entery and attending three days training program and one day game per weeks in the acadmey. The TG particpated on twelve weeks intgrated plyometric and speed training exercise for 45mint to 60mint 2-days per week in parallel with their regular training prgram while the CG group participate only on their football training program arranged by their academy coach.

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Pre-and immedatly after training , the related fitness and physiological variable performance of all trainees were tested and analysed on the following dependent variables: 30m shuttle for sprint abilty, number of push up and sit up with 30 seconds for their upper and trunk strength, height and disatnce of vertical and standing broad jump respectively for upper and lower extrimity explosive power and strenght, duration of time elsped to complete Illinois agility test for SQA and sit reach test for flxbility; beside to this Vo2max test for for areboic capacity using beep test, Resting Heart rate per mint, systollic and distolic blood pressure in mmHg were also tested to see the improvement obsrved.

Design and Procedure of the Study

procedure

The trainees had two trainings per week had included plyometric and speed training exercises. Training duration was 45-60minutes. Prior to each training session, all subjects participated in a 10 minute warm-up period which included jogging at a self-selected comfortable pace followed by calisthenics. After warming up session trainees performed plyometric and speed training and after finishing starts with their usual training. All trainees have got instructions how to make exercises correctly before starting training program.

Statistical Analysis

Following data collection and analyses of mean and standard deviations were calculated for all dependent variables test results. A paired t-test for the same group before and after the duration of training program and independent t-test for different group after training were used to determine if there were a significant difference between pre and post training program. Statistical analysis was conducted using SPSS v 16.0 statistical software package Inc. Chicago, IL) with a statistical significance level set at $p<0.05$.

Result of the Study

The purpose of this study was to determine the combined effects of twelve weeks plyometric and speed training exercise on related fitness and physiological variables of football trainees in Ambo youth FIFA goal project academy of Ethiopia. A paired samples t-test and independent t-test showed after training program improves statistically significant of related fitness and physiological variables performance of trainees ($P<0.05$). The mean and SD of the pre test on related fitness were 5.51secon sprint, 18 and 21 pushup and sit up within 30 second, 21cm and 2.54m VJ and SBJ, 17.05 second to complete Illinois Agility test and 25cm sit reach test and the mean and SD after the completion of arranged training program for training program, A significant improvement from pre test to post test was found.

Tabe-2: Related Fitness test results of plyometric and speed training program

Variable	Training Group					Control group				
	Pre		Post			Pre		Post		
	M	SD	M	SD	P	M	SD	M	SD	P
30m shuttle sprint (sec)	4.77	0.15	4.33	0.11	.000*	4.81	0.15	4.69	0.13	0.01
Push Up test (No)	17.20	3.23	22.46	3.41	.000*	17.06	2.12	18.53	2.26	0.013
Sit up Test (No)	20.80	2.58	25.00	3.07	.000*	20.20	1.78	21.60	1.57	0.000
Vertical Jump test (cm)	22.14	2.65	33.59	4.53	.000*	25.69	7.51	26.67	5.41	0.521
Stand Broad Jump Test (m)	2.18	0.15	2.62	0.17	.000*	2.09	0.81	2.26	0.41	0.000
Illinois Agility Test (sec)	17.02	0.46	16.25	0.49	.000*	17.10	0.54	17.52	0.57	0.25
Sit reach test (cm)	11.43	0.95	18.53	0.37	.000*	9.88	6.55	13.31	6.54	0.001

*indicate the level of significance set at p< 0.05

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Table -3: Physiological test results of youth male soccer trainees

Variable	Training Group					Control group				
	Pre		Post			Pre		Post		
	M	SD	M	SD	P	M	SD	M	SD	P
Vo2max.Test (ml/kg/mint)	48.83	1.47	52.67	1.72	.00*	48.42	2.07	49.65	1.96	0.014
Resting Heart Rate(bpm)	66.13	6.98	59.53	3.99	.00*	64.20	6.16	64.33	5.12	0.806
SBP (mmHg)	108.00	10.14	100.00	10.00	.005	112.00	9.41	106.67	8.12	0.056
DBP (mmHg)	65.00	6.81	60.00	5.00	.000	65.00	7.31	63.33	4.49	0.465

SBP-systolic blood pressure, DBP- diastolic blood pressure*Level of Significance set at ($p<0.05$)

As we can see from the above table -2 & 3, the pre-post paired t-test statistical analyses reveal the significance difference were observed on the related fitness and some physiological variables performance of trainees as the consequences of the arranged training program for his study the difference were significantly more among the pre-post performance of training group than the control group

Table-4: The test results of Independent t-test for post-training program arranged for training group

Related fitness Variables	Subjects (TG=15,TC=15)	Mean	SD	Sig.(2-tailed)	95% CI of the Diff.	
					Lower	Upper
30m shuttle Sprint Test (sec)	TG	4.33	0.11	.000*	-.450	-.268
	CG	4.68	0.12		.	
Push up Test (No)	TG	22.46	3.41	.001*	1.764	6.102
	CG	18.53	2.26			
Sit Up test (No)	TG	25.00	3.07	.001*	1.570	5.229
	CG	21.60	1.59			
Vertical Jump Test (cm)	TG	33.59	1.17	.000*	4.188	11.656
	CG	25.67	1.39			
Stand Broad Jump Test (m)	TG	2.62	0.79	.000*	.239	.485
	CG	2.26	0.14			
Illinois Agility Test(sec)	TG	16.25	.49	.000*	-1.233	-.453
	CG	17.10	.54			
Sit –Reach test (cm)	TG	18.53	8.37	.068	-.403	10.837
	CG	13.31	6.54			
Physiological Variables						
Vo2max Test (ml/kg/min)	TG	52.67	1.72	.000*	1.638	4.401
	CG	49.65	1.96			
Resting Heart Rate (bmp)	TG	59.53	3.99	.008	-8.236	-1.363
	CG	64.33	5.12			
Systolic Blood Pressure (mmHg)	TG	106.00	8.28	.475	-7.654	3.654
	TC	108.00	6.76			
Diastolic Blood Pressure (mmHg)	TG	60.00	5.00	.065	-6.890	.223
	TC	63.33	4.49			

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TG=Training Group, CG= Control Group, *level significance among the dependent variables at p<0.05

Tabl-4 shows that there is a significant improvement on the related fitness and physiological variables of training group in relation to the control group except some dependent variables like sit reach test, systolic and diastolic blood pressure because of the training program.

Discussion

In this discussion section the main findings of this study was that integrating plyometric and speed training exercise with the regular training program of youth football trainees for twelve weeks brings significant improvement on their related physical fitness and physiological variables. As we can see form tables above, the paired t-test analyses on pre and post training test results of the dependent variables of related fitness were as follows; 30m shuttle sprint improved for TG by 0.44sec&for CG by 0.12se, Push up test were improved for TG by 5.26 & for CG by 1.47, Sit ups test improved for TG by 4.2& for CG by 1.4, Vertical Jump test of TG improved by 11.45cm & for CG BY 0.98cm, Standing Broad Jump test improved for TG by 0. 44m & for CG by 0.17m, Illinois agility test improved by 0.77 second &but for CG by 0.42sec), and sit-reach test improved by 6.9cm & for CG by 3.43cm. Similarly the pre-post test were also conducted on physiological test variables of the trainees and analyses by using paired t-test then the change observed were as follows, Vo2max test for TG improved by 3.84ml/kg/min & for CG by 1.23 ml/kg/min, Resting Heart rate for TG improved by 6.6bpm & for CG by 1.2bpm, systolic blood pressure test improved for TG by 8mmHg & for CG by 5.33mmHg and Diastolic blood pressure test improved by 5mmHg and for CG by 1.7mmHg. For further explanation, the post training program of both group (TG, and CG) from table- 4, were analyzed by using independent t-test, the results reveals the significance improvement of training group on all dependent variables. Beside to this as we can see form table- 4, the independent t-tests were applied to analyzes the significance improvement between the related fitness and physiological performance of training group and control group after the training group complete their training program, then the mean value of test results of all dependent variable of TG significantly improved than the CG which strengthen the paired t-test results.

Conclusion

On the basis of findings of the study, the following conclusions can be drawn:

The results of the study indicates that the significant difference were found in pre and post test of training group on all related fitness tests (P<0.05), but insignificant difference was found in pre and post test results of control group in all related fitness variables included for this study (P>0.05).

The results of the study indicate that the significant difference was found in pre and post tests of training group in some physiological variable like Vo2max, Resting heart rate (p<0.05) and insignificant difference in some other test results like systolic and Diastolic blood pressure (P<0.05). The tests results of the study indicate that the insignificant difference was found in pre-and post tests on the physiological variable of control group (P>0.05). On the base of this finding it was concluded that the integrated twelve weeks plyometric and speed training exercises are responsible for the improvement of related fitness and physiological variables of youth football trainees in academy.

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ROLE OF NUTRITION IN PHYSICAL FITNESS

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Abstract
Fitness is defined as the quality or state of being fit. Modern definition of fitness describes either a person or machines' ability to perform a specific function or holistic definition of human adaptability to cope with various situations. Fitness is attributed to person who possesses significant aerobic or anaerobic ability that is strength or endurance. Physical fitness is a state of health and wellbeing and more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate vigorous physical exercise and sufficient rest.
Nutrition is the science of foods, interaction and balance in relationship to health and disease; the processes by which the organism ingests, digests, absorbs, transport and utilizes nutrients and disposes of their end products. In addition nutrition is concerned social, economic, cultural, and physiological implications of food and eating. In short, nutrition science is the area of knowledge regarding the role of food in the maintenance of health.
The health benefits if physical activity are not reserved just for athletes. In a personally planned program to meet individual needs, any person can develop a healthy lifestyle. The longer people follow some from of regular exercise, the more committed they become. Water aerobics, walking, and other soft workouts are becoming more and more popular in health clubs and have enabled more people to participate. Now nutrition is an important part of our life, we now realize that, quality of our health depends upon the nourishment that we provide to our body. However our dietary habits are influenced by many factors. This paper explores the interrelationship of nutrition, health and physical fitness is the life of the individuals.

Introduction:
Physical fitness is a state of health and wellbeing and more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate vigorous physical exercise and sufficient rest. Physical fitness now considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy. Fitness is defined as the quality or state of being fit. Modern definition of fitness describes either a person or machines' ability to perform a specific function or holistic definition of human adaptability to cope with various situations. Fitness is attributed to person who possesses significant aerobic or anaerobic ability that is strength or endurance.
A comprehence fitness program tailored to an individual typically focuses on one or more specific skills and on age or health related needs such as bone health. Physical fitness can also prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging. Regular physical exercise is important for younger generations too, especially with the rise of obesity in children. Heart disease, type 2 diabetes, asthma and social discrimination are just a few of the possible consequences of childhood spent in front of the television or the internet. Lack of physical activity is associated with increase rise of anxiety, diabetes, osteoporosis, colon cancer and obesity and dyeing prematurely.
Nutrition has been simply defined as the food you eat and how your body uses it. The physiologic need for food is actually the need for nutrients. Nutrients are the chemicals obtained from food that allow the proper functioning of the body. Nutrition is the science of foods, interaction and balance in relationship to health and

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disease; the processes by which the organism ingests, digests, absorbs, transport and utilizes nutrients and disposes of their end products. In addition nutrition is concerned social, economic, cultural, and physiological implications of food and eating. In short, nutrition science is the area of knowledge regarding the role of food in the maintenance of health.

The science of nutrition had its beginnings in the late 18th century with the discovery of the respiratory gases and especially the studies on the nature and quantification of energy metabolism by Lavoisier, A Frenchman, often referred to as the father of the science of nutrition.

The health benefits if physical activity are not reserved just for athletes. In a personally planned program to meet individual needs, any person can develop a healthy lifestyle. The longer people follow some from of regular exercise, the more committed they become. Water aerobics, walking, and other soft workouts are becoming more and more popular in health clubs and have enabled more people to participate (eg- those who cannot lift heavy weights or do "go-for-the-burn" aerobics). Several of these new gym members are older adults who have health problems that improve with moderate exercise. Many elderly persons fond that regular exercise not only helps manage their health but also assists them to feel more in control of their lives.

Over nutrition or **hyper alimentation:**

Is a form of malnutrition in which the intake of nutrients is over supplied. The amount of nutrients exceeds the amount required for normal growth, development, and metabolism.

The term can also refer to: Obesity, which usually occurs by overeating, as well as: Oversupplying a specific nutrient, such as dietary minerals or vitamin poisoning. This is due to an excessive intake or a nutritional imbalance caused by fad diets. For mineral excess Iron poisoning, and Low sodium diet (a response to excess sodium). Over nutrition may also refers to greater food consumption than appropriate, as well as other feeding procedures such as parenteral nutrition.

The sense of fitness exercise creates helps one to "feel good", physically, emotionally, and psychologically. However, in addition to this general sense of well-being, exercise (especially aerobic exercise) has special benefits for persons with certain health problems.

Coronary Heart Disease: Exercise reduces risks for heart disease in several ways, including improved heart function, blood cholesterol levels, and oxygen transport.

Heart muscle function: The heart is a four chambered organ of muscle that is about the size of a fist in adults. Its ability to pump blood depends on its development. As with any muscle, this development depends on how much the heart is used. Exercise, especially aerobic conditioning, strengthens and enlarges this muscular organ, enabling ot to pump more blood per beat, a capacity called stroke volume. The hearts ability to pump enough blood during exercise determines the degree of aerobic capacity in healthy persons.

Blood cholesterol level: Exercise raises blood levels of high-density lipoprotein (HDL), known as the "good cholesterol", because it carries surplus cholesterol from the tissues to the liver for broken down and removal from the body. Exercise also lowers blood levels of low density lipoprotein, referred to as "bad cholesterol". LDL cholesterol carries at least two thirds of the total blood cholesterol to body tissues, raising the potential of cholesterol deposits in major in major arteries of the heart. Thus the benefits effects of exercise on blood cholesterol profiles can lower the risks for diseased arteries.

Hypertension: The risks for cardio vascular complications Increases continuously with increasing levels of blood pressure of 140 to 159 mmHg or a diastolic blood pressure of 90 to 104 mmHg or both.

Cancer: A systematic review evaluated 45 studies that examined the relationship between physical activity and cancer survivorship. According to the study results "There was consistent evidence from 27 observational

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studies that physical activity is associated with reduced all-cause, breast cancer–specific, and colon cancer–specific mortality".

Epigenetic effects: Physical exercise was correlated with a lower methylation frequency of two tumor suppressor genes, CACNA2D3 and L3MBTL. Hypermethylation of CACNA2D3 is associated with gastric cancer, while hypermethylation of L3MBTL is associated with breast cancer, brain tumors and hematological malignancies. A recent study indicates that exercise results in reduced DNA methylation at CpG sites on genes associated with breast cancer.

Diabetes: Exercise helps control diabetes, especially type 2 diabetes in obese adults. Exercise improves the action of a person's naturally produced insulin by increasing the number of insulin receptor sites. In managing type 1 Diabetes, the type of exercise and when it is done must be balanced with food and insulin injections to prevent reactions caused by drops in blood sugars.

Weight Management: Exercise is extremely beneficial to weight management in the following ways: Helps regulate appetite , Increases the basal metabolic rate , Reduces the genetic fat deposit set-point level. Exercise also helps reduce stress related eating and helps work off hormonal effects of adrenaline produced by stress in the body.

Bone disease: Weight bearing exercise, such as walking and running helps strengthen bones. The weight bearing increases calcium deposits in bone, thus increasing bone density andreducingthe risk for osteoporosis. The benefits of exercise on bone density are not notable during peak bone growth of the adolescent and young adults. However, excessive or extreme forms of training can have a rebound effect where bone density actually is lost because of overtraining or under nutrition.

Types of Physical Activity: It is best to have a variety of exercises in one's fitness plan. A well-balanced exercise programme incorporates resistance training, aerobic activity, flexibility and stretching exercise, along with a variety of activities of daily living. A good fitness plan is a combination of different enjoyable activities that most effectively reduce the risk of several chronic diseases.

Aerobic exercise: It is any physical activity that uses large muscle groups and causes the body to use more oxygen than it would while resting. The goal of aerobic exercise is to increase cardiovascular endurance. Examples of aerobic exercise include cycling, swimming, brisk walking, skipping rope, rowing, hiking, playing tennis, continuous training, and long slow distance training. Walking can be an aerobic exercise convenient and requires no equipment except good walking shoes. Walking is also satisfying to many people for whom other forms may not be appropriate (ex-running, biking, and aerobic dance). Start slowly and gradually increase the pace and distance.

Anaerobic exercise: Which includes strength and resistance training, can firm, strengthen, and tone muscles, as well as improve bone strength, balance, and coordination. Examples of strength moves are push-ups, pull-ups, lunges, and bicep curls using dumbbells. Anaerobic exercise also include weight training, functional training, eccentric training, Interval training, sprinting, and high-intensity interval training increase short-term muscle strength.

Resistance training: Resistance training creates and maintains muscle strength a physical trait necessary for health and enhanced quality of life. Two position statements by the American College of Sports Medicine established guidelines for a beginning resistance training programme and for progressive models of advanced training for healthy adults. A beginning resistance programme generally should include one set of 8 to 12 repetitions fro 8 to 10 exercise, including one exercise for all major muscle group performed 2 to 3 days per week. A more progressive model incorporate gradual load increases to stimulate muscle overloads, more

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muscle load increases to stimulate muscle overload, more muscle specificity and variation, and a training regimen of 4 to 5 days per week.

Flexibility: Exercises stretch and lengthen muscles. Activities such as stretching help to improve joint flexibility and keep muscles limber. The goal is to improve the range of motion which can reduce the chance of injury.

Activities of daily living: Many activities of daily living do not reach aerobic levels (eg., walking to work or the store, walking the dog, and playing catch with children) but are enjoyable and should be incorporated into daily life. If whatever one does is not fun it will soon stop, reaping no benefit.

Dietary needs during exercise:

Muscle action and fuel: Millions of special cells and fibers make up skeletal mass. These coordinated structures make all physical activity possible. They are stimulated by nerve endings to produce controlled muscle contraction and relaxation.

Fuel sources: All of this action requires fuel to burn for energy. These fuel sources are the basic energy nutrients (e.g., primarily carbohydrate and some fat). Their metabolic products- glucose, glycogen, and fatty acids- provide ready fuels for immediate, short and long-term energy needs. A good diet to meet these needs is essential, whatever the level of physical activity.

Oxygen: The constant supply of oxygen necessary for life becomes all the more important during exercise to the tissues for energy production determines how much exercise can be done. This aerobi8c capacity depends on two basic factors, as follows: The fitness of the lungs, heart, and blood vessels and Body composition

Fluid and energy needs:

Fluid: More water necessary, but often overlooked, for increased activity and exercise. With continued exercise, the body temperature rises because of the release of heart as part of the energy produced. To control this temperature rise, the body sends as much heat as possible to the skin, where it is released in sweat. Over time, and especially in hot weather, this excessive sweating can lead no dehydration. To prevent dehydration, water must be replaced frequently. Athletes who are engaged in longer and more demanding endurance events, especially in a warm environment, however, may use one of the many mild saline and glucose sports drinks that have rapid gastric emptying and intestinal absorption times.

Nutrient stores: For athletes, as well as any active person, proper diet choices are essential for daily energy needs, nutrient reserves and winning performances. When nutrient reserves become depleted during continuous exercise, the body burns its fuel stores to meet increasing energy demands and requires replenishing. With prolonged exercise, nutrient levels fall too low to sustain the body's continued demands. Fatigue follows, and exhaustion may result. Carbohydrate and fat are fuels used to maintain these energy reserves very little energy is drawn from protein.

Energy: Physical activity requires energy in the form of calories. Exercises raise the calorie need and helps regulate the appetite to meet this need. Exercise is the only way to adjust an individual's terminal set point, which determines how much body fat the person will carry naturally.

Macro and Micro Nutrient recommendations:

Nutrient Ratios: Highly active persons and athletes have slightly increased protein requirements when compared with inactive persons, but recommendations for fat intake do not vary from standard guidelines. Carbohydrate is the preferred fuel and is the critical food for an active person, not only before an exercise period, but also during the recovery period afterward. The complex carbohydrate forms not only sustain energy needs but also supply added fiber, vitamins and minerals. Thus the recommended ratio of energy nutrients to support physical activity may ne summarized as follows:

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- Carbohydrate : 45 % to 65 % of total kcalories
- Fat : 25 % to 30 % of total kcalories
- Protein : 10 % to 35 % of total kcalories

Carbohydrate:

The major nutrient used for energy support during exercise is the carbohydrate. The carbohydrate body-energy reserve comes from the following two sources: Circulating blood glucose and Glycogen stored in muscle cells and the liver. Thus for active persons, carbohydrates. Thus for active persons carbohydrate should contribute approximately 60% to 65% of the daily energy intake. Simple sugars on the other hand, are less efficient at maintaining the body's glycogen stores and are mainly converted to fat and stored as such. Simple sugars also trigger a sharper insulin response, contributing to the danger of rebound hypoglycemia.

Proteins: Some amino acid breakdown may occur during exercise, but protein is usually discounted as a fuel source because it makes an sufficient contribution to energy. However there may evidence that endurance and strength-trained athletes may require as much as 1.2 to 1.7 g. protein kg body weight.

Fat: In the presence of oxygen, fatty acids serve as a fuel source from stored fat tissue. Note that fats fat as a fuel source is not drawn from the diet directly but from body fat stores. There is no evidence supporting improved physical performance with increased levels of fat in the diet. There is a need for some dietary fat, however, to supply linoleic and linolenic acid, the body's essential fatty acids. The total exceeds approximately 25% to 30% of the diet's total daily energy intake.

Vitamins and minerals: Vitamins and Minerals cannot be used as fuel. They are not oxidized or used up in the energy production process. They are essential in this process but only as coenzyme partners. Increased exercise does not require increased vitamins or minerals. Exercise generally increases the body's efficient use of vitamins and Minerals. Because athletes require more energy, their larger intake of nutrient-dense food also increases their dietary intake of vitamins and minerals. However, female adolescent athletes should focus special attention on iron supplements if the levels of iron in their blood are consistently low.

Conclusion

Nutrition is a subject that every member of medical team should be well-versed, as it plays an important role in the prevention and treatment of diseases. Among the UN Millennium Development Goals (2000-2015) the highest priority has been given to the elimination od hunger and poverty. Hunger is the extreme manifestation of poverty or inadequate purchasing power. Maternal, foetal and adult malnutrition is unacceptably high in our country. We are having problems in making proportionate advance in achieving the goal of reducing hunger by half by 2015. Now nutrition is an important part of our life, we now realize that, quality of our health depends upon the nourishment that we provide to our body. However our dietary habits are influenced by many factors.

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EXERCISE-ASSOCIATED MUSCLE CRAMPS –MYTHS AND MISCONCEPTIONS

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INTRODUCTION

Exercise-associated muscle cramps (EAMCs) are painful involuntary contractions of skeletal muscle during or after exercise. They are the most common heat-related illness and affect recreationally active individuals and competitive athletes alike . Despite their commonality, few well-designed research studies exist examining the cause, treatment, and prevention of EAMCs. As a result, numerous myths exist about EAMCs. The goal of in this article will be to debunk some of these myths by examining the scientific evidence.

MYTH 1: EAMCs ARE CAUSED BY DEHYDRATION AND ELECTROLYTE LOSSES

This is the most popular myth believed by the sports community and general populace. For example, 92% of athletic trainers believe that dehydration or electrolyte imbalance causes EAMCs. Yet, few well-designed experimental studies actually support this myth. Rather, this misconception is supported by case studies or observational studies. In addition to the low strength of evidence, all of the studies examined athletes who did not actually experience EAMCs when the studies were conducted.Several observations also argue against this myth.

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1. Static stretching quickly relieves cramping. If dehydration caused EAMCs, stretching should have no effect because no fluids or electrolytes are added to the body with this treatment.
2. Athletes with EAMCs often have similar body mass losses, blood electrolyte concentrations , and blood and plasma volumes as noncramping athletes.
3. Cramp-prone athletes often drink similar, if not more, fluid than athletes without a history of EAMCs.
4. Even when sport drink ingestion matched sweat loss, EAMCs still occurred 70% of the time.
5. Dehydration affects the whole body, yet it is often the working muscles (e.g., calves, hamstrings) that develop EAMCs. If EAMCs were caused by dehydration or electrolyte imbalance, we would observe random muscles cramping.
6. Finally, in two well-designed experimental trials, cramp risk was unchanged when fatigue was minimized and subjects were dehydrated.

If dehydration caused exercise-associated muscle cramping, stretching should have no effect because no fluids or electrolytes are added to the body with this treatment.

MYTH 2: SPORT DRINKS CAN PREVENT EAMCs BY REPLACING THE ELECTROLYTES LOST DURING EXERCISE

Sport drinks contain electrolytes (e.g., sodium, potassium) but not in enough quantities to replenish completely what is lost during exercise. For example, crampers can lose 2.7 g/h of sodium via sweating. If these crampers exercised for 2.5 hours (e.g., a typical football practice), 6.75 g of sodium would need to be replaced. If the athletes consumed a typical sport drink containing 0.44 g/L of sodium, the athletes would need to drink

15.3 L (4 gallons) to replace their sodium losses fully! Drinking this much fluid is dangerous. In August 2014, two high school American football players died of exercise- associated hyponatremic encephalopathy (a.k.a., water intoxication). In one case, it was estimated that the athlete drank 4 gallons (15.1 L) of water and sport drinks because he suffered from EAMCs. The deaths of these athletes may have been prevented had they followed the guideline of drinking when thirsty. Therefore, electrolytes must be replaced at meals rather than by drinking sport drinks.

MYTH 3: STATIC STRETCHING WILL HELP PREVENT EAMCs

Undoubtedly, stretching is the most effective way to relieve an active cramp . In fact, muscles cannot cramp if they are not allowed to shorten . However, several field studies have failed to show a link between stretching habits and EAMC occurrence . Moreover, a laboratory studies shows that 3 minutes of static stretching did not increase calf inhibition. This means that it is unlikely that stretching before exercise would prevent the over excitation in the nervous system thought to contribute to EAMC genesis . Whether stretching may help prevent EAMCs through other means (e.g., improving range of motion) is still unknown.

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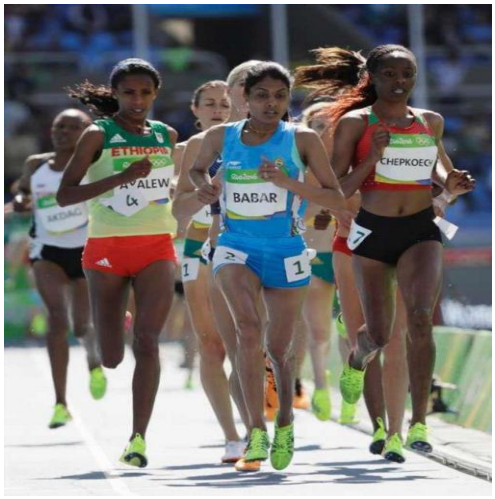
Undoubtedly, stretching is the most effective way to relieve an active cramp. In fact, muscles cannot cramp if they are not allowed to shorten. However, several field studies have failed to show a link between stretching habits and exercise-associated muscle cramping occurrence.

MYTH 4: THERE IS NO WAY TO PREDICT WHO WILL GET EAMCs

It is true that EAMCs are spontaneous and, at times, unpredictable. However, a prior history of EAMCs or a family history of EAMCs seems to be a good predictor of cramp risk. This suggests that there may be a genetic component to EAMCs. Thus, asking athletes if they, or their immediate family, have ever had EAMCs can be a useful question to identify people at risk of EAMCs. These individuals can then be targeted with possible interventions like neuromuscular reeducation, which may help prevent future EAMCs.



MYTH5: BANANAS CAN RELIEVE EAMCs BY INCREASING BLOOD POTASSIUM

This is a popular myth propagated by the belief that EAMCs are caused by electrolyte losses. Unfortunately, it takes at least 30 minutes to see an increase in new potassium ions in the blood after banana ingestion. Thus, eating bananas is unlikely to help an athlete with an active EAMC because of the delay in blood potassium changes. In addition, there is no evidence that eating bananas effectively prevents or treats EAMCs.

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SUMMARY

The cause of EAMCs is likely multifactorial and caused by changes in the neuromuscular system. This multifactorial nature may explain why so many myths exist regarding treatment and prevention of EAMCs. Our care of athletes prone to EAMCs must be evidence based and extend beyond cookie-cutter recommendations (e.g., drink more fluids containing electrolytes). Clinicians should study their cramp-prone athletes to identify the unique risk factors that make them prone to EAMCs. For example, the athlete could keep a "cramp journal" and document the events that preceded EAMCs (e.g., diet, hydration, exercise duration and intensity, sleep, environmental conditions). Once trends in risk factors emerge, clinicians should target those factors with treatments and prevention strategies.

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QUADRICEPS DRILL AND YOGA FOR KNEE PAIN MANAGEMENT

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ABSTRACT
Knee extensor mechanism is composed of the quadriceps and its tendon, patella and patellar tendon. Rupture of either the quadriceps or patellar tendon, or of the patella itself, lead to a disruption of the knee extensor mechanism. Physical examination reveals an inability to actively extend the knee. Clinical examination of the knee show a supra patellar swelling of the soft tissues in case of quadriceps tendon rupture, or a displaced patellar fracture, or a patella alta in case of patellar tendon rupture. Symptoms of a quadriceps strain or thigh strain typically include a sudden sharp pain at the front of the thigh. Swelling and bruising may develop.
Knees are the most common joints which get injured (Lin et al 2010). Quadriceps -drill is highly useful for making knees stronger and less prone to injury. Quadriceps drill strengthens the muscles around the knees and hence improves the flexibility, mobility, balance. This exercise will give relieve from painful knee joints. It is very easy to perform and can be done anywhere.
In the present study an attempt is made to treat the knee pain patients with quadriceps drill and effect of four yogasanas for fortnight duration. Total forty subjects were selected for the study who is having knee pain. The pain was divided into three types depending on the severity. Knee patients were divided into four groups. First group was considered as control group. Second group knee patients were given only quadriceps drill exercise. The third group patients were done four yogasanas i.e. Virasana, Makarasana, Trikonasana and Garuddasana. The fourth group were given quadriceps drill as well as yogasanas. The results showed that there was a decrease in pain in all groups when compared to control. The recovery was more in grade1 thigh pain followed by grade 2 thigh pains and grade 3 thigh pains. Synergistic effect was found in yogasanas and quadriceps drill patients. The role of quadriceps drill and use of yogasanas in treatment were discussed.
Key words: Knee Pain, quadriceps drill: recovery, role of yogasanas.

Introduction:

Quadriceps femoris is an important muscle group that are present on the front side of thigh region. All four parts of the quadriceps muscle ultimately insert into the tuberosity of the tibia. This is via the patella, where the quadriceps tendon becomes the patellar ligament, which then attaches to the tibia. All four quadriceps are powerful extensors of the knee joint. They are crucial in walking, running, jumping and squatting. Because rectus femoris attaches to the ileum, it is also a flexor of the hip. This action is also crucial to walking or running as it swings the leg forward into the ensuing step. The quadriceps, specifically the vastusmedialis, play the important role of stabilizing the patella and the knee joint during gait (Tahmasebi 2009). Non-medicinal treatments for knee osteoarthritis include physical therapy,[Thomas 2009,Kawasaki et al 2010] acupuncture medicine, using assistive devices like crutch, knee brace, medical insoles and heel wedges, losing weight, and exercise.(Jamtvedt et al 2008,Bukowski 2007)

Methodology

In total 40 subjects were selected for the study who visits for the Lakshmi Physiotherapy clinic, Kavali. All are males and in the age group of 40-55 years. They were divided into four groups. Among them 10 subjects

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were considered as control group. No treatment was given to them. Rest of the thirty patients were divided into three groups depending on the severity of pain. The classification of patients is as follows.

Assessment of any injury included questions concerning the patient's general health, previous injuries and current injury. The aim of these questions is to determine what may be causing the pain. Symptoms of a quadriceps strain or thigh strain typically consist of a sudden sharp pain at the front of the thigh. Tightness or pulling sensation may be felt (Egan and Mentes 2010). Swelling and bruising may develop but not in all cases. A thigh strains are graded 1 to 3 depending on how bad the injury is with a grade 1 being mild and a grade 3 involving a complete or near complete tear of the muscle.

Grade 1 thigh strain

Symptoms of a grade 1 quadriceps thigh strain are not always serious enough to stop training at the time of injury. A twinge may be felt in the thigh and a general feeling of tightness. The athlete may feel mild discomfort on walking and running might be difficult. There is unlikely to be swelling. A lump or area of spasm at the site of injury may be felt.

Grade 2 thigh strain

Grade 2 symptoms are more severe than a grade two. The athlete may feel a sudden sharp pain when running, jumping or kicking and be unable to play on. Pain will making walking difficult and swelling or mild bruising would be noticed. Pain would be felt when pressing in on the suspected location of the quad muscle tear. Straightening the knee against resistance is likely to cause pain and the injured athlete will be unable to fully bend the knee.

Grade 3 thigh strain

Grade 3 symptoms consist of a severe, sudden pain in the front of the thigh. The patient will be unable to walk without the aid of crutches. Bad swelling will appear immediately and significant bruising within 24 hours. A static muscle contraction will be painful and is likely to produce a bulge in the muscle. Thigh strain or quadriceps strain is a tear in one of the quadriceps muscles at the front of the thigh. It can range from a mild discomfort to a full blown tear of most of the muscle resulting in severe pain and inability to walk.

Experimental design:

All the Knee joint problem subjects were divided in to four groups. The first group was considered as control group. They are having knee pain and no treatment was given for them. The second group were given 15 days quadriceps drill training. The third group was yoga training. The fourth group was given both quadriceps drills cum yoga training. After 15 days of time the severity of pain was evaluated and range of motion was recorded.

Quadriceps drill

The subjects were allowed to sit on an even floor. Placed the arms beside their body to give support. Stretched both legs, contracted both the knee muscles and hold for five seconds. Repeated this exercise for five times both morning and evening for a fortnight.

Yoga regime

1. Virasana 3 times
2. Makarasana 3 times
3. Trikonasana 3 times
4. Garudasana 3 times

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Virasana:

Hero pose or Virasana increases the flexibility of the legs by stretching the knees, ankles, thighs and feet. Its name is derived from the Sanskrit word vira which stands for hero or warrior. Knell down on the floor. Transferred a small in excess of hip girth with your above level on the floor. Bend forward and twist the plump part of calves external with the hands. Sit on the floor among the feet and exhale. Place the hands on top of thighs shut your palms and knees facing down. At that time relax the upper body and shoulders, tall and spine straight. Tip the crown of head look straight and the ceiling. Stay this pose from 30 sec to one minute. Relieve the feet, ankles and knees that time shake your legs.

Makarasana:

The pose resembles a crocodile taking rest in water, keeping its face and neck above the surface water level. The purpose of Makarasana is to release the strain caused by practicing other yoga asanas. Lie down on the floor on stomach. Fold hands and keep the tip of the elbows on the ground with your fingers facing upwards. Keep your elbows shoulder distance apart. Now, raise your shoulders and head. Keep your neck straight and look ahead. Bend your head a little forward and place your chin in your palms. Stretch out your legs with the toes facing outwards. Feel your body touching the ground. Breathe normally and slowly and relax your muscles. Stay in the asana for a few minutes until you feel completely relaxed. To release from the position, gently remove your palms from the chin, bring your shoulders and head down, and roll over.

Trikonasana:

Stand straightly by wide up feet. Give a proper space in between the feet, two to three feet depending upon their height. Don't bend spine, stand straightly. Raise your arms parallel to the floor and your palm must face down. Deeply inhale. Slowly exhale and bend your body to left side and touch the floor with your left hand's finger and your hand should touch the left ankle. Your right hand must be straight. Now turn your head and see the tip of the right hand's finger. Be in this pose from seven to ten counts. Now inhale the breath and stand straight with your straightened hands beside. Now inhale and count from five to ten. Exhale now and bend your hip to right side and touch the floor by right hand's finger and the right hand must touch the right leg's ankle. Be in this pose for ten seconds. Then come to the standing position with the straightened hands beside and inhale. If you do the asana in two sides it is called as one round of *Trikonasana*.

Garudasana

Stand in Tadasana. Bend knees slightly, lift your left foot up and, balancing on right foot, cross your left thigh over the right. Point your left toes toward the floor, press the foot back, and then hook the top of the foot behind the lower right calf. Balance on the right foot. Stretch your arms straight forward, parallel to the floor, and spread your scapulas wide across the back of torso. Cross the arms in front of your torso so that the right arm is above the left, and then bend your elbows. Snug the right elbow into the crook of the left, and raise the forearms perpendicular to the floor. The backs of your hands should be facing each other. Press the right hand to the right and the left hand to the left, so that the palms are now facing each other. The thumb of the right hand should pass in front of the little finger of the left. Now press the palms together (as much as is possible for you), lift your elbows up, and stretch the fingers toward the ceiling. Stay for 15 to 30 seconds, then unwind the legs and arms and stand in Tadasana again. Repeat for the same length of time with the arms and legs reversed.

Results:

The data regarding the effect of quadriceps drill and yogasanas in management of knee pain is presented in Table: The results shows that both quadriceps drill as well as yogasanas had their positive effect

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in relieving pain of the knee when they were done independently. Both yoga and quadriceps drill had synergistic effect in preventing knee pain. Grade 1 thigh pain was hundred per cent controlled followed by grade 2 and grade 3 thigh pain. The two way analysis of variance showed that there was significant reduction in the different types of treatment when compared to control group.

Table: Effect of quadriceps drill and yogasanas in management of knee pain (Values are mean of 10 observations).

S.No.	parameter	Total	Grade 1 Pain		Grade 2 Pain		Grade 3 Pain	
			No	Percent recovery	No	Percent Recovery	No	Percent recovery
1	Control	30	10	-	10	-	9	-
2	Quadriceps drill alone	10	9	90	7	70	6	66.7
3	Yogasanas alone	10	8	80	5	50	5	55.6
4	Quadriceps drill along with yogasanas	10	10	100	9	90	8	88;8

Anova: Two-Factor Without Replication

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
Row 1	4	39	9.75	0.25
Row 2	4	34	8.5	7
Row 3	4	27	6.75	4.25
Row 4	4	37	9.25	0.916667
Column 1	4	41	10.25	1.583333
Column 2	4	37	9.25	0.916667
Column 3	4	31	7.75	4.916667
Column 4	4	28	7	3.333333

ANOVA

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Rows	20.6875	3	6.895833	5.367568	0.021499	3.862548
Columns	25.6875	3	8.5625	6.664865	0.011551	3.862548
Error	11.5625	9	1.284722			
Total	57.9375	15				

Discussion:

The quadriceps muscles are the muscles on the front of the thigh. They consist of the vastuslateralis, vastusmedialis, vastusintermedius and the rectus femoris. A strain is a tear in the muscle. These can range in severity, from a very small tear to a complete rupture.

Tears to the quadriceps muscles usually occur following an activity such as sprinting, jumping or kicking, especially if a thorough warm-up hasn't been undertaken. Any of these muscles can strain or tear but

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probably the most common is the rectus femoris. This is because it is the only one of the four muscles which crosses both the hip and knee joints. This makes it more susceptible to injury.

A strain can occur either at the musculotendinous junction where the muscle becomes tendon just above the knee, or higher up in the belly of the muscle. Injury to the rectus femoris tendon at the hip either as a tear or an overuse inflammation type injury can also occur (Mangione 1999).

Conclusions

The purpose of this research was to study the effects of two weeks of quadriceps drill and yoga exercises on knee (Marsh et al 2009) osteoarthritis. Effects of Yoga on different chronic diseases show that these exercises have positive effects on knee diseases. As knee osteoarthritis is very common among middle aged we decided to measure effectiveness of these exercises on knee osteoarthritis. The results show positive improvement in mobility in limbs along with less pain. It seems that yoga can be used as a conservative treatment besides usual treatments and medications to improve the condition of people with knee pain.

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COMPARATIVE ANALYSIS OF PROGRESSIVE PLYOMETRIC TRAINING AND PROGRESSIVE PLYOMETRIC TRAINING FOLLOWED BY REVERSIBILITY ON ANAEROBIC POWER

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ABSTRACT
This study was designed to analyze the effect of progressive plyometric training and progressive plyometric training followed by reversibility on anaerobic power. The achieve the purpose of this study, 45 men students from bachelor's degree course in the department of physical education and sports sciences, AcharyaNagarjuna University Ongole Campus, Ongole, Andhra Pradesh, India were selected as subject. The subject were assigned at random into three groups of fifteen each (n=15). Group I underwent progressive plyometric training, Group II underwent progressive plyometric training followed by reversibility and Group III acted as control. Control group was restricted to participate in any specific training. The stride frequency was selected as dependent variable. The pre and post test random group design was used as experimental design. The collected data from the three groups prior to and immediately after the training programme on selected criterion variables was statistically examined for significant difference, if any, by applying analysis of covariance (ANCOVA). Since three groups were involved whenever the 'F' ratio was found to be significant for adjusted means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. The results of the reveals that due to the influence of progressive plyometric training (14.19%) and progressive plyometric training followed by reversibility (15.79%) the anaerobic power was significantly improved. It is also concluded that progressive plyometric training followed by reversibility group is significantly better than progressive plyometric training group in improving anaerobic power.
Key Words: *Progressive plyometric training, Reversibility and Anaerobic power.*

INTRODUCTION
The human body is an amazing creation. During rest, countless events are occurring simultaneously in perfect co-ordination, allowing complex functions such as seeing, hearing, smelling, tasting, breathing and thinking to continue without conscious effort. The transition from rest to exercise is accompanied by substantial changes in a number of bodily functions, allowing the body to successfully adapt to additional stress. At the body experiences repeated bouts of exercise, such as in a physical conditioning programme, long-term adaptations occur in the body allowing higher performance levels without undue fatigue as well as providing the body with a feeling and/or sense of well being (Wilmore &Costill, 1988).

Human beings have consistently tried to run faster, jump higher, and exhibit greater strength, endurance and skill. We are naturally competitive and ambitious for excellence in athletic performances. As a result of practical experience, observation and scientific experimentation, old method of conditioning though fascinating and rich in tradition, have been discarded and replaced by new methods based on insight and

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understanding. For centuries, this evaluation towards better methods of conditioning was slow, but in the recent years the dramatic changes that have taken place have brought about some astounding results in performance (Bourhcer&Malina, 1993).

Athletic performance has dramatically progressed over the past few decades. Performance levels unimaginable before are now common and the number of athletes capable of outstanding results is increasing. One among the contributing factors are that athletics is a challenging field, and intense motivations has encouraged long, hard hours of work. Also, coaching has become more sophisticated, partially from the assistance of sports specialists and scientists. Sports sciences have progressed from descriptive to scientific. A broader base of knowledge about athletes now exists, which is reflected in training methodology (Bompa, 1999).

Most scientific knowledge, whether from experience or research aims at to understanding and improving the effects of exercise on the body. Exercise is now the focus of sports science. Research from several sciences enriches the theory and methodology of training, which has become a science of its own. The athlete is the subject of the science of training. The athlete represents a vast source of information for the coaches and sports scientists.

The major objective in training is to cause biological adaptation in order to improve performance in a specific task. To enhance physiological improvement effectively and to bring about a change, specific exercises and overload must be followed. By exercising at a level above normal, variety of training adaptations take place in the body that makes it function more efficiently. Numerous training procedures are in practice to improve each and every physical and motor fitness quality at various levels. These basic training procedures will serve better when utilized with modifications suited to the individual. The best training programme is that which increases the desired quality at a higher rate without causing unwanted effects **(**Boucher &Malina, 1993).

Any Physical activity leads to anatomical, physiological, bio-chemical and psychological changes. The efficiency of a physical activity results from its duration, distance and repetitions, load and velocity and the frequency of performance. While planning the dynamics of training, consider these aspects, referred to as the variables of training model, all these variables according to the functional and psychological characteristics of a competition. Throughout the training phases preceding a competition, define which component to emphasize to achieve the planned performance objective.

Strength gains can be transformed into power only by applying specific power training. Perhaps one of the most exciting training innovations of the past 25years has been plyometric training. As with any training innovations there was much mystique and some confusion surrounding the method. Much of these occurred, because plyometrics was first protracted as a secret Russian training method. In reality, plyometic training was not a particularly new training method, nor was it the exclusive domain of the Russian sport machine.

Plyometric training involves a number of advantages over traditional heavy weight training method. Plyometric exercise tends to be performed in a more explosive way than traditional strength training. Consequently plyometric training requires the athletes to rapidly develop force, promoting the development of muscular power. Dynamic mature of plyometric training allows for greater improvement in the maximal rate of force development, in comparison to traditional weight training method. Plyometric exercise do not involve a large deceleration phase during concentric movement, which occurs in traditional strength training , as the body does not have to achieve zero velocity at the end of the exercise. Thus Plyometric exercises involve the production of high force and acceleration throughout the entire range of motion, specific to most

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competitive movements. Plyometric exercises are performed at higher velocities than those achieved using traditional strength training. This increased velocity enhances the specificity of the training modality to competitive performance, improving the transference of training gains to the competitive situation.

METHODOLOGY

Subjects and Variables

The purpose of the study was to investigate the effect of progressive plyometric training and progressive plyometric training followed by reversibility on anaerobic power . To achieve the purpose of the study 45 male students studying bachelor's degree course in the department of physical education and sports sciences, AcharyaNagarjuna University Ongole Campus, Andhra Pradesh, India during the academic year 2014-2015 were selected as subjects at random by lot method from total of 100 students. They were divided into three groups of fifteen each (n=15). Group I underwent progressive plyometric training, Group II underwent progressive plyometric training followed by reversibility and Group III acted as control. Control group was restricted to participate in any specific training. The purpose and nature and importance of experiment and testing periods were explained to the subjects. The data collected from the experimental and control groups as these students were new to plyometric training regime, the subjects cleared the minimum strength requirement test prescribed by Voight and Draovitch, which consisted of five push-ups, five squat thrust, standing long jump and skipping rope for thirty seconds.

Training Programme

During the training period, the experimental groups underwent their respective training programmes in addition to their regular physical education programme of the course of study as per the curriculum. Group I had undergone progressive plyometric training for three days per week for twelve weeks and group II had undergone progressive plyometric training for three days per week for nine weeks and followed by reversibility for two days per week for remaining three weeks. The principle of overload for Group I had been applied at every four weeks up to the twelfth week to reach the high intensity whereas Group II was attained the high intensity at the ninth week itself and then for remaining three weeks the load was deliberately reduced. The duration of training sessions in all the days was between 45 minutes and an hour approximately, which included also warming up and limbering down. Group III acted as control who did not participate in any specific training on par with experimental groups. However, they performed the regular physical education programme of the course of the study. The experimental groups underwent their respective training programs during evening hours under strict supervision of the investigator. To reduce the possibility of injury the training was conducted on the grassland. The training schedules for the experimental groups were designed in response to the pilot study and also based on the guidelines by Donald A.Chu.

Statistical Procedure

The pre and post test random group design was used as experimental design in which forty-five men subjects were divided into three groups of fifteen each at random. No attempt was made to equate the group's in any manner. Group I underwent progressive plyometric training and Group II underwent progressive plyometric training followed by reversibility and Group III acted as control. The subjects were tested on selected criterion variable stride frequency prior to and immediately after the training programme. The collected data from the three groups prior to and immediately after the training programme on selected criterion variables were statistically examined for significant difference, if any, by applying analysis of covariance (ANCOVA). Since three groups were involved whenever the 'F' ratio was found to be significant for adjusted means, Scheffe's test was followed as a post hoc test to determine which of the paired means

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difference was significant. Magnitudes of improvements were computed for all the groups on selected criterion variables separately as suggested by Jerry Thomas and Jack Nelson. In all cases .05 level was fixed as level of confidence.

RESULT

The analysis of covariance on anaerobic power of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group have been analyzed and presented in table-1

Table I :Analysis Of Covariance On Anaerobic Power Of Experimental And Control Group

	Progressive plyometric training group	Progressive plyometric training followed by reversibility group	Control group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained 'F' Ratio
Pre test Mean	90.97	92.17	95.96	Between mean	203.73	2	101.865	4.11*
S.D	6.0	4.45	4.29	Within group	1040.24	42	24.767	
Post test Mean	103.88	106.72	97.13	Between mean	727.77	2	363.885	20.67*
S.D	4.81	3.48	4.19	Within group	739.43	42	17.605	
Adjusted Post test Mean	105.45	107.38	94.91	Between set Within set	1161.61 136.91	2 41	580.58 3.34	173.83*
Magnitude of Improvement	**14.19%**	**15.79%**	**1.22%**					

*Significant at .05 level of confidence.

The table value required for significance at .05 level with df 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively. (Anaerobic Power performance in kgm/sec).

Table I shows that the pre test mean value of anaerobic power of progressive plyometric training group, progressive plyometric training group, progressive plyometric training followed by reversibility group and control group are 90.97, 92.17 and 95.96 kg m/s respectively . The obtained 'F' ratio of 4.11 for pre test is more than the table value of 3.22 for df 2 and 42 required for significant at .05 level of confidence. The post test mean values of anaerobic power for progressive plyometric training group, progressive ploymetric training followed by reversibility group and control group are 103.88, 106.72 and 97.13 kg m/s respectively. The obtained 'F' ratio of 20.67 for post test is more than the table value of 3.22 for df 2 and 42 required for significance at .05 level of confidence. The adjusted post test mean values of anaerobic power for progressive plyometric training group, progressive plyometric training followed by reversibility group and control group

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are 105.45, 107.38 and 94.91 kg m/s respectively. The obtained 'F' ration of 173.83 for adjusted post test is more than the table value of 3.23 for df 2 and 41 required for significance at .05 level of confidence.

The magnitude of improvement of anaerobic power due to the influence of the respective training means of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group are 14.19%, 15.79% and 1.22% respectively.

The results of the study indicates that there is a significant difference among the adjusted post test means of progressive plyometric training group, progressive plyometric training followed by reversibility group and control group on anaerobic power.

To determine which of the three paired means had a significant difference, Scheffe's test was applied as post hoc test and the results are presented in Table II.

Table II :Scheefe's Test For The Differenes Between The Adjusted Post Test Paired Means On Anaerobic Power

Adjusted Means			Mean Difference	Confidence Interval
Progressive plyometric training group	Progressive plyometric training followed by reversibility group	Control Group		
105.45	107.38	-	1.93*	1.67
105.45	-	94.91	10.54*	1.67
-	107.38	94.91	12.47*	1.67

*Significant at .05 level.

(Anaerobic power performance in kg m/s).

Table II shows that the adjusted post test mean difference on anaerobic power between progressive plyometric training group and progressive plyometric training followed by reversibility group, progressive plyometric training group and control group and progressive plyometric training followed by reversibility group and control group 1.93, 10.54 and 12.47 kg m/s respectively are higher than the confidence interval value 1.67 which shows significant difference at .05 level of confidence.

It may be concluded form the results of the study that there is a significant difference between the adjusted post test means of progressive plyometric training group and progressive plyometric training followed by reversibility group, progressive plyometric training group and control group and progressive plyometric training followed by reversibility group and control group on anaerobic power.

DISCUSSION

The results of the study indicates that both the experimental groups namely progressive plyometric training and progressive plyometric training followed by reversibility groups had significantly improved the selected dependent variable stride frequency when compared to the control group as it did not participate in any of the special training programme apart from the regular physical education activities. According to **Wilson et al.**, (1994) plyometric training is used as a means to enhance the muscular strength and size, power, speed and endurance, enhance muscle tone, and assist in rehabilitation injury prevention and to aid in the maintenance of muscular function. These findings are also in agreement with the findings of **Brown et al.**, (1986)who conducted a study to find out the effects of plyometric exercises on 15 year old subjects in which plyometric group experienced significant gain in Speed, stride frequency and stride length.

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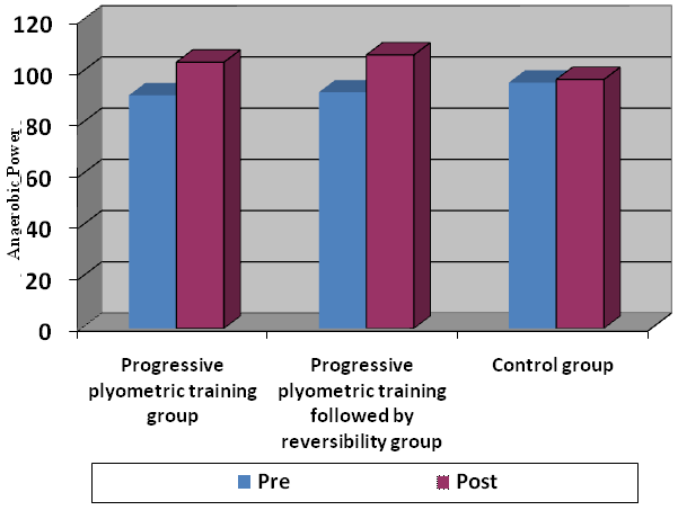

Figure II : Mean Values Of Progressive Plyometric Training Group, Progressive Plyometric Training Followed By Reversibility Group and Control Group On Anaerobic Power

According to **Reddy**,(1993) plyometric training increased speed, stride length, stride frequency and anaerobic power than that of the resistance training. **Bompa** (1999)experimented and suggested that plyometric exercise can often yield a significant gain in physical ability and optimization of athletic performance. Plyometric training influence the starting power and acceleration power during sprinting. **Hatfied and Yessis** (1998)point out that plyometric exercise involves powerful muscular contraction in response to the rapid, dynamic loading of the involving muscles. The rapid stretching of these muscles activates the muscle stretch reflex, which sends a powerful stimulus to the muscles causing them to contract faster and with more power. The faster a muscle is forced to lengthen, the greater tension, it exerts.

According to **Gehri et al.**,(1998) plyometric training technique is the best for improving vertical jumping ability, positive energy production and elastic energy utilization. **Admas et al.**,(1995) quoted that plyometric training improves hip and thigh power production as measured by vertical jumping ability. **Blakey, et al.**, (1987)examined plyometric training improves strength power an anaerobic power. Because, the possibility of reducing the time between forced stretch at impact and initiation of contraction was improved by plyometric training. According to **Wagner et al.,** (1997) and **Medboet al.**, (1990)plyometric training is effective for increasing lower body anaerobic power.

CONCLUSION

The results of the reveals that due to the influence of progressive plyometric training (14.19%) and progressive plyometric training followed by reversibility (15.79%) the anaerobic power was significantly improved. It is also concluded that progressive plyometric training followed by reversibility group is significantly better than progressive plyometric training group in improving anaerobic power.

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ANALYSIS OF PLAYERS POINTS ON SEMI-FINALMATCH BETWEEN DELHI AND PUNJAB IN UNDER 19 BOYS SGF NATIONAL BASKETBALL CHAMPIONSHIP

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ABSTRACT
.Basketball is a popular game in the world. This is evident from the number of countries playing this match all over the world. Basketball is an anaerobic game played with high intensity. The player have to perform their best within the stipulated 40 minutes duration the fundamental skills being passing ,dribbling and shooting in this paper , the researcher has made the analysis of basketball match between boys Delhi and Punjab in under 19 SGF national basketball championship held at NUZEVID in the month of this January 2017 . The match is analysis on the basis of score sheet. The tournament was conducted on league come knock-out basis and the match chosen was the semi-final match. The aspects of the match such as 4 quarter were analyzed. The Delhi won the match with the score of 62-59. Methodology **:**The subjects selected for this study were Delhi and Punjab male basketball players between the age group of under 19 year from under 19 national boys' basketball players in INDIA Samples and variables In order to carry out this study, the researcher has score sheet of the match and the analysis of basketball match between boys Delhi and Punjab in under 19 SGF national basketball championship held at NUZEVID in the month of this January 2017 analyzing the player's points in 1point, 2 points & 3 points detail in quarter wise table. .**Conclusion:** On the basis of the study the following conclusion were drawn in the basketball match between boys Delhi and Punjab in under 19 SGF national basketballs.Delhi Player chest no 13 scored more in 3rd quarter score is10

Introduction

To perform commonly used essential techniques like footwork, shooting, passing and catching, dribbling, rebounding, moving with and without the ball and defending, players of this ball game utilize energy from both aerobic and anaerobic sources of energy production during an event]. Superior body height, litheness, agility, muscular strength and eye-hand coordination are also required to prevail in a contest.

Basketball is a popular game in the world. This is evident from the number of countries playing this match all over the world. Basketball is an anaerobic game played with high intensity. The player have to perform their best within the stipulated 40 minutes duration the fundamental skills being passing ,dribbling and shooting in this paper , the researcher has made the analysis of basketball match between boys Delhi and Punjab in under 19 SGF national basketball championship held at NUZEVID in the month of this January 2017 . The match is analysis on the basis of score sheet. The tournament was conducted on league come knock-out basis and the match chosen was the semi-final match. The aspects of the match such as 4 quarter were analyzed. The Delhi won the match with the score of 62-59.

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Methodology

Selection of the Subjects

The subjects selected for this study were Delhi and Punjab male basketball players between the age group of under 19 year from under 19 national boys' basketball players in INDIA

Samples and variables

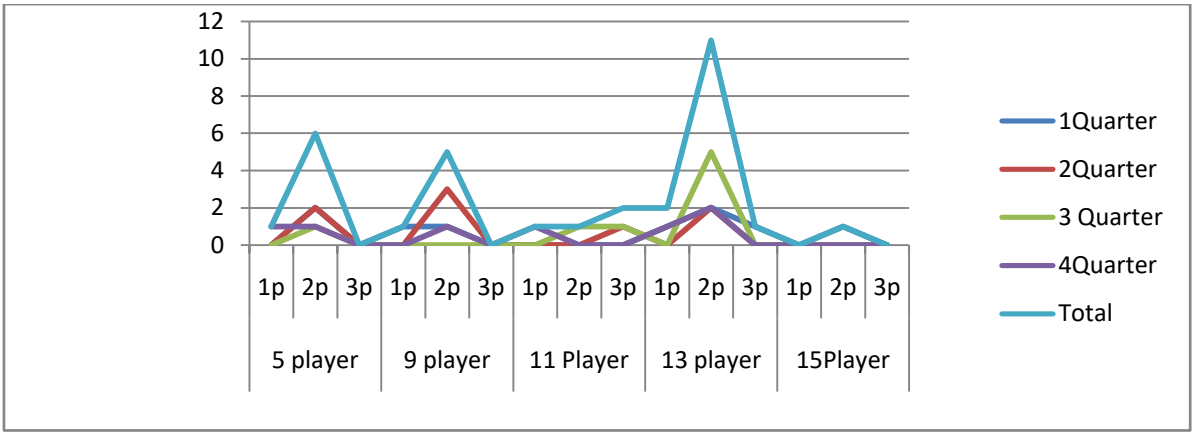
In order to carry out this study, the researcher has score sheet of the match and the analysis of basketball match between boys Delhi and Punjab in under 19 SGF national basketball championship held at NUZEVID in the month of this January 2017 analyzing the player's points in 1point, 2 points & 3 points detail in quarter wise table.

Table 1 show the Delhi player's points

	points														
Delhi	5 player			9 player			11 Player			13 player			15Player		
Points	1p	2p	3p	1p	2p	3p	1p	2p	3p	1p	2p	3p	1p	2p	3p
1Quarter	0	2	0	1	1	0	0	0	0	1	2	1	0	1	0
2Quarter	0	2	0	0	3	0	0	0	1	0	2	0	0	0	0
3 Quarter	0	1	0	0	0	0	0	1	1	0	5	0	0	0	0
4Quarter	1	1	0	0	1	0	1	0	0	1	2	0	0	0	0
Total	1	6	0	1	5	0	1	1	2	2	11	1	0	1	0

In the above 1table shows that the Delhi players match analyses 1,2and 3points in detail. The chest no 5 in points 1,6&0, the chest No 9in points 1,5,&0, the chest no 11 in points 1,1,&2, theChest no 13 points 2,11,1 and the chest no 15in points 0,1,0 has only got 62 score only .

Diagram 1 show the Delhi player's points



In the Diagram 1 shows that the Delhi players match analyses 1,2and 3points in detail. The Delhi player heights points in the semifinal match the chest no 13.

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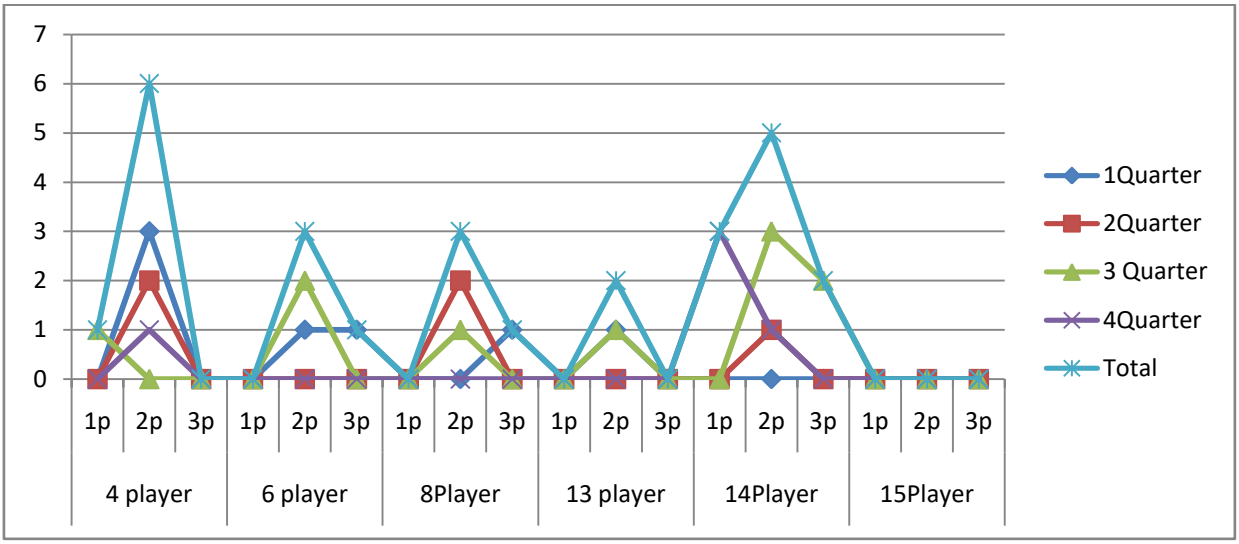
Table 2 shows the Punjab player's points

punjab	4 player			6 player			8Player			13 player			14Player			15Player		
Points	1p	2p	3p	1p	2p	3p	1p	2p	3p	1p	2p	3p	1p	2p	3p	1p	2p	3p
1Quarter	0	3	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0
2Quarter	0	2	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0
3 Quarter	1	0	0	0	2	0	0	1	0	0	1	0	0	3	2	0	0	0
4Quarter	0	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0
Total	1	6	0	0	3	1	0	3	1	0	2	0	3	5	2	0	0	0

In the above 2 table shows that the Punjab players match analyses 1,2and 3points in detail. The chest no 4 in points 1,6&0, the chest No 6in points 0,3,&1, the chest no 8 in points 0,3,&1, theChest no 13 points 0,2,0 , the chest no 14in points 3,5,2 and the chest no 15in points 0,0,0,has only got 59 score only .

Diagram 2 shows the Punjab player's points



In the Above Diagram 2 shows that the Punjab players match analyses 1,2and 3points in detail. The Punjab player height points in the semifinal match the chest no 14.

Conclusion

On the basis of the study the following conclusion were drawn in the basketball match between boys Delhi and Punjab in under 19 SGF national basketballs.

Delhi Player chest no 13 scored more in 3rd quarter score is10

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IMPORTANCE OF SPORTS AND GAMES FOR HEALTH

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Abstract
Sports and games are very important for us. They keep us healthy and fit. They offer us a change from the monotony of daily life. It is a useful means of entertainment and physical activity. Sports and games help in character building. They give us energy and strength. Sports and games are means of mental and physical growth. We learn how to maintain mental balance in the midst of hopes and despair. They make us learn how to tackle the difficult situation. Sports develop a sense of friendliness. They develop in us team spirit. They help in developing mental and physical toughness. They shape our body and make it strong and active. They remove tiredness and lethargy. They improve blood circulation. This improves our physical well-being. Sports and games improve our capability. They improve our efficiency. Either study or work alone makes us exhaust. We remain no longer efficient to do any work. Sports remove our mental exhaustion. Sports are integral part of education. Education without sports is incomplete. Keeping their value in life, children are taught some sorts of games in the very early stage in school. These days' sports are a part of academic curricula.
Sports are particularly important for the youth. They help in their physical and mental growth. They contribute in the formation of character. They inculcate in them good values. It is therefore, sports competition is held at school and college levels. The students who perform well in this competition are promoted to play at the national and international level. Thus sports help in career growth also. Sports and games give us opportunity to grow in life. Sports have great potential to offer career opportunities. So we should take them very seriously from the very early age of our life. Sports and games are good means of earnings. They offer opportunity to prove talents. Thus, sports and games have great value in life.

Key words: Character building, team spirit, good values, career growth

Importance of Sports and Games for health

Introduction:

Sports and games are physical activities involves in skill development of competitive nature. Generally two or more groups compete against each other for the entertainment or win the prize. Sports activities for both, men and women are needed to be promoted as it enhances the physical, mental, financial health of the person. It plays various great roles in strengthening the nation by building the character and health of its citizens. Sports bring speed and activeness to human's way of acting.Playing sports contributes to muscle development, coordination, cardiovascular health and numerous other benefits associated with disease prevention; physical activity can help ward of chronic diseases including cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis. Playing sports can help children develop healthy bones, stronger cardiovascular systems and powerful lungs, according to Sport and Development.org. Child athletes also develop motor skills and cognitive skills. Among women, sports can help prevent osteoporosis and hip fractures. Older citizens who play sports have opportunities to keep their bodies moving, feel independent and socialize with others in a healthy way. Playing sports can help people achieve fitness goals related to weight loss, muscle development and fat reduction because of the physical activity involved. Children who play sports are less likely to experience childhood obesity. Physical activity is associated with

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hormone regulation and strengthening the immune system. Playing sports contributes to mental health, helping to prevent depression and increase self-esteem and body image. Individuals who participate in sports might also benefit from the social aspect, developing friendships with teammates and feeling part of a group. Children can learn positive mental health skills including accountability, leadership and dedication.. Playing sports is a key strategy for reducing stress, because your body releases feel-good endorphins while exercising.

Some sports are associated with particular health advantages. For example, bowling can help achieve greater bone density because of the frequent heavy lifting, according to the Mother Nature Network. Fencing might help ward off cognitive decline, given the complex thinking associated with this sport. People who play volleyball benefit from increased hand-eye coordination and flexibility. Ping-pong also helps players increase hand-eye coordination, while also promoting better brain health because of the fast thinking involved.

Sports are nice way to get involved in the physical activities which benefits a lot. Sports are given much importance in many countries as they know it's real benefits and need in the personal and professional life of a person. Sports are physical activities of much importance for any athlete or a professional sportsperson. It means a lot for them and their life. Sports have nice scope for the sportspersons nationally as well as internationally. In some countries, sports and games activities are arranged in the celebration of some events or festivals, for example; Olympic Games are organized to pay honor to the Olympiads of the ancient Greece. Sports are nice physical activities that provide freedom from the stress and worries. sports can be played for personal benefits as well as professional benefits. In both ways, it benefits our body, mind and soul. First Olympic Games were held in 1896 in Athens which is now held continuously after every four years in different countries. It involves both, outdoor and indoor games in which sportsperson of many countries takes part. Some of the outdoor sports and games are like football, hockey, volleyball, baseball, cricket, tennis, kho-kho, kabaddi, etc which require a playground to be played. Indoor games are like carom, cards, chess, table tennis, puzzle, indoor basketball, etc can be played at home without any playground. Some sports and games like badminton and table tennis can be enjoyed both as indoor and outdoor. If we have a look on the history, we see that sports are given much importance from the ancient time. In the modern time, growing popularity of other entertainment things like video games, television, etc are decreasing the demand of sports and games in the life.

ADVANTAGES OF SPORTS AND GAMES

Sports and games are very beneficial to us as they teach us punctuality, patient, discipline, teamwork and dedication. Playing sports help us in building and improving confidence level. If we practice sports on regular basis, we can be more active and healthy. Being involved in the sports activities help us in getting protected with numerous diseases such as arthritis, obesity, obese, heart problems, diabetes, etc. It makes us more disciplined, patient, punctual, and courteous in life. It teaches us to go ahead in life by removing all the weaknesses. It makes us bold and gives the feeling of happiness by reducing the occurrence of anxiety and angry. It makes us physically fit and mentally comfort using which we can easily deal with all the problems.

Physical coordination and strength

It is considered that both, sports and strength are two sides of the coin. It is true that a person involved in the sports activities get more strength than the normal person without any physical exercise. A person interested in the sports can develop great body strength and make his/her career bright by participating in any sports at national or international level. Playing sports help in strengthening the immune system, maintaining physical coordination, enhancing body strength and improving mental power.

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Character and Health Building

Playing sports on regular basis helps in character and health building of any person. It is generally seen that a person involved in sports activity from the very young age, develops very clear and strong character as well as good health. Sportsperson becomes more punctual and disciplined thus, we can say that sports give various strong and well-built individuals to the society and nation.

Role of Sports and games in Building Health, Money and Nation

People can be involved in the sports activities for their personal as well as professional growth. It is good for both boys and girls to build fine physique. It makes people mentally alert, physically active and strong. Good health and peaceful mind are two most important benefits of the sports. Students are youth of the country and they can be more benefited by the sports activities. They can be more disciplined, healthy, active, punctual and can easily cope with any difficult situation in their personal and professional life. Being involved in the sports regularly helps to easily overcome from the anxiety, tension and nervousness.It improves the physiological functions of the body organs and thus positively regulates whole body functioning. It helps in maintaining the body health and thus keeps mind peaceful, sharp, and active with improved concentration. It boosts the body and mind power and energy level. It gives everyone a nice break from the monotonous life. Sports have a bright professional career so youths interested in it, do not need to worry and they only need to continue their interested sport with full dedication. It teaches everyone to work in team by developing a sense of cooperation and building team-spirit. More inclination towards sports makes both, a person and a nation, financially healthy strong. So, it should be promoted by the parents, teachers and government of the country.

Games and sports are an integral part of a student's life. A student should study hard to be successful in competitive examinations. But, he should also play games and sports to enjoy the health and vigor of life. Along with bookish learning, a student should spend his time on games and sports. There are many people who give importance only to bookish knowledge. Indeed, there is often no provision for games at all.In the Western countries, education of boys and girls is no longer confined to the lecture-theatres alone. Monotony of lectures has been very much minimized by out-door work and participation in games and sports and various athletic feats, which generate healthy competitive spirit and interest in life among students.

There are many benefits of games and sports in education. Outdoor games such as football, cricket, badminton, tennis, etc. have many benefits. The participation in any one of them is not a fruitless or frivolous pursuit. They may not ensure any immediate gain. They may tell upon the health for the time being and may also affect education temporarily. But the outdoor games gradually build up a healthy body and make the mind energetic.

Friendship

Playing sports enables you to create friendships you otherwise might not have formed. Sports bring teens together from different schools, backgrounds, and communities. Many times, the friendships you create on the field remain intact even when you are not playing sports.

Family

The fans on the sidelines are one of the most important parts of the game. The constant support of your parents helps you to feel good about yourself and strengthens your connection to them. As a teen, it is not always easy to find time to spend time with your parents. Sports give you and your parents' time to appreciate one another.

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Coaches: Providing wisdom and encouragement, coaches can be very good role models. The relationship that you develop with your coach is very important to the success of the team. Positive coaching helps to bring the team together, and gives players the right tools to push themselves academically and physically.
Health: Participating in sports improves your health in many ways. To be a good athlete, you must take care of yourself. This gets you thinking about what to eat and how to treat your body to achieve peak performance levels.
School: It's a common misconception that being both a student and an athlete is hard, if not impossible. Participating in sports can actually have a positive impact on school. Sports force you to organize your time so that you can both go to practice and finish your homework. **The key is finding a balance.** If you can learn to organize your time then you can succeed in both.
Leadership Skills: Participating in sports helps build leadership skills. Sports teams give you an opportunity to surround yourself with competitive people and role models, and learn from them both. You can demonstrate your own leadership through team captainships and individual actions to improve your team's success.
Many athletes do better academically: Playing a sport requires a lot of time and energy. Some may think this would distract student-athletes from schoolwork. However, the opposite is true. Sports require memorization, repetition and learning — skill sets that are directly relevant to class work. Also, the determination and goal-setting skills sports require can be transferred to the classroom.
Sports teach teamwork and help achieve goals: Fighting for a common goal with a host of other players, coaches, managers and community members teaches you how to build a collective team synergy and effectively communicate the best way to solve problems en route to a victory. This will be very helpful in life when encountering problems at work, at home, or in any arena.
Sports offer many health benefits, some less obvious: Clearly, sports will improve your fitness and weight goals. However, they also encourage healthy decisions such as not smoking or drinking and offer hidden health benefits such as a lower chance of getting osteoporosis or breast cancer later in life. Also, a team counting on you to show up and work hard is plenty of motivation for you to get to the gym day in and day out.
Sports boost self-esteem: Watching your hard work pay off and achieving your dreams brings about tons of self-confidence. If you can achieve something in a sport or with a fitness goal, then you know you can achieve any other goal you set. This is a very rewarding and exciting process.
Playing a sport cuts down on pressure and stress: Exercising is a natural way to loosen up and let go of stress. Also, you will most likely make many new friends on the team who can be there for you as a support system. When you find you are having a lot of stress, you can call up teammates and head to the gym to talk it out and play it out.

Conclusion

Sports activities have been made compulsory in the schools and colleges for the student's good physical health, mental health and professional career. Sports have nice career in future for anyone who involved dedicatedly. It is very beneficial especially for the students as it support physical as well as mental development. People who are much interested and good in the sports can live more active and healthy life. They can develop better discipline and leadership qualities at the workplace as well. The training for different branches of games and sports should be given in a scientific way under a good coach and the suitability to any particular branch of sports or games should be determined on the ability and interest of the student. For health and physical fitness games and sports are essential. All young men and women in schools, colleges, universities and training institutions should play **games.** Even business executives and others engaged in

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serious and very responsible activities should play some game in their spare time. It is necessary for their good health, physical fitness and mental alertness.

Riot only government agencies but also corporate bodies and business houses should come forward to promote games and sports in a big, and on permanent basis. They should adopt schools and promising boys and girls. There should be more such schools and institutions where sports are given due importance along with liberal education. There should be sufficient budget and fund allocations for the purpose. The promising students should be provided with adequate training and playing facilities. They should be given chances of international exposure and competition at the very school stage. There are scores of games and sports to choose from according to one's taste, aptitude and physical fitness. More and more people, parents, private and public agencies should be involved in the promotion of games and sports. The promising and talented students should be provided with all the modern facilities to develop their skills in various games. They should be given scholarships, and kept in residential schools with adequate coaching and field-facilities.

Proper planning and its effective execution is the need of the hour. Proper development of games and sports can solve so many of our problems related to student unrest and indiscipline. The good habits formed in the playground stand in good stead throughout the life. Games and sports teach the players obedience, fair-play, team-spirit, co-operation, courage, and tolerance, balance of mind and judgment quickness in decision-taking, punctuality and sense of oneness as Indians. Our teams go abroad to participate in international sports events. They are our ambassadors and help in promoting the national interests. They can enhance the national image and respect by winning laurels and medals. They can also promote better understanding, cooperation and cultural ties between India and other countries. Exchange of players, sports-persons, coaches and teams can be a good source of international peace, mutual help and development.

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PHYSICAL EXERCISE PROMOTES MENTAL HEALTH

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ABSTRACT
This article focuses on the role Physical Exercise in promoting mental health. Exercise improves muscular strength, increase joint flexibility and improve endurance and wellbeing. Regular exercise will bring remarkable changes to body, mind, heart, and spirit. Exercising does not mean doing something boring and dreaded. It is to engage in physical activities that is enjoyable that helps to increase the overall happiness in life and promotes health and happiness. Stress, depression and anxiety can be treated or get read through regular exercise. It has a unique capacity to exhilarate and relax, to provide stimulation and calm, to counter depression and dissipate stress. It's a common experience among endurance athletes and has been verified in clinical trials that have successfully used exercise to treat anxiety and depression. Any type of moderate activity like walking, swimming, running, jogging, skipping or organized exercise or sports can support to Mental Health.

Regular exercise promotes an enormous sense of well-being. It energize a person throughout the day, boost better sleep at night, sharpens memories, and feel more relaxed and keep positive about oneself and their life. And it's also powerful medicine for many common mental health challenges. Studies have revealed that regular exercise is good for the body. But it is also one of the most effective ways to improve your mental health. Regular exercise can have a profoundly positive impact on depression, anxiety, and more. It also relieves stress, improves memory, helps you sleep better, and boosts overall mood. And you don't have to be a fitness activist to reap the benefits. Studies indicate that modest amounts of exercise can make a difference. No matter what age or fitness level, one can learn to use exercise as a powerful tool to feel better.

Exercise and depression:

Exercise is a powerful depression fighter for several reasons. Most importantly, it promotes all kinds of changes in the brain, including neural growth, reduced inflammation, and new activity patterns that promote feelings of calm and well-being. It also releases endorphins, powerful chemicals in your brain that energize your spirits and make you feel good. Finally, exercise can also serve as a distraction, allowing you to find some quiet time to break out of the cycle of negative thoughts that feed depression. Studies show that exercise can treat mild to moderate depression as effectively as antidepressant medication but without the side effects, of course. In addition to relieving depression symptoms, research also shows that maintaining an exercise schedule can prevent you from relapsing.

Regular exercise has many psychological and emotional benefits. It helps to Gain confidence**.** Meeting exercise goals or challenges, even small ones, can boost your self-confidence. Getting in shape can also make to feel better about your appearance. It is a distraction that can get you away from the cycle of negative thoughts that depression. Exercise and physical activity may create the chance to meet or socialize with others. Just exchanging a friendly smile or greeting as you walk around neighborhood can help to sooth mood. Doing something positive to manage depression is a healthy coping strategy. Trying to feel better by drinking alcohol, dwelling on how badly you feel, or hoping depression will go away on its own can lead to worsening symptoms.

Exercise and stress: Muscles tense especially on the face, neck and shoulders leaving with back or neck pain, or painful headaches. It leads to tightness in the chest, a pounding pulse, or muscle cramps. The worry and

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discomfort of all these physical symptoms can in turn lead to even more stress, creating a vicious cycle between mind and body.Exercising is an effective way to break this cycle. As well as releasing endorphins in the brain, physical activity helps to relax the muscles and relieve tension in the body. Since the body and mind are so closely linked, when the body feels better the acts mind functions better.Exercise reduces levels of the body's stress hormones, such as adrenaline. It also stimulates the production of endorphins, chemicals in the brain that are the body's natural painkillers and mood elevators. Endorphins are responsible for the "runner's high" and for the feelings of relaxation and optimism that accompany many hard workouts — or, at least, the hot shower after your exercise is over.

Behavioral factors also contribute to the emotional benefits of exercise. As the waistline shrinks and strength and stamina increase, the self-image will improve .it enhance the will power to earn a sense of mastery and control, of pride and self-confidence. Renewed vigor and energy will help to succeed in many tasks, and the discipline of regular exercise will help to achieve other important lifestyle goals. Exercise and sports also provide opportunities to get away from it all and to either enjoy some solitude or to make friends and build networks. "All men," wrote St. Thomas Aquinas, "need leisure." Exercise is play and recreation; when body is busy mind will be distracted from the worries of daily life and will be free to think creatively.

Other mental and emotional benefits of exercise:

Sharpens memory and thinking the same endorphins that enables to feel better also help to concentrate and feel mentally sharp for tasks at hand. Exercise also stimulates the growth of new brain cells and helps prevent age-related decline.

Positive self image: Regular activity is an investment to mind, body, and soul. When it becomes habit, it can foster sense of self-worth and make feel strong and powerful. It boots better feeling about ones appearance and, by meeting even small exercise goals, creates sense of achievement.

Boost sleep**:** Even short bursts of exercise in the morning or afternoon can help regulate sleep patterns. Exercise at night, relaxing exercises such as yoga or gentle stretching can help promote sleep.

More energy**:** Increasing the heart rate several times a week will give more get-up-and-go. Few minutes of exercise a day may increase energy

More flexibility**:** When faced with mental or emotional challenges in life, exercise can help to cope in a healthy way, instead of resorting to alcohol, drugs, or other negative behaviors that ultimately only make your symptoms worse. Regular exercise can also help boost the immune system and reduce the impact of stress.

Conclusion:

Physical activity is an important aspect in life to maintain mental health. Sustained physical activity is most helpful in the prevention mental disorder and to live a happy,healthy and a long life. In addition exercise has a benefit of developing wholeness and it can foster sense of self-worth and make feel strong and powerful.Regular exercise can alleviate mood disorders such as Stress, anxiety and depression. Regular exercise also help boost the immune system. It sharpens memory and thinking that enables feel good and help to concentrate.

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EFFECT OF RECREATIONAL GAMES ON SELECTED PHYSICAL FITNESS VARIABLES AMONG RURAL FEMALE SCHOOL STUDENTS

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INTRODUCTION

Recreation games are not only for simple entertainment or fun: but it teaches lots of important lessons to any human being. Children, who like to play recreation games, are more sociable and physically fit than others. The physical and mental ability of a child improves large extent through playing games. The children learn to be more matured when they play in a regular basis. Indoor or outdoor recreation games both are quite useful for the child all-round development. Indoor games are related to the growth of brian and mental ability and the outdoor games are responsible for building the physical strength and power. Recreation games also improve the muscle power, flexibility and strengthen the sense organs to enhance their performance. Recreation games have also been useful for normal development of the children having development problems. By playing games, the children learn to interact with each other and thus to become more social. **(Brar, 2005)**

STATEMENT OF THE PROBLEM

The present study was to findout the effect of recreational games on selected physical fitness variables among rural female school students.

HYPOTHESES

It was hypothesized that there may be significant differences due to recreational games on the selected physical fitness variables namely speed and Leg explosive strength

SIGNIFICANCE OF THE STUDY

1. The study will be helpful to know the effect of recreational games on selected physical fitness variables among rural female school students.
2. The study will be helpful to prepare training schedule to improve the effect of recreational games on selected physical fitness variables among rural female school students.
3. The study will be helpful to realize female school students and coaches for their coaching purpose.

DELIMITATIONS

The following delimitations are considered for the study

1. This study is confined to 60rural female school students as subjects.
2. The subjects were selected from K.G.B.V School, Gurazala, Guntur, A.P.
3. The subjects were selected only from the age group of 11 and 15 years.
4. The duration of the training was five days per week and six weeks in total.
5. The study is confined only to the selected recreational games training.

LIMITATIONS

The following limitations are considered for the study.

1. The factors like personal habits, life style, routine, diet, climatic conditions and environmental factors which might have had an effect on the results of this study could not be taken into consideration.
2. Hereditary, social and other psychological factors could not be controlled.

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METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the effect of recreational games on selected physical fitness variables among rural female school students.60 subjects were selected randomly from K.G.B.V School, Gurazala, Guntur, A.P. The age of the subjects ranged from 11 to 15 years. They were divided into two groups of 30 in each. One group acted as the experimental group. The experimental group was undergone the training for 6 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

Recreational games

DEPENDENT VARIABLES

- **PHYSICAL FITNESS VARIABLES**
  1. Speed
  2. Leg explosive strength

TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Speed	30 meter dash	In seconds
2.	Leg explosive strength	Standing broad jump	In centimeters

EXPERIMENTAL DESIGN

The present study is to find out the effect of recreational games on selected physical fitness variables among rural female school students.60 subjects were selected randomly from K.G.B.V School, Gurazala, Guntur, A.P.The age of the subjects ranged from 11 to 15 years. They were divided into two groups each consisting of 30 namely experimental group and control group. The experimental group underwent the recreational gamestraining for 6 weeks. The training was given five days in a week and the training session was from 4:00 pm to 5:00 pm. The control group was not involved in any recreational games training. They were engaged in their usual activities. All the subjects were tested in the selected physical fitness variables namely speed and leg explosive strength. The pre- test was taken before the start of recreational games training and post-test was taken after 6 weeks recreational games training.

TRAINING PROGRAMME MESO CYCLE PLAN TRAINING COMPONENTS AND PERCENTAGE OF TRAINING RECREATIONAL GAMES

S.NO	TRAINING	WEEKS					
		1	2	3	4	5	6
1	Warm up	20	20	25	15	20	15
2	Recreational games	60	60	50	70	60	70
3	Warm down	20	20	25	15	20	15
4	Total percentage	100	100	100	100	100	100

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List of Recreational games

Recreational games

Potato race, Zig and Zag relay, Dodge ball, Throw and sit relay, Kick and run tag, Football dribble relay, Jump the hurdle relay, Jump the lane relay, Small hurdle jump relay, etc…

STATISTICAL TECHNIQUES

The present study paid its attention mainly on testing the effect of recreational games on selected physical fitness variables among rural female school students. The Statistical tool used for this present study is described here. The significance of the mean difference between the pre-test and post-test values of the variables was found out by applying ANCOVA.

Table-III: COMPUTATION OF ANALYSIS OF COVARIANCE ON SPEED AMONG EXPERIMENTAL AND CONTROL GROUPS

Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	Obtained 'F'
Pre-test Mean	5.53	5.63	BG	0.07	1	0.07	0.53
			WG	3.78	58	0.14	
Post-test Mean	5.28	5.62	BG	0.88	1	0.88	7.54*
			WG	3.30	58	0.12	
Adjusted post-test Mean	5.33	5.59	BG	0.48	1	0.48	69.11*
			WG	0.19	57	0.02	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 58 and 1 & 57 degree of freedom = 4.00 & 4.00

The table-VIII shows that the pre-test mean value on speed of experimental group and control group are 5.53 and 5.63 respectively. The obtained 'F' ratio of pre test mean is 0.53 which is lesser than the required table value of 4.00for df 1 and 58 at 0.05 level of confidence onspeed.

The post-test mean value on speed of experimental group and control group are 5.28 and 5.62 respectively. The obtained 'F' ratio of post-test mean is 7.54 which are greater than the required table value of 4.00 for df 1 and 58 at 0.05 level of confidence on speed.

The adjusted post-test mean value on speed of experimental group and control group are 5.33 and 5.59 respectively. The obtained 'F' ratio of adjusted post-test mean is 69.11 which is greater than the required table value of for 4.00 df 1 and 57 at 0.05 level of confidence on speed.

The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on speed.

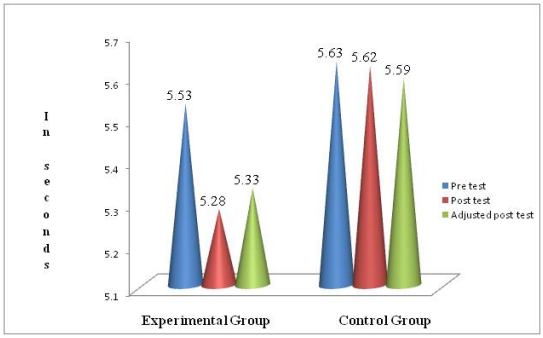

FIGURE-1: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON SPEED

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Table-IV: **COMPUTATION OF ANALYSIS OF COVARIANCE ON LEG EXPLOSIVE POWER AMONG EXPERIMENTAL AND CONTROL GROUPS**

Test	Experimental Group	Control	Source of variance	Sum of square	df	Mean square	Obtained 'F'
Pre-test Mean	1.82	1.80	BG	0.02	1	0.02	0.14
			WG	0.35	28	0.01	
Post-test Mean	1.99	1.82	BG	0.26	1	0.26	27.82*
			WG	0.27	28	0.01	
Adjusted post-test Mean	2.00	1.81	BG	0.23	1	0.23	83.67*
			WG	0.08	27	0.03	

***Significant at 0.05 level.**

Table value at 0.05 level of significance for 1 & 58 and 1 & 57 degree of freedom = 4.00 & 4.00

The table-IV shows that the pre-test mean value on leg explosive powerof experimental group and control group are 1.82 and 1.80 respectively. The obtained 'F' ratio of pre test mean is 0.14 which is lesser than the required table value of 4.00for df 1 and 58 at 0.05 level of confidence onleg explosive power.

The post-test mean value on leg explosive power of experimental group and control group are 1.99and 1.82 respectively. The obtained 'F' ratio of post-test mean is 27.82 which are greater than the required table value of 4.00 for df 1 and 58 at 0.05 level of confidence on leg explosive power.

The adjusted post-test mean value on leg explosive power of experimental group and control group are 2.00 and 1.81 respectively. The obtained 'F' ratio of adjusted post-test mean is 83.67 which is greater than the required table value of for 4.00df 1 and 57 at 0.05 level of confidence on leg explosive power.

The result of the study indicates that there was a significant difference among the adjusted post-test means experimental group and control group on leg explosive power.

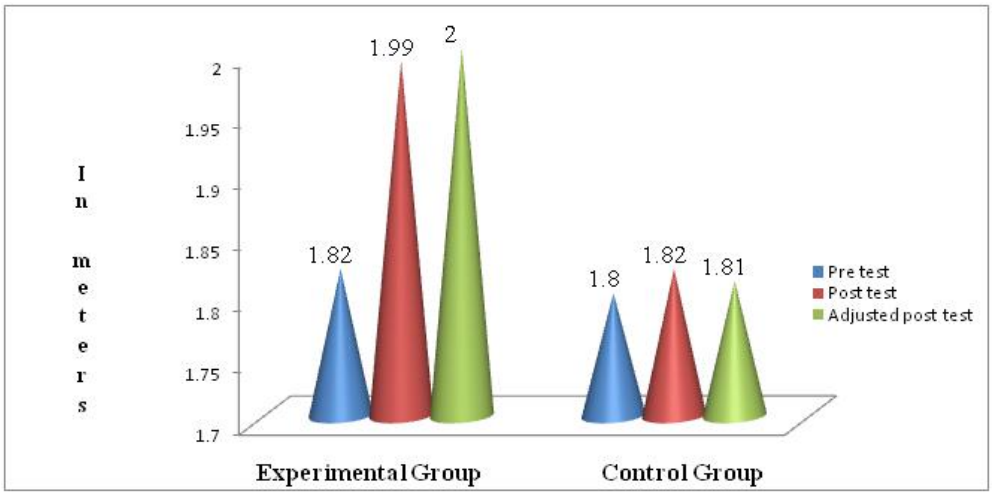

FIGURE-2: THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUPS ON LEG EXPLOSIVE POWER

DISCUSSION ON FINDINGS

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The result of the study shows that the recreational games that had undergone recreational training and significant improvement on selected physical fitness variables namely speed and leg explosive power. This may be due to the effect of recreational games training.

The results conformity with other studies Outle.,etal (2011), Stern HP., et al (2009), Rajakumar (2010),Pratima., et al (2008), Hardy., et al (2013), Patterson., et al (2001) has also provide in their studies that an improvement did occur physical fitness variables namely speed and leg explosive power

CONCLUSIONS

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn. It was concluded that recreational games training significantly improved on physical fitness variables namely speed and leg explosive power.

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EFFECT OF PLYOMETRIC TRAINING ON SELECTED PHYSICAL AND PHYSIOLOGICAL VARIABLES AMONG MALE VOLLEYBALL PLAYERS

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ABSTRACT
The purpose of this study was to find out the effect of plyometric training on selected physical and physiological variables among male volleyball players. The investigator selected 24 men volleyball players were selected from Ramakrishna mission, Vivekananda University, General and adapted physical education and yoga, Coimbatore, Tamilnadu. Their age ranged from 18 to 21 years. The subjects were divided into two equal groups. Group 1 consisting 12 subjects called as the experimental group and group 2 consisting of 12 subjects called as the control group .The group I was assigned the plyometric training programme. The control group was not allowed to participate in any kind of treatment. The selected criterion variables speed, agility and anaerobic capacity, speed was tested with 20 meters dash test, agility was tested with 4×10 meters shuttle run and anaerobic capacity was tested with margariakalaman power test. The training period was for 8weeks except on Saturday and Sunday in each week. The data were collected from before and after the eight weeks of plyometric training. The data was analyzed by the use of paired't' test. The level of confidence was fixed 0.05. The results study shows that improvement on selected criterion variables speed, agility and anaerobic capacity due to effect of plyometric training. The control group did not show any improvement.

Key words: plyometric Training**,** speed, agility and anaerobic capacity.

INTRODUCTION

PLYOMETRICS

Plyometrics is the term now applied to exercise, that have their roots in **"Europe"** where they were first known simply as "jumping training".

Interest in this jump training increased during the early 1970's as east European athletes emerged as powers on the world sports scene. As the eastern bloc countries began to produce superior athletes in such sports as track and field, gymnastics, and weight lifting, the mystique of their success began to Centre on the training methods. **(Donald .A. Chu, 1998)**

The actual term plyometric was first coined in 1975 by "Fred wilt" one of the Americas more forward thinking track and field exercise coaches. Based on Latin origins, "plyometric is interrupted to mean measurable increases". These seemingly exotic exercises were thought to be responsible for the rapid competitiveness and growing superiority of eastern Europeans in track and field events. **(Donald .A. Chu, 1998)**

Plyometrics rapidly became known to coaches and athletes are exercise (or) drills aimed at linking strength with speed of movement to produce power. Plyometric training becomes essential who jumped, lifted, (or) threw.

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METHODOLOGY

For this study 24 male volleyball players were randomly selected from Vivekananda University, Faculty of General and Adapted Physical Education and Yoga, Ramakrishna Mission Vidyalaya, Periyanaickenpalayam, Coimbatore, Tamilnadu. The selected subjects were divided in to 2 equal groups. One was plyometric training (experimental group) and another one was control group. The following criterion variables were selected for the study such as physical variables, speed, agility, and physiological variable anaerobic capacity. The training period was 8 weeks, one and half hour in evening session. For the pre and post-test randomized controlled group design was followed for this study.The data was analyzed by the use of paired't' test. The level of confidence was fixed 0.05.

TABLE – I:COMPUTATION OF 't' RATIO BETWEEN PRE AND POST TEST SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ON SPEED

	TEST	MEAN	SD	DM	SD MEAN ERROR	't'
EXPERIMENTAL GROUP	PRE-TEST	3.64	0.24	0.1	0.012	8.33*
	POST-TEST	3.54	0.21			
CONTROL GROUP	PRE-TEST	3.63	0.23	0.01	0.032	0.312
	POST-TEST	3.64	0.31			

*level of significance was fixed at 0.05 with df 11 table value is 2.20

Table-1 shows that the mean and standard deviation and 't' ratio of experimental group and control group. The experimental group pre and post-test mean values of speed were 3.64 and 3.54 and standard deviation values were 0.24 and 0.21and obtained 't' value was 8.33 which was greater than the table value of 2.20 with df 11. And control group pre and post-test mean values of speed were 3.63 and 3.64 and standard deviation values were 0.23 and 0.31. The obtained 't' value of the control group was 0.312 which was lesser than the table value of 2.20. The findings of the study statistically proved that the experimental group showed significant improvement on speed due to plyometric training on male volleyball players.

BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST TEST OF EXPERIMENTAL AND CONTROL GROUP ON SPEED

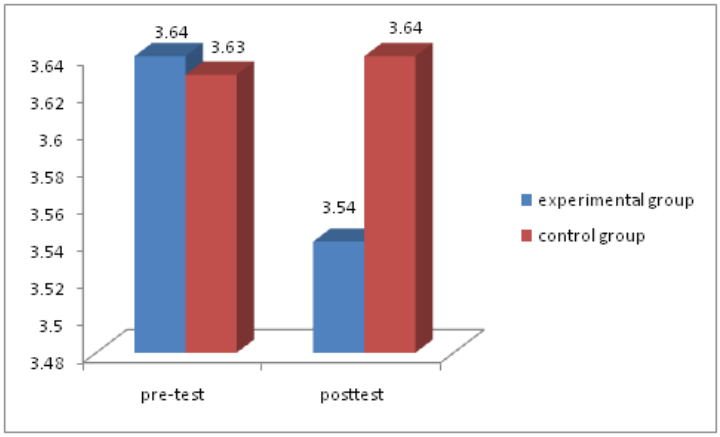

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TABLE – II: COMPUTATION OF 't' RATIO BETWEEN PRE AND POST TEST SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ON AGILITY

	TEST	MEAN	SD	DM	SD MEAN ERROR	't'
EXPERIMENTAL GROUP	PRE-TEST	11.73	0.93	0.94	0.31	3.03*
	POST-TEST	10.78	0.76			
CONTROL GROUP	PRE-TEST	11.64	0.97	0.069	0.084	0.821
	POST-TEST	11.71	0.92			

*level of significance was fixed at 0.05 with df 11 table value is 2.20

Table-2 shows that the mean and standard deviation and 't' ratio of experimental group and control group. The experimental group pre and post-test mean values of agility were 11.73 and 10.78 and standard deviation values were 0.93 and 0.76 and obtained 't' value was 3.03 which was greater than the table value of 2.20 with df 11. And control group pre and post-test mean values of agility were 11.64 and 11.71 and standard deviation values are 0.97 and 0.92. The obtained 't' value of the control group was 0.821 which was lesser than the table value of 2.20. The findings of the study statistically proved that the experimental group showed significant improvement on agility due to plyometric training on male volleyball players.

BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST TEST OF EXPERIMENTAL AND CONTROL GROUP ON AGILITY

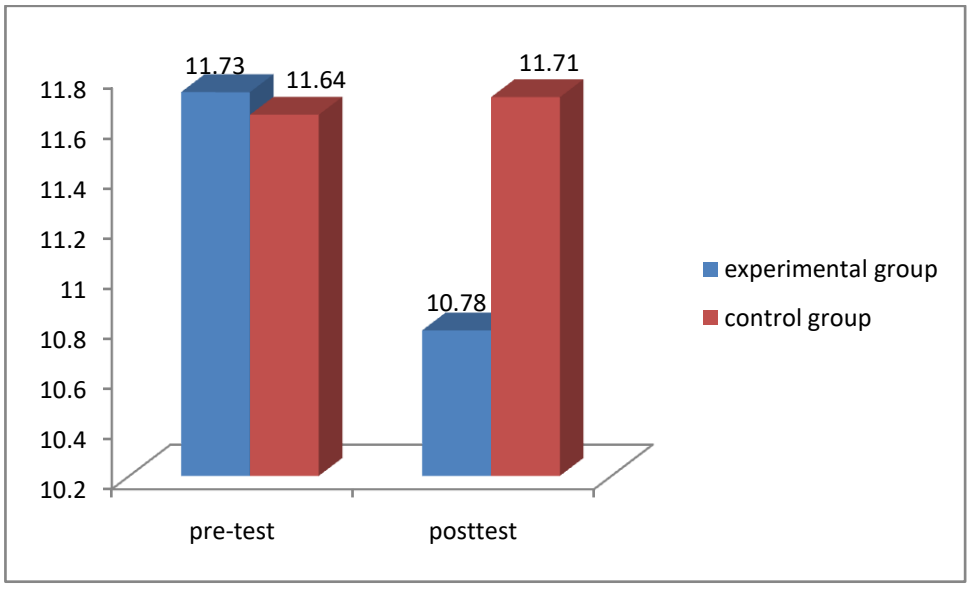

TABLE – III: COMPUTATION OF 't' RATIO BETWEEN PRE AND POST TEST SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ON ANAEROBIC CAPACITY

	TEST	MEAN	SD	DM	SD MEAN ERROR	't'
EXPERIMENTAL GROUP	PRE-TEST	3.64	0.24	0.1	0.012	8.33*
	POST-TEST	3.54	0.21			
CONTROL GROUP	PRE-TEST	3.63	0.23	0.01	0.032	0.312
	POST-TEST	3.64	0.31			

*level of significance was fixed at 0.05 with df 11 table value is 2.20

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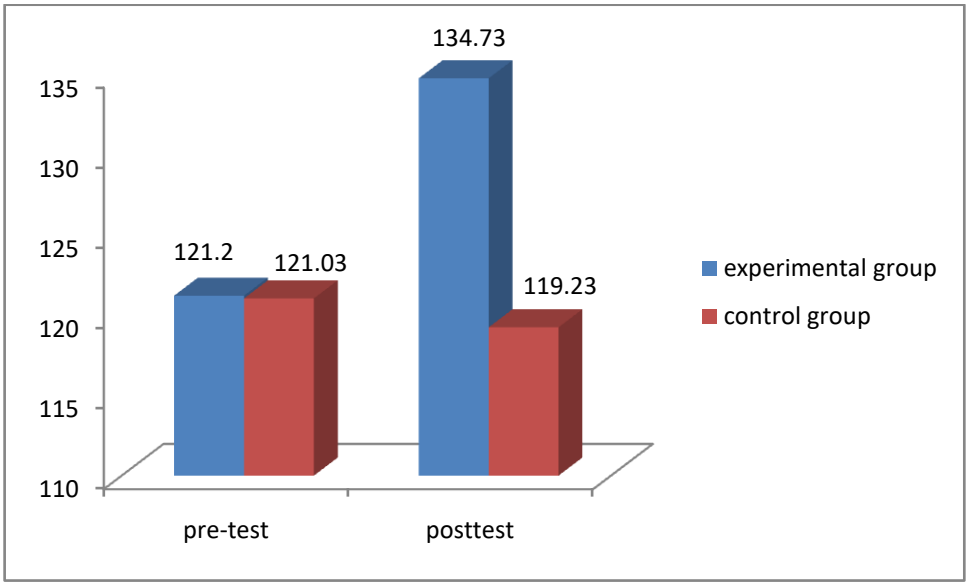
Table-3shows that the mean and standard deviation and 't' ratio of experimental group and control group. The experimental group pre and post-test mean values of anaerobic capacity were 121.20 and 134.73 and standard deviation values were 15.40 and 17.11 and obtained 't'value was 14.80 which was greater than the table value of 2.20 with df 11. And control group pre and post-test mean values of anaerobic capacity were 121.03 and 119.23 and standard deviation values are 15.41 and 14.41. The obtained 't' value of the control group was 2.08 which was lesser than the table value of 2.20. The findings of the study statistically proved that the experimental group showed significant improvement on anaerobic capacity due to plyometric training on male volleyball players.

BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST TEST OF EXPERIMENTAL AND CONTROL GROUP ON ANAEROBIC CAPACITY



CONCLUSION

The plyometric had shown significant improvement in all selected physical and physiological variables (speed, agility and anaerobic capacity) among male volleyball players.

The control group had not shown any significant changes on selected physical and physiological variables (speed, agility and anaerobic capacity) among male volleyball.

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INFLUENCE OF PRANAYAMA WITH FLEXIBILITY EXERCISES ON SELECTED MOTOR ABILITIES OF OBESE SCHOOL BOYS

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ABSTRACT
The present study is to findout the influence of pranayama practice with flexibility exercise on selected motor abilities variables of obese schoolboys. 30 subjects were selected from SRKV Higher Secondary School (Tamil and English Medium) and TAT Kalanilayam, Ramakrishna Mission Vidyalaya, Coimbatore. The subjects were between 12 and 18 years. They were divided into two groups of 15 in each. One group was acted as the experimental group and another group was acted as control group. The experimental group underwent the pranayama practice with flexibility exercise training for 12 weeks of 5 days per week. Each training session was for one hour in the evening from 3.00 PM to 4.00 PM. To achieve the result, the collected data on following criterion measures namely motor abilities variables namely flexibility and leg explosive power. The standardized tests were taken before and after the pranayama practice with flexibility exercise training. The paired't' test was applied to analyzed the collected data and in all cases the criteria for the statistical significance was set at 0.05 level of confidence. Itis concluded that the pranayama practice with flexibility exercise training significantly increased the flexibility and leg explosive power of obese school boys.

KEYWORDS:
pranayama practice with flexibility exercise training, flexibility and leg explosive power.

INTRODUCTION

Pranayama is control of breath. 'Prana' is breath or vital energy in the body. On subtle levels, prana represents the pranic energy responsible for life or life force and 'Ayama' means control. So pranayama is 'control of breath'. One can control the rhythms of pranic energy with pranayama and achieve health if body and mind. Five types of Prana are responsible for various pranic activities in the body; they are prana, apana, vyana, vudanaand samana. Out of these prana and apana are most important. Prana is upward flowing and apana is downward flowing. Practice of pranayama achieves the balance in the activities of these pranas, which results in a healthy body and mind.

Prana means breath, respiration, life, vitality, wind, energy (or) strength. Pranayama thus can notes extension of breath and its control. This control is over all the functions of breathing namely,

(1) Inhalation or inspiration which is named Puraka (filling up)
(2) Exhalation (or) expiration which is called Rechaka (emptying the lungs)
(3) Retention or holdings the breath or state where there is no inhalation (or) exhalation which is termed Kumbhaka.

Emotional excitement affects the rate of breathing. Equally deliberate regulation of breathing checks emotional excitement. As the very object of yoga is to control and steal the mind. The Yogi first learns Pranayama to master the breath. This will enable him to control the senses and so reach the stage of Pratyahara. Only then will the mind be ready for concentration (Dhyana).

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Several types of flexibility exercises can improve range of movement. Ballistic methods or "bouncing" stretches use the momentum of the moving body segment to produce the stretch. Dynamic or slow movement stretching involves a gradual transition from one body position to another, and a progressive increase in reach and range of motion as the movement is repeated several times. Static stretching involves slowly stretching a muscle/tendon group and holding the position for a period (i.e., 10–30 s). Static stretching can be active or passive. Active static stretching involves holding the stretched position using the strength of the agonist muscle, as is common in many forms of yoga. In passive static stretching, a position is assumed while holding a limb or other part of the body with or without the assistance of a partner or device (such as elastic bands or a barre). Proprioceptive neuromuscular facilitation (PNF) methods take several forms but typically involve an isometric contraction of the selected muscle-tendon group followed by a static stretching of the same group (i.e., contract-relax).

Recent research has shown that static stretching can reduce muscle soreness after exercise. These slow, gradual movements involve a controlled elongation of the muscle through it's full range of motion, and is then held for 15-30 seconds in the farthest position that can be held without pain. By stretching in this way, you can improve muscular balance and your resting posture.Prolonged inactivity will make it more difficult for obese people to exercise and lead a more active lifestyle. When they find that it is getting harder to walk and stand up, exercise will help to flex and stretch the muscles to help their mobility and lose extra weight.

STATEMENT OF THE PROBLEM

The present study is to find out the influence of pranayama practice with flexibility exercise on selected motor abilities variables of obese schoolboys.

SIGNIFICANCE OF THE PROBLEM

This study will help to improve on the selected motor abilities variables to the school students.

- To contribute better pranayama practice with flexibility exercise programme to the obese school students.
- To create an awareness among the school students about the pranayama practicewith flexibility exercise.

HYPOTHESIS

It is hypothesized that there may be a significant difference between pre-test and post-test of pranayama practice with flexibility exercise on the selected motor abilities variables of obese school boys.

DELIMITATIONS

1. This study confined to 30 obese school boys was selected from SRKV Higher Secondary School (Tamil and English Medium) and TAT Kalanilayam, Ramakrishna Mission Vidyalaya, Coimbatore.
2. The subjects were selected only from the age group 12 to 18 years.
3. The study delimited the motor abilities variables namely flexibility and leg explosive power.
4. The duration of the experimental period was 12 weeks.

LIMITATIONS

Diet, regular habit, past experience, participation in sports training, and meteorological factors will not be taken in to consideration

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the influence of pranayama practice with flexibility exercise on selected motor abilities variables of obese schoolboys. 30 school boys were selected randomly

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from SRKV Higher Secondary School (Tamil and English Medium) and TAT Kalanilayam, Ramakrishna Mission Vidyalaya, Coimbatore. The age of the subjects ranged from 12 to 18 years. They were divided into two groups of 15 in each. One group acted as the experimental group. The experimental group was undergone the training for 12 weeks.

SELECTION OF VARIABLES

Independent variable

- Pranayama practice with flexibility exercise

Dependent variables

- **Motor abilities**
  - flexibility
  - leg explosive power

TOOLS AND TECHNIQUES

Variables	Name of the Test
flexibility	Sit and reach test
leg explosive power	Standing broad jump

EXPERIMENTAL DESIGN

For this study, 30 school students were selected as subjects. They were selected from SRKV Higher Secondary School (Tamil and English Medium) and TAT Kalanilayam, Ramakrishna Mission Vidyalaya, Coimbatore. Their age ranged from 12 and 18 years which represented a true random sample group and it was called as experimental group. These subjects were tested to find out their motor abilities variables namely flexibility and leg explosive power were tested.

Pranayama practice with flexibility exercise training for 12 weeks was given to the subjects. Their training days and hours every week ranged from Monday to Friday from 3.00pm to 4.00pm. A pre - test was conducted before the commencement of the training the final test data were collected after 12 weeks.

STATISTICAL TECHNIQUES

't' ratio was calculated to findout the significance difference between the mean of pre and post test of the each group.

TABLE-II: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN FLEXBILITY

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	15.60	4.46	1.68	0.44	18.06*	2.14
Experimental post test	19.06		1.83	0.47		
Control pre test	16.06	0.20	1.68	0.43	1.88	2.14
Control post test	16.26		1.78	0.45		

***significance at 0.05 level 0f confidence**

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To find out the significant difference between pre test and post testonflexibility 't' ratio was employed and the level of significance was set at 0.05. The experimental group on flexibilitypre test value was 15.60 and post test value was 19.06 respectively. The mean difference value was 4.46 and flexibilityobtained't' ratio was18.06 greater than the table value 2.14. So it was to be significant. The control group on flexibilitypre test value was 16.06 and post test value was 16.26 respectively. The mean difference value was 0.20 and flexibility obtained't' ratio was 1.88 and is lesser than table value of 2.14. So it is found to be insignificant.

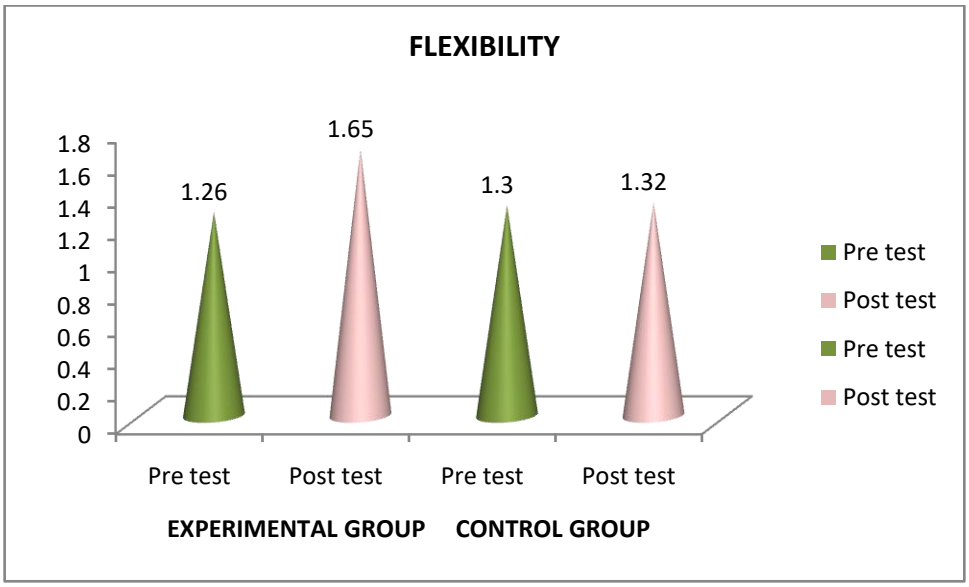

FIGURE-I: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP AND CONTROL GROUP OF FELEXIBILITY.

TABLE-III: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN LEG EXPLOSIVE POWER

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	1.26	0.39	0.15	0.03	7.95*	2.14
Experimental post test	1.65		0.16	0.04		
Control pre test	1.30	0.02	0.10	0.02	1.00	2.14
Control post test	1.32		0.11	0.03		

*significance at 0.05 level 0f confidence

To find out the significant difference between pre test and post testonflexibility 't' ratio was employed and the level of significance was set at 0.05. The experimental group on flexibilitypre test value was 15.60 and post test value was 19.06 respectively. The mean difference value was 4.46 and flexibilityobtained't' ratio was

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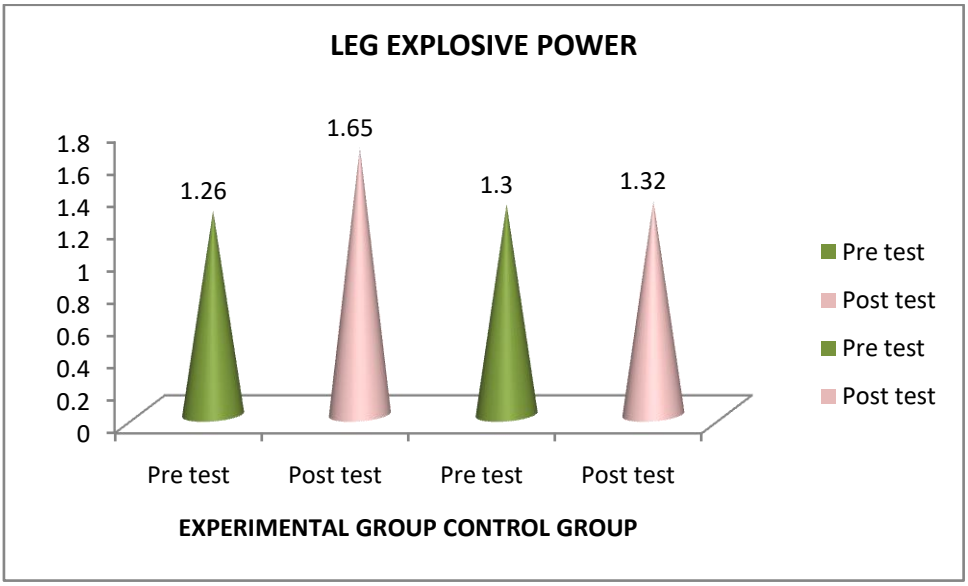

FIGURE-II: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP AND CONTROL GROUP OF LEG EXPLOSIVE POWER

DISCUSSION ON FINDINGS

The result of the study shows that the influence of pranayama practice with flexibility exercise training group had significant improvement on selected motor abilities variables namely flexibility and leg explosive powerofobese schoolboys. This may be due to the pranayama practice with flexibility exercise training.

CONCLUSIONS

Based on the statistical analysis and results of the study, the following conclusions are drawn.

- It is concluded that pranayama with flexibility exercise training significantly improved the motor abilities variables namely flexibility and leg explosive power.

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BETTER HEALTH & FITNESS MANAGEMENT

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Abstract
Our nation's people are, in large measure, inactive, unfit, and increasingly overweight. In the long run, this physical inactivity threatens to reverse the decades-long progress we have made in reducing death from cardiovascular diseases and to devastate our national health care budget. In the short run, physical inactivity has contributed to an unprecedented epidemic of childhood obesity that is currently plaguing the India. The percentage of people who are overweight has doubled since the last decade.

Physical activity has been identified as one of our nation's leading health indicators in Healthy People. Enhancing efforts to promote participation in physical activity and sports among people is a critical national priority. Sports and recreation programs that offer a range of developmentally appropriate activities that are accessible and attractive to all people.A community structural environment that makes it easy and safe for people to walk, ride bicycles, and use close-to-home physical activity facilities.

Key Words: Physical activity, Physical Fitness, Benefit, Physical exercise

To increase their levels of physical activity and fitness, people can benefit from-Families who model and support participation in enjoyable physical activity.

School programs—including quality, daily physical education; health education; recess; and extracurricular activities—that help students develop the knowledge, attitudes, skills, behaviours, and confidence to adopt and maintain physically active lifestyles, while providing opportunities for enjoyable physical activity.

Media campaigns that help motivate people to be physically active.

What exactly is physical fitness?

Being fit means you have more energy to do daily tasks, can be more active, and do not tire as easily during the day. Being fit also helps you build a positive self-image and feel better about yourself. You do not have to spend hours in a gym to be physically active. Every time you throw a softball, swim a lap, or climb up a flight of stairs, you are improving your health and fitness level.

Benefits of physical activity

Physical activity has many proven benefits. When you are physically fit, you feel and look better, and you stay healthier. Physical activity can help you to: Prevent high blood pressure, strengthen your bones, Ward off heart disease and other medical problems, relieve stress, stay active as an adult, maintain or achieve an appropriate weight for your height and body build.

A major benefit of physical activity is that it helps to reduce stress. Learning to cope with stress is an important part of healthy living. Family problems, conflicts with friends, and school pressures can cause stress. Major changes in your life, such as moving to a new home or breaking up with someone, are also sources of stress. Exercise helps you relax by causing physical changes inside your body that help it react to and handle stress. Physical activity also has many other health benefits, such as helping to ward off heart disease. Research has shown that your risk factors as an adult for developing heart disease start during your childhood. A lack of

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physical activity is one of the major risk factors influencing heart diseases, such as high blood pressure, and other medical illnesses.

Participation in physical activity and sports can promote social well-being, as well as physical and mental health, among people. Research has shown that students who participate in interscholastic sports are less likely to be regular and heavy smokers or use drugs and are more likely to stay in school and have good conduct and high academic achievement. Sports and physical activity programs can introduce people to skills such as teamwork, self-discipline, sportsmanship, leadership, and socialization. Lack of recreational activity, on the other hand, may contribute to making people more vulnerable to gangs, drugs, or violence.

One of the major benefits of physical activity is that it helps people improve their physical fitness. Fitness is a state of well-being that allows people to perform daily activities with vigour, participate in a variety of physical activities, and reduce their risks for health problems. Five basic components of fitness are important for good health: cardio respiratory endurance, muscular strength, muscular endurance, flexibility, and body composition (percentage of body fat). A second set of attributes, referred to as sport- or skill-related physical fitness, includes power, speed, agility, balance, and reaction time. Although skill-related fitness attributes are not essential for maintaining physical health, they are important for athletic performance or physically demanding jobs such as military service and emergency and rescue service.

Physical fitness is a balance of many areas

To be physically fit, you must work on all aspects of fitness, including the following:

Cardio respiratory endurance (aerobic fitness)—This is the ability of the heart, lungs, and circulatory system to deliver oxygen and nutrients to all areas of your body. When you are active, you breathe harder and your heart beats faster so that your body can get the oxygen it needs. If you are not fit, your heart and lungs must work extra hard during physical activity.

Body composition (body fat)—This is the percentage of body weight that is fat. Overweight people have more body fat in relation to the amount of bone and muscle in their bodies than do people who are physically fit. Overeating, not exercising enough, or both often lead to more body fat. Being overweight increases your risk of diabetes, high blood pressure, and heart attacks.

Muscle strength and endurance—This is the amount of work and the amount of time that your muscles can do a certain activity before they get tired, such as lifting heavy objects or in-line skating.

Flexibility—Flexibility is the ability to move joints and stretch muscles through a full range of motion. For example, people who are very flexible can bend over and touch the floor easily. A person with poor flexibility is more likely to get hurt during physical activity.

What can I do to become more fit?

First, you must make the commitment to become more physically active. Try to do some physical activity every day, whether it is through physical education classes in school or in college an activity on your own. Exercise should be a routine part of your day, just like brushing your teeth, eating, and sleeping. It may help to plan a physical activity with a friend or family member. Most people find that it is more fun to exercise with someone else. More importantly, though, is that you like the exercise or activity. You are more apt to stay in the habit of doing whatever activity you choose if it is one that you enjoy. Now is a good time to pick a “life sport” that you enjoy. Unlike a competitive team sport like football or baseball, a life sport is any kind of physical exercise or activity that you can do throughout your life. Examples of life sports are: Swimming, Tennis, Golf, Walking, Bicycling, Skating, and Jogging.

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Regular exercise should include aerobic activity. Aerobic activity is continuous. It makes you breathe harder and increases your heart rate. This type of exercise increases your fitness level and makes your heart and lungs work more efficiently. It also helps you maintain a normal weight by burning off excess fat. Examples of aerobic activities are brisk walking, basketball, bicycling, swimming, in-line or ice skating, soccer, jogging, and taking an aerobics or step class. Baseball and football do not involve as much continuous exercise because you are not active the whole time. In general, the more aerobic an activity, the more calories—and eventually fat—you will burn. If you like the exercise, you will want to keep doing it. Anything that involves movement qualifies as exercise. You do not have to be on a sports team, have expensive athletic clothes or shoes, or be good at sports to become more fit. Any type of regular, physical activity is good for your body. Household chores, such as mowing the lawn, vacuuming, or scrubbing, involve exercise and may have fitness benefits, depending on how vigorously you do the chores. The most important thing is that you keep moving.

Be sure to include stretching exercises in your daily routine. Before you do any physical activity, you should stretch out your muscles. This warms them up and helps protect against injury. Stretching makes your muscles and joints more flexible, too. It is also important to stretch out after you exercise to cool down your muscles. Exercise videos, programs on television, and magazines can show you examples of how to stretch out different muscle groups, as well as different exercises you can do. Just about any physical activity will improve fitness. For example, walking is better than riding in a car, and using the stairs is better than taking an elevator. Making small changes like these in your everyday life can make you more physically fit.

Whenever possible, eat three healthy meals a day, including at least two to four servings of fruit and three to five servings of vegetables each day. Limit your intake of fat, cholesterol, salt, and sugar. Also, get enough sleep and take time to do things you enjoy. For even better health, don't smoke, drink alcohol, or do other drugs. Physical activity is just one important part of preventive health care, which should be a part of your daily lifestyle. The activities you decide to do should be enjoyable, use a variety of muscle groups, and include some weight-bearing exercises. If you are not exercising much now, increase your level of activity gradually and have fun! Exercise for a better today and a healthier tomorrow.

How Often Should I Exercise?

Make exercise a part of your lifestyle. Your goal should be to do some type of exercise every day, or at the very least, three to four times a week. Try to do aerobic activity that requires continuous physical activity without stopping for at least 20 to 30 minutes each time. Do the activity as often as possible, but do not exercise to the point of pain because this can lead to injury. Like all things, exercise can be overdone. You may be exercising too much if:

-Your weight falls below what is normal for your age, height, and build

- It starts to interfere with your normal school and other activities

-Your muscles become so sore that you risk injuring yourself.

Exercise is only one part of living healthy

Besides the physical and mental health benefits, regular physical activity can also help you become more self-confident, organize your time better, learn new skills, and meet people with similar interests. To make more time for exercise, limit the amount of time you watch television or play computer or video games.

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Fitness Activity Chart:

Activity	Calories Burned During 10 Minutes of Continuous Activity	
	(35 kg Person)	(60 kg Person)
Basketball (game)	60	102
Cross Country Skiing	23	72
Bicycling (15 km/h)	36	60
Judo	69	118
Running (8 km/h)	60	90
Sitting (complete rest)	9	12
Football (game)	63	108
Swimming (30 m/min)	34	58
Tennis	39	66
Volleyball (game)	35	60
Walking (4 km/h)	23	34
(6km/h)	30	43

Resources must be invested in creative, culturally sensitive, linguistically appropriate programs to give all Indians the opportunities and motivation they need to become more active. Through its effects on mental health, physical activity may help increase students' capacity for learning.

How Our Society Discourages Physical Activity

Behaviour is shaped, in large measure, by one's environment. Our people live in a social and physical environment that makes it easy to be sedentary and inconvenient to be active. Developments in our culture and society over the past few decades that have discouraged youth physical activity include the following:

Community design centredaround the automobile has discouraged walking and bicycling and has made it more difficult for children to get together to play.

Increased concerns about safety have limited the time and areas in which children can play outside.

New technology has conditioned our people to be less active, while new electronic media (e.g., video and computer games, cable and satellite television) have made sedentary activities more appealing.

States & districts have reduced the amount of time, students are required to spend in physical education classes, and many of those classes have so many students that teachers cannot give students the individual attention they need.

Communities have failed to invest adequately in close-to-home physical activity facilities (e.g., parks, recreation centres).

STRATEGIES FOR PROMOTING PARTICIPATION IN PHYSICAL ACTIVITY AND SPORTS AMONG PEOPLE

People in the country cannot become more physically active and fit if they don't have a wide range of accessible, safe, and affordable opportunities to be active. However, opportunities alone are not enough. In 21st century, physical activity is, for the most part, a voluntary behaviour. Our people, therefore, will not increase their levels of physical activity and fitness unless they are sufficiently motivated to do so. Their motivation to be active will depend on the degree to which they find their physical activity experiences to be enjoyable. Enjoyment of physical activity, in turn, will be influenced by the extent to which people

-Can choose to engage in sports and recreational activities that are most appealing to them.

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-Are taught necessary skills.
-Develop confidence in their physical abilities.
–Are guided by competent, knowledgeable, and supportive adults.
-Are supported by cultural norms that make participation in physical activity desirable.
To obtain the opportunities and motivation that will enable them to increase their levels of physical activity and fitness, people can benefit from
-Families who model and support participation in enjoyable physical activity.
-School programs—including quality, daily physical education; health education; recess; and extracurricular activities—that help students develop the knowledge, attitudes, skills, behaviours, and confidence to adopt and maintain physically active lifestyles, while providing opportunities for enjoyable physical activity.
-After-school care programs that provide regular opportunities for active, physical play.
-Youth sports and recreation programs that offer a range of developmentally appropriate activities that are attractive to all people.
-A community structural environment that makes it easy and safe for people to walk, ride bicycles, and use close-to-home physical activity facilities.
-Media campaigns that increase the motivation of people to be physically active.
The strategies presented are designed to promote lifelong participation in enjoyable and safe physical activity. Special efforts must be made to ensure that programs are responsive to those in greatest need, including girls and racial/ethnic minorities.

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COMBINED EFFECTS OF RECREATIONAL GAMES WITH YOGIC PRACTICE ON SELECTED FUNDAMENTALMOTOR SKILLS OF COLLEGE STUDENTS

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ABSTRACT
The present study is to findout the combined effects of recreational games with yogic practice on selected fundamental motor skills of school students. 20 subjects were selected from J.M.J College for women Tenali, Guntur, A.P. The subjects were between 18 and 21 years. They were divided into two groups of ten in each. One group was acted as the experimental group and another group was acted as control group. The experimental group underwent the combined training for 6 weeks of 5 days per week. Each training session was for one hour in the evening from 4.00 PM to 5.00 PM. To achieve the result, the collected data on following criterion measures namely fundamental motor skill variables like leap, run, and overhead throw weretested. The standardized tests were taken before and after the combined training. The paired 't' test was applied to analyze the collected data and in all cases the criteria for the statistical significance was set at 0.05 level of confidence.Itis concluded that the recreational games with yogic practice significantly increased the leap, run and overhead of college students.

KEYWORDS:
Recreational games, yogic practice, leap, run and overhead throw.

INTRODUCTION

In the modern world, man is enjoying lots of luxuries provided by the developments in advanced technology. Simultaneously, man is also facing lots of physical, mental, emotional and social disturbances in everyday living. Undoubtedly the latest technological developments have provided all kinds of comforts in all walks of life, at home as well as the work places, in agriculture or industries and so on. They have also reduced dependence of persons on each other, has resulted in increased social, and physiological problems. It has also reduced physical work but introduced the shift system at work places. People working in day and night shift have reduced the family members to strangers. This is causing emotional upheavals. Collectively all these factors affect family life, society and nation adversely in the long run. Further, the technological advancements in every spheres of life have created lots of free, or leisure time after the working hours. Side by side easy availability of recreational gadgets like T.V, cable T.V, Video CD games, computer games have made the human child least interested in physical activity. As a result, in so many physical, mental and emotional problems have cropped up. To counteract these.i.e.to utility the free or leisure time in a constructive way and to make people physically active thereby allowing their growth and development, active recreation activities, other than the passive ones, are a must.

Yoga is one of the most ancient cultural heritages of India. It was invented by Hindu yogis over 2500 years ago. The word yoga means 'unity' or 'oneness' and is derived from the Sanskrit word 'Yug' which means 'to join'. In this sense, it is an exercise in moral and mental cultivation that generates good health (arogya), contributes to longevity (chirayu), and the total intrinsic discipline culminates into positive and perennial happiness and peace. It works on all aspects of the person: the physical, mental, emotional, psychic and

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spiritual. Therefore, yoga is said to be indispensable of the ultimate accomplishment in life. It is a science that affects not only the conscious self but the subconscious as well.

Patanjali's famous definition of yoga is "YogasChittaVirttiNirodhah" which means "yoga is the removal of the fluctuations of the mind". Chitta is mind, Virtti are thought impulses, and nirodhah is removal.

Yoga is a positive way of maintaining physical 'up keep' mental alertness and spiritual attainment. It teaches us how to control one's senses results an integrated personality, freedom, stress, conflict and the like. It stabilizes one behavioural pattern, developed will power and ultimately helps one to lead healthy, happy and balanced life (**Swami Githananda and MeenashiBhavan, 1989).**

Fundamental motor skills are common motor activities with specific observable patterns. Most skills used in sports and movement activities are advanced versions of fundamental motor skills. For example, throwing in softball and cricket, the baseball pitch, javelin throw, tennis serve and netball shoulder pass are all advanced forms of the overhand throw. The presence of all or part of the overhand throw can be detected in the patterns used in these sport specific motor skills. Similar relationships can be detected among other fundamental motor skills and specific sport skills and movements. Children normally develop motor skills in a sequential manner. Fundamental motor skills comprise one level in the continuum of motor skill acquisition. Children at the fundamental motor skill stage are building upon previously learned movements and preparing for the acquisition of more advanced skills.

STATEMENT OF THE PROBLEM

The present study is to find out the combined effects of recreational games with yogic practice on selected fundamental motor skills variables namely leap, run and overhead throwof college students.

DELIMITATIONS

6. This study confined to twenty college grails students from J.M.J College for women Tenali, Guntur, A.P.
7. The subjects were selected only from the age group of 18 to 25 years.
8. The study delimited the fundamental motor skills, namely leap, run and overhead throw.
9. The duration of the experimental period was six weeks.
10. The study is confined the recreational games with yogic practices.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of the present study is to find out the combined effects of recreational games with yogic practice on selected fundamental motor skills of school students. 20 college women's students were selected randomly from J.M.J College for women Tenali, Guntur, A.P. The age of the subjects ranged from 18 to 21 years. They were divided into two groups of 10 in each. One group acted as the experimental group. The experimental group was undergone the training for 6 weeks.

SELECTION OF VARIABLES

INDEPENDENT VARIABLE

- RECREATIONAL GAMES WITH YOGIC PRACTICE

DEPENDENT VARIABLES

- FUNDAMENTAL MOTOR SKILLS
  1. Leap
  2. Run
  3. Overhead throw

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TABLE – I: SELECTED VARIABLES AND TESTS

S.NO	VARIABLES	TESTS	UNIT UPPERCASE
1.	Leap	Fundamental motor skills Assessment leap test	Score
2.	Run	Fundamental motor skills Assessmentrun test	Score
3.	Overhead throw	Fundamental motor skills Assessment dodge test	Score

EXPERIMENTAL DESIGN

For this study, twenty school students were selected as subjects. They were selected from J.M.J College for women Tenali, Guntur, A.P.. Their age ranged from 18 to 21 years which represented a true random sample group and it was called as experimental group. These subjects were tested to find out their fundamental motor skills variables namely leap, run and overhead throw were tested.

A recreational games with yogic practice training for six weeks was given to the subjects. Their training days and hours every week ranged from Monday to Friday from 4.00pm to 5.00pm. A pre - test was conducted before the commencement of the training the final test data were collected after six weeks.

TRAINING PROGRAMME SIX WEEKS PLAN TRAINING COMPONENTS AND PERCENTAGE OF TRAINING

S.NO	TRAINING	WEEKS					
		1	2	3	4	5	6
1	Warm up	14	12	12	11	10	10
2	Recreational games	36	38	40	41	40	40
3	Yogic practice	36	38	38	39	40	40
4	Warm down	14	12	10	10	10	10
	Total percentage	100	100	100	100	100	100

STATISTICAL TECHNIQUES

't' ratio was calculated to findout the significance difference between the mean of pre and post test of the each group.

TABLE-II: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN LEAP

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	13.70	6.50	1.49	0.47	29.06*	2.26
Experimental post test	20.20		1.35	0.35		
Control pre test	12.60	0.70	0.96	0.30	2.09	2.26
Control post test	13.30		1.25	0.39		

*significance at 0.05 level of confidence

To find out the significant difference between pre test and post testonleap 't' ratio was employed and the level of significance was set at 0.05. The experimental group on leappre test value was 13.70 and post test value was 20.20 respectively. The mean difference value was 6.50 and leapobtained 't' ratio 29.06 was greater than the table value 2.26. So it was to be significant. The control group on leappre test value was 12.60 and

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post test value was 13.30 respectively. The mean difference value was 0.70 and leapobtained't' ratio was 2.09 and is lesser than table value of 2.26. So it is found to be insignificant.

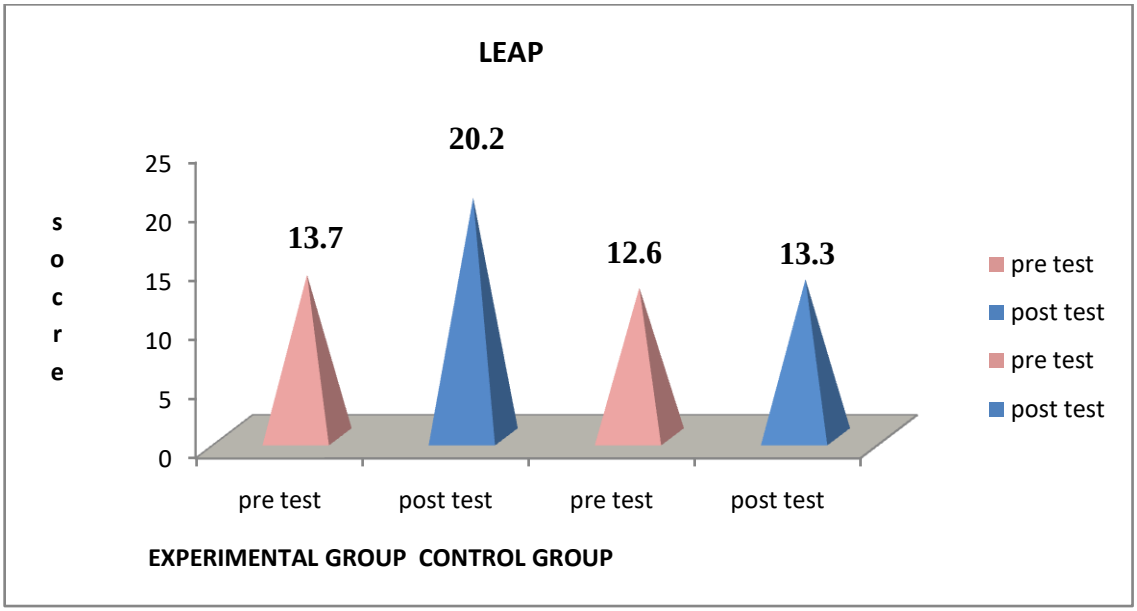

FIGURE-I: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP ANDCONTROL GROUP OF LEAP.

TABLE-III: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN RUN

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	12.60	7.20	1.64	0.52	54.00	2.26
Experimental post test	19.80		1.61	0.51		
Control pre test	12.20	0.20	0.63	0.20	0.80	2.26
Control post test	12.40		1.07	0.33		

***significance at 0.05 level of confidence**

To find out the significant difference between pre test and post testonrun 't' ratio was employed and the level of significance was set at 0.05. The experimental group on run pre test value was 12.60 and post test value was 19.80 respectively. The mean difference value was 7.20 andrunobtained 't' ratio 54.00 was greater than the table value 2.26. So it was to be significant. The control group on run pre test value was 12.20 and post test value was 12.40 respectively. The mean difference value was 0.20 and runobtained't' ratio was 0.80 and is lesser than table value of 2.26. So it is found to be insignificant.

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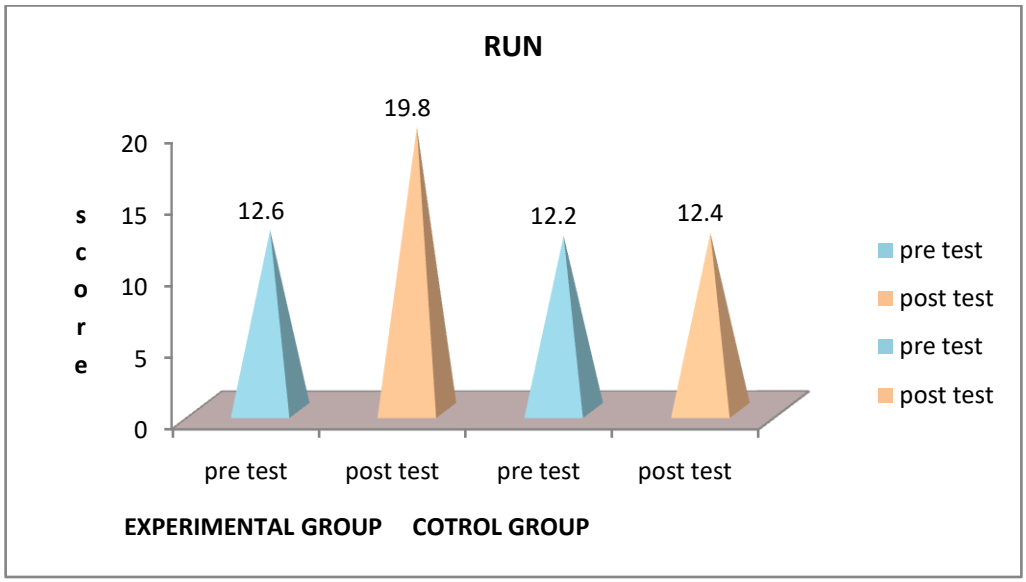

FIGURE-II: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP ANDCONTROL GROUP OF RUN.

TABLE-III: TABLE SHOWING THE MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUPS IN OVERHEAD THROW

Group	Mean	Md	Std.deviation	Std.error of the mean	't'	Table value
Experimental pre-test	11.90	7.80	0.99	0.31	58.50	2.26
Experimental post test	19.70		1.15	0.36		
Control pre test	12.00	0.20	0.81	0.25	0.80	2.26
Control post test	12.20		1.13	0.36		

***significance at 0.05 level of confidence**

To find out the significant difference between pre test and post testonoverheadthrow 't' ratio was employed and the level of significance was set at 0.05. The experimental group on overhead throwpre test value was 11.90 and post test value was 19.70 respectively. The mean difference value was 7.80 and overhead throwobtained 't' ratio 58.50 was greater than the table value 2.26. So it was to be significant. The control group on overhead throwpre test value was 12.00 and post test value was 12.20 respectively. The mean difference value was 0.20 and overhead throwobtained't' ratio was 0.80 and is lesser than table value of 2.26. So it is found to be insignificant.

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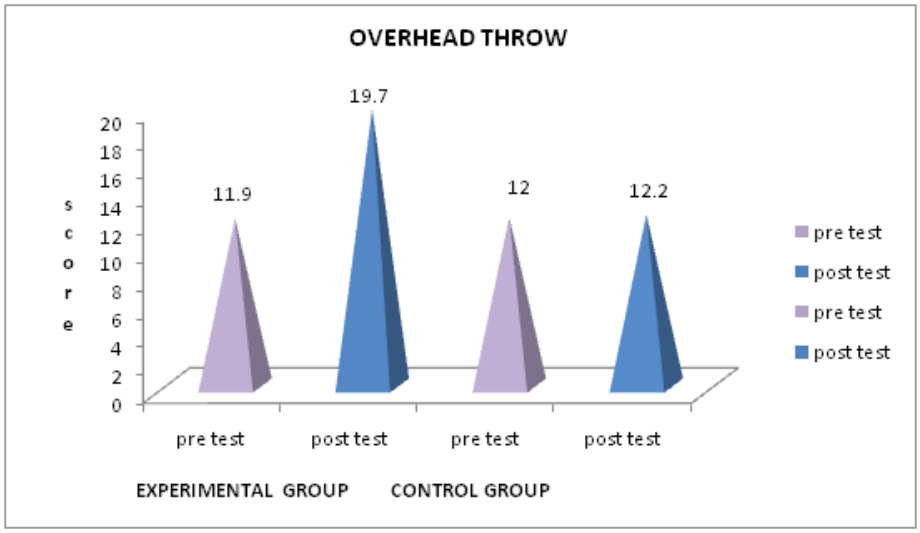

FIGURE-III: BAR DIAGRAM SHOWING THE PRE AND POST TEST MEAN VALUE OF EXPERIMENTAL GROUP ANDCONTROL GROUP OF OVERHEAD THROW

DISCUSSION ON FINDINGS

The result of the study shows that the recreational games with yogic practice group had significant improvement on selected fundamental motor skills namely leap, run and overhead throw. This may be due to the combined effect of recreational games with yogic practice

The results conformity with other studies Outle.,etal(2011), Stern HP., et al (2009), Rajakumar (2010),Pratima., et al (2008), Hardy., et al (2013), Patterson., et al (2001) has also provide in their studies that an improvement did occur fundamental motor skills namely leap, run and overhead throw.

CONCLUSIONS

Based on the statistical analysis and results of the study, the following conclusions are drawn.

- It is concluded that recreational games with yogic practice significantly improved the fundamental motor skills namely leap, run, overhead throw.

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YOGA FOR WOMEN TO CONTROL STRESS IN DAILY LIFE ACTIVITIES

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Abstract
In today's era of globalization where there is a lot of competition, innovation and change, executives in all organizations cannot avoid tension, stress and anxiety in their day-to-day work. Only hardworking, disciplined, punctual and mentally alert executives can survive the work pressures and strike a balance between work life and personal life. They are exposed to stress and tension for long periods which may manifest in the form of many ailments like hypertension, high/low blood pressure, insomnia, depression, backaches, migraine, spondylitis, etc. This in turn results in overall decrease in the executive's efficiency and productivity; consequently, there is a deterioration of human capital in the organization. Yoga is the answer for healing stress among working men and women. This all-in-one formula acts as a soothing agent for the burned-out Indian corporate and is fast growing on the popularity charts. It serves as reviver of mind, body and soul. The techniques of yoga comprise of physical postures (asanas), breath expansion and enhancement (pranayama), relaxation and meditation techniques (dhyaan), coupled with philosophy of simple and natural lifestyle management. It enhances energy of the person and develops a positive attitude. It has been attested by many as a complete all-in-one holistic formula for stress management.

"Yoga is a way of life." It means our every action should be on yogic pattern. Yoga is a process of evolution of the self physically, mentally, morally, intellectuallu, emotionally, socially and spiritually. Yoga is a path of all round development. Our every movement should be happiness, harmonious, dedicated, tension free and for divin

Asana:

When we are in a constant state of stress, our minds are tense, our bodies are tense and our sympathetic nervous system is heightened. Specific yoga poses can induce the relaxation response in the body. Calming and restorative poses along with controlled breathing activate the parasympathetic nervous system, bringing the mind and body to a calm and relaxed state.

Some asanas that help in reducing stress management:

Tadasana (Mountain Pose):

It helps you improve your concentration levels by increasing your focus level.

Stand straight with your feet flat on the mat with the heels slightly spaced out and big toes touching each other. Keep your spine straight while hands straight on either side, with palms facing the thighs.

Slowly stretch your hands and bring your palms together.

Inhale deeply and stretch your spine while taking the folded hands up above your head. Stretch as much as possible.

Slowly lift your ankle and stand on your toes, with eyes facing the ceiling.

Hold the position for a minimum of 30 seconds, while breathing normally.

Slowly relax your body and bring your feet back to the floor.

Balasana (Child Pose):

This helps you to relax completely, like a child. In this pose, you curl up like a foetus.

Sit on your knees with your palms facing the floor on either side of the body.

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As you inhale, bring your whole body forward in such a way that only the forehead touches the floor.
Stay in the position for a minimum of 30 seconds, while breathing normally. The longer you stay, the more relaxed you will feel.
Slowly lift your forehead and stretch your body back to Vajrasana (Diamond pose).Repeat thrice.
People suffering from knee injuries are advised not to try this pose.
Padmasana (Lotus Pose): This pose is commonly used during meditation and helps to increase the self-awareness levels. The pose helps you to calm down and soothes your mind.
Sit cross legged. The left feet should be on right thigh and vice versa, while the soles face up.
Keep the spine erect.
Keep the hands in Gyan mudra.
Close your eyes and while inhaling and exhaling deeply, maintain the pose for a minimum of 30 seconds.
People suffering from knee injuries are advised not to try this pose.
AdhoMukhaSvanasana (Downward Facing Dog Pose): This is one of the 12 phases of Surya Namaskar (Sun Salutation). Along with energizing the body and offering relief from indigestion problems, the pose is known to relax your body. Thus, it is an ideal asana for obtaining relief from stress.
Stand straight with your feet flat on the mat. Keep your spine straight while hands straight on either side, with palms facing the thighs.
While breathing normally, bend forward, and place the palms in front of you on the mat. The head should face down.
Slowly stretch your legs backwards, one at a time, while maintaining the balance, in such a way that the feet and hands are in line with each other.
Make sure that the elbows are straight and fingers are spread out.
Inhale deeply and tuck in your stomach completely.
Hold the position, while breathing normally, with tummy tucked in for about 30 seconds to 60 seconds.
Exhaling slowly, come back to the standing pose.Repeat three to five times.
Savasana (Corpse Pose):
Relax yourself completely with this pose. If you do not have time for any other yoga asanas, you can practice this. It brings your breathing to normal levels, and thus, helps to soothe down stress levels.
Lie down in supine position.
Close your eyes.
Slump your body in such a way that it looks lifeless.
Let go of everything and experience the serenity as your body weight shifts away from you completely.
Maintain the position until you feel light and relaxed.
This pose helps you do away with fatigue and fills your mind with an amazingly intense calmness.
Pranayama: With our busy life schedules, we often ignore our breathing. It tends to be fast and shallow. We use only a little of our lung power while inhaling and exhaling. This shallow breathing leads to less oxygen supply and the negative emotions get stuck inside the body. Due to the lack of prana (oxygenated breath) we suffer restlessness, stress, anxiety, etc. This leads to different complications like sleep disorders, fatigue, etc.
Pranayama encourages slow and rhythmic breathing practices that help us take sufficient amount of oxygen that re-energizes our body. In the process, we tend to let go of our negative emotions, thus, making ourselves free from negative emotions.

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Yoga offers a number of breathing techniques for stress relief. These breathing techniques are called pranayama. Pranayama comprises of various ways of inhaling, exhaling and breath retention. This breath is inter-linked with consciousness, both at the cosmic and individual levels. Pranayama creates a synergy between the self-energizing life force and individual mind-body-spirit by scientific regulation of prana.

Perhaps the simplest form of pranayama is Anuloma-Viloma or NadiShodhana (Alternate Nostril Breathing). Nadis are subtle nerve channels through which prana, 'life-force' flows. In addition, Dirga Pranayama, Ujjayi and Brahmari also help reduce stress.

Some Pranayamas that help in stress management :

AnulomVilom Pranayama:

To practice the Anulomaviloma pranayama just follow these simple steps:

Sit in a position, close the eyes and settle down.

With the right thumb close the right nostril.

Inhale slowly through the left nostril until the maximum capacity.

Hold your breath (Not for beginners, hypertension and asthma people).

With the right hand's middle and ring fingers close the left nostril.

Release the right thumb and exhale slowly.

Now inhale through right nostril.

Hold the breath.

Exhale through left nostril.

Benefits: It induces calmness of mind by regulating the flow of prana in the body.

The whole body is nourished with an extra supply of pure oxygen, and the carbon dioxide is more efficiently eliminated.

This pranayama purifies the whole blood system and is helpful to increase the overall health of the body.

Very good to increase the resistance power of the body.

Very useful for all respiratory disorders like asthma and bronchitis.

Good to increase concentration, to get sound sleep.

Due to its overall benefit, this pranayama is considered as fundamental pranayama, so one has to do this regularly for maintaining good physical and mental health.

Sheetali Pranayama (cooling breath):

To practice Sheetali Pranayama just follow these simple steps:

Sit in any comfortable meditation posture.

Close the eyes and relax the whole body.

Extend the tongue outside the mouth as far as possible without strain. Roll the sides of the tongue up so that it forms a tube. Practise a long, smooth and controlled inhalation through the rolled tongue.

At the end of inhalation, draw the tongue in, close the mouth and exhale through the nose.

Practise yogic breathing throughout.

The breath should produce a sucking sound.

A feeling of icy coldness will be experienced on the tongue and the roof of the mouth. This is one round.

Benefits: This practice cools the body and affects the important brain centres associated with biological drives and temperature regulation. It cools and reduces mental and emotional excitation, and encourages the free flow of prana throughout the body. It induces muscular relaxation, mental tranquillity and may be used as a tranquillizer before sleep. It gives control over hunger and thirst, and generates a feeling of satisfaction.

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Bhramari Pranayama (humming bee breath): To practice the Bhramari Pranayama just follow these simple steps:

Sit in a comfortable meditation asana, preferably padmasana or siddha/siddha yoni asana with hands resting on the knees in joana or chin mudra.

Close the eyes and relax the whole body.

The lips should remain gently closed with the teeth slightly separated throughout the practice. This allows the sound vibration to be heard and felt more distinctly.

Raise the arms sideways and bend the elbows, bringing the hands to the ears. Use the index or middle finger to plug the ears or the flaps of the ears may be pressed without inserting the fingers.

Bring awareness to the centre of the head, where ajna chakra is located, and keep the body absolutely still. Inhale through the nose.

Exhale slowly and in a controlled manner while making a deep, steady humming sound like that of the black bee. The humming should be smooth, even and continuous for the duration of the exhalation. The sound should be soft and mellow, making the front of the skull reverberate. At the end of exhalation, the hands can be kept steady or returned to the knee and then raised again for the next round.

The inhalation and exhalation should be smooth and controlled. This is one round.

Benefits: Bhramari relieves stress and cerebral tension, so helps in alleviating anger, anxiety and insomnia, increasing the healing capacity of the body. It strengthens and improves the voice. Bhramari induces a meditative state by harmonizing the mind and directing the awareness inward. The vibration of the humming sound creates a soothing effect on the mind and nervous system

Meditation: Meditation has proven extremely beneficial in reducing stress and anxiety, lowering blood pressure, improving concentration and creativity besides bringing relief from stress-induced ailments. In the modern age, various meditation techniques are increasingly being used for relaxation as well as therapeutic benefits. Among them are Mantra Japa, Vipassana, Transcendental Meditation made popular during the 1970s by Maharshi Mahesh Yogi, SudarshanKriya of Sri Sri Ravi Shankar and many more.

All these practised together are bound to give you tremendous results in combating stress at all levels, physical, mental and emotional. Practicing postures with steady relaxed breathing can alleviate the physical effects of stress and accumulated tension as well. Some quick, but effective yoga exercises that can be practiced are neck movements and shoulder socket rotation which relax the neck and upper back. Several stretches including palm and feet, double angle, and triangle stretch can improve your circulation. Having good circulation is extremely important because our life fluids are blood and oxygen. By encouraging a good supply of both, it revitalizes the body and allows you to be more focused and concentrate clearly. Other factors that also cause stress are suppressing emotions and worrying needlessly. Instead of suppressing your feelings, try to gain a better understanding of them, by meditating and focusing on your breath. It is also very crucial to understand that worrying about the future does not produce a favourable outcome and in fact detracts from your performance. Worrying causes shortness of breath, creating stress and tension which are both harmful to your mind as well as body. It is important to focus on the present moment, utilizing it to plan the future and to do what you can, to the best of your ability. Stress and tension impact our entire being; our body, mind, and spirit. However, we can overcome the effects of stress and manage them by utilizing the beneficial breathing techniques and postures that yoga provides. These techniques can not only alleviate the problems we encounter daily, but can revitalize and nourish the mind, body, and spirit over a prolonged period of time, enabling all of us to have long and healthy lives.

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COMPARISON OF SPEED AND AGILITY VARIABLES TO HIGH AND LOW ACHIEVERS OF RDT HOCKEY ACADEMY PLAYERS

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INTRODUCTION

Hockey is one of the most popular games in the world in general and India in particular. Hockey being most competitive sports, a player who is physically fit does not only enjoy more but he is also capable of using all the skills attained and mastered by him throughout, right from the beginning to the end of the game. The twin combination of both skills and physical fitness is indispensable for a player without either of which he will not be able to achieve much, specifically in order to play any ball game competently. Star player must have the stamina to run for at least three hours at a stretch, strength to execute the skills like hitting, pushing, scooping more forcibly, speed to run quickly with or without the ball, power to execute any skill with maximum force in minimum possible time as for trying in shooting circle and clearing the ball from dangerous zone, agility to rapidly change body position and direction like in tackling and dodging, balance the ability to maintain body equilibrium during vigorous movement like shooting on wrong foot and a player should have good reaction during stopping, tackling and in goal keeping as well.

METHODOLOGY

The study was proposed to compare RDT hockey academy male players of high and low achievers in terms of biomotor variables. To accomplish the purpose of the study, twenty nine (29) male youth field hockey players were selected at random as subjects, who volunteered to participate in this study. These players were randomly classified into two groups namely high and low achievers. The high achievers group constitutes of 17 players and low achievers group constitutes of 12 players. These players were selected from RDT Hockey Academy, Anantapur, Andhra Pradesh, India. These players were selected during the academic year 2016 – 2017.

On average, the players had 4.9 ± 2.1 years of playing experience and represented different levels of competition and underwent regular morning training between 06:30 to 08:30 and evening practice between 16:30 to 18:30 regularly prior to the commencement of this study. Players remained passive for remaining hours. These subjects were accommodated in RDT Academy hostel, during the course of the study and similar diet was provided to all the subjects. These subjects go to bed between 22:00 to 22:30 and wakes up from bed between 05:30 to 06:00 hours. Prior to the study, the investigator ensured that all the subjects had a good understanding of the requirements. When verbal consent was obtained, the researcher in consultation with the subjects sketched a time schedule to incorporate the sampling schedule and exercise testing. Written consent was obtained prior to initial data collection,

Speed

Objective : The objective of this test is to determine acceleration and speed.EquipmentrequiredMeasuring tape, stopwatch, cone markers, flat and clear surface of at least 50 meters.

Procedure

The test involves running a single maximum sprint over 30 metres, with the time recorded. A systematic warm up should be given, including some practice starts and accelerations. Start from a stationary

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position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encouraged to continue running hard through the finish line.

Results

Two trials are allowed, and the best time is recorded to one-hundredth of a second. The timing starts from the first movement (if using a stopwatch) and finishes when the chest crosses the finish line

Agility

Objective

This is a test of speed, body control and the ability to change direction (agility).

Equipment required

Marker cones, measurement tape, stopwatch, flat non-slip surface, 10 metres of distance is marked by two parallel lines of 5 metres each.

Procedure

The subject stands behind the starting line. On getting starting signal "GO" he runs faster, goes nearest to the other line and touches it with the one hand, turns and comes back to starting line, touches it with hand, turns and repeats it for a total of 5 times and 6th time runs over the line as fast as possible.

Scoring

The time taken by the performer to complete the course of 6 x10 metres to the nearest 1/10th of a second is recorded as score of the test. Only one chance is given.

Table 1: Mean (*sd*) and results of ANOVA for speed among field hockey players classified by level of performance

Groups	Mean ± *sd*	SOV	Sum of square	df	Mean square	F ratio	*P* value
Total subjects (29)	4.97±0.24	B	.282	1	.282	5.178*	.031
High achievers (17)	4.89±0.24	W	1.468	27	.054		
Low achievers (12)	5.09±0.21	T	1.749	28	-		

SOV – Source of variance, B – Between groups, W – Within groups, T – Total

*Significant at 0.05 level of confidence

The mean value and standard deviation of high and low achievers on speed are 4.89±0.24 and 5.09±0.21 respectively. Levene's test has shown that the variance is not significant since $p = 0.606$.

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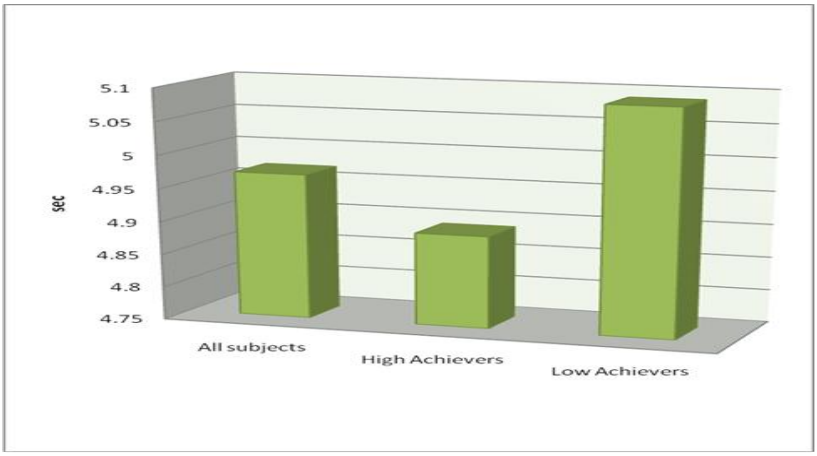

Figure 1: Speed of high and low achievers field hockey players

Table 2: Mean (*sd*) and results of ANOVA for agility among field hockey players classified by level of performance

Groups	Mean ± *sd*	SOV	Sum of square	df	Mean square	F ratio	*P* value
Total subjects (29)	17.58±0.99	B	.977	1	.977	.983	.330
High achievers (17)	17.42±0.98	W	26.846	27	.994		
Low achievers (12)	17.79±1.01	T	27.824	28	-		

SOV – Source of variance, B – Between groups, W – Within groups, T – Total

The mean value and standard deviation of high and low achievers on agility are 17.42±0.98 and 17.79±1.01 respectively. Levene's test has shown that the variance is not significant since $p = 0.696$.

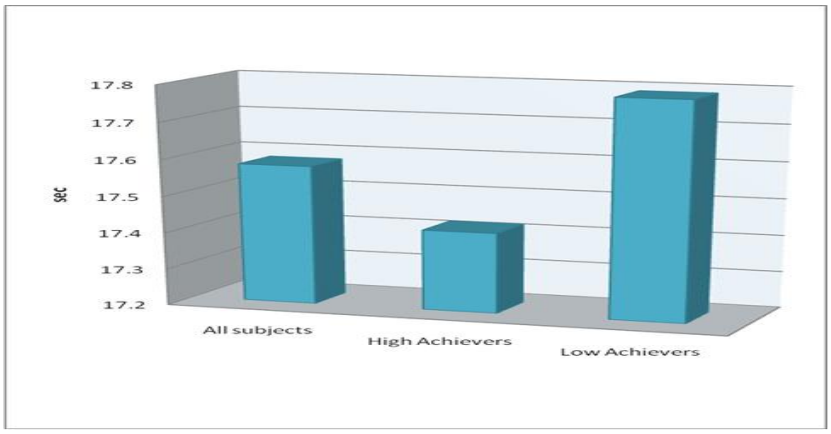

Figure 2: Agility of high and low achievers field hockey players

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Conclusion:

The study was proposed to compare RDT hockey academy male players of high and low achievers in terms of biomotor variables. To accomplish the purpose of the study, twenty nine (29) male youth field hockey players were selected at random as subjects, who volunteered to participate in this study. These players were classified into two groups namely high and low achievers. The high achievers group constitutes of 17 players and low achievers group constitutes of 12 players. High achievers subjects who represented highest level of competition and low achievers are immediately below high achievers level.

The high and low achievers youth hockey players has a significant difference in speed and agility

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HEALTHY WOMEN CREATES HEALTHY SOCIETY

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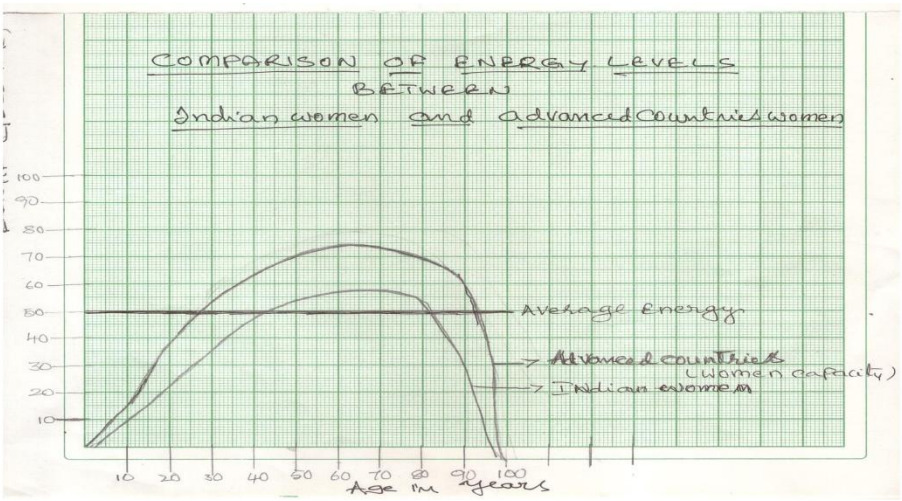
During the primitive age movement was for survival and 'Survival of the fittest was the order of the day, so even the females had to be as strong as men. There is ample anthropological and historical evidence to indicate that culture vary widely with respect to the roles that they assign to one sex or the other. Building their homes or shelters, making clothes planting and cultivating the land trading and many other occupations may be regarded as women's jobs in one society.

It is need less to emphasize the importance of health and in a special way the health of women. The place of a woman in a society is an important as an engine to a vehicle. The power energy the strength of the women leads to the happiness of the family and society. If the mother is sick, the entire family is sick.

It is my observation that most Indian women do not enjoy the best of health and its blessings. Here I would like to give a small diagram, a graph showing the energies versus the age. We observe the Indian women get older very fast. They resign from active life by the age of 30-35 years itself. Whereas in the advanced countries, women are very active, strong and attractive till 55 to 60 years. They are more than enough reasons. For example, take the education infrastructure of our schools where the students spend most of the time, never care for the body mechanics of a child.



The body mechanics is very important for growing women. Even highly educated parents never care to observe and correct how their child walks, sits, runs, etc., Due to many constraints, circumstances or environment where she grows, she acquires somebody defects, they can be rectified by prompt, corrective measures and specific education and purposeful observation. All the parents wants only the formal education and rat race for professional courses and never bother about physical education. They never bother to see how she is preparing herself to be a happy and healthy mother, acquiring a perfect womanhood. It is my humble request to all the parents to make the children particularly girl child to play and to take seriously physical education.

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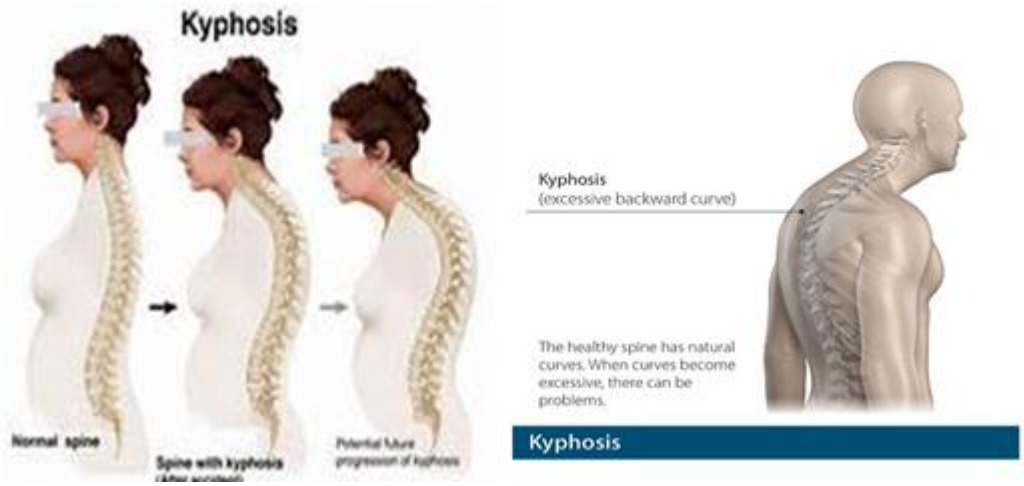
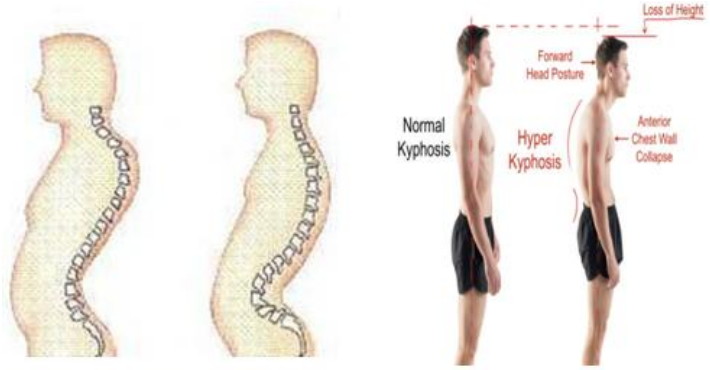
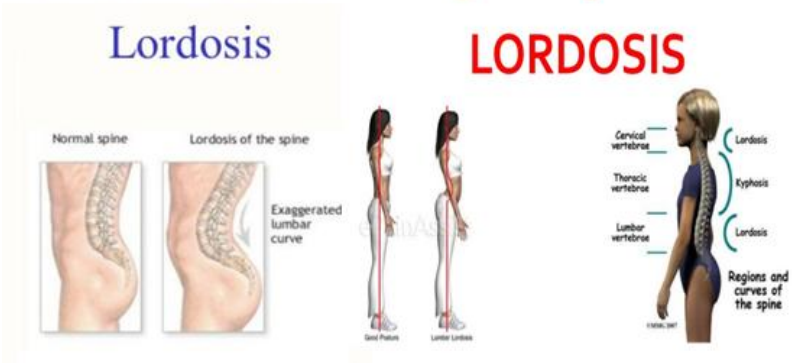
Where I am working I observed few women acquired deformities, that can be easily rectified by constant and conscious observation and physical education. There are some classifications how the children are getting the body shapes. In this

Kyphosis: It is hunch back, some children walk with dropping shoulders. Concaved chest and looking down. It is not rectified early can in time there spinal will bend permanently and they acquire a very bad hunch.



Lordosis: Bending backward. In this position the abdomen is provided unwontedly to hang the hands backwards where they walk like a stick (concave lumbar region is called lordosis. It can refer either exaggeration of this curvature or to the normal condition).





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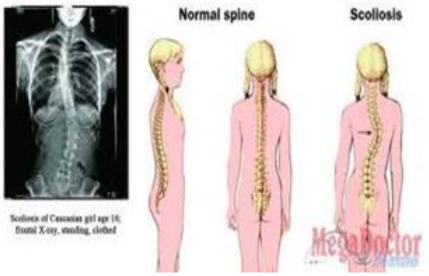
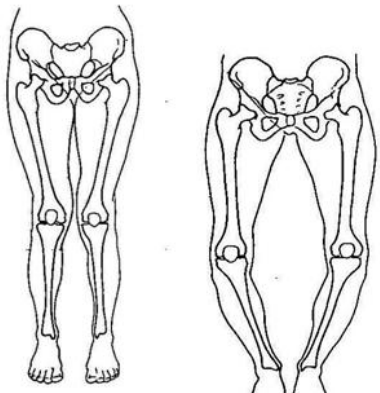
Scoliosis: Where the body weight is always shifted to one side of their left or right and giving an awkward swing while walking.



Knocked Knees:



The lateral angle formed by these two axes varies from person to person; it can be less than 180° ("genu valgum," above) or greater than 180° ("genu varum," below).

Bow Legs

The knees touch while walking and the speed and efficiency is walking is decreased. There are an innumerable body traits and mannerisms which can be eliminated before they become a permanent part of your body system.

The causes of deformities:

1. Malnutrition and improper diet.

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2. Faulty habits of work, rest and play.
3. Chronic mental and physical fatigue.
4. Psychological factors like shyness and other consciousness of fastings etc.
5. Lack of interest in good posture.
6. Badly fitting clothes and shoes.
7. Faulty hearing and eye sight.

The remedies are: Educate the women with the value and knowledge of Physical Education and its important and to maintain a good posture. Cultivate or practice what you know, that is taking good exercises and proper diet.

The ideal posture from the mechanical point of view is one in which all the body limbs are balanced within the body frame with a minimum energy expenditure. Energy saving increasing one's efficiency.

A women is a most wonderful creation of God. She has the vital and key to handle of responsibilities of motherhood and perhaps she is the ultimate motivating force for the world to run. An attractive women is all the more a sight to watch and she can attractive for longer years only through proper care of physical education.

In developing countries, empowering women has prevents benefit the entire community. Healthy women not only contribute to the local economy but they create more stable families by reinforcing good health care for themselves and each family member.

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SPORTS AND OUTDOOR GAMES FOR HEALTH AND FITNESS

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.Abstract:
Sports play a great in everyone's busy life especially for students. Everyone should involve themselves in the sports activity even for a small time all through the day. Sports are necessary because it brings physical and mental fitness to the person involved in this on regular basis. People who have busy schedule in their life get tired very easily. As we all know that, living a relaxed and comfort life we need a sound mind and a sound body. Education is very necessary to get name, fame and money. In the same way, getting a sound mind and body, everyone must involve in some type of physical activities for which sports is the best way. Being involved in sports activities benefits a person in many ways. It does not provide only physical strength however it increases mental power too. Outdoor sports such as football, cricket, volleyball, hockey, running, etc helps in improving physical health and mental fitness. Sports are given much importance in many countries as they know it's real benefits and need in the personal and professional life of a person. Sports are physical activities of much importance for any athlete or a professional sportsperson.

Importance of outdoor games in our life: Outdoor games have a great role to play in our life.

- Outdoor games such as football, swimming, soccer, golf, cricket, etc. are necessary for our physical fitness.
- Sporty spirit helps us tide overt the pangs of life.
- Outdoor games played on national level foster national integration.
- They are the connecting bridges among the nations and lay the foundation of international understanding and universal brotherhood.
- Olympic Games enhance the national prestige of medal winning countries highly.

Outdoor games and sports in educational institutions: Every educational institution has to arrange for outdoor games and sports for its students. Many schools have their own play ground. We generally encourage our girls and boys to become good engineers or doctors but seldom to become a good footballer.

Advantages of Playing Outdoor Games:

Outdoor Games play an important role in the overall development of mind and body of a child, a teenager, and even an adult. The advantages of playing outdoor games are mentioned below:

1. Physical fitness: Outdoor games played in the open air exercise all the limbs of the body and make us physically fit.
2. Pleasure: Every one taking part in a outdoor game tries his best to show his skill. These games benefit our health and give us pleasure.
3. Learn to obey rules: All the players are to obey the rules of the outdoor games and sports that they play. If any player plays foul game, the referee at once pulls him up. In this way, they learn to play clean game according to rules.
4. Discipline and team spirit: Again, several players have to combine together as a team. They have to play under the leadership of a captain. They learn discipline and develop team spirit.
5. Virtues: These games call forth several manly virtues, such as courage, endurance, patience, and presence of mind.

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6. Learn to organize things: Every player has to sacrifice his personal gains and passions. The captain gives proper direction to his team without fear and bias. Thus, the players learn discipline and organization. The captains ripen into leaders of men in society in course of time.
7. Learns to accept defeat with grace: When an outdoor game is fought and lost, the defeated party accepts the result in good grace. The victors do not cast a fling at the players who have lost the game. Thus, a sporting spirit develops and the players learn how to be generous and fair to others.

Necessity of sports:

1. Sports are the sources of recreation. They provide relief and a sense relaxation in a life of monotony of routine marked by miseries, hardships and hurdles.
2. They instill or infuse a sportive spirit to take up the heavy burden of life in a lighter vein and not to think of life either as a tragedy or a comedy but as the ordinary business of living.
3. It is very essential to maintain health and physical fitness.
4. It encourages the growth of team-spirit.
5. Sports and games bring about various methods of diversions.

Sports and games have been part of human society for thousands of years. The importance of these things should not be underestimated. Much of young children's learning comes from participating in sports and games, and this same participation as adults can lead to happier, healthier and more productive lives.

Adolescence: The benefits of sports in the development of children are well documented. An Ad Hoc Committee on Sports and Children said the potential benefits from sports to children and adolescents includes the development of healthy physical and social skills, the development of fine motor skills, and both improved health and sport-specific fitness. This is particularly true for adolescents who are physically or emotionally challenged. Playing cards and board games also benefit teens, providing a quiet and yet competitive outlet where they can interact with their peers or older family members in a positive manner.

Adults: Adults need 150 minutes of moderate-intensity aerobic activity each week, coupled with muscle-strengthening exercise at least twice a week, according to the Centers for Disease Control and Prevention. One of the ways to accomplish at least part of these goals is to play sports such as tennis, basketball or racquetball. All of these would qualify as aerobic activity while they also allow you to compete and have fun. Participating in indoor games such as chess, checkers and board games with family and friends also provides a social interaction that helps relieve the stresses of daily life.

Senior Citizens: Senior citizens stand to benefit the most from being involved in sports and exercise. Increased cardiovascular endurance, better balance and flexibility, and a reduction in the effects of illnesses are a few of the benefits. Some not-so-obvious benefits are better sleep at night, a boost in self-confidence and a better mood, as well as preventing memory loss and a decline in cognitive abilities. In addition, a study conducted by psychology professor Arthur Kramer of the University of Illinois found that playing a strategic video game improved older adults' memory, reasoning ability and cognitive functions.

Students: It is argued that sports should be made compulsory right from the primary classes and form a part of educational curriculum. Children from their start must realize the utility of sports and games. Drills and other methods of physical fitness should be introduced from the beginning by well trained teachers and coaches.

Educational value of sports: The necessity of sports is felt to be so great in life that there is ample justification for them to be introduced in the schools compulsorily.

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Conclusion: In the past, these outdoor games were much neglected. The guardians did not encourage them. They wrongly thought that these games would divert the minds of young learners from their studies. They also feared that the young boys might fall into bad company and get spoiled. However, there has been a change in attitude of the Indians towards outdoor games. They have fully realized that boys lose their health without outdoor games. Therefore, these sports and games have now been made a compulsory part of school and college education.

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FITNESS, NUTRITION AND BALANCE DIET

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FITNESS : Fitness is defined as the quality of being suitable to perform a particular task. Around 1950.perhaps consistent with the industrial Revolution and the treantise of World War II the term fitness increased in westem vernacular by a factor of ten. Modern definition of fitness describes either a person or machine ability to perform a specific function or a holistic definition of human adaptability to cope with various situations. This has led to an interrelation of human fitness and attractiveness which has mobilized global fitness and fitness equipment industries. Regarding specific function fitness is attributed to personnel who possess significant aerobic or anaerobic ability i.e strength or endurance. A holistic definition of fitness is described by Greg Glassman in the Cross fit Journal as an increased work capacity across broad times and modal domains mastery of several attributes of fitness including strength Endurance, power, speed, balance and coordination and being able in improve the amount of improve a person in all aspects of fitness, rather than one, such as only cardio/respiratory endurance or only weight training.

NUTRITION: Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an organism. It includes food intake, absorption, assimilation, biosynthesis, catabolism and excretion. The diet of an organism is what it eats, which is largely determined by the availability, the processing and palatability of foods. A healthy diet includes preparation of food and storage methods that preserve nutrients from oxidation, heat or leaching, and that reduce risk of forborne illness. A poor diet can cause deficiency diseases such as blindness, anemia, scurvy, preterm birth, stillbirth and cretinism health-threatening conditions like obesity and metabolic syndrome; and such common chronic systemic diseases as cardiovascular disease, diabetes, and osteoporosis. A poor diet can cause the wasting of kwashiorkor in acute cases, and the stunting of marasmus in chronic cases of malnutrition.Nutrition can be broadly be defined as the study of food and the way the body uses it to produce energy and build or repair body tissuesit is the science of food and its relationship with health concerned primarily with the part played by nutrients in body growth,development and maintenance, good nutrition signifies the maintenance of a nutritional status that enables proper growth and good health.

BALANCED DIET: Balanced diet is very important for the adults as well as for the children in today's tiring schedule. The nourishment should include all the essential nutrients which are necessary for your body. Below I have given a **balanced diet charts**.

Balanced diet is always considered to be the crucial part for a healthy and lengthier life. The healthy nourishment should always include the correct proportions of vitamins, proteins, minerals and carbohydrates. For maintaining the better and healthier life, you should maintain a track of the daily calorie intake. Make sure that your calorie consumption is neither too high nor too low. Just have look at the balanced diet chart that includes the accurate quantity of food with sufficient nutrients.

Below is the Diet chart for common foods and their composition:

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Food	Carbohydrate	Fat	Protein
Bread (Roti)	52%	3%	9%
Rice (cooked)	23%	0.1%	2.2%
Banana	20%	0.5%	1,0%
Potato	19%	0.1%	2%
Peas	16.7%	0.5%	5.2%
Apples	12.8%	0.5%	0.3%
Cabbage	5.5%	0.3%	1.2%
Spinach (Palak, Saag)	3.2%	0.3%	1.6%
Eggs	0.7%	12%	13%
Milk	4%	4%	4%
Butter	0.4%	81%	0.6%
Cheese	2%	32%	25%
Meat	0	30%	22%
Chicken	0	11%	20%
Fish	0	0.4%	17%

Recommended daily allowances of, energy, proteins and fats according to the body weight:

Group	Body Wt. in Kg	Net Energy in K Cal	Protein in Gm	Fat in Gm
Adult Man	60	2875	60	20
Woman	50	2225	50	20
Boy(13-15 years)	47-48	2450	70	22
Girl	46-47	2060	55	22

More on, the body also needs tough content called the water and roughage (for digestion). A food diet that comprises all the above is called a **balanced diet**.

The human body requires various types of nutrients in order to keep the body fit and healthy. These nutrients should be used up correctly in our daily diet. The nutrition diet that we follow each day must be balanced. Balanced diet is such a nutrition diet that gives all the nutrients required by the body in accurate amount. This means that it should contain all the types of nutrients in the essential quantities. Each mealtime should include sources of minerals and vitamins (for instance range of vegetables), fats (for instance cooking oil), proteins (for instance pulses) and carbohydrates (for instance cereals).

Age	Energy required
5 years	6000 kJ per day
11 years	9000 kJ per day
18 years	11000 kJ per day
Adult (normal work)	9600 kJ per day
Adult (heavy work)	12000 kJ per day
Adult (very heavy work)	16000 kJ per day

A young boy of about Fifteen years old needs more calories or energy than any adult man who do not perform any heavyweight work. In the same way, lactating mothers needs high energy and high protein diet for good lactation. The above balanced diet chart includes all the vital nutrients required by each and every age group. It is always suggested that you must take the advice of your dietician before following any balanced diet chart.

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SPORTS & GAMES FOR ELEMENTARY CHILDREN's HEALTH

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Abstract
Playing any games or sports can make any individual healthier and happier because of the physical activity involved. Playing games & sports contributes to muscles development, coordination, cardiovascular health and numerous other benefits associated with disease prevention; physical activity i.e. playing games can also help word of chronic diseases including cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis. Playing sports can help children develop healthy bones, stronger cardiovascular system and powerful lungs, according to sport & development-org-child. Athletes also develop motor skills and cognitive skills. Being physically active as a child **orakes** it more likely to continue playing sports as an adult, promoting life-long health. Older citizens who play sports have opportunities to keep their bodies moving, feel independent & socialise with others in a healthy way.

Key words: Playing, Games & Sports, health, Children.

Introduction

Today human can fly over sky happily, swim in water but unable to stand properly on their earth because of lack of physical fitness, balancing mind. So playing sports can help people achieve fitness goals related to weight loss, muscle development and fat reduction because of the physical activity involved. Children who play sports are less likely to experience childhood obesity. Physical activity is associated with harmone regulation and strengthens the immune system. It is not just your body that benefit from sports. Playing sports contribute to mental health, helping to prevent depression and increases self-esteem & body image.

Methodology:

Different sports, different benefits:

1. Some sports are associated with particular health advantages. They are:

a) Bowling can help achieve greater bone density.

b) People who play volleyball benefit from increase hand coordination and flexibility.

c) Pring-pong also helps players increase hand-eye coordination while also promoting better brain health because of the fast thinking involved.

2. **Coordination exercises for kids:** A child's physical coordination will ultimately have a bearing on his skill level in sports, that's why it is important for kids to have structured games & activities through the day that present coordination exercises.

3. **Line walk:** Learning to walk in a straight line can help children learn about balance & walking with one foot in front of the other.

4. **Obstacle course:** An obstacle course is an afternoon exercise to work on with your child to improve her coordination skills.

Physical education games for elementary children: Physical education is just as important as any subject in an elementary school. It helps to develop motor skills, body awareness, social interaction and cognitive

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development. Many physical education teachersturn physical education activities into games to increase the enthusiasm of elementary school children.

a). Balloon Blitz: Balloon Blitz is an appropriate game for students of all ages in an elementary school. This game helps to improve the coordination of children as well as enforcing of the importance of team work.

B). Scooter Soccer: It helps to teach teamwork, coordination as well as following direction. The class should be split into two. Each team will need a **goolie.** Depending on the age of elementary school students, you can explain to them offensive & defensive positions. Children will use scooters to manoeuvre aroma the gym. Children are only allowed to use their feet to kick the ball around the gym and attempt to score a goal.

c). Garbage Ball: This game helps to improve the motor skills of elementary children. Gather items that can be thrown but will not cause injuries. Foam balls or paper **wads** are acceptable items. Children should be divided into two teams and given the exact same number of items to throw. The gym should be divided so that each team is not allowed to cross a particular line going across the centre of the gym. If the sound of a whistle, teams can grab the "garbage" and throw it to other teams side. When the wistle blows again, the team with the least amount of garbage of their sides are the winners. The losting team may have to pick up the "garbage" or complete a certain number of push-ups or sit-ups.

d). Spin & Run: Spin-& Run is a simple race game that provides entertainment and helps to improve coordination in elementary children spin students around in circles 10 times. Have them try to run across the gym. Time each student. The student with the quickest time is the winner.

Conclusion:

Sport and physical activity can make a substantial contribution to the well-being of people. In developing countries. Exercise, games & sports have long been used in the treatment and rehabilitation of communicable & non-communicable diseases. Physical activity in games & sports for individual is a strong means for the prevention of diseases and for nations is a cost-effective method to improve public health across populations. A number of studies have shown that exercise may play a therapeutic role in addressing a number of psychological disorders. So finally, the positive, direct effects of engaging in regular physical activity are particularly apparent in the prevention of several chronic diseases, diabetes, cancer, hypertension, obesity, depression and osteoporosis.

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EFFECTS OF MENTAL TRAINING ON PSYCHOSOMATIC PARAMETERS AMONG COLLEGE MEN HANDBALL PLAYERS

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INTRODUCTION

Sports Mental Coaching, also known as sports mental training, is that segment of sports training that concentrates specifically on helping athletes break through the mental barriers that are keeping them from performing up to their peak potential. By focusing on the mental skills needed to be successful in any sporting competition, mental game coaching achieves the overall goal of performance improvement. The trained professionals, who do this mental coaching, employ proven techniques to accomplish this important work.

Concentration, confidence are generally considered to be the main mental qualities that are important for successful performance in most sports and the development of these within the athlete is a major part of the work of the mental trainer. Concentration –ability to maintain focus And confidence –believe in one's abilities.

This is the mental quality to focus on the task in hand. If the athlete lacks concentration then their athletic abilities will not be effectively or efficiently applied to the task. Broad/Narrow continuum – the athlete focuses on a large or small number of stimuli. Internal / External continuum – the athlete focuses on internal stimuli (feelings) or external stimuli. (ball) The demand for concentration varies with the sport, sustained concentration – distance running, cycling, tennis, squash, short bursts of concentration – cricket, golf, shooting, athletic field events and intense concentration – sprinting events, bobsleigh, skiing.

HYPOTHESIS

1. There would be a significant improvement on sports competition anxiety and self confidence due to mental training among college men handball players.
2. There would be a significance difference between mental training group and control group on sports competition anxiety and self confidence among college men hand ball players.

METHODOLOGY

The purpose of the study was to find out the effects of mental training on psychosomatic variables among thirty men handball players. To achieve this purpose of the study, thirty men students studying in the college of Physical Education, Alagappa University, Karaikudi and Tamil Nadu were selected as subjects and they were divided into two equal groups of fifteen subjects each, such as mental training groups and control group. The Group I underwent mental training programme for three days per week for eight weeks and Group II acted as control which did not participate in any special training programme apart from the physical education activities did not participate in any special training programme apart from the physical education activities as per the curriculum. The dependent variables namely sports competition anxiety and self confidence were measured by SCAT (Sports Competition anxiety Test) and Agnihotry Rekha self confidence test. The Data were collected from each subject before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA). 0.05 level of confidence was fixe to find out the significant improvement and differences among the groups on selected variables namely sports competition anxiety and self confidence.

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ANALYSIS OF THE DATA

The effects of independent variables on selected sports competition anxiety and self confidence were determined through the collected data by using appropriate statistical techniques and the results are presented below.

The analysis of dependent 't' test on the data obtained for sports competition anxiety and self confidence of the pre-test and post –test means of mental training and control groups have been analyzed and presented in table – I.

TABLE – I:THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON SPORTS COMPETITION ANXIETY AND SELF CONFIDENCE OF MENTAL TRAINING AND CONTROL GROUPS

Variables	Name of the test	Mental Training group	Control group
Sports competition anxiety	Pre test mean	15.47	15.46
	Post test mean	18.20	15.60
	't' test	4.12*	0.52
Self confidence	Pre test mean	36.2	36.47
	Post test mean	29.53	36.53
	't' test	9.24*	0.02

*Significant at 0.05 level.

(The table value required for .50 level of significance with df 14 is 2.15).

The Table – I show that the pre-test mean value of sports competition anxiety, self confidence in mental training group and control group is 15.47, 15.46 and 36.2 and 36.47 respectively. The post test means are 18.20, 15.60 and 39.53, 36.53 respectively. The obtained dependent t-ratio values between the per and post test means of sports competition anxiety, self confidence in control group is 0.52 and 0.02 respectively. The table value required for significant difference with df 14 at 0.05 level is 2.15. Since, the obtained 't' ratio value of experimental group is greater than the able value, it is understood that mental training had significantly improved the sports competition anxiety and self confidence. However, the control group has not improved significantly. The obtained 't' value is less than the table value, as they were not subjected to any specific training.

The analysis of covariance on sports competition anxiety, self confidence of mental training and control groups have been analysed and was presented in Table II.

TABLE – II: ANALYSIS OF COVARIANCE ON SPORTS COMPETITION ANXIETY AND SELF CONFIDENCE OF MENTAL TRAINING AND CONTROL GROUPS

Variables	Adjusted post test means		Source of variance	Sum off squares	Df	Mean Squares	Obtained 'F' Ratio
	Mental group	Control group					
Sports competition anxiety	18.20	15.60	Between	50.70	1	50.70	13.05*
			Within	105.26	27	3.90	
Self Confidence	29.59	36.48	Between	354.20	1	354.20	93.41*
			Within	102.38	27	3.79	

*Significant at. .50 level of confidence

(The table values required for significance at .50 level of confidence with df and 27 is 4.21

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The table II shows that the adjusted post test means of sports competition anxiety, self confidence of mental training and control groups are 18.20, 15.60 and 29.59, 36.48 respectively. The obtained 'F' ratio value of sports competition anxiety and self confidence is 13.05 and 93.41 which are higher than the table value of 4.21 with df 1 and 27 required for significance at 0.50 level. Since the value of F-ratio is higher than the table value, it indicates that there is significant difference among the adjusted post test means of mental training and control group on sports competition anxiety and self confidence.

The results of the study showed that there was a significance difference between the adjusted post test mean of mental training group and control group on sports competition anxiety and self confidence.

CONCLUSION

1. There was a significant improvement on sports competition anxiety and self confidence due to the effects of the mental training among college men hand ball players.
2. There was significance difference between mental training group and control group on sports competition anxiety and self confidence among college men handball players.

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