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Teff, the Ethiopian Wonder Grain and Global Utilization by Endurance Athletes: A Sports Nutrition Perspective

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ABSTRACT

Teff (*Eragrostis tef*) or Taff, is Ethiopia's staple food since several decades. The wonder grain is highly nutritious with maximum value of calcium, complex carbohydrate, good quality protein, iron and all other essential nutritious. The spongy fermented bread of teff, injera is most favourite among Ethiopia's marathon runners for their glycogen loading during an endurance activity. The gluten free grain can easily fulfill the protein demand of vegetarian athletes and famous among female athletes for its iron content. Teff is mainly produced in Ethiopia and recently is adopted for cultivation in Australia, USA and to some extent in India due to its enormous popularity among celebrities and sports identities. Production cost, ban in export and availability are keeping teff out of hand from the people outside Ethiopia. Easy growing, environment friendly teff is thus approaching towards capturing the food market of western world after quinoa due to its super nutritive value. From a Botanical and Biotechnological point of view teff can be grown in large scale by adopting tissue culture technique for utilizing as sports medicine by the global endurance athletes.

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INTRODUCTION:

Teff (*Eragrostis tef*)or Taff, the smallest grain in the world measuring only about one or two millimeters across was fully domesticated in the highlands of Northern Ethiopia about 3000 to 1000 BC[1]. Teff accounts to about 25% of all grain production in Ethiopia[1]. Teff grows in most parts of the highlands of Ethiopia and a little bit in Sothern Eritrea[1]. Recently farmers in Australia, The United States and India to some extent have started to experiment with growing teff[2]. Teff is Ethiopia's main staple food that is used to make injera, spongy bread[1]. The current article tries to see the potential benefit of teff as a sports food in supporting the performance of endurance athletes and how the grain can be used in large scale commercial purpose in sports nutrition market.

Nutritive Value of Teff:

Teff is a gluten free whole grain which is very tiny in size but loaded with nutrients. Ethiopians are growing, harvesting and eating teff for thousands of years. Spongy, flat and dotted with tiny holes, injera is traditional African flat bread served in both Ethiopia and Eritrea. Made with teff flour, a short fermentation period gives the bread its distinctive sour taste. The grain comprises –

- Highest content of calcium compared to other grains like wheat and corn, about 123 mg per cup cooked. The calcium content found in teff is very similar to spinach[3].
- Teff is excellent source of resistant starch, a dietary fibre with huge benefits on balancing blood sugar in our body. At least 40% of the carbohydrate in teff is complex in nature that is beneficial for colon health and weight management[3].
- The ancient grain is present with Vitamin C which is minimal in most grains. So, it accelerates iron absorption[3].
- It is high in protein and useful in building muscle mass[3].

The bread injera has its own nutritive value[4]–

- A single serving of injera bread has 379 calories. Because it is cooked in a pan with oil, there is 1.2 g of fat per serving, although it has minimal saturated fat with only 0.2 g per serving. This amount can be reduced if injera is prepared with vegetable oil or grape seed oil.

- A single serving of injera has almost no sugar and 12 g of proteins.
- The bread providers 868 mg of sodium and 4.2 g of dietary fibre in a single serving.

The nutritive values are given in Table 1. Figure 1 shows the nutritional fact, Figure 2 shows the calorific ratio and Figure 3 shows the composition of protein that is obtained from one serving of uncooked teff (1 cup = 193 g)

Nutrition information of 1 cup (193 g) of Teff		
Nutrients		**Contains**
Vitamins	Vitamin A	17.4 IU
	Vitamin C	0.25 mg
	Vitamin D	~
	Vitamin E (Alpha Tocopherol)	0.2 mg
	Vitamin K	3.7 mcg
	Vitamin B6	0.9 mg
	Vitamin B12	~
	Thiamin	0.8 mg
	Riboflavin	0.5 mg
	Niacin	6.5 mg
	Folate	~
	Pantothenic Acid	1.8 mg
	Choline	25.3 mg
	Betaine	4.4 mg
Minerals	Calcium	347 mg
	Iron	14.7 mg
	Magnesium	355 mg
	Phosphorous	828 mg
	Potassium	824 mg
	Sodium	23.2 mg
	Zinc	7.0 mg
	Copper	1.6 mg
	Manganese	17.8 mg
	Selenium	8.5 mcg
	Fluoride	~
Carbohydrates	Total carbohydrate	141 g
	Dietary Fiber	15.4 g
	Starch	70.6 g
	Sugars	3.6 g
Protein	Protein	25.7 g
Fats & Fatty Acids	Total Fat	4.6 g
	Saturated Fat	0.9 g
	Monosaturated Fat	1.1 g
	Polyunsaturated Fat	2.1 g
	Total trans fatty acids	~
	Total trans-monoenoic fatty acids	~
	Total trans-polyenoic fatty acids	~
	Total Omega-3 fatty acids	261 mg
	Total Omega-6 fatty acids	1807 mg
Sterols	Cholesterol	~
	Phytosterols	~

Table 1: Nutritive Value of Teff (1 cup = 193 g)

Nutrition Facts

Serving Size 193 g

Amount Per Serving	
Calories 708	Calories from Fat 41
	% Daily Value*
Total Fat 5g	7%
Saturated Fat 1g	4%
Trans Fat	
Cholesterol	0%
Sodium 23mg	1%
Total Carbohydrate 141g	47%
Dietary Fiber 15g	62%
Sugars 4g	
Protein 26g	

Vitamin A	0%	• Vitamin C	0%
Calcium	35%	• Iron	82%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Figure 1: Nutritional Fact of Teff (1 cup = 193 g)

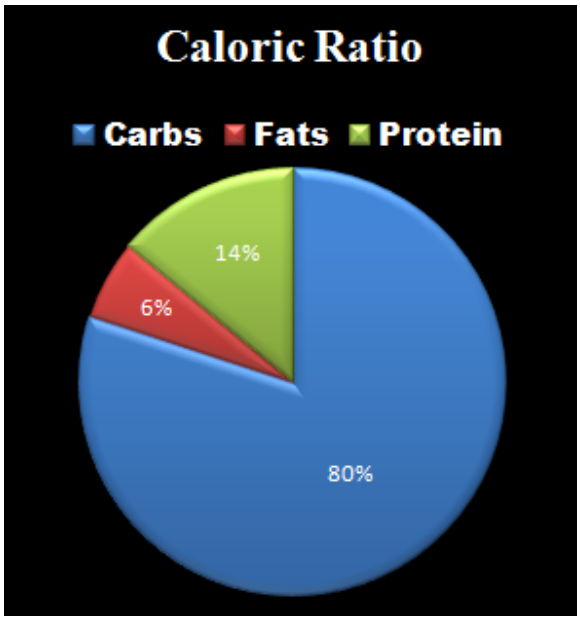

Figure 2: Caloric Ratio (1 cup = 193 g)

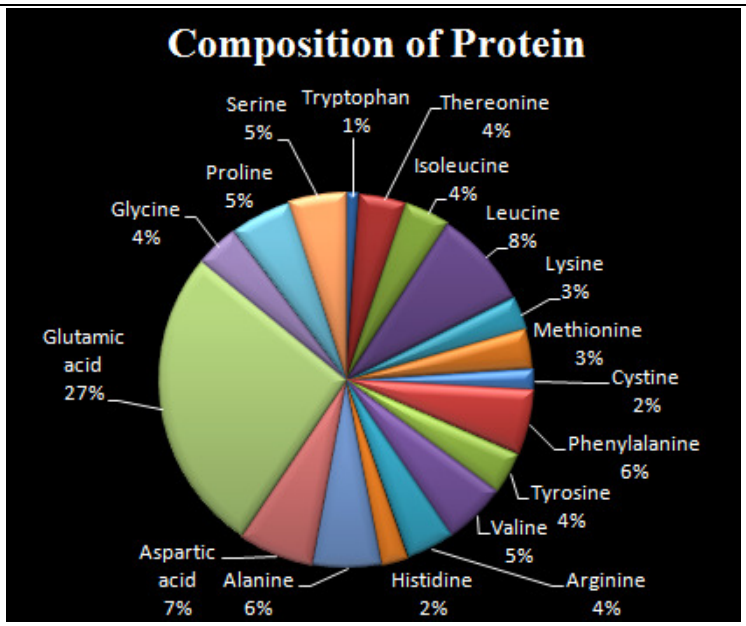

Figure 3: Composition of Protein in Teff (1 cup = 193 g)

APPLICATION IN SPORTS NUTRITION:

Teff, like other grains high in carbohydrate, protein, fat and calorie (a half cup has 25 g carbs, 5 g protein, 1 g of fat and 120 kcal of calorie). It gets a nutritional boost over many other grains because of its high level of lysine and amino acid that our body uses to maintain muscle tissue[3]. It's the main carbohydrate for many of the elite runners from Ethiopian origin.

Glycogen Loading and Teff:

Glycogen loading, commonly known as carbohydrate loading, is the most crucial strategy for endurance athletes, such as marathon runners, to maximize the storage of glycogen in the muscles[5]. Glycogen loading is generally recommended for endurance events lasting larger than 90 minutes. Endurance athletes prefer foods with low glycemic indices for carb-loading due to their minimal effect on serum glucose levels[5]. Low glycemic foods commonly include fruits, vegetables, whole wheat pasta and grains[5]. With carbohydrate loading adequate protein should also be taken since muscles also use amino acids extensively when functioning within aerobic limits. Nutritive value of teff makes it most important in elite athletes of Ethiopia. It is estimated

that teff has glycemic load of 84 and protein content of 27.5 g with and amino acid score of 55. With its high % of iron (14.7 g in 193 g) teff is excellent in fighting tissue injuries and blood thinning phenomena in endurance activities[1]. For female endurance athletes thus it puts a unique significance in preventing amenorrhoea and oligorrhoea. Beside all these, it is best for athletes with gluten enteropathy[1].

According to a post in the Washington Post, the Whole Grains Council estimates that Ethiopians get about 2/3rd of their dietary protein from teff[6]. Long distance runners from Ethiopia including marathon world record holder Haile Gebrelassie and Kenenisa Bekel, the 10,000 meter world record holder have credited their energy and health to the grain.

ACCEPTIBILITY AND GLOBAL UTILITY:

Ethiopian's staple grain for thousands of year is getting a rave review in the West from celebrities in the United Kingdom to chefs and nutritionists in North America; teff is the next big thing after quinoa[7]. It has gained the title of 'Super Grain' according to the sports nutrition scientists of Western World.

Now, for other countries the research is going on for implementing teff in the daily diet of the sports person. Other than injera, teff can be served as hot, cooked cereal meal as one cup of teff to two cups of water or apple juice. Teff flakes can also be prepared for the use in sports nutrition market globally[8].

Teff being an important option for people who don't eat gluten or dairy and for vegetarians who struggle to get protein into their diet is world's latest super food. But, till date it is not globally marketed as it has a ban on exports to control price hikes at home and farmers have to tie to local consumers, limiting their contribution to growing markets abroad. Ethiopia's 6.5 million teff farmers struggle to meet local demand let alone growing demand from abroad with limited access to seed varieties, fertilizers and modern machinery that would allow for higher yielding.

ECONOMIC CONCERNS:

Teff suffers from the lack of research since it is considered as an 'Orphan Crop' unlike global crops like rice, wheat and maize, which are widely studied and well-funded[9]. The wonder crop is out of the eye because of its high costs and restriction within the country. Regardless,

productivity has rose to bridge the supply gap with the introduction of 19 new teff varieties and improved farming techniques. In last four years yielding increased from 1.2 million to 1.5 million tons per hector. An estimated 2 million tons per hector is required to reach export potential. For now, the price of teff is $72 per quintal and already too expensive for the majority of Ethiopian's who earns less than $2 per day, though the farmers are eager to export their teff to global market for its immense popularity.

PRODUCTIVITY AND FUTURE PERSPECTIVE:

A handful of teff is enough to sow a typical field, and it cooks quickly, using less fuel than other foods. Teff thrives in both water logged soils and droughts, making it a dependable staple wherever it is grown. No matter what the weather, teff crops will likely survive, as they are also relatively free of plant diseases compared to other cereal crops. Teff can grow in an environment where many other crops won't thrive and can be produced from sea level to as high as 3000 meters of altitude, with maximum yield at about 1800-2100m high. This versatility could explain why teff is now being cultivated in areas as diverse as dry and mountainous Idaho and the low wet Netherlands. Teff is also being grown in India and Australia.

Just one pound of teff grains can grow an acre of teff, while 100 pounds or more of wheat grains are needed to grow an acre of wheat. Teff requires only 36 hours sprouting, the shortest time of any grain. 3000 grains of teff weigh just one gram. Teff's protein content is largely easy to digest albumins, similar to a vegetable version of egg whites.

Teff is having less environmental stress and can be easily grown. Artificial tissue culture can be effective for large scale production and utilization with less cost involved. This can be possible by preparing callus of the cereal and producing artificial seed by proliferation. In this way industrial production of teff can be enormously done by tissue culture and spread in the sports nutrition market.

DISCUSSION:

In Ethiopia, the wonder crop teff is used to make injera, a spongy fermented pancake topped with meat or vegetable stew and consumed with almost religious devotion, often 3 times in a day. Ethiopian's endurance runners explicitly use teff for their carbohydrate loading and muscle

function as it is reach in complex carbs and good quality protein respectively. The demand of the grain has increased and it got a position of 'Super Crop'. Sports Nutrition professionals are continuously researching to bring teff in the menu of global endurance athlete and tissue culture is one of the promising methods that can actually increase the productivity of teff for industrial purpose.

CONCLUSION:

Gluten free teff is a magic grain from Ethiopia which is utilized in large scale for sports persons to increase the endurance capacity in them during long term sports. Being a vegetable source of protein, calcium and iron teff can provide optimum nutrition to endurance athletes without including animal food source in the diet. Limitations are large scale production, price and marketing which need to be resolved for the use of endurance athletes. The article thus tries to explain the importance of teff in Sports Medicine market as a nutrient enriched staple grain, global demand, economic concern, cultivation in large scale by tissue culture while harvesting and distributing teff among world population of endurance athletes.

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ROLE OF YOGA IN SCHOOL HEALTH PROGRAMME

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ABSTRACT

Education is a process which is constructive by nature and leads one from darkness to light. Just providing education to the students does not serve the purpose. The schools should help the children in their allround personality development, physical, mental, emotional and social etc. Yoga goes a long way in this direction. Yoga is the greatest contribution of our country to the world. Practice of yoga contribute to the allround personality development by developing the fitness of the children physical, mental, emotional, social as well as spiritual. Hence, this paper is an attempt to discuss the role of yoga in school health programme.

Key words : Yoga, Health, Fitness

INTRODUCTION :

"Education is simply the soul of a society
as it passes from one generation to another"

- Gilbert K. Chesterton

The above statement shows the importance of education, and it shows that education is a continuous process.

Schools are dynamic settings for promoting health and wellness through various correlated areas such as physical education and sports. There is a growing awareness that the health and psycho-social wellbeing of young children is of paramount importance and schools can provide a strategic means of improving children's health, self-esteem, life skills and behaviour.

Participating in physical education and sports helps a child in the development of allround personality by improving the physical fitness, and physical fitness is the pre-requisite of all other fitness such as mental, emotional etc.

Fitness can be achieved through participating in most enjoyable activity according to one's needs and ability. Yoga is one such activity everyone can participate.

Yoga is one of the ancient heritages of India. It is the greatest contribution of our country to the world. Practice of yoga helps in improving and maintaining health.

According to WHO "Health is a state of complete physical, mental, social, emotional and spiritual wellbeing and not merely the absence of diseases." Yoga works at all these levels and improves health. Hence the study is undertaken.

Purpose of the Study

Purpose of the study is to discuss the role of yoga in school health programme.

Why Yoga in Schools

Yoga is best suited in schools due to the following reasons.

- it is economical
- It does not require any additional equipments.
- Even the class rooms can be used to practice yoga
- It is non-injurious

How yoga improves Health

Yoga develops health related fitness components

Yoga helps in developing all the health related fitness components. Suryanamaskar and yogic asanas help in improving muscular strength and muscular endurance.

Pranayama increases vital capacity, helps in absorption of oxygen with increased efficiency of exchange of gasses and improve the cardiovascular efficiency as a whole.

Yoga is a passive and static activity. Suryanamaskar and most yogic postures involve bending forward, backward and sideways and holding the position for a while. Yoga postures help in stretching and relaxing the muscles and skeletal system, thus helps in improving flexibility.

Yoga helps in reducing the fat, reduced fat and toned up muscles help in developing proper body composition. There are many research evidences to prove the effect of yoga in improving the health related fitness.

CONCLUSION

'Health is wealth.' Health related fitness goes a long way in improving the quality of youngsters. Yoga improves Health related fitness. Hence yoga should be made a way of life in schools and colleges, so that the students can improve and maintain health and become able bodied citizens of our country.

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PERSONAL HYGIENE FOR ADOLESCENT GIRLS AND WOMEN

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Introduction:

Hygiene refers to the set of practices perceived by a community to be associated with the preservation of health and healthy living. When a young girl starts to mature, many physical changes take place. Some of these changes include an increase in body hair, an increase in sweat (accompanied with body odor), facial skin problems and an oily scalp.

Good personal hygiene should be practiced to combat the problems associated with these changes and to avoid contracting any diseases related to poor personal grooming.

A finely tuned body in good working order from head to toe promotes and reflects a sense of well being. If we treat our body with respect we actively encourage a feeling of vibrant health, energy and confidence.

Understanding how our body works and knowing how to take care of it on day to day basis are the two of the important elements to fitness and well being. Such type of body care includes looking after our skin, whatever its type, caring for our hair, keeping hands and nails well groomed ,looking after teeth and gums and also maintain cleanliness during the menstrual cycles. We have to also keep our eyes and ears healthy as these are delicate organs which need regular care and attention to serve us well for life.

Having good personal hygiene is important for both your health and physical appearance. Because a man and a woman's chemistry is different, a woman needs to pay more special attention to her personal hygiene, especially during the days we have our menstrual period.

Personal hygiene is the process of maintaining cleanliness. Individual standards for personal hygiene vary from person to person depending on factors like culture, personal preference and learned habits. Laying out specific objectives for personal hygiene is a helpful way to ensure that all goals are met. Understanding the consequences of poor hygiene can serve as motivation for planning and accomplishing personal hygiene objectives.

Everyone needs to understand the basics of personal hygiene. Personal hygiene is the process of keeping your body clean. If you stop taking care of yourself and allow your level of personal hygiene to fall, you have a greater risk of becoming sick or being ostracized by others.

This paper discuss about the personal hygiene on day to day basis especially for teenage girls and young women.

Personal hygiene basics:

SHOWER DAILY:

Shower daily to remove the offensive odour that develops when bacteria caused from sweating is left on the skin to grow. The odour from these bacteria has a strong smell to it, especially in the area of the armpits and the feet. The groin area may develop an unpleasant odour. Cleanse your body with warm water and a gentle soap. Apply deodorant, antiperspirant or talcum powder to underarms to keep sweating under control and to mask underarm odour if needed. An antiperspirant works to stop sweating, and it may help sweat dry up. Deodorant or talcum powder is designed to mask the unpleasant odour that comes from bacteria growth associated with sweating. Antiperspirants and deodorants may be irritating to sensitive skin.

KEEP HAIR CLEAN

Wash your hair at least once in a week basis and use oil-free hairstyling products. The sebaceous glands make more than enough oil in the teen years, so do not add to it with greasy products. The objective of hair care is to keep the hair clean and well-groomed. Choosing a shampoo formulated for your particular hair type can produce the best results.

Take care of your hair. Care for your hair each day. Don't forget to comb it. Knotty, frizzy, and unkempt hair is harder to manage or clean.

NAILS HYGIENE:. Trim your nails regularly to keep them how you like, also washing your hands often should keep them relatively clean underneath, but if not, use an under nail scraper to get the dirt under your nails. Clip and clean your fingernails and toenails at least once every week or once every two weeks, it depends on how much your nails grow.

FACIAL SKIN HYGIENE:

Wash your face two times a day without fail. Adolescents go through a period in which their oil glands produce more oil, and some adolescents wind up with acne. Use skin care products made to treat acne, and if your acne symptoms do not improve after eight weeks, go to a dermatologist to see what he/she can do to help you. Avoid using anything on your face that contains oil if you have acne, and do not rub the skin on your face with a heavy hand. Do not spend too much time under the sun, and keep your hands off your face. Skin care is vital for a youthful and attractive appearance. Daily washing of the face skin is vital for a youthful and attractive appearance. Daily washing of the face and body with mild soap and water is the best way to remove oil and debris that cause acne breakouts. Regular exfoliation using a scrub brush or exfoliating lotion helps remove dead skin cells that build up and clog pores.

BODY HAIR HYGIENE:

Shave your under arms and legs if you desire, but do so with care. Use a new blade if you are going to shave with a manual razor to lessen your risk of cutting yourself. You can also use hair removing creams, waxing to remove hair on your arms and legs. Take your time when shaving to avoid nicks and cuts. Removing hair from under arms reduces the body odour to a large extent.

Many women feel cleaner and more confident after they remove some or all of the hair from their genital region. You can rid yourself of pubic hair by waxing, shaving or using a depilatory cream. Do not apply the cream to your genitals it can cause burning and tissue damage.

ORAL HYGIENE:

Do not let halitosis, bad breath, become a problem. Brush your teeth after eating, especially after eating foods that contribute to bad breath. Clean your teeth for two minutes minimum, and replace your toothbrush after six months. Brush your tongue as well as the top of your mouth, using a light touch. Use floss to remove plaque and pieces of food from between your teeth. Schedule an appointment to have your teeth cleaned by a dentist once a year.

Cover your mouth or turn away from people when you cough and sneeze. It's not just manners, as you could spread illness even when healthy. It is now being taught to cough or sneeze into the crook of your elbow/sleeve. This keeps germs from your hands which might contaminate others before you get an opportunity to wash.

CHANGE YOUR CLOTHES EVERY DAY

Put on clean clothes every day to prevent smelling bad, as fabrics have a tendency to absorb odours. Make sure your socks and undergarments are freshly laundered. Wear dresses and blouses made of cotton or dresses which have a cotton lining as this fabric and other natural fabrics are good at blotting up perspiration. Do not wear clothes with stains, wrinkles, and smells on them. Sometimes reusing clothes are okay, as long as you are sure they're not dirty.

HAND WASHING:

Hand washing is instrumental in preventing infections of all kinds. Food-borne illnesses, contagious infections like the flu and many other pathogens can enter the body via unwashed hands. According to medical practioners hands should be washed for 20 seconds with soap and water to effectively kill harmful microbes. Always wash hands before eating and after handling garbage, pets or raw meat. While anti-bacterial hand sanitizers are a convenient option, the friction created by soap-and-water washing is the most effective method for killing germs.The basic rule is to wash hands before preparing food and after handling uncooked meat and poultry, before eating, after changing diapers, after coughing, sneezing, or blowing one's nose, after using the bathroom, and after touching animals or anything in the animal's environment. Use warm water and soap every time you wash your hands. Create a soapy lather and rub your hands for 15 to 20 seconds. You can sing Happy Birthday in this amount of time.

Practice good bathroom hygiene. Always wipe yourself clean and wash your hands using plenty of soap and warm water.

EAR HYGIENE:

The ears are normally efficient, self cleaning organs that take care of themselves. The wax in the outer ear contains a bactericide that helps to trap dust and potential irritants. Body warmth melts the wax which travels outward with the help of the movement of the hairs in the outer ear. Never poke the wax with any type of cotton bud, hairpin or any instrument this can damage the ear drum and can result in deafness. Wash or wipe only the outer ear with a wash cloth.

VAGINAL HYGIENE:

Don't use soap to clean your private parts, this will disturb your natural pH-balance, and might result in yeast infection. It is good to clean any of the sweat and bacteria gathered around your inner thighs and around your private general area, but there is no need to clean the outer or especially inner parts of your vagina. The vagina is a self cleaning ecosystem of good bacterias, and your discharge (the clear fluid that comes from your vagina) is what sweeps out anything unwanted. Do not douche (a method of washing inside a part of someone’s body, using a narrow stream of liquid) as doctors do not recommend douching. Wash the pubic area with a mild soap and water to keep the area clean and free of odour. See a gynaecologist if you experience abnormal itching, pain, a burning sensation or a yellow/green or lumpy white fluid coming out of your vagina or if you experience pain when you urinate.

Women, especially the college going and working professionals often have problems about maintaining hygiene during periods. The dirty restrooms, unavailability of paper towels, water problems are some of the common problems encountered when they are badly in need during this time.

Women are more prone to infection if they do not maintain a proper hygiene during this time. Here are few suggestions on personal hygiene during menstruation.

Menstrual Hygiene Tips -

1. What Should Your Bag Contain: Paper towels, sanitizers, sanitary pads, water, chocolates, pain killers (not advised but only in case of emergency). The paper towels will help in cleaning, sanitizers keep your hands dry and smell fresh, pads for changing. Water and chocolate to provide you energy and make you feel better. Pain killers if you suffer from severe muscle cramps.
2. Never calculate the number of napkins (sanitary pads) you use as it is at the cost of health and personal hygiene. Discard it after certain hours of use as it may stink due to sweat and the damp pad may even irritate skin.
3. In case you are using homemade cloth napkins wash them properly with soap and water and dry them in sun to get rid of all the bacteria present on it.
4. Soak the stained clothes in warm soapy water and wash it after minutes. Stacking up the stained clothes for long will make stains stubborn and stink even after wash.
5. For personal menstrual hygiene, maintain a separate set of clothes and under garments for that time as even if the clothes stink or carry germs, it won't spread to the clean ones.

CONCLUSION:

The above methods if followed will undoubtedly help all the girls and young women free from any infections.

Poor hygiene deters people from getting to know you. If people find your body odour or unkempt, unclean appearance offensive, they're likely to pass judgments on your personality and your ability to care for yourself on a basic level. This can dissuade them forming friendships and meaningful bonds with you. People generally avoid smells and situations they find unpleasant. Maintaining good personal hygiene will benefit your social life in that it will remove this barrier to interaction and connections.

Appearances broadcast more than just how we look to the world. For example, when you present to a job interview well-dressed, displaying good hygiene, you look like a capable professional, able to handle yourself with care and respect. If you appear with poor hygiene, even if you're the most qualified candidate, it may send the message that you're sloppy, you don't care about your performance and you don't value and respect yourself. If your hygiene declines in school, college or the workplace, it can lead people to question your abilities and even your mental and physical health. At the very least, good hygiene in the workplace or school/College environment avoids creating unnecessary distractions to those around you.

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ANALYSIS OF AGILITY AMONG FEMALE KABADDI PLAYERS.

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ABSTRACT

Kabaddi is a popular game of India. It is the contribution of India to the world. Like any other sporting event Kabaddi also requires high level of physical fitness. Agility is one of the important component of physical fitness. It plays an important role in Kabaddi, for both defence as well as offence. Hence the study was undertaken. The purpose of the study was to analyse agility among female kabaddi players, To achieve the purpose twenty five (N=25) female Kabaddi players who have participated at Inter-Collegiate, Inter-University, State and National Level Kabaddi tournaments were chosen as the subjects. Agility was tested with the help of 4 x 10 Mtrs. Run test. The obtained data was treated statistically by calculating mean and standard deviation. The results revealed that the subjects of the study had average agility.

Keywords : Kabaddi, Physical Fitness, Agility.

INTRODUCTION :

The play instinct in man is as old as evolution itself. Play is a biological need. In man it has reached its climax. Ancient India has contributed a lot in many spheres of human life including physical education and sports. Greatest contribution of India to the world is yoga. Apart from Yoga, Kabaddi was also found in India. Kabaddi is the indigenous game of India. It is a popular game in India. With the introduction of the game at the international competitions, the popularity has grown. The competition has increased the performance of players in leaps and bounds. The Kabaddi players require various qualities, physical as well as mental. Kabaddi being a combative team game requires high level of physical fitness. Agility is one of the important components of physical fitness.

Agility is an important motor ability factor in majority of the sporting activities. Commonly speaking, agility means ability of quick and swift movements, and ability of quick apprehension of body movements. Agility may be defined as ***"one's controlled ability to change body position and direction rapidly and accurately***".

In Kabaddi the attacker must be agile enough to change the directions as fast as possible so not to get caught and defense must move faster than the attacker to catch him or sometimes to push the opponent out of the playing field.

There are three main types of agility items – changes of direction of body parts (various items demanding change of position of the hands or feet), change of direction in running (dodge or maze run), and change of body position (for example, squat thrusts). Agility, being one's ability to change direction or position of the body or parts of the body rapidly and precisely, is closely associated with coordination which is defined as harmonious interplay of muscle groups during a motor performance that indicates some degree of skill. In other words, to be agile, one must also be well coordinated. Agility is more effective when it is combined with high levels of speed, strength and endurance. Agility plays an important role in Kabaddi, for both defense as well as offence. Hence the present study was undertaken.

PURPOSE OF THE STUDY

Purpose of the study was to analyze the Agility of Female Kabaddi players.

METHODOLOGY

To achieve the purpose twenty five (N=25) female Kabaddi players who have participated at Inter-Collegiate, Inter-University, State and National Level Kabaddi tournaments were chosen as the subjects. Agility was tested with the help of 4 x 10 Mtrs. Run test. The obtained data was treated statistically by calculating mean and standard deviation.

RESULTS AND DISCUSSIONS

Table-1

Table showing the Mean and Standard Deviation of Female Kabaddi Players on Agility.

N	Agility	
	Mean	**Standard Deviation**
25	19.795	0.579

The above table shows that the mean value on agility of female kabaddi players is 19.795 secs. and standard deviation is 0.579 secs.

Table-2

Table showing the standards of evaluation of the subjects on Agility

Standards of Evaluation	Score Limit	Frequency	Percentage
Good	< 18.636	2	8.00
Above Average	18.637 - 19.216	1	4.00
Average	19.217- 19.795	10	40.00
Below Average	19.796-20.373	6	24.00
Poor	20.374 >	6	24.00
	Total	25	100.00

The above table shows the standards of evaluation of the subjects. Standards of evaluation were based on the mean and Standard deviation value that is 19.795 and 0.579. 8% of the subjects had more agility, 4% players had above average, 40% average, 24% below average and 24% poor agility.

CONCLUSION

On the basis of the results it was concluded that the selected female Kabaddi players had average agility.

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A COMPARATIVE STUDY OF PHYSICAL FITNESS AMONG BOYS HOCKEY PLAYRERS OF SPORTS AUTHORITY OF ANDHRA PRADESH AND SPORTS AUTHORITY OF INDIA

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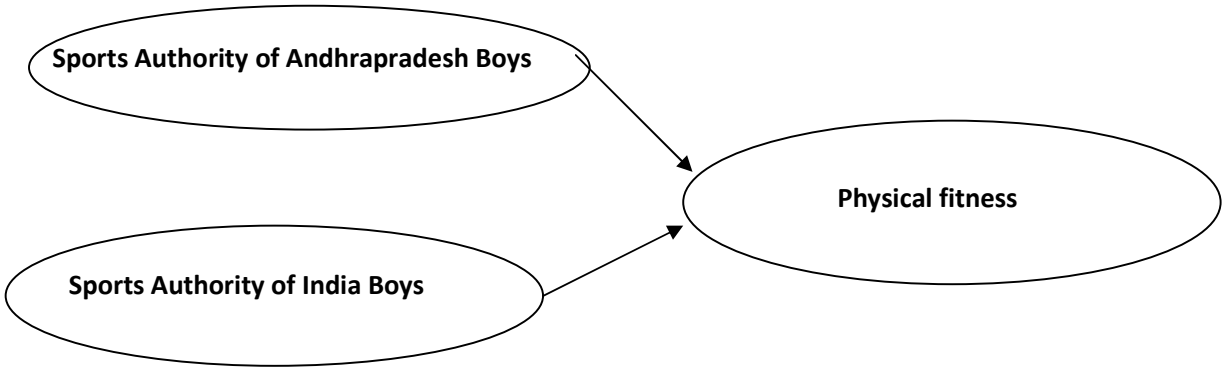
Abstract: Fitness is the term, which is widely used in the present day health conscious society. The people have realized the importance of fitness in day to day routines and also in achieving sports excellence. Fitness denotes a person status of physique in relation to its physical achievements. The latest scientific evidence also edict the fact that for internal or physiological soundness physical fitness is necessary. Modern physical educators divided the factor of fitness into skill related and Health related physical fitness. It is also an undesirable fact, that the health related physical fitness, which is main concern for physical educationists, is depended on the skill related physical fitness of an individual. Physical fitness refers to the capacity of an athlete to meet the varied physical demands of their sport without reducing the athlete to a fatigued state. The components of physical fitness are: Strength, Endurance, Speed, Flexibility and Co-ordination.

The purpose of this study was to compare the physical fitness among Boys Hockey players of Sports Authority of Andhra Pradesh and Sports Authority of India in Tirupati and Hyderabad.

To achieve this purpose 30 players were taken from both the disciplines as random samples. They were ranged in age between sixteen to twenty years only. The test is more economical in terms of space and the time aspects. In order to assess the physical fitness, the motor components i.e speed, agility, flexibility and endurance were used on the Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India in Tirupati and Hyderabad.

The content and the details of motor components are as follows i.e.30 meters sprint, 10x6m shuttle run, Bent & reach, 2.4 km run. Apparatus were used for 30 meters sprint: Standard Electronic Stop Watch,10x6m shuttle run Standard Electronic Stop Watch, Bent & reach Measuring tape (inches or / and centimeters),2 ft stool,2.4 km run Standard Electronic Stop Watch. The raw scores of Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India were converted into Mean, Standard Deviation, Standard Error and t-ratio and comparison was made to find out the significance. Sports Authority of Andhra Pradesh Hockey players have better average performance than Sports Authority of India Hockey players in Physical Fitness. The results of the study when compared with physical fitness of both the groups shows that both are not equal in physical fitness. The Present Article/Paper deals with this issue and attempts to focus on the difference between the performances of trained sportsmen.

DESIGN OF THE STUDY*:*



TOOLS USED: 1). 30 meters sprint: Standard Electronic Stop Watch
2). 10x6m shuttle run Standard Electronic Stop Watch
3). Bent & reach Measuring tape (inches / centimeters),2 ft stool
4). 2.4 km run Standard Electronic Stop Watch.

SAMPLE OF THE STUDY:

For this study 15 Boys from Sports Authority of Andhrapradesh and 15 Boys from Sports Authority of India were selected as the subjects. All the players were Specialized in Hockey and undergoing training at the different centers in Andhrapradesh.

Table showing the significance of the comparison of physical components of boys hockey players of sports authority of Andhra Pradesh and sports authority of India.

		No. of Players	Mean	Standard Deviation	Standard Error
30 Mtrs. sprint	S.A.A.P. BOYS	15	4.4113	0.2001	5.17E-02
	S.A.I BOYS	15	4.4933	0.1919	4.95E-02
10 X 6 m Shuttle run	S.A.A.P. BOYS	15	14.4787	0.6489	0.1675
	S.A.I BOYS	15	15.592	0.6422	0.1658
Bent & Reach	S.A.A.P. BOYS	15	17.6	5.1381	1.3266
	S.A.I BOYS	15	17.6	4.7177	1.2181
2.4 KM run	S.A.A.P. BOYS	15	9.1107	0.4778	0.1234
	S.A.I BOYS	15	9.7633	0.8811	0.2275

The above table indicates that the comparison of all variables viz.30metres, 10x6 meters sprint, Shuttle run, Bent and Reach and 2.4 km run in respect of Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India.

The calculated value of Mean and Standard deviation on the above variables shows (in 1st variable, 30 meters sprint) 4.4113 and 4.4933 respectively in respect of Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India.

There is a little variation in the Mean value as Sports Authority of Andhra Pradesh boys have less than Sports Authority of India boys and this can be interpreted that in this variable Sports Authority of Andhra Pradesh boys are better than Sports Authority of India boys.

The calculated value of Mean and Standard deviation on the above variables shows (in 2nd variable, 10x6 meters Shuttle run) 14.4787 and 15.5920 respectively in respect of Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India.
There is a little variation in the Mean value as Sports Authority of Andhra Pradesh boys have less than Sports Authority of India boys and this can be interpreted that in this variable Sports Authority of Andhra Pradesh boys are better than Sports Authority of India boys.
The calculated value of Mean and Standard deviation on the variable shows (in 3rd variable, Bent & Reach) 17.6000 and 17.600 respectively in respect of Hockey players (Boys) Sports Authority of Andhra Pradesh and Sports Authority of India.
There is no significant variation in the Mean value of Hockey players (Boys) of Sports Authority of Andhra Pradesh and Sports Authority of India.
The calculated value of Mean and Standard deviation on the above variables shows in (4th variable, 2.4 km run) 9.1107 and 9.7633 respectively in respect of Hockey players (Boys) Sports Authority of Andhra Pradesh and Sports Authority of India.
There is a little variation in the Mean value, as Sports Authority of Andhra Pradesh boys have less than Sports Authority of India boys and this can be attributed that in this variable Sports Authority of Andhra Pradesh boys are better than Sports Authority of India boys.

CONCLUSIONS:

Based on the results of the above study the investigator has drawn the following conclusions:

1. Sports Authority of Andhra Pradesh Hockey players have better average performance than Sports Authority of India Hockey players in speed.
   This speaks that 30 meters sprint is speed event, which comes under sprinting distance. Hence Sports Authority of Andhra Pradesh Boys Hockey players are already having good speed can cover 30 meters spring in less time compared to Sports Authority of India Hockey players. The reason is that Sports Authority of Andhra Pradesh training schedule includes mostly activities like strength training, explosive strength training and speed training.
2. Sports Authority of Andhra Pradesh Boys Hockey players are not having better average performance than Sports Authority of India Hockey players in 10x6mt shuttle run.
   This speaks that Sports Authority of Andhra Pradesh Hockey players are not having good speed and agility. To improve speed and agility Sports Authority of India Boyls Hockey players play the games which improves the agility like the kho-kho, handball basketball, Football, volleyball etc.
3. The average performance of Boys Hockey players of Sports Authority of Andhra Pradesh and Sports Authority of India are almost equal and there is no significant variation in Bent and Reach component. This speaks like that both are having good flexibility. To improve the flexibility in the body their training schedule includes stretching i.e. both individual and partner stretching, individual flexibility and partner flexibility.
4. The average performance of Sports Authority of Andhra Pradesh Boys Hockey players are higher than Sports Authority of India Hockey players in endurance.

To find out whether there is any significant difference among Boys Hockey players of Sports Authority of Andhra Pradesh and Sports Authority of Indian t-ratio was tabulated.
The calculated value of t-ratio was higher than the table value required at 0.05 level of confidence. The results of the study when compared with physical fitness of both the groups shows that both are not equal in physical fitness.

This speaks that Boys Hockey players of Sports Authority of Andhra Pradesh and Sports Authority of India does regularly two practice sessions in the morning and evening with each of two to three hour

duration daily. Their training schedule includes to improve speed, strength, endurance, agility etc for achieving the high level of sports performance.

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COMMUNITY DEVELOPMENT THROUGH SPORTS

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Introduction

Sport is always a hope for peace building and development. Unfortunately sports is always treated as a pass time activity without knowing much about it. Sports is a strong tool which can create better communities, a better society and better life for all. Sports is having tremendous social transformative capacity which can change the scenario of the society. Lack of support for sports and recreation programmes in our public school and communities could be one of the reasons for the lack of awareness of Sports. The sad part is most of our people are spectators in the stand and due to their socio-economic situation sometimes they stand outside shops, watching the movements on our Television set.

Sport is not only a physical activity but an area where people interact socially. According to 'Jarvie' and 'Maguire' (1994), sports and Leisure activities form an integral part of social life in all communities and are closely linked to society and politics. Sport is also praised for its important role in the new millennium, for it is seen as a tool for conflict prevention, peace building and development.

Sport improves health, fitness, education, creates business opportunities and employment, fosters non-violent team work, respect, bridges cultural and ethnic device, contributes to cross-cultural dialogue, understanding, unity, tolerance and peaceful co-existence. Such is the power of Sports.

Community development through Sport is a relatively new and exciting approach as it help and brings together people in cluster in a positive manner. Sport for community development is a process of bringing social change through the use of sport activities.

FAJ Colony is situated in Mapusa, North-Goa, Goa. It is 4 kms from main city Mapusa in North-Goa. The Colony came into existence in the year 1997. The total population of the colony is around 500 hundred and the area covered is approximately 20,000 sq. mtrs. The colony is registered under Society's Act, bearing Registration number: Reg No.:261/Goa/98. It has 110 occupied or dwelling houses.

Various activities are conducted for the members of the colony. It includes Table Tennis, Badminton, Chess, Dance and Carrom as indoor activities. Outdoor activities include Walking, Jogging, Football, Cricket and Trekking. Recently they have started reviving our traditional Sports activities such as "Lagori", "Skipping" and "suryanamaskar". They also conduct "Yoga" classes,

annual picnic and annual social gathering for the community. Apart from this they celebrate days of National importance such as Independence Day, 15th August, Goa liberation day, 19th December. They also conduct awareness programmes by calling eminent personalities on health related issues.

Infrastructure: They have an indoor area with stage, outdoor area, and full fledged library with regular librarian and assistant. Library is aided by government. They also have Office with office bearer which maintains the records of such activities.

Purpose of Study:

People in the colonies are generally from different background and basically from different areas. These people are having different liking and interests. Their habits are different and so is their lifestyle. The aim of present study is to find out the changes in the life style of the people staying in the colony and the effect of the various sports activities conducted.

Delimitation:

1. The present study is delimited to one colony FAJ housing society.

2. The study is further delimited to social, religious and health aspect.

Limitation:

The present study involves collection of questionnaire from the randomly selected respondents of the colony. Further the study is restricted to a colony and thus the details of stratification is not done.

Significance of the study:

1. The study will help the general masses to know the influence of Sports as a whole on the society.
2. The study will help the other colonies to implement such programmes in their colony
3. The study will help the colony itself to enhance further.

Methodology:
The data is collected through primary data. The study has used questionnaire method and interview techniques along with secondary data. The secondary data was collected through the books of record from the office of the colony.

Sample size: The present study involve 200 sampling units of which 100 are adults and 100 are children (aged up to 14 years).

Selection of the Unit:

We have selected 200 units randomly from the colony.

Analysis of the data and Findings:

The present study uses Descriptive techniques to analyse the data. The finding clearly reveals that majority of respondent are in favour of a positive impact of Sport on community with respect to social cultural, health and religious aspect.

The respondents were of the opinion that Sport is beneficial for the well being of our society. It enables youngsters to keep away from bad habits and help them to become good citizens. It also teaches them respect for elders; develop self discipline and their personality. Majority of the parents feel that sport provides opportunity for individuals to progress and achieve their goals. They become socialized so that they can deliver constructive ideas and contribute to the society.

It is also found that the health status of the community is good and that they are aware of the life style diseases and how to overcome this problem by participating in the activities.

Women participation is excellent and it is found that due to which other family members are also motivated to participate.

The majority of people think that there is lack of government support for community development through sports as the facilities and equipment provided are not sufficient to run the programmes. It is also found that contributing themselves personally through yearly membership, fund is raised for the activities, to be organised.

With regards to religious aspect, it helps a lot to understand the culture and practices of others by involving in religious festival celebration.

People also feel that participation in activities helped them to know each other in a better way and ultimately it help in maintaining peace in the community.

All the members of the community are of the opinion that the physical activity helps to keep good relationship among themselves, good health as well as unity among the members.

The members feel that the celebration of festivals is important as it create the awareness among the members to know more about the festivals. They further said that it helps in knowing the practices of other religion and to improve the understanding and respect for others.

Participation in activity helps you to keep fit, to know your strength and weakness, to develop leadership quality and decision making power. Apart from this, it also helps to be conscious about diet and the problems related to the individual life style.

Participation in activities helps to change the attitude as well as to keep good relation with each other, a better emotional development and also to become mentally tough which ultimately helps to shape your personality.

The members of colony are happy about the sports activities being carried out by the colony but are keen in strengthening the activities further.

The community is also having swimming activity and sports camps organised by different agencies. They are interested in starting a cycling activity and self defense activities for the community as it is the need of the hour.

Conclusion and Recommendation:

If the mechanisms are put in place, sport has a potential to contribute powerfully to the better world. We have to start a co-ordinated approach in our community. Nation building at home is a pre-requisite for peace –building, nationally and internationally and only a peaceful community can foster development in the right sense.

Recommendation:

The FAJ colony can be looked upon as a role model for the upcoming housing colonies in the state.

Similar studies can be made on the neighbouring colonies to analysed the impact of this colony.

Proper infrastructure should be provided to housing colonies to have better programmes. The colony people should organised inter-housing sport and cultural activities for public at large.

The Sports Authority of Goa and Sport Department should support the activities of the community for the betterment of unity and nation at large.

The colony people are keen to start with a cycling competition and self defense.

There is a scope to improve on this study itself, by studying other factors such as education, income etc.

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Sports ….. Positive influence on day to day life…

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SPORTS: A WAY OF LIFE……PHILOSOPHY OF LIFE

For a sportsman sports means training your body and mind

Sportsman "spirit" is the spirit of the Thyself and can be compared to the libidinal force. Sportsman spirit can be taken as the driving force. Life force, the eros (life instinct – Freud)

1. ***<u>Concept of totality in personality of Plato:</u>***
   - **Physical**
   - **Psychological**
   - **Sociological**
   - **Spiritual**
   - **Professional**

   Sports have direct influence and role in grooming a personality with a totality into a *holistic personality* (as a personality with totality).Sports can show a positive influence on all aspects of life like physical, psychological , spociological , spiritual and professional.

2. **"*SPORTSMAN SPIRIT*" :**

   A noun which includes so many positive characteristics , a 'winner' needs <u>to excel in life……</u>
   - **Alertness**
   - **To be ready**
   - **To be fit**
   - **Winning and losing spirit (grace in winning and defeat)**
   - **Fighting spirit (good human when losing)**
   - **Team spirit**
   - **Fairness**
   - **Generosity and courtesy**
   - **Observance of the rules and abiding to the rules**
   - **Competitive spirit**
   - **Upgrading and continuous training to excel – spirit to upgrade**
   - **Spirit to better himself day by day**

3. ***Sports gives totality to beingness*** **– by giving a "feeling of satisfaction" , which inturn makes a person "<u>contended</u>"**
    - **"I could do the way I wanted to do "**
    - **"I could implement what I was planning"**
    - **"I have performed very well to my satisfaction"**
    - **"I am winning, whenever I m playing to my satisfaction"**

4. ***Profession Vs Hobby:***

Sport is a recreative activity. Sport reenergizes a person. Recharges and boosts up the morale.

In this mechanized and materialistic world sports have considerable role in any one's life.

Sport definitely increases the performance of a professional at his workplace.

Depression is going to become the number "1" cause for the absence at workplace by 2020, in this scenario sports have definite role to play.

Drug abuse among the youth is another alarming situation our present society is facing. To tackle such a gigantic problem sports is the best way at an individual level to whole society level.

Sports facilitates an opportunity to ventilate ones suppressed emotions, feelings, etc. and improves the quality of life.

5. ***ENDORPHINE*****- a wonderful chemical.**

Usually in general under any stressful situations cortico-steroids will be secreted into the chemical mel.. of the human body system.
For a sportsman who is trained to take up pressure in a graded manner, with a positive approach and attitude, during these stress periods endorphins will be released.
Endorphins are wonderful chemicals as endogenous "PAIN KILLERS". They can control both physical as well as psychological pain, where as drugs like aceclofenac, paracetamol etc. can control only physical pain and drugs like diazepam, alprozolam can reduce psychological pain only.
Morphins are considered as 'BAD' as they are highly addicting, can cause damage to the health.
If a person takes morphine in the tablet (on injection form the internal production of endorphins will be suppressed , in turn making a person addicted to the drug leading to abuse.

6. ***Body Mind Equilibrium:***

Maintaining the balance between the physical and psychological strengths is the key point in Decision Making ability.

For ex: The relationship between body and mind can b described as

- **Psychological load and**
- **The Body's capacity to take the load**

If a carrier auto is loaded with a lorry load, it cannot bear the weight of the load and cannot carry the load to the destination.

Body is the vehicle which takes the pressure and withstands the psychic pressure meaningfully with tolerance, patience, etc. and helps the person complete the task successfully.

7. ***Concept of 'self …***

.. realizing the strength and limitations.

Sports helps the sportsperson to realize "one's own self"

Self awareness helps an individual to realize his potentials, nature of personality.

Knowing 'one's self' means realizing his own passion and aptitude.

8. ***Preparing one's self for the day:***

***by* realizing the "<u>the mood of the day"</u>.**

Playground is the laboratory which helps in the grooming of the personality.

Sports help the sportsperson to develop insight into his own "moods", which in turn facilitates in planning "how to go with the day".

One can b choosy regarding whether to go for making major decisions for the day or not, depending on the mood prevailing on that particular day.

9. ***Sportsman body built : fit and confident outlook:***

Attractive and fit body built reflects positive, confident attitude.

A perception of feeling "<u>*proud of one's self".*</u>

Normally sportsperson will have healthy, attractive, masculine physique which boosts up their healthy, active feeling with a dynamic and enthusiastic outlook.

10. ***Sports give a VVIP feeling to a person..***

Developing a good social circles, getting opportunity to travel distances, developing acquaintances with people of different cultures, walks of life will make a person feel VVIP.

Being appreciated for doing something special and particularly a positive, constructive act is the key thing here.

Being able to develop fans for his sporting skills and lawrels is another "God given gift" for sportsman.

Representing the college, culture, state or nation makes somebody feel pride.

11. **Appreciation and rewarding are the key in internal motivation and drive.**

We human beings are motivated and driven by the appreciation and rewarding phenomenon.

According to the principles of conditioning. Appreciation and rewarding will enhance the behavior, strengthens the skills of a person positively.

12. ***Sport is a game of decisions……***

……what we are – "the decisions we made" makes what we are.

Decisions can be classified as:

- **Decisions which carry immediate effect**
- **Decisions which will have long term effect**
- **Major decisions**
- **Minor decisions**

Whether it is making a decision for winning a game or making a decision for winning a life- you need to make the decision consciously.

Still many of the most important and significant decisions are not made consciously at all.

Here the sports mind will carry a the real advantage over others.

The role of sports in improving the decision making ability of an individual or sportsman is priceless. Sports mind is a trained mind to make quick and spontaneous decisions and crisis intervention.

13. **"*JOY OF DOING":***

- **Makes the philosophy of pursuance.**
- **Keeps life cool and comfortable.**
- **Makes life 'live life king-size.**

CONCLUSION: Sports influence the walk of life directly and positively.

Sports make life a great experience.To be ready

The Role of Physical Training in Academic Excellence

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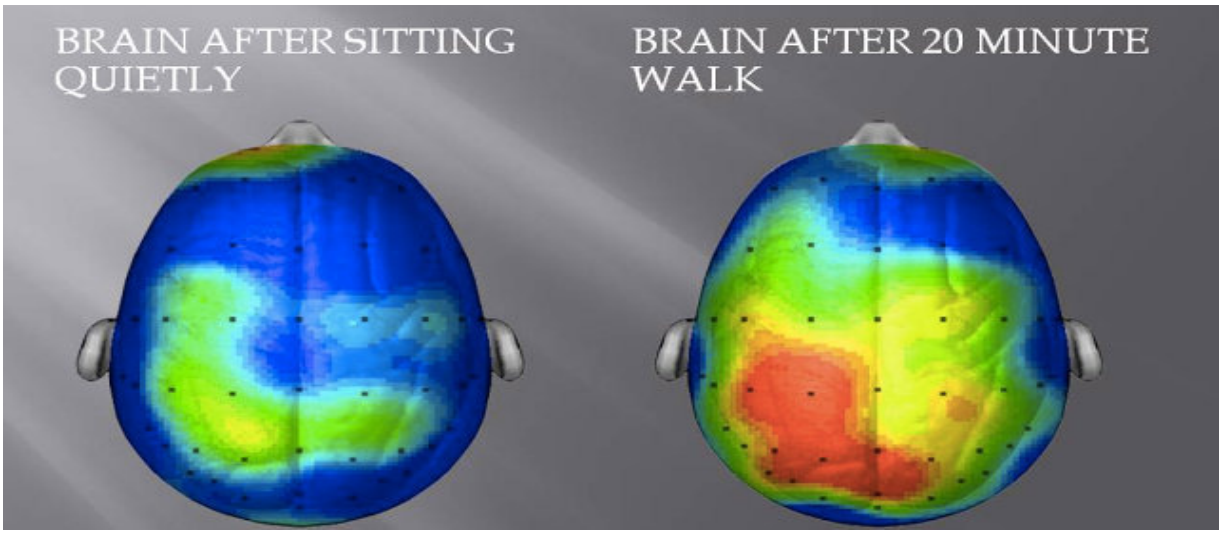
Introduction

Now we are witnessing the highest competitive academic curriculum among educational institutions, completely excluding or avoiding the physical activity in the planning of educational curriculum. Is this beneficial to growing children in long term development? Or even in short term excellence?

There are many studies worldwide proving against this thinking, reemphasizing the importance of essential hours of physical training as a part of academic curriculum at all levels of education.

Children who are physically fit absorb and retain new information more effectively than children who are out of shape, a new study finds, raising timely questions about the wisdom of slashing physical education programs at schools.

Parents and exercise scientists (who, not infrequently, and the similar people) have known for a long time that physical activity helps young people to adjust and pay attention in school or at home, with beneficial effects on academic performance. A representative study, presented at the American College of Sports Medicine, found that fourth- and fifth-grade students who ran around and otherwise exercised vigorously for at least 10 minutes before a mathematics test scored higher than children who had sat quietly before the exam.



If we start exercising, our brain recognizes this as a moment of stress. As our heart pressure increases, the brain thinks like we are either fighting the enemy or fleeing from it. To protect

our self and our brain from stress, our body releases a protein called BDNF (Brain-Derived Neurotropic Factor). This BDNF has a protective and also reparative element to the memory neurons and acts as a reset switch. That's why we often feel so at ease and things are clear after exercising and eventually happy.

At the same time, endorphins, another chemical to fight stress, is released in our brain. The endorphin's main purpose is these endorphins tend to minimize the discomfort of exercise, block the feeling of pain and are even associated with a feeling of euphoria.

Overall, there is a lot positive changes going on inside our brain and it is in fact brain is a lot more active than when we are just sitting down or actually concentrating only mentally.

More generally, in a large-scale study of almost 12,000 schoolchildren published in The Journal of Pediatrics, researchers compiled each child's physical fitness, as measured by a timed run, body mass index and academic achievement in English and math, based on the state's standardized test scores. The findings were interesting! Better fitness proved to be linked to significantly higher achievement scores, while, surprisingly, body size had almost no role. Students who were overweight but relatively fit had higher test scores than lighter, less-fit children.

To date, however, no study specifically had examined whether and in what ways of physical fitness might affect how children learn. Researchers recently stepped into that breach, recruiting a group of local 9- and 10-year-old boys and girls, testing their aerobic fitness on a treadmill, and then asking 24 of the most fit and 24 of the least fit to come into the exercise physiology lab and work on some difficult memorization tasks.

Learning is, of course, a complex process, involving not only the taking in and storing of new information in the form of memories, a process known as encoding, but also recalling that information later. Information that cannot be recalled has not really been learned practically.

Earlier studies of children's learning styles have shown that most learn more readily if they are tested while they are in the process of learning it. In effect, if they are quizzed while memorizing, they remember more easily. Straight memorization, without intermittent reinforcement during the process, is tougher, which fact reemphasizing the compulsory hours of physical activity in between the academic curriculum, although it is how, most children tries to study when given them a choice.

In one research setting, the researchers opted to use both approaches to learning. In one learning session,they provided their young volunteers with which several maps of imaginary lands had been loaded. The maps were demarcated into regions, each with a four-letter name. During one session, the children were shown these names in place for six seconds. The names then appeared on the map in their correct position six more additional times while children stared at and tried to memorize them, akin to repetition method.

In a separate learning session, region names appeared on a different map in their proper location, and then moved to the margins of the map. The children were asked to tap on a name and match it with the correct region, providing in-session testing exercise as they memorized.

A day later, all of the children returned to the lab and were asked to correctly label the various maps' regions.

The results, show that, over all, the children performed similarly when they were asked to recall names for the map, But when the recall involved the more difficult type of learning and memorizing without intermittent testing, the children who were in better aerobic condition significantly outperformed the less-fit group, remembering about 40 percent of the regions' names accurately, compared with barely 25 percent accuracy for the out-of-shape kids.

This finding suggests that "higher levels of fitness have their greatest impact in the most challenging situations" that children face intellectually.The study's outcomes also confirm that the more difficult something is to learn, the more physical fitness may aid children in learning it.

Of course, this study did not focus specifically on the kind of active exercise typical of recess, but on longer-term, the overall physical fitness in young children matters most. This, subtly reinforces the importance of physical training and similar physical activity programs in schools, we believe.

If children are to develop and maintain the kind of aerobic fitness, that definitely amplifies their ability to learn, said Charles Hillman, a professor of kinesiology at the Institute for Advanced Science and Technology, University of Illinois and suggest they should engage in "*at least an hour a day of vigorous physical activity*".

The Schools, where children spend so many of their waking hours, provide the most logical and logistically plausible place for them to get such exercise.

Reducing or eliminating physical education in schools, as is often done in tight financial or space restraints, may not be the best way to ensure educational success among our young people.

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A METHOD FOR RESETTING THE TARGET IN INTERRUPTED TWENTY20 CRICKET MATCH

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Introduction

The Mathematical Modeling and Statistical analysis plays a pivot role in illustrating performances of players in various sports, cricket in particular. For instance, factors such as winning the toss and the home team advantages affecting the results of ODI games have been studied in the literature (Clarke (2003) and De Silva (1997)), while Kimber and Hansford (1993) proposed a nonparametric approach based on runs scored for assessing batting performance. Surprisingly, the methods of statistics are not only confined to post-match analysis but also useful in adjusting targets of interrupted cricket matches. Clarke (1988) used a dynamic programming model to calculate the expected score for games with rain interruptions, so that both teams have the same chance of winning the game. Duckworth and Lewis (1998) introduced a technique for revising the target for games that are shortened due to weather interruptions. The focus of the paper is to find a method to revise the target in an interrupted Twenty20 matches with suitable illustrations.

A Review of Existing Rain Rules.

Frank Duckworth and Tony Lewis (1998) proposed a method based on a Mathematical formulation designed to calculate an appropriate target for the team batting second (Team 2) in a limited overs match interrupted by weather or other circumstances, especially for One-day International Cricket Matches (ODI), since then it was adopted by the International Cricket Council (ICC) to address the problem of delayed ODI. To outline the basic idea of their method, consider the most common situation where two teams play a full length game along with 100% of the resources (50 overs, 10 wickets in hand) available to them. Team 2 simply has to beat Team 1's score, without adjustment. Now consider a game where Team 1 has an uninterrupted 50 over innings, but at some point in Team 2's innings it rains and ten overs are lost. Team 2 now only bats for a total 40 overs. This clearly hurts their chances of beating Team 1's score so an adjustment is need. The Duckworth/Lewis (D/L) method makes this adjustment based on the ratio of resources available to Team 2 to the resources available to Team 1. The resources lost

depend on the number of overs and wickets remaining at the time of the interruption as shown in Figure 1 below.

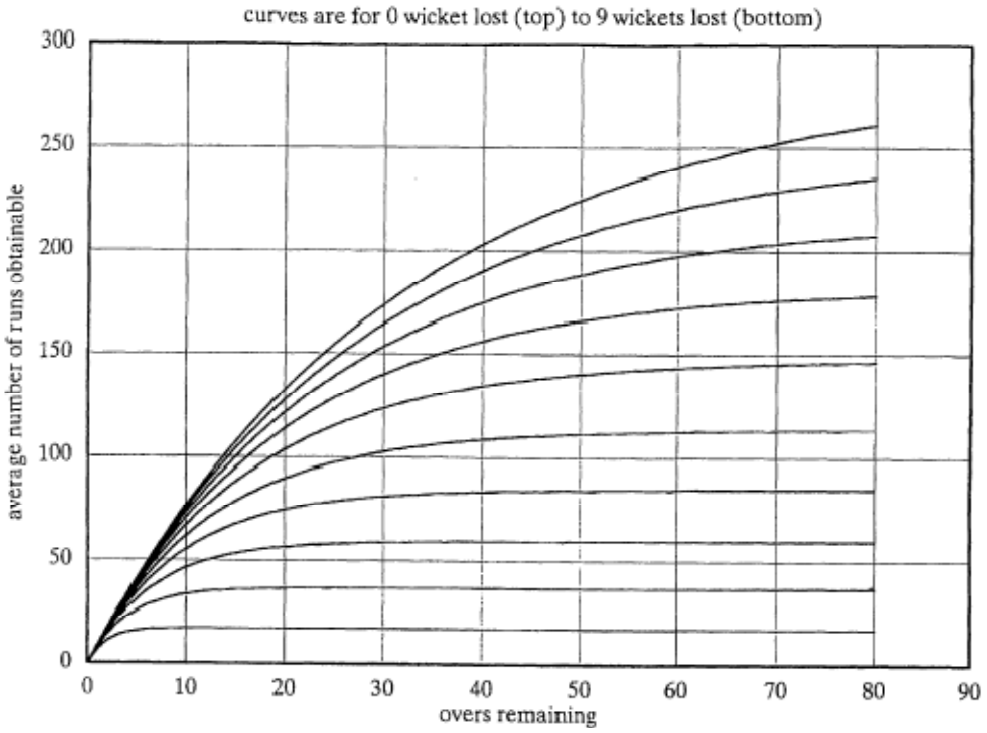

Figure 1 Average number of runs from overs remaining with wickets lost.

The D/L method may overcome a few disadvantages available in methods adopted by ICC prior to 1999 ODI matches. Most of them do not take account of the stage of the innings at which the overs are lost or of the number of wickets that have fallen. We now provide details of a few Pre-Duckworth/Lewis methods as follows:

1. Average run Rate(ARR)

The winning team is decided by the higher average number of runs per over that each team has had the opportunity to receive. It is a simple calculation but the major problem with this method is that it very frequently alters the balance of the match, usually in favor of the team batting second.

2. Most Productive Overs (MPO)

The target is determined for the overs the team batting second (Team 2) are to receive by totaling the same number of the highest scoring overs of Team 1. The process of determining the target involves substantial bookwork for match officials and the scoring pattern for Team 1 is a criterion in deciding the winner. We believe that it is only Team 1's total that should be used in setting the target and not the way by which it was obtained. The method strongly tends to favor Team 1. The most notorious example came in the 1992 Cricket World Cup, where the MPO method was used; in the simi-final between England and South Africa, rain stopped play for 12 minutes with South Africa needing 22 runs from 13 balls chasing England's 252/6 off 45 overs. The revised target left South Africa needing 21 runs from one ball, which was a reduction of only one run compared to a reduction of two overs and a preposterous target given that the maximum score from one ball is generally six runs. The D/L method avoids this flaw; in this match, the revised D/L target would have left South Africa four to tie or five to win from the final ball.

3. Discounted Most Productive overs (DMPO)

The total from the most productive overs is discounted by 0.5% for each over lost. This reduces slightly the advantage MPO gives to Team 1 but still has the same intrinsic weaknesses of that method.

4. Parabola (PARAB)

This method, by a young South African (do Rego), calculates a table of norms y, for over s of an innings, s, using the parabola $y = 7.46x - 0.059x^2$ to model, rather in appropriately since it has a turning point at about 63 overs, the diminishing return's nature of the relationship between average total runs scored and total number of overs available. The method is an improvement upon ARR but takes no account of the stage of the innings at which the overs are lost or of the number of wickets that have fallen.

5. Clark Curves (CLARK)

This method fully described on the Internet, attempts to correct for the limitations of the PARAB method. It defines six types of stoppage, three for each innings, for stoppages occurring before the innings. It applies different rules for each type of stoppage some of which, but not all, allow for wickets which have fallen. There are discontinuities between the revised target scores at the meeting points of two adjacent types of stoppage.

The objective of Duckworth and Lewis was to find a method that must follow criteria given below

1. It must be equally fair to both sides; that is the relative positions of the two teams should be exactly the same after the interruption as they were before it.
2. It must give sensible results in all conceivable situations.
3. It should be independent of Team 1's scoring pattern, as indeed is the target in an uninterrupted game.
4. It should be easy to apply, requiring no more than a table of numbers and a pocket calculator.
5. It should be easy to understand by all involved in the game, players, officials, spectators and reporters.

Citing reasons of commercial confidentiality, Duckworth and Lewis have provided only partial information concerning the construction of the resources table. However, they do disclose that the table entries are based on the estimation of the 20 parameters $Z_0(w)$ and $b(w)$, $w = 0,1,\ldots,9$ corresponding to the average total score function

$$Z(u) = Z_0[1 - \exp(-bu)],$$

Where Z_0 is the asymptotic average total score in unlimited overs (but under ODI rules) and b is the exponential decay constant.

The next stage of development of a suitable two-factor relationship to revise the above equation for when w wickets have already been lost but u overs are still left to be received. The asymptote will be lower and the decay constant will be higher and both will be functions of w. The revised relationship is of the form

$$Z(u) = Z_0(w)[1 - \exp(-b(w)u)],$$

Where $Z_0(w)$ is the asymptotic average total score from the last $10 - w$ wickets in unlimited overs and $b(w)$ is the exponential decay constant, both of which depend on the number of wickets already lost.

For 50-over matches, each team must face at least 20 overs before D/L can decide the game, unless one or both sides have been bowled out in less than 20 overs and/or the team batting second has reached its target in less than 20 overs. If these prerequisites are not met, the match is declared a no result.

The D/L method has been criticized on the grounds that wickets are a much more heavily weighted resource than overs, leading to the suggestion that if teams are chasing big targets, and there is the prospect of ran, a winning strategy could be to not lose wickets and score at what

would seem to be a losing rate. Another criticism is that the D/L method does not account for chages in proportion of the innings for which field restrictions are in place compared to a completed match. More common informal criticism from cricket fans and journalist of the D/L method is that it is overly complex and can be misunderstood.

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1. V. Jayadevan(VJD) Method

In 2011 World Cup, where D/L method was used; in the match between Sri Lanka and Australia, the match was called off: Sri Lanka, after choosing to bat, was 146 for 3 in 32.5 overs, going at a run-rate of 4.44. Considering the pitch was offering turn and bounce, Sri Lanka was arguably ahead on points at that stage. Not a ball was bowled after that, the rains eased up later, allowing two more hours of play - Sri Lanka's innings would have been curtailed at the point of interruption and Australia would have got 30 overs in which to chase a revised target. An upward revision is clearly needed since it's assumed that Sri Lanka paced their innings expecting it to last 50 overs. The revised target according to the D/L method left Australia 199 to win in 30 overs at an asking rate of 6.63 runs per over, almost 50% more than Sri Lanka's run rate at the time of the interruption.

An alternative to the D/L method, which has been adopted in Indian domestic cricket, is the V. Jayadevan system, devised by an engineer from Kerala. According to this method, Australia's target would have been 185, which is a required run rate of 6.17. The difference between the two targets is 14 runs, which is significant in a 30-over innings. It's debatable as to which is the fairer target, but the VJD method has shown itself to be an alternative that deserves close scrutiny (see [7]).

The Comparison of D/L and VJD methods in ODIs

Scenario	D/L Target	VJD target
Team A 60 for 0 in 20 overs, innings terminated. Target for Team B in 20	147	121
Team A 100 for 0 in 20 overs, innings terminated.Target for Team B in 20	158	165
Team A 130 for 0 in 20 overs, innings terminated. Target for team B in 20	174	194

The D/L method has come in for criticism especially for its handling of situations in Twenty20 games. Paul Collingwood was vocal in his criticism after England were beaten by West Indies in successive World Twenty20s, as in World Twenty20, 2010, England's score of 191 in 20 turned out to be a losing one after D/L decided that West Indies' revised target in six overs was 60. (They were 30 without loss in 2.2 overs, 11 ahead of the par score, at the time of the

interruption.) VJD's method would have given a revised target of 62, which wouldn't have helped England's cause much, suggesting that VJD Method is better than D/L Method.

The Comparison of D/L and VJD methods in T20 format

Scenario	D/L Target	VJD target
Team A 41 for 0 in 7 overs, innings terminated. Target for Team B in 7	64	59
Team A 50 for 0 in 7 overs, innings terminated. Target for Team B in 7	65	67
Team A 35 for 0 in 6 overs, innings terminated. Target for team B in 6	56	51
Team A 50 for 0 in 6 overs, innings terminated. Target for Team B in 6	60	65
Team A 50 for 0 in 7 overs, innings terminated. Target for Team B in 7	65	67
Team A 50 for 0 in 8 overs, innings terminated. Target for Team B in 7	64	61

Rain Rules for Twenty-Twenty Cricket Matches

A full-length game of Twenty20 (T20) cricket consists of each team sequentially batting for an innings of 120 balls, divided in 20 “overs” of six balls each. In contrast to the ODI, T20 matches have completion times that are comparable to other popular team sports. The D/L resource table (Standard Edition) for T20 can be constructed in which the entries are obtained by dividing the corresponding entry in Table 1 by 0.566 (the resources remaining in a one-day match where twenty overs are available and zero wickets taken).

Although T20 cricket is similar to one-day cricket, there exist subtle variations in the rules between the two versions of cricket. The variations in the rules, and most importantly, the reduction of overs from 50 to 20 suggest that scoring patterns in T20 may differ from the one-day game. In particular, T20 is seen as a more explosive game where the ability to score 4’s and 6’s is more highly valued than in one-day cricket. Since the D/L method are based on the scoring patterns in one-day cricket, it is therefore reasonable to ask whether the D/L method appropriate for T20. In [1], R. Bhattacharya et al. proposed a nonparametric approach based on Gibbs sampling as a probable alternative to D/L method to T20.

Instead of revising the existing D/L resource table by dividing the corresponding entry in Duckworth-Lewis Resource Table 1 (Standard Edition) by 0.566 to suit T20 format, we can still use the same resource table for a T20 matches. Since the T20 format is 2.5 times shorter than a 50-over match, it is reasonable to convert the resources (runs scored and overs consumed, keeping wickets lost unchanged) at the time of interruption in a T20 match into a 50-overy match by multiplying them by 2.5, thereby we can use the existing D/L method (or VJD method) devised for a 50-over match to reset the targets which suits 50-over match. We now can find the

adjusted target to the original interrupted T20 match by dividing the obtained target (runs and overs remaining) by 2.5.

The current rules of ICC to implement D/L method to a T20 match, each team must face at least five overs before D/L can decide the game, unless one or both sides have been bowled out in less than five overs and/or the team batting second has reached its target in less than five overs. If these prerequisites are not met, the match is declared a no result. However, these prequisites are criticized by experts and players in several occasions. For instance, Pakistan's former leg-spinner Abdul Qadir said one needs to revisit the system and its use in the shortest version of the game. "To decide any match on the basis of five overs was a farce like it happened in the Sri Lanka and Zimbabwe and the England and West Indies matches(in T20 World Cup, 2010)," Qadir said.

To implement the method proposed herein, we need to adjust five over restriction to eight overs as 2.5 times eight is "20 overs", a restriction in a 50-over match.

To explain our method we consider England and West Indies match in T20 World Cup, 2010. Team 1 (England) has scored 191 from its allocation of 20 overs in an uninterrupted innings. Team 2 (West Indies) has received 2.2 overs and scored 30 without loss of a wicket. Then play is suspended and 11.4 overs are lost. Number of overs at start of match, N=20. Converting these values into 50-over format by multiplying with 2.5, we get Team 1 score will be 477.5 (rounded to 478) in 50-overs, Team 2's score will be 75/0 in 5.5 overs.

We now apply D/L method to calculate revised target to this adjusted score as follows:

Team 1's innings was uninterrupted, so its resource percentage available, R1=100%,

Resource percentage available to Team 2 at start of innings = 100%,

Resource Percentage remaining at suspension (18.4 x 2.5 = 46 overs, 0 wickets lost) = 96.1%

Resource percentage remaining at resumption (6 x 2.5 =15 overs, 0 wickets lost) = 45.2 %,

Resource percentage lost due to suspension = 96.1 – 45.2 = 50.9%,

Resource percentage available to Team 2 = R2 = 100-50.9 = 49.1 %,

R2 is less than R1; S=478.

Team 2's revised target is $T = S \times \frac{R2}{R1} + 1 = 478 \times \frac{49.1}{100} + 1 = 235.698$, approximately 236 runs, and it needs a further 236-75 = 161 runs from 15 overs.

We now convert the revised target 161 runs in 15 overs to T20 scenario by dividing these values with 2.5 we get 64 runs in 6 overs

Therefore, our method would have given a revised target of 64 runs to score in six over left, better than D/L and VJD's revised targets 60 and 62 respectively. If we implement our method along with VJD's instead of D/L's method then the revised target will be 68 runs to score in six over, seems to be much more reasonable.

Conclusion

In this paper we have proposed a method of finding targets in an interrupted Twenty20 match using the existing Rain Rules along with an illustration. Our method can also be applicable to several other type of interrupted matches in which interruption may occur in the first innings or in the second innings of a match.

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A Comparative Study on Achievement Motivation among Athletes and Hockey Players of Kakatiya University

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Introduction:

Sport Psychology is the scientific study of people and their behaviors in sport. The role of a sport psychologist is to recognize how participation in sport exercise and physical activity enhances a person's development. Beginning, in the 1970, Sport psychology became a part of the curriculum on university campuses. Today, sport and exercise psychologists have begun to research and provide information in the ways that psychological well being and vigorous physical activity are related. Achievement Motivation defined as the need to perform well or the determined the success as the need to perform well or the motivated for success and evidenced by persistence and effort to achieve high performance in sports. Motivation is based on your emotions and achievement related goals. Achievement Motivation is the desire to excel at task.

Modern day sports are very demanding. It requires for the sportsmen and athletes a like to perform to the very best of their abilities and beyond. Individual sport activities such as wrestling and gymnastics have shown to elicit higher anxiety levels than competitive team sport activities such as soft ball and basket ball. Achievement Motivation defined as the need to perform well or the striving for success and evidenced by persistence and effort in the face of difficulties. Achievement Motivation is regarded as central human motivation. Achievement Motivation form to be the basic for good life. People who are oriented towards achievement in general, enjoy life and feel in control, being motivated keeps people dynamic and gives them self respect. They set moderally difficult but easily achievable targets, which help them, achieve their objectives. They do not set up extremely difficult or extreme easy targets by motivated people prefer to work on a problem rather than leaving the outcome to chance. It is also seen that achievement motivated sports persons seem to be more concerned with their personal achievement rather the rewards of success.

Athletics is an exclusive collection of sporting events that involve competitive running, jumping, throwing, and walking. The most common types of athletics competitions are track and field, road running, cross country running, and race walking. The simplicity of the competitions, and the lack of a need for expensive equipment, makes athletics one of the most commonly competed sports in the world. Athletics is mostly an individual sport, with the exception of relay races and competitions which combine athletes' performances for a team score, such as cross country.

Hockey Field hockey is played on gravel, natural grass, sand-based or water-based artificial turf, with a small, hard ball approximately 73 mm (2.9 in) in diameter. The game is popular among both males and females in many parts of the world, particularly in Europe, Asia, Australia, New Zealand, South Africa, and Argentina. The governing body is the 126-member International

Hockey Federation (FIH). Men's field hockey has been played at each summer Olympic Games since 1908 (except 1912 and 1924), while women's field hockey has been played at the Summer Olympic Games since 1980.

Modern field hockey sticks are J-shaped and constructed of a composite of wood, glass fibre or carbon fibre (sometimes both) and have a curved hook at the playing end, a flat surface on the playing side and curved surface on the rear side. All sticks are right-handed – left-handed sticks are not permitted. While current field hockey appeared in mid-18th century England, primarily in schools, it was not until the first half of the 19th century that it became firmly established. The first club was created in 1849 at Blackheath in south-east London.

Objective of the study

The purpose of the study is to find out the level of achievement motivation among Athletes and Hockey Players of Kakatiya University.

Significance of the study

The study is to determine the significance difference between athletes and hockey players in relation to their achievement motivation of Kakatiya University.

Hypothesis

Is there any significance difference between athletes and hockey players in relation to their achievement motivation of Kakatiya University.

Methods and materials

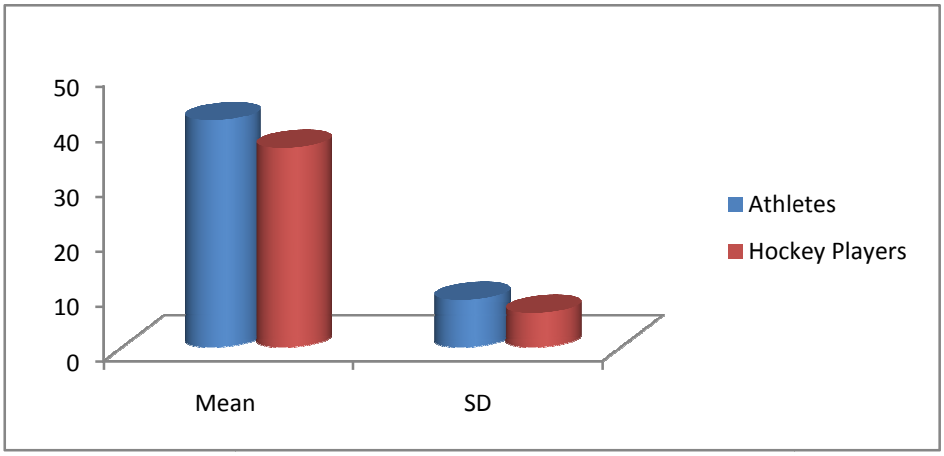
The sample for the study consists of 50 Male Athletes and 50 Male Hockey Players. The Standardized Dr. B. N. Mukharji Achievement Motivation scale was used for the study. The Questionnaire was administered in small groups.

Results and discussions

The table showing the significance difference between athletes and hockey players of achievement motivation

Sl. No	Groups	N	Mean	SD	t- value
1.	Athletes	50	41.32	8.60	5.14
2.	Hockey Players	50	36.29	6.21	

The Graph showing the significance difference between athletes and hockey players of achievement motivation



Conclusion:

Hence it is concluded that the Athletes have high level of Achievement than HockeyPlayers must have more achievement motivation to excel in sports. The Decision for individual game will be made by Athletes persons is final for his performance. Whereas in Team Game like hockeythere will be group effort among all players and their achievement motivation differs from each sports persons to sports persons. It was found the Athletes are having high level of Achievement Motivation than Hockey Players the Athletes required compulsory Motivation to achieve excel in Performance at peak stage. Therefore the Individual Sports persons like Athletes set goals and aims to give level best performance to win the Competition, where as the Hockey Players depend upon their group to give the high level of performance. It is recommended that achievement motivation is compulsory for all sports persons to achieve high excellence in sports. The Coaches must prepare all the sports persons with high level of motivation to excel in sports and games.

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ADHERENCE TO PHYSICAL ACTIVITY– PSYCHOLOGICAL ASPECTS IN "PRESCRIBED EXERCISE" AND "MOTIVATIONAL COUNSELLING

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Introduction:
In several countries, prescribed exercise is used to facilitate physical activity in a sedentary population, which is at risk of developing lifestyle diseases. Since long-term effect of prescribed exercise to some degree fails to happen when people participate in prescribed exercise interventions, it is necessary to introduce other ways of thinking. Health psychological theory can contribute with important knowledge on bio-psycho-social factors important for behaviour change.

In India a prescribed exercise intervention called "Exercise on Prescription" (EoP) was divided into two central parts: a high-intense EoP scheme (Treatment Group) and a lower-intense counselling scheme (Prevention Group). It is important to clarify to what extent differences in stages of change, self-efficacy and social relations before, during and after the Treatment Group and the Prevention Group are influencing motivation and adherence towards a physically active lifestyle. An analysis of these factors will be able to contribute with important knowledge important to the individual's health behaviour and ability to change behaviour.

Hypotheses and aim:
1) Participation in the TG and the PG will lead to changes in level of self efficacy towards barriers, stages of change, and physical activity 2) The initial level of self-efficacy toward barriers and stages of change will be different for the Treatment Group (TG) and the Prevention Group (PG). 3) The participants' initial level of self-efficacy towards barriers and stages of change before the intervention is important for adherence to a physically active lifestyle. 4) Social relations are important for the participants' adherence to physical activity during and after EoP. The aim of this study is to test these hypotheses at baseline, as well as after 4, 10 and 16 months.

Methods:
The analyses are performed as a triangulation of methods via a combination of questionnaires semi-structured interviews and research literature.

Results and discussion:
The results of the quantitative analysis show a statistically significant increase in the level of physical activity and stages of change from baseline to 16 month. No change was observed for self-efficacy. However, the results suggest that the change in these features was indistinguishable between participants in the Treatment Group and the Prevention Group. The results also suggest that other factors characterising the participants may be better predictors of the change in outcome than self-efficacy and stages of change. The results in the qualitative study suggest that participants in the Treatment Group and the Prevention Group have similar initial stages of change. Furthermore, the study indicates, as do the quantitative study, that the precondition in

stages of change is not decisive for long-term development in the level of physical activity and that self-efficacy towards overcoming barriers did not change in either group. The results show a fundamental difference between major and moderate barriers between the groups. This could possibly provide some explanation for the difference (indicated in the qualitative study) between the groups in terms of staying physically active at long-term. Furthermore, a positive attitude towards or interest in physical activity seems to be a stronger predictor of adherence to physical activity than stages of change and self-efficacy. Social relations as family, friends, the exercise specialist and other participants in the intervention were mentioned as important.

Conclusions:
Given that no differences could be found between the groups in the above mentioned factors, other explanatory parameters may be relevant to explore to a greater extent in future research. The results emphasise that future research should explore the interaction between the participant, family, friends and the exercise specialist, but also the other participants in the intervention. However, when interpreting the results the possible bias in the two studies must be taken in to account. Further evaluation of EoP-interventions could be based on a more rigid design. But moreover, future research should recognise the interactional basis of behavioural change and to a greater degree try to take into account the influence from social network and its influence on the individuals' lifestyle, coping, health behaviour and reactions to illness and disease.

Perspectives:
To enhance people's adherence to a physically active lifestyle after prescribed exercise it is important to incorporate a health psychological understanding of behaviour change in order to generate a better milieu for change. A way of improving life-long motivation for exercise and physical activity could be to develop a model for understanding of participation in exercise and physical activity that shifts the emphasis away from a focus on treatment, health and behavior change and towards motivation, satisfaction and enjoyment. This could be done e.g. through the development of psychological skills, physical skills, and social skills. A reconceptualising of participation in physical activity in this way could possibly enhance adherence to physical activity in later life and moreover, possibly influence those who are in greatest need.

ANALYSIS OF PRE-COMPETITION MOOD STATES OF TEAM SPORTS PLAYERS OF ANDHRA UNIVERSITY

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Introduction

Sport is generally considered a primarily physical endeavor, involving the marshaling of bodily resources to complete a variety of specialized, demanding physical tasks. Undeniably, physical attributes such as speed, strength, endurance, power, coordination, agility, flexibility, and resilience are richly rewarded in competitive sport. Recognizing the abundant physical component of sport performance, scientists have investigated biomechanical, physiological, nutritional, metabolic, epidemiological, biochemical, pharmacological, and medical aspects of sport. Applied practitioners in exercise physiology, physiotherapy, sport biomechanics, sports medicine, sports nutrition, strength and conditioning, and other disciplines have translated research findings into interventions designed to enhance the physical performance capabilities of the athletes.

The ability to produce and maintain appropriate emotional feelings before competition is universally recognized by athletes and coaches as one of the most important factors contributing to athletic performance. Thus, it is not surprising that the relationship between precompetitive emotions and sport performance has generated considerable interest from researchers in the field of sport psychology (Jones & Hardy 1990; Ken 1989; Landers 1991; Martens, Vealey, & Burton 1990; Neiss 1988; Silva & Hardy 1984). One popular line of research has focused on discriminating between successful and less successful performers based on their mood states prior to competition. The conceptual (*descriptive*) approach primarily used in this line of research has been Morgan's (1980) Mental Health Model. It is proposed through this model that positive mental (*i.e., emotional*) health and successful athletic performance are highly correlated. Specifically, athletes who are less anxious, angry, depressed, confused and fatigued, and more vigorous will be more successful than those athletes who exhibit the opposite profile, as assessed by the Profile of Mood States (POMS; McNair, Lorn & Droppleman, 1971). This positive profile of mood states has been termed the iceberg profile by Morgan since the five negative moods fall below the population norm and the one

positive mood lies above it. The aim of this study is to assess pre-competition mood states of team sports players of Andhra University.

Methods

Subjects & Variable

In this study 120 team games players were selected as subjects, who represented Andhra university team in Indian Inter University Competition. The age of the subjects were ranged between 20 and 28 years. In the present study mood state was selected as criterion variable. In the present study stratified group design was employed.

Selection of Instruments

Profile of Mood States Questionnaire developed by McNair *et al*., (1971) was used in the present study. This questionnaire constitutes 65-items which measures five negative scales such as fatigue, depression, tension, anger, confusion and positive scale vigour.

Collection of Data

The data on selected criterion variables were collected from the subjects confined to this study, by administering the questionnaires 15 days, 7 days and 1 day prior to the match they completed the POMS on three separate occasions before their inter university competition. Then, the duly filled-in questionnaires were collected from the subjects and subjected to evaluation according to the scoring key. The total scores obtained were tabulated and statistically treated, to arrive at meaningful conclusions.

Statistical Techniques

The repeated measure ANOVA was calculated for mood states. Whenever, the *F* ratio is found significant, post hoc tests using the Bonferroni correction was applied to know the difference between the tests. Results were reported as the mean ± SD of all observations, and the level of significance was set at $p < 0.05$.

Results

The result of the study showed that tension, depression, anger, fatigue and confusion showed no changes at different testing conditions (Table 1). However, positive factor vigour showed significant improvement as competition advances. The obtained *F* ratio 12.63 is greater than the required table value of 3.0337 at $\alpha = 0.05$ for the df of 2 and 238.

Table 1

Mood states of Team players

Variables	Testing conditions	Mean ± SD	*F*
Tension	15 Days	7.04 ± 3.15	0.009
	07 Days	7.08 ± 3.08	
	01 Day	7.06 ± 2.96	

Depression	15 Days	4.78 ± 2.99	0.306
	07 Days	4.61 ± 2.89	
	01 Day	4.58 ± 2.88	
Anger	15 Days	6.91 ± 3.24	0.021
	07 Days	6.95 ± 3.35	
	01 Day	6.88 ± 3.76	
Vigour	15 Days	17.22 ± 3.61	12.63*
	07 Days	17.87 ± 3.48	
	01 Day	18.86 ± 3.52	
Fatigue	15 Days	6.99 ± 3.49	0.783
	07 Days	6.93 ± 3.79	
	01 Day	6.60 ± 3.91	
Confusion	15 Days	4.98 ± 3.06	0.013
	07 Days	4.95 ± 3.02	
	01 Day	4.94 ± 2.91	

Post hoc tests using the Bonferroni correction revealed that vigour improved in team players of Andhra University from 15 days to 1 day prior to competition which was statistically significant ($p < 0.05$). However, it also showed statistically significantly different improved from 7 days to 1 day prior to competition ($p < 0.05$). Therefore, we can conclude that vigour improved as the competition day advances and no changes were recorded on tension, depression, anger, fatigue and confusion.

Discussion

Conversely, in team sports, the pressure of training and stress distribute to the whole team and team members support the weakness of each other. Notwithstanding those five negative mood states, "Vigour" has been known as a kind of positive mood status for athletes. One day before competition, the level of vigour is higher among team sports players. The team sport, as they are getting closer to the competition, the vigour mood state became stronger from one week to one before competition which was due to the fact of increasing self-confidence among team members. James & Lane (2002) and Lane & Chappell (2001) concerning the effects of moods on team sports showed that behavior trait of team such as volleyball, football and basketball showed improvement in positive factor vigour.

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Women's Sports in Modern Times

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We live in a world that changes quickly, so it's no terrible surprise that the image of women in sports is changing quickly, as well. Relatively, it hasn't been that long since women were not even socially permitted to participate in sports or any kind of physical activity. There are still remnants of past gender-types, but overall the image of women in sports has changed dramatically.

It used to be that women were not allowed to participate in sports-- beyond just being seen as unbecoming and unfeminine, it was actually believed that physical activity would harm a woman's reproductive system. Men did not think that women should or could do the same things that men could do-- and maybe they were a little bit afraid to have women try, because of all the perceived notions that a success would shatter. But women tried anyway and, lo and behold, succeeded. So society had to face up to the fact that, yes, women could not only participate in sports, but they could excel at them.

Women's sports include amateur and professional competitions in virtually all sports. Female participation in sports rose dramatically in the twentieth century, especially in the last quarter, reflecting changes in modern societies that emphasized gender parity. Although the level of participation and performance still varies greatly by country and by sport, women's sports have broad acceptance throughout the world, and in a few instances, such as tennis and figure skating, rival or exceed their male counterparts in popularity. The **Women's Sports Foundation** (WSF) "is an educational nonprofit organization founded in 1974 by tennis legend Billie Jean King." Its stated mission statement is "To advance the lives of girls and women through sports and physical activity.

Indian women have achieved great laurels for the nation in every sport. Indian women cricket team has won Asia Cup of 2004 and 2005 and made country proud. Some women sports icons of India are: P.T. Usha (Athletics),Kunjarani Devi (Weight lifting), Diana Edulji (Cricket), Sania Mirza (Tennis), Karnam Malleshwari (Weight lifting),Saina Nehwal (Badminton).

Keywords : Strategy , Gender equity, Title IX

History

For most of human history, athletic competition has been regarded as an exclusively masculine affair. In antiquity, athletic competitions were held among warriors to prove their fighting prowess or otherwise demonstrate their virility. The exclusively male origins of competitive sport carried over into the Ancient Olympics, where women were not allowed even to watch competitions, much less compete. However, a separate women's athletic event, the Heraea Games, was eventually developed. Few women competed in sports until the late nineteenth and early twentieth centuries, as social changes in Europe and North America favored increased female participation in society as equals with men, as exemplified by the women's

rights movement. Although women were permitted to participate in many sports, relatively few showed interest, for a variety of social and psychological reasons that are still poorly understood.

The modern Olympics had female competitors from 1900 onward, though women at first participated in considerably fewer events. Concern for the physical strength and stamina of women led to the discouragement of female participation in more physically intensive sports, and in some cases led to less physically demanding female versions of male sports. Thus netball was developed out of basketball and softball out of baseball.

Tennis was the most-popular professional female sport from the 1970s onward, and it provided the occasion for a symbolic "battle of the sexes" between Billie Jean King and Bobby Riggs, enhancing the profile of female athletics. The success of women's tennis, however, did little to help the fortunes of women's professional team sports.

Women's professional team sports achieved popularity for the first time in the 1990s, particularly in basketball and football (soccer). This popularity has been asymmetric, being strongest in the U.S., certain European countries and former Communist states. Thus, women's soccer was originally dominated by the U.S., China, and Norway, who have historically fielded weak men's national teams. However, more recently, several nations with strong and even dominant men's national teams, such as Germany, Sweden, and Brazil, have established themselves as women's powers. Despite this increase in popularity, women's professional sports leagues continue to struggle financially. The WNBA is operated at a loss by the NBA, in the hopes of creating a market that will eventually be profitable. A similar approach is used to promote women's boxing, as women fighters are often undercards on prominent male boxing events, in the hopes of attracting an audience.

Modern Times

Today, women compete professionally and as amateurs in virtually every major sport, though the level of participation typically decreases when it comes to the more violent contact sports; few schools have women's programs in American football, boxing or wrestling. However, these typical non-participation habits may slowly be evolving as more women take real interest in the games, for example Katie Hnida became the first woman ever to score points in a Division I NCAA American football game when she kicked two extra-point field goals for the University of New Mexico in 2003. The practical recognition of basic physiological gender differences has not impeded the development of a higher profile for female athletes in other historically male sports, such as golf, marathons or ice hockey

Needless to say, today is a far cry from the feeble beginnings of women in sport. In 1972 the most important piece of legislation for women in sport was passed. Title IX, the Educational Amendment Act, stated that "federal money could not be given to public school programs that discriminated against girls" (Steiner 9). Schools were forced to have equal men's and women's sports, equal scholarship funds, and equal equipment. This legislation marked the beginning of modern sport. The conflicts that followed and still resonate today are enormous, however; the law still stands. The reasons women participate in sport today have much to do with body image. Today women athletes are perceived as beautiful and their bodies are desired by women. Female

"athletes reposes their bodies". In fact, it has become some what of an obsession among pop culture in America to be fit and toned. In addition "to dietary aids and cosmetic surgery, physical exercise has also become a commodity in the highly commercialized be auty culture" . There are numerous sports and fitness magazines and publications distributed to women who can not wait to try the new featured butt workout or the new overnight diet. Thumbing through a popular magazine, I see strong, beautiful, model-like women who are showing the readers what they should look like and be like. According to Wiseman's survey of American magazines, "they found a significant increase in the number of diet, exercise articles in the last fifteen years". Sport today, is about beauty, image, and power.

The women athletes of today strive for bigger challenges than ever. In today's society, it is acceptable for women to participate in any sport she desires. Women are body builders, power lifters, football players, and ballerinas. Women athletes are now expected to lift weights and show their body definition. According to Muscle and Fitness Hers, "women should do medium to heavy weight training three times a week to see maximum results in their body". Women athletes play and challenge men athletes in almost any sport. The typical athlete is an empowered woman who is competitive, strong and enjoys taking risks. Today there are women's professional football and basketball leagues. From Muscle and Fitness Hers, a player on the women's pro football team, Quake, quotes: "tackle football is the last of sports that women don't play, the last of area that Title IX hasn't reached". She also says that "For me it's exciting because-not that I picture myself as major barrier-smashing feminist-it's something women haven't had a chance to do, and now we're doing it".

The future for women in sport seems very bright with all of the innovation and talent on the horizon. Women are ever more empowered by their sporting ability; in fact, women are a dominating force in some sports such as running and bodybuilding. While playing sports, "women use their bodies to do as they please. If in that process female bodies look unladylike-if they become bruised or bloody or simply unattractive-that seems irrelevant". Women today use their bodies for whatever purpose they want. They enjoy working out not with the fears of looking "manly" but with the desire for health and power.

"Lunging for a soccer ball, women do not worry if their hair looks attractive.

Leaping over a high bar, they do not wish they had bigger breasts.

Strapped snugly into a race car, roaring around a track at 220 miles per hour, they do not

smile and wave".

Women athletes are empowered by their ability to challenge their bodies with whatever activity they choose. Women athletes do not necessarily call themselves a feminist or a revolutionary, but without even realizing it, they are making a profound statement to the world: "we are redefining what it means to be an athlete and a woman."

Research shows that sportswomen significantly are underrepresented in the sports pages and on television. Moreover, when they are covered, their achievements are more likely to be trivialized

and devalued and their images portrayed as incompetent or uncoordinated. “Men's sports still receive more than 90% of all electronic and media coverage”. Not only is the reporting of women's sports achievements sub-par, advertising using female athlete images is worse. It is not atypical to see ads of women playing sports in which the focus is on scantily clad athletes and shots are more of buttocks and breasts than heads and skilled play.

Our culture has changed, but the media has lagged behind. Most people do not know that:

“Since 1991, women have outspent men in the purchase of athletic shoes and apparel (over 21,000,000,000 per year,) more women participate in sports and fitness than men do, in 1970, one in every 27 girls participated in high school varsity sports: today that figure is one of three”. Our culture has undergone dramatic changes in the past 25 years with regard to recognition of inappropriate gender stereotyping. Yet, the advertising industry in particular has been slow to reflect these changes. Images of women in general still are unrealistically thin and "twiggy" or reflective of sexual connotations. Female athletes most often are portrayed by models as women without muscles or sports skills. Athlete and non-athlete models are portrayed in sexually provocative or non-athletic poses instead of moving or posing as authentic athletically skilled performers. Despite the phenomenal growth of women's sports in the last 30 years, sports coverage in newspapers and on television and radio largely remains devoted to men's sports. Furthermore, when female athletes are the subject of reports and commentary, they sometimes are referred to in words that treat them differently than men, often in ways which downplay or trivialize their achievements.

Conclusion

Gender equity will not happen by itself we have to work for it and speak out against discrimination. The following are some strategies anyone can use to bring about gender equity in athletics. The strategies are organized in general from the least time and energy consuming to the most. Everything you can do will help.

STRATEGY 1: Support Women's and Girls Sports

You can support women's athletics at any age. Attend women's and girls' sporting events. Do not be taken in by stereotypes that negate women's athletic abilities and deride women who perform well in sports. Coach, athlete, fan and fundraiser are all roles that can build confidence and initiative, and promote women's leadership.

STRATEGY 2: Join a Women's Rights Organization

Title IX and other advances for women in athletics were won through feminist organizing. You can join (or organize) a feminist organization in your school, university, or town. Sponsor programs on Title IX and gender equity, and call attention to policies that unfairly disadvantage women and girls in the sports arena. National Girls and Women in Sports Day, the first Thursday in February, is a great day to plan activities.

STRATEGY 3: Challenge the Myths

Stereotypes unchallenged are stereotypes accepted. Familiarize yourself with the myths and point out the discrepancies between myth and reality about women and girls in sports.

STRATEGY 4: Speak Out Against Gender Inequity

Breaking the silence has a tremendous impact. It puts women's issues at the forefront of everyone's mind and identifies them as legitimate topics to be addressed. At every opportunity--in meetings, at conferences, and in the classroom -- point out inequalities in women's athletics. Don't hesitate: feminists are the majority. In a 1986 Newsweek/Gallup poll, “71% of the women surveyed believe the women's movement has improved their lives. Three years later, a Time magazine poll found that 81% think the movement is still improving their lives”

STRATEGY 5: Encourage Other Women and Girls

Your visibility to women just starting out in athletics can make a critical difference in their future. Invite women and girls to informational meetings about athletics and the wonderful things they have to offer. Encourage them to see themselves as players, coaches-whatever role they would like to play. Offer advice on how they can get their athletic careers started and where to go for more information.

STRATEGY 6: Push for Gender Equity Policies

Gender equity in athletics applies to three basic areas: participation opportunities, athletic financial aid, and all other athletic benefits and opportunities.

Encourage local, state, and national policy makers to take steps towards ending gender bias by promoting and reinforcing gender equity policies and practices in the Department of Education, federal education programs, and in educational funding and research. Write to the Office of Civil Rights, your members of Congress, your Governor, and members of your state legislature to let them know you want gender equity enforced.

STRATEGY 7: Develop a Media Strategy

The media is vital to creating change. Never hesitate to contact the media and make them aware of actions, workshops, or other activities. Encourage reporters to cover women's athletics in your area. Local radio and TV talk shows should also be encouraged to devote programs to women's athletics.

Support women sports reporters and media coverage of women's sports. Similarly, you can call the media to task when they do not cover women's sports or do not have female reporters.

STRATEGY 8: Consider Legal Alternatives

Sometimes, despite the best efforts to correct a problem, the only recourse is to take legal action. Thus far, legal action and the threat thereof have been largely responsible for advances toward ending discrimination against women and girls in sports.

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STANDARDISATION OF NORMS IN JUNIOR HANDBALL PLAYERS IN TELANGANA STATE – A STUDY

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INTRODUCTION

A sport is an integral part of the society that has an important and valuable effect on many spheres of social life. Similarly, the whole social pattern of a society may be reflected in its sports. Sports, unlike the other activities, are not an end product. It is undertaken essential for its own. If we want to know why, that the primarily play for fun, enjoyment or satisfaction. The sport is a carrier, which encourages coaching of various sports and games along with rules and regulations governed by them and also it prepares the trainees to take active part in competitive sports.

Objectives: Keeping in view of the need, background and purpose of the study, investigator has listed the following major objectives. (i) To identify the performance variables of 16 to 18 age group talented Handball players; (ii) To construct physical fitness norms of Handball players 16 to 18 age group from Telangana State.

Sampling: A sample survey involves the selection of a subject of the population, called a sample, to be measured. The researcher attempts to generalize from the sample observations to the population from which the sample was selected. For this study, purposive random sampling method was used. Therefore, 200 Handball players are the total sample of study. The players were selected by using purposive random sampling method. Their age groups are 16 to 18 years of Boys.

Tools Used for Data Collection: For this study JCR Physical Fitness Test (i) Vertical Jump Test; (ii) Chin-ups Test. (iii) Shuttle Run Test, (iv) Skill Test.

Procedure of the Study: The detailed procedure of above stages has been explicitly presented as follows:

Identification and Composition of dimension-wise Test Items: The investigator, on the basis of several research reports, has considered four major dimensions with a view to discriminate talented players for composing a standard State level Handball team.

The test-items were further confirmed to be included for the testing, after a deep study of various related literature and related study and after taking opinions of various experts in the area of Physical Education and Sports and considering the long-standing professional experience of the present investigator.

Of all the above mentioned various tests the Physical fitness tests, skill tests which were used for assessment and team selection as studies have proven their importance in prediction of handball playing ability, height and weight were recorded for information and further research purpose, it was not considered as a selection criterion as handball player. Psychological factor is also not included in the final test result as it has its own norms. Percentiles were tested on the sample so as to know the entire profile of handball players, for further researches and studies.

ANALYSIS AND INTERPRTATION OF THE DATA

Scoring of the Data: A total of 5 tests were conducted on 200 subjects. The scoring of the selected physical fitness tests and other tests is presented in the table.

1.	Vertical jump	dentimetres
2.	Shuttle run	seconds
3.	Chin-Ups	number
4.	Passing	points

Table 1: The Descriptive Statistics and of Vertical Jump

Sr. No	Statistics	Score
1	N Valid	200
2	Mean	42.7
3	Median	43
4	Mode	34
5	Std. Deviation	10.14

Table No 2: The Descriptive Statistics of Chin-Ups

Sr. No	Statistics	Score
1.	N Valid	200
2.	Mean	8.56
3.	Median	9
4.	Mode	8
5.	Std. Deviation	1.74

Table No.3: The Descriptive Statistics and Speed Shot Shooting

Sr. No	Statistics	Score
1.	N Valid	200
2.	Mean	20.62
3.	Median	21
4.	Mode	21
5.	Std. Deviation	4.04

Observation & Interpretation: Above table shows the statistical values and histogram of Speed Shot Shooting. The mean of Speed Shot Shooting was found to be 20.62, median was found to be 21 & Std. Deviation was found to be 4.04. This was found to be 0.02 & the value found to be 0.1. From the table 5 it is clear that the is 0.02 and 0.1. So from the above scores of and it is known that the scores are normal.

Table No.4: The Descriptive Statistics of Passing

Sr. No	Statistics	Score
1.	**N Valid**	20
2.	**Mean**	65.17
3.	**Median**	65
4.	**Mode**	63
5.	**Std. Deviation**	7.29

Observation & Interpretation

Above table shows the statistical values and histogram of Passing. The mean of Passing was found to be 65.17, median was found to be 65 & Std. Deviation was found to be 7.29. The was found to be 0.15 & the value found to be 0.7. From the table 9 it is clear that The is 0.15 and is 0.07. So from the above scores of and it is known that the scores are normal.

RESULTS OF THE STUDY

- When the score for Vertical Jump of the Handball players is 27 then the player gets 5 points, where as when the score for Vertical Jump is 43 then the player gets 50 points and when the player record a score of 65 points he gets 99 points.
- When the score for Chin-Ups of the Handball players is 5 then the player gets 5 points, where as when the score for Chin-Ups is 9 then the player gets 50 points and when the player record a score of 12 points he gets 99 points.

CONCLUSION

Within limitation, the results of the present study helped to warrant the following conclusion.

- The Performance variable for a Handball player are Muscular Endurance, Speed, Agility, Explosive Power, Passing & recovering the ball while moving, Performance skill of basic defensive movement of the Handball players, Ball handling & controlled dribbling while the body is in motion, The skill of rapid shooting from specified positions & to some extent, the agility & ball handling potentials of the player.

- The present Scenario of Handball in India despite it being India’s National Game is very disappointing. Handball lags far behind cricket and other games in the popularity stakes. When Indian sportspersons are rapidly proving themselves at the world stage, India's Handball fortune is plummeting to an abyss in the international arena. With success being far and few between, Handball is losing out to other popular sports that have brought India international success.

The effects of weight Training on Body Mass index (BMI) and muscular strength On Osmania University Kabaddi players

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Introduction:

Weight training will play a vital role in performance of sports men and women. It is become essential in their fitness schedule. The impact of weight training exercises is enormous on performance of the athletes. Weight training exercises are a type of strength training exercises in which you use the force of gravity to build muscle strength, often through the use of fitness equipment such as dumbbells, barbell bars or gym equipment. You can see significant improvement in your strength with just two or three 20- or 30-minute weight training sessions a week. That frequency also meets activity recommendations for healthy adults, which call for strength training at least twice a week — in addition to at least 150 minutes a week of moderate aerobic activity.

Weight training is a secure form of exercise when the movements are controlled, and carefully performed under the guidance of a coach. Weight training is a type of strength training that uses weights for resistance. Weight training provides a stress to the muscles that causes them to adapt and get stronger, similar to the way aerobic conditioning strengthens heart.

A person's total body weight may not change over time. But the weighting machine does not assess how much of that body weight is fat and much is lean mass, body composition is important to consider for health and managing.

Benefits of weight training exercises:

There are several key benefits inherent to integrating weight training exercises into your weekly schedule.

Increase in muscle strength:

The consequence to using weight training exercises is the increase in muscle strength that you'll develop over time. You'll also develop stronger bones as well as gain a better general posture. In short, maintaining good muscle strength will allow your body to move more freely from the moment you wake up in the morning to the moment you fall asleep at night.

Effective weight management

Doctors have been saying it for years, daily exercise combined with a healthy diet will allow you to feel better in your skin and maintain a healthy weight. As little as 20 minutes per day of exercise often is enough to achieve notable results.

Fends off depression and promotes sound sleep

By raising your metabolism, weight training exercises will allow you to fend off depression and will allow you to sleep better at night.

The body composition: The body is composed of water, protein, minerals, and fat. A two-component model of body composition divides the body into a fat component and fat-free component. Body fat is the most variable constituent of the body. The total amount of body fat consists of essential fat and storage fat. Fat in the marrow of bones, in the heart, lungs, liver, spleen, kidneys, intestines, muscles, and lipid-rich tissues throughout the central nervous system is called essential fat, whereas fat that accumulates in adipose tissue is called storage fat. Essential fat is necessary for normal bodily functioning.

Muscular Strength: This is the ability of a muscle to exert a maximal or near maximal force against an object. In the sports, muscular strength is an important component of optimal performance, Increasing muscle strength also can help in reducing injuries. Muscular endurance is the ability to muscle to apply force repeatedly into sustains a contraction for a period of time. The ability to withstand hardship or adversity; *especially* **:** the ability to sustain a prolonged stressful sports activity. Muscular endurance is the ability to repeat a series of muscular contractions without fatigue. The muscle strength objective is pursued when you want your muscles to be effective when a high number of repetitions will be involved, or in other words when you want your muscles to be strong for a continued period of time. You'll want to use approximately 4 sets from which 10-12 reps are performed. The muscle strength objective is often used for muscles located in your back and your abdominals.

Body Mass Index: BMI stands for Body Mass Index. It is a measure of body composition. BMI is calculated by taking a person's weight and dividing by their height squared. For instance, if your height is 1.82 meters, the divisor of the calculation will be (1.82 * 1.82) = 3.3124. If your weight is 70.5 kilograms, then your BMI is 21.3 (70.5 / 3.3124).

The purpose of this investigation was to find out the effects of weight training among the Kabaddi players of osmania university

Method: A group of (N=30) subjects were selected for this study are kabaddi players from the Bhavans New science college and V.V.College of Osmania University. The age of the participants was between 19-22 years. The selected physical fitness test considered for this study was body composition (body mass index, BMI), muscular strength and endurance (sit-ups test for 30 sec). The Weight training program was

employed for nine weeks, 45 minutes of training per session, six days in a week. A pre and post selected fitness test were conducted before and after the training regime. For analyzing the data, mean, Standard deviation, and t-tests were computed by means of Statistical Software.

Results and Discussion: The analysis of data shows that the body mass index of the participants from pre to post test shows significant difference in performance of kabaddi players. If we computed the results after weight training there is a significant difference in reducing a body weight and it is noticed that there was a better muscular strength and endurance. With regard to other selected variables i.e., sit-ups, shows encouraging and significant results from pre to post test.

Conclusion: It is concluded that the impact of nine weeks weight training regime was tremendous on kabaddi players. It shows an effective means in reduction of the body weight of the participants from pre to post test. An overall body composition which denotes as BMI, become better and muscular endurance improved which is helpful for better performance of the kabaddi players. Further effect of nine weeks weight training program had shows improved performance with regard to sit-ups performance, which was significant.

Keywords: weight training, muscular strength, endurance, body composition (BMI)

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PREBIOTICS INFLUENCE ON HUMAN HEALTH

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INTRODUCTION

The influence of nutrition on human health is well documented. In spite of availability of plenty of literature, there is still ignorance among the elite, as well as the illiterate, about some of the important requirements in diet, which help human health in many ways. This article aims to enlighten about one of the necessary additives to diet, namely prebiotics.

DEFINATION:

The classical definition of prebiotics was given by Gibson and Roberfroid who, in the year 1995, defined them as nondigestible food components, usually oligosaccharides, which evade digestion by human enzymes, reach the colon in an intact state, and are fermented by beneficial indigenous microflora of the intestine. The selective fermentation of prebiotics by the gut microflora results in a healthier composition of gut microflora and significant luminal and systemic effects, which are beneficial to the host's well-being and health. Prebiotics, Dietary Fiber, and Colonic Foods

Prebiotics are nondigestible dietary fiber. The most prevalent forms of prebiotics are nutritionally classed as soluble fiber. Colonic foods are those, which pass undigested into the colon to serve as substrates for the endogenous colonizing colon bacteria. Generally resistant starch and non-starch polysaccharides are classified as "colonic foods" but not as prebiotics, as they are not metabolized by the gut microflora.

A prebiotic can be a fiber but a fiber need not be a prebiotic.

Properties and Function

Typically, prebiotics are carbohydrates. Short-chain saccharides ferment more quickly and long-chain saccharides ferment slowly. Prebiotics get fermented in the colon and in the acid pH so produced, increase the number and/or activity of bifidobacteria and lactobacilli. The importance of the bifidobacteria and the lactic acid bacteria is that these groups of bacteria have several beneficial effects on the host, especially in terms of improving digestion (including enhancing mineral absorption) and the effectiveness and intrinsic strength of the immune system.

Prebiotics are heat resistant, which keep them intact during the baking process and allow them to be incorporated into every day food choices.

Sources
Traditional dietary sources of prebiotics include soybeans and insulin sources like onion,

garlic, chicory root, raw oats, unrefined wheat, unrefined barley, etc. Some of the prebiotics that naturally occur in breast milk are believed to play an important role in the development of a healthy immune system in infants.

Effects of prebiotics on public healtlh

It has been argued that many of the positive health effects of prebiotics emanate from increased production of short-chain fatty acids (SCFA) by the stimulated beneficial bacteria. The following are some of them.

1. **Increase of useful gut flora, which synthesize B complex vitamins:** Prebiotics serve as food for the colonic microflora, which proliferate and synthesize the useful B complex vitamins.
2. **Positive effects on calcium and other mineral absorption:** Prebiotics help in acidification of the gut lumen by the SCFA, thereby increasing solubility of the minerals in the gut, increased expression of calcium binding proteins mainly in the large intestine, modulated expression of bone-related cytokines, increased bioavailability of phyto-estrogens, and increased calcium uptake by enterocytes.
3. **Increase in the effectiveness of the immune system:** The knowledge about the influence of prebiotics on the gut-associated lymphoid tissues (GALT) for the improvement of human health is still growing. There is convincing preliminary data to suggest that the consumption of prebiotics can modulate immune parameters in GALT, secondary lymphoid tissues, and peripheral circulation.
4. **Reduction of risk of colorectal cancer:** The ingestion of probiotics, prebiotics, or combination of both (synbiotics), alter the intestinal microflora by increasing concentrations of beneficial bacteria such as lactobacillus and bifidobacteria, and reducing the levels of pathogenic micro-organisms. This strategy has the potential to inhibit the development and progression of neoplasia via mechanisms including decreased intestinal inflammation, enhanced immune function and anti-tumorigenic activity, binding to potential food carcinogens including toxins found in meat products, and a reduction in bacterial enzymes which hydrolyze pre-carcinogenic compounds, such as beta-glucuronidase.
5. There is substantial experimental evidence to suggest that prebiotics can influence the development and progression of colorectal cancer and may be beneficial in the prevention and treatment, However, to date there have been few conclusive human trials.
6. **Reduction of risk of inflammatory bowel disorders (Crohn ' s Disease and ulcerative colitis):** It has been argued that prebiotics are beneficial to Crohn's disease through production of SCFAs to nourish the colon walls, and beneficial to ulcerative colitis through reduction of hydrogen sulfide gas due to reduction of sulfate-producing bacteria, which do not thrive in the slightly acidic environment created by SCFAs.
7. **Antihypertensive effect and regulation of blood cholesterol:** One of the possible mechanisms is via the lowering of blood lipid and cholesterol. The lipid and cholesterol-lowering effects of prebiotics could be attributed to the production of SCFAs. The SCFA produced by prebiotics in the large bowel are absorbed in the portal vein, and a major part is metabolized by the liver and subsequently affects

various metabolic processes, resulting in lowering of blood pressure. Indigenous lactic acid bacteria and bifidobacteria often have the ability to ferment prebiotics and produce lactates and acetates as the main metabolites, with smaller amounts of propionate and butyrate. It has been reported that propionate could hinder fatty acid and cholesterol synthesis, while lactate produced in the colon plays a significant role in lowering the synthesis of triacylglycerol fatty acids. Prebiotics absorb fat and phospholipids in the lower intestines, leading to increased excretion in feces. Cholesterol levels have been reported to be reduced via the binding effect of prebiotics. The reduction of total cholesterol regulates the receptors of low-density lipoprotein (LDL) and thus increases the clearance of LDL cholesterol. This overall cholesterol-lowering effect could reduce the stiffness of large arteries and thus could potentially reduce blood pressure.

8. **Maintenance of regularity of bowel:** Prebiotics reduce constipation. The laxative effects of prebiotics are attributed to their action as soluble nondigestible fibers. Some researchers have suggested that a reduction in the number of bifidobacteria has been related to constipation, and treatment to correct this with prebiotics could therefore benefit bowel function.
9. **Enhancement of bacteriocin synthesis by lactobacilli** , resulting in a lower incidence of enteral infections by pathogenic bacteria.
10. **Reduction of obesity:** Past studies involving animals models (mainly rats) have shown promising evidence that ingestion of inulin-type fructans could regulate body weight via the promotion of endogenous glucagon-like peptide-1 (GLP-1) in the gut. GLP-1 is a key hormone released from enteroendocrine-L cells in response to nutrient ingestion and is the key modulator of food intake by promoting satiety. This consequently reduces the intake of food, which leads to a decreased in body weight and BMI.
11. **Antidiabetic effect:** Giaccoa *et al*., evaluated the effect of short-chain fructo-oligosaccharides (prebiotics) on glucose tolerance in 30 volunteers. The randomized, double-blind, placebo-controlled, and crossover trial for two months showed that daily consumption of 10 g/day of short-chain-fructo-oligosaccharides contributed to a significant (P<0.02) reduction of postprandial insulin response as compared to those in the placebo group, which did not show any significant differences.

In fact, the benefits of consuming both prebiotics and probiotics are so strong that synbiotic products (products in which both a probiotic and a prebiotic are combined) are being developed as functional foods. If all consumers met their dietary requirements, and ate 5-8 servings of fruits and vegetables per day, then their dietary fibre needs would be met. However, the vast majority of the population does not meet these requirements by consuming fruits and vegetables alone. Functional foods increase consumer choice by adding prebiotics to everyday food items. By continuing to eat and drink common foods, but choosing functional alternatives (eg, bread containing prebiotics), dietary requirements can be met without significant changes to food preferences. As the need for functional foods rises, prebiotics are being added to many everyday food choices such as cereals, biscuits, breads, table spreads, drinks, and yoghurts.

Side effects

The addition of prebiotics to diet should be gradually increased. Immediate addition of substantial quantities of prebiotics to the diet may result in a temporary increase in gas, bloating, or bowel movement. It may also impair nutrient absorption and temporarily increase colonic transit time.

Future research areas

It is recognized that numerous potential new applications are being considered for prebiotic use, as mentioned below.
Prevention and or management of type 2 diabetes mellitus; drug bioavailability; effects on autoimmune diseases and allergy, modulation of pathogenic biofilms, and alleviation of physiological and psychological symptoms of stress and anxiety.

Biomechanics – Sporting performance

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The most common method for improving performance in many sports is to improve an athlete's technique. This is highlighted here as one motivation for studying biomechanics and it is probably what you thought of when asked how a biomechanist goes about trying to improve an athlete's performance.Performance of a skill can be broken down into multiple layers of components, ranging from muscle strength to joint trajectories. Tools to measure human movement include video, accelerometry, medical imaging, and 3-D motion capture. Optimal movement is affected by body size and shape. Elite athletes move optimally and this knowledge can be used to coach and train others.

Let's look at a simple example of the first case. As a coach, suppose you observe that your gymnast is having difficulty completing a double somersault in the floor exercise. You might suggest three things to the gymnast to help her successfully complete the stunt: (1) jump higher, (2) tuck tighter, and (3) swing her arms more vigorously before takeoff. These suggestions may all result in improved performance and are based on biomechanical principles. Jumping higher will give the gymnast more time in the air to complete the somersault. Tucking tighter will cause the gymnast to rotate faster due to conservation of angular momentum. Swinging the arms more vigorously before takeoff will generate more angular momentum, thus also causing the gymnast to rotate faster. In general, this is the most common type of situation in which biomechanics has an effect on the outcome of a skill. Coaches and teachers use biomechanics to determine what actions may improve performance.

The second general situation in which biomechanics contributes to improved performance through improved technique occurs when biomechanics researchers develop new and more effective techniques. Despite the common belief that new and revolutionary techniques are regularly developed by biomechanists, such developments are rare. Perhaps the reason is that biomechanics as a discipline is a relatively new science. The much more common outcome of biomechanics research is the discovery of small refinements in technique. One example of biomechanics research that did greatly affect the technique and performances in a sport occurred in swimming in the late '60s and early '70s. Research done by Ronald Brown and James "Doc" Counsilman (1971) indicated that the lift forces acting on the hand as it moved through the water were much more important in propelling a swimmer through the water than previously thought. This research indicated that rather than pulling the hand in a straight line backward through the water to produce a propulsive drag force, the swimmer should move the hand back and forth in a sweeping action as it is pulled backward to produce propulsive lift forces as well as propulsive drag forces. This technique is now taught by swimming teachers and coaches throughout the world.

Other examples of sports in which dramatic changes in technique produced dramatic improvement in performance include javelin throwing, high jumping, and cross-country skiing. In 1956, before the Summer Olympic Games in Melbourne, Felix Erasquin, a 48-year-old retired discus thrower from the Basque region of Spain, experimented with an unconventional way of throwing the javelin. Erasquin had experience in barra vasca, a traditional Basque sport that involved throwing an iron bar called a palanka. A turn was used

to throw the palanka, and Erasquin incorporated this turn in his innovative javelin throwing technique. Rather than throwing using the conventional technique—over the shoulder with one hand from a run—Erasquin held the javelin with his right hand just behind the grip. The tip of the javelin pointed down to his right, and the tail was behind his back and pointed upward. During the run-up, Erasquin spun around like a discus thrower and slung the javelin from his right hand, which guided the implement. To reduce the frictional forces acting on the javelin as it slid through his hand, it had been dunked in soapy water to make it slippery. The outstanding results achieved by Erasquin and others with this technique attracted international attention. Several throwers using this "revolutionary" technique recorded throws that were more than 10 m beyond the existing javelin world record. Officials at the International Amateur Athletic Federation (IAAF), the governing body for track and field, became so alarmed that they altered the rules for the event, and this unconventional technique became illegal. (None of the records set with the Spanish technique were recognized as official world records.

What is Biomechanics?

Study of **forces** and their **effects** on living bodies-

Types of forces

External forces: ground reaction forces, forces applied to other objects or persons, fluid forces (swimming, air resistance), impact forces

Internal forces: muscle forces (strength and power), forces in bones, ligaments, cartilage

Types of analyses

Temporal (times, timing), Kinematic (positions, motion), Kinetic (forces, moments of force) Direct, Indirect, Electromyographic (muscle activation)

Temporal Analyses

Quantifies durations of performances in whole (race times) or in part (split times, stride times, stroke rates, etc.)

Instruments include: stop watches, electronic timers, timing gates, frame-by-frame video analysis. Easy to do but not very illuminating. Necessary to enable kinematic studies

Kinematics: Position, velocity (speed) & acceleration**.** Angular position, velocity & acceleration**,** Distance travelled**,** tape measures, electronic sensors, trundle wheel

Linear displacement: point-to-point linear distance and direction, Angular displacement, changes in joint angular orientations from point-to-point, 3D angles are order specific

Kinetics: Forces or moments of force (torques)-Impulse and momentum (linear and angular)-Mechanical energy (potential and kinetic)-Work (of forces and moments)-Power (of forces and moments)

Example: rowing ergometry: Subject used a Gjessing rowing ergometer with a strain gauge force transducer on cable that rotates a flywheel having a 3 kilopond resistance

Force tracing visible: In real-time to coach and athlete

Increased impulse: Means better performance

Applies to cycling, canoeing, swim or track starts

Force platforms

Typically measure three components of the ground reaction force, location of the force application (called centre of pressure), and the free (vertical) moment of force

Example: fencing (fleche)

Instantaneous ground reaction force vectors are located at the centres of pressure

Force signatures show pattern of ground reaction forces on each force platform

Sprinting:

knee flexors (hamstrings, gastrocnemius) are NOT responsible for knee flexion during mid-swing of sprinting, hip flexors (rectus femoris, iliopsoas) are responsible for both hip flexion AND knee flexion during swing, hip flexors are most important for improving stride length, hip extensors (gluteus) are necessary for leg extension while knee flexors (hamstrings) prevent knee locking before landing

Conclusions

The application of biomechanics to improve technique may occur in two ways: Teachers and coaches may use their knowledge of mechanics to correct actions of a student or athlete in order to improve the execution of a skill, or a biomechanics researcher may discover a new and more effective technique for performing a sport skill. Teachers and coaches use qualitative biomechanical analysis methods in their everyday teaching and coaching to effect changes in technique. A biomechanics researcher uses quantitative biomechanical analysis methods to discover new techniques, which then must be communicated to the teachers and coaches who will implement them. Biomechanics is a tool to understand human movement that can be applied to enhance athletic performance and prevent injury. Performance of a skill can be broken down into multiple layers of components, ranging from muscle strength to joint trajectories.

EFFECT OF CONTINUOUS RUNNING FARTLEK TRAINING AND INTERVAL TRAINING ON SELECTED MOTOR ABILITY AND PHYSIOLOGICAL VARIABLES AMONG MALE FOOTBALL PLAYERS

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INTRODUCTION

Continuous training as the name implies, involves continuous activity, without rest intervals. This has varied from high intensity, Continuous activity of moderate duration to low-intensity activity of an extended duration, i.e. long, slow distance, or 'LSD" training. LSD training is probably the most widely used from of endurance conditioning for jogger who want to stay in condition for health-related purpose, the athlete who participate in team sports and endurance-trains for general condition, and the athlete who wants to maintain his endurance condition during the off-season. *Ajmer Singh et al., (2003)*

Fartlek training is running with carious intensity according to requirement of the athlete and dictates of the terrain. The athlete will use a terrain which undulates and makes varying demands upon him. (Ex. Hills, Woodland, Ploughed land, sand) like the alternating pace method, anaerobic period provides a sting stimulus for the improvement of VO_2 maximum. In addition, the demands of terrain stimulate strength endurance development and proprioceptive balance adjustment of ankle, knee and hip. *(Dick 1980)*

Interval training is a form of progressive conditioning in which the intensity of the activity, the duration of each bout. The Number of bouts, the time or kind of resting period between bouts, on the order of the bouts is varied **Baby (1927).** According to **Mathews and Fox (1974),** Interval training as work or exercise followed by the property of prescribed relief interval.

Statement of the problem

The purpose of the study was to find out the effect of Continuous running, Fartlek and Interval training on selected motor abilities, Physiological and skill related performance variables of male football players.

METHODOLOGY

The purpose of this study was to find out the influence of effect of continuous running fartlek training and interval training on selected motor ability and physiological variables namely **Coordination.** To achieve the purpose of this study sixty inter collegiate football men players were selected at random from in and around the Guntur district Andhra Pradesh. Their age ranged from 18 to 25 years. The subjects chosen for study was divided into four groups and designated as experimental group A, experimental group B, experimental group C and control group D. Each groups consisted of fifteen players. Continuous running was given to group A, Fartlek training given to group B, Interval training given to group C and control group C was restricted to participate in any of the training programme other than their regular activities. Training was given three days in a week for twelve weeks. The subject were tested on at the **Coordination** beginning (Pre-test) and at the end of the experimental period (Post-test). To measure the **Coordination ,Scott Obstacle Race Test** respectively because of their simplicity and availability of necessary facilities, instrument and equipment's.

RESULT AND DISCUSSION

The analysis of data on **Coordination** has been examine by ANCOVA for variables separately in order to determine the differences if any among the group at pre and post test when the differences was found to be significant by ANCOVA, the Scheffe's post hoc test was applied to assess the significant differences between the adjusted mean

Table - XV

Analysis of Covariance of data on Coordination between pre and post test of Continuous running group, Fartlek training group, Interval training group and control group

	CRG	FTG	ITG	CG	Sources of variance	Sum of square	df	Mean Square	'F' ratio
Pre -test Mean	15.62	15.60	15.66	15.46	B	0.330	3	0.110	0.398
SD	0.38	0.60	0.65	0.424	W	15.70	56	0.280	
Post- test Mean	14.79	14.59	14.54	15.63	B	11.65	3	3.88	19.73*
SD	0.38	0.45	0.51	0.41	W	11.01	56	0.197	
Adjusted post-test Mean	14.77	14.58	14.48	15.73	B	14.40	3	4.80	138.50*
					W	1.90	55	0.035	

Significant at 0.05 level of confidence
(***The table value required for significant at 0.05 level with df 3 and 56 & 3 and 55 are 2.77 and 2.77 respectively***)

The table XV Shows that the pre test mean values on coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control groups (CG) were 15.62, 15.60, 15.66 and 15.46 respectively. The obtained 'F' value of 0.398 for pre test scores on coordination, which was lesser than the table value of 2.77 for significance with df 3 and 56 at 0.05 level of confidence.

The post test mean values on coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control groups were 14.79, 14.59, 14.54 and 15.63 respectively. The obtained 'F' value of 19.73 for post test scores on coordination, which was greater than the table value of 2.77 for significance with df 3 and 56 at 0.05 level of confidence.

The adjusted post test mean values on coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control groups (CG) were 14.77, 14.58, 14.48 and 15.73 respectively. The obtained 'F' value of 138.50 for adjusted post test scores on coordination, which was higher than the table value of 2.77 for significance with df 3 and 55 at 0.05 level of confidence.

The result of the study showed that there was significant difference among Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on coordination.

Since four groups were involved the Scheffe's post hoc test was applied to find out the paired mean differences if any, and it is presented in table XVI

Table-XVI

Scheffe's post hoc test for the differences between paired adjusted post test means of coordination

CRG	FTG	ITG	CG	MD	CI
14.77	14.58	-	-	0.19*	0.19
14.77	-	14.48	-	0.29*	
14.77	-	-	15.73	0.96*	
-	14.58	14.48	-	0.10	
-	14.58	-	15.73	1.15*	
-	-	14.48	15.73	1.25*	

***Significant at 0.05 level of confidence**

The table XVI Shows that the adjusted post test mean differences of Continuous training group (CRG) and Fartlek training group (FTG), Continuous running group (CRG) and Interval training group (ITG), Continuous running group (CRG) and Control group(CG), Fartlek training group (FTG) and Control group (CG) and Interval training group (ITG) and Control group (CG) were 0.19, 0.29, 0.96, 1.15 and 1.25 respectively. They were greater than the confidence interval value 0.19 at 0.05 level, which indicate that there is a significant differences among the group of Continuousrunning group (CRG) and Fartlek training group (FTG), Continuousrunning group (CRG) and Interval training group (ITG), Continuous running group (CRG) and Control group (CG), fartlek training group (FTG) and Control group (CG) and Interval traininggroup (ITG) and control group (CG).

The adjusted mean difference of Fartlek training group (FTG) and Interval training group (ITG)was 0.10 respectively. Hence it shows that it was lesser than the confidence

interval value 0.19 at 0.05 levels, which indicate that there is no significant differences exist among the group.

The Comparison of pre, post and adjusted post mean values of Coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on Coordination are graphically presented in figure 5.

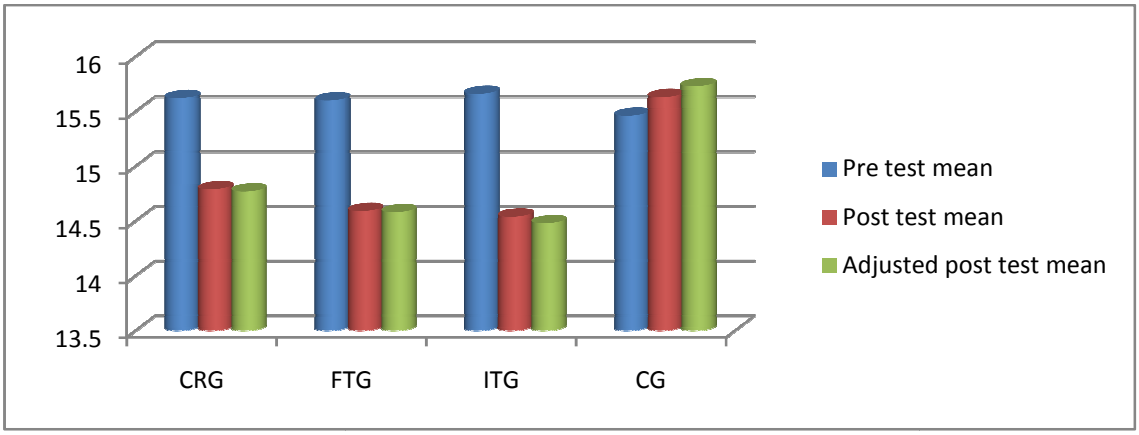

Figure 5: Bar diagram showing the pre, post and adjusted post test mean values of Continuous running group (CRG), Fartlek training group (FRG), Interval training group (IRG) and control group (CG) on Coordination.

DISCUSSION ON HYPOTHESIS

The first hypothesis says that there will be a significant improved in coordination after the twelve weeks of Continuous running, Fartlek training and Interval training as compared with the control group. T he result of the study shows that there was significant improvement in coordination after twelve weeks of Continuous running, Fartlek training and Interval training when compared with control group. Hence research hypothesis has been accepted.

.

DISCUSSION AND FINDINGS

The result of the study reveals that there are no significant differences between pretest experimental group and control group. But twelve weeks of Continuous running, Fartlek training and Interval training result in signi ficant changes in the coordination for post test experimental group than control group.

"Coordination is the ability of the performer to integrate types of body movement into specific patterns" **(Kansal 1996).**

It's performed pre-requisite and is primarily determined by mechanism involved in control and regulation of movement. It is dependent on the coordinative process of nervous system and functional capacity of sense organs **(Uppal 2004).**

CONCLUSIONS

1 .Coordination was significantly improved by the Continuous running group, Fartlek running group and Interval training group when compared with control group.

2 .Coordination was significantly improved by Interval running group when compared the Continuous running group and fartlek training group.

3 .Coordination was significantly improved by fartlek training group when compared with continuous running group.

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APPRAISE OF GOAL LINE TECHNOLOGY & DUAL REFEREE SYSTEM IN FOOTBALL

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Football is the most popular game in the world. Almost all the progressive countries are fond of playing football. The games make the players healthy and disciplined and develop in their mind a team spirit and sense of tolerance. Football game is played for ninety minutes with a break of fifteen minutes in the middle of the game. It is played between two teams each having eleven players. The games played by kicking the ball, and trying to send it between the two goalposts of the opponent team. There is a goalkeeper on each side to resist the scores of goals shot from the rival team. The goal-keeper is allowed to touch the ball by hand, while others are not. The team, which scores more goals, is declared the winner. The referee conducts the game with the help of two assistant referees, one on each side of the field. A player is warned for committing fouls or hand-balls, and as a measure, a free kick of the ball is awarded to the suffered team.

GOAL LINE TECHNOLOGY is a method used when the ball has completely crossed the goal line with the assistance of electronic devices and at the same time assisting the referee in calling a **'Goal or not'**. The GLT must provide a clear indication as to whether the ball has fully crossed the line, and this information will serve to assist the referee in taking his final decision.

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The objective of goal-line technology (GLT) is not to replace the role of the officials, but rather to support them in their decision-making.

Default Goals / NEED FOR GLT:

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- Both of these incidents undoubtedly prove that there is a gap that needs to be filled in order to ensure that football is played evenly and fairly, especially now that there is so much money involved in the sport.
- The fact that GLT could remove any doubt that a goal was or wasn't a goal, coupled with many other factors makes a strong case for the introduction of GLT into Football and minimizes the case against the introduction of GLT.

Goal line technology: (Hawk-Eye TECHNOLOGY)

- Hawk-Eye is an existing technology currently used in cricket and tennis.
- It is '**based on the principle of triangulation using the visual images and timing data'** provided by high-speed video cameras at different locations around the area of play. The system uses high frame rate cameras to track the ball in flight. The software calculates the ball's location in each frame by identifying the pixels that correspond to the ball and can also track the ball and predict the flight path, even if several cameras are being blocked.
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- The system sends the message to Referee.

Application: GOAL LINE TECHNOLOGY AND FUTURE

The technology in football debate has been raging for quite some time now. Disallowed goals and allowed non-goals are the key factor in the debate for the introduction of goal-line technology into football. The fact that FIFA are testing nine different goal-line technologies and have discussed its possible inclusion in the 2012-13 English Premier League proves to be positive. However, there is also concern for other factors such as unseen handballs and offside players. The have been recent cases of both such issues which have both resulted in goals. Although it may take a significant amount of time, eventually football will have technology the can determine if a goal was really a goal or if it wasn't and if players are offside. Both technologies able to determine the afore mentioned are able to do so instantaneously. However, technology used to establish if a player handballed is not instant. Due to the fact the technology is not instant; the technology is not likely to be implemented, as it does not meet the strict testing criteria developed by FIFA.

Ultimately, the decision is up to the International Football Association Board (IFAB), who establishes the football rules and is the only one that can change them. However, it is clear that the introduction of technology in football has the potential to reduce human error and to make goal-line controversies, such as Frank Lampard's disallowed goal at the 2010 FIFA World Cup in South Africa, a thing of the past.

Referees spraying foam on the pitch

Goal line technology and referees spraying the pitch to mark a line where defensive walls must stand are among the innovations at the World Cup in Brazil 2014, illustrating how the game is subtly evolving. Referees have been whipping out a canister of vanishing spray when free kicks are awarded to mark the exact spot where defenders have to stand, 10 yards or 9.15 metres away. The foam spray, which disappears within a minute, was already a feature in Major League Soccer and will be introduced in the European Champions League next season. Its popularity has been a boon for supplier, Argentine company 9.15 Fair Play. TV images of the line where players stand have also given the boot manufactures a nice dose of free publicity.

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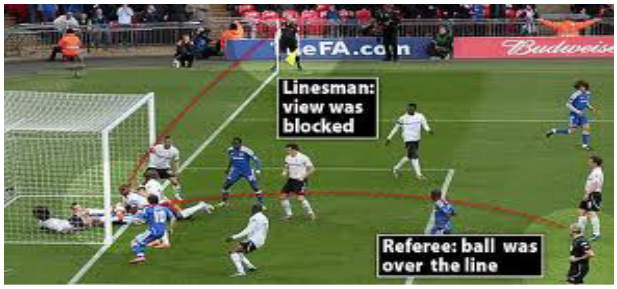

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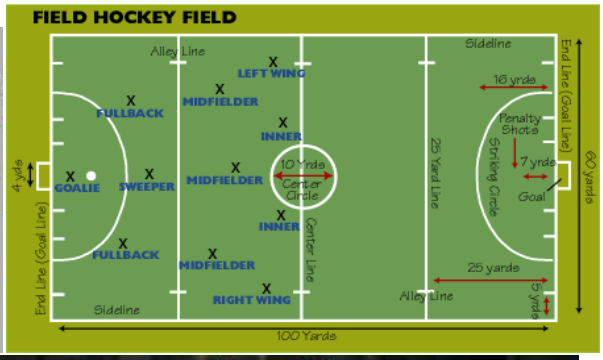

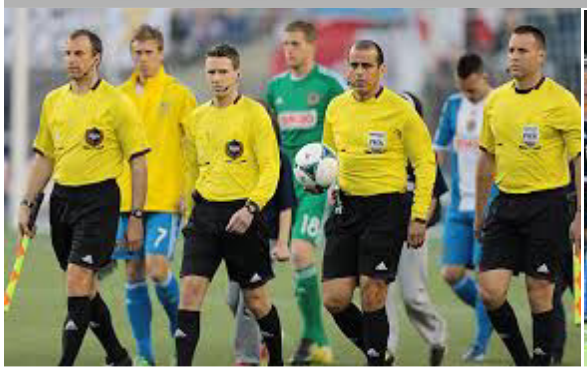

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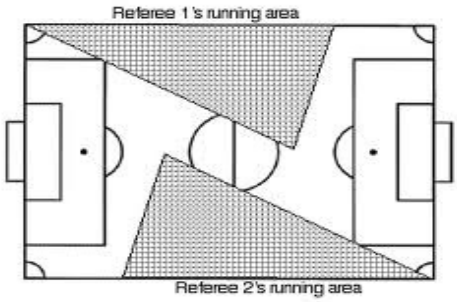

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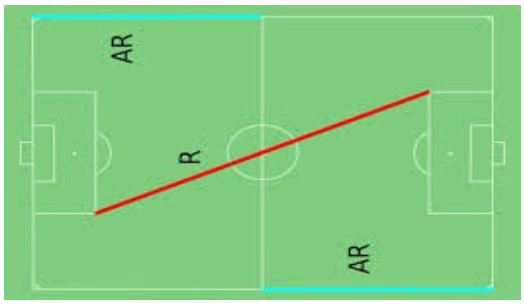

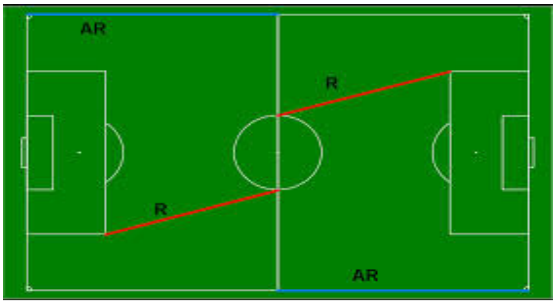

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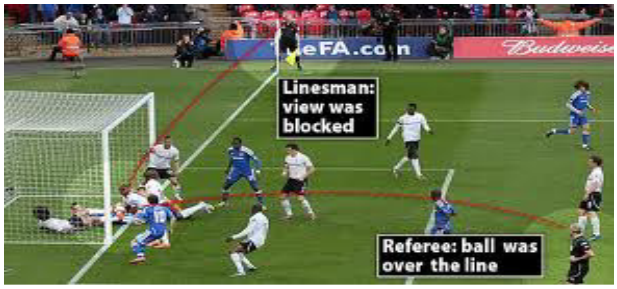

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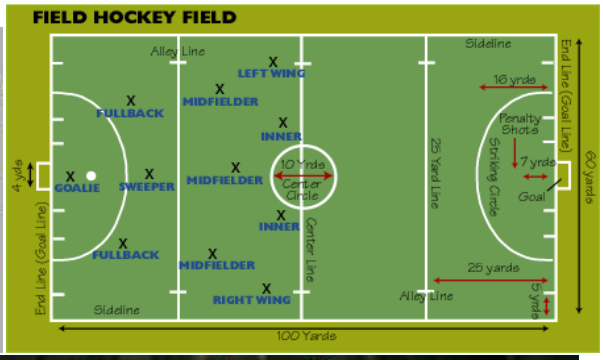

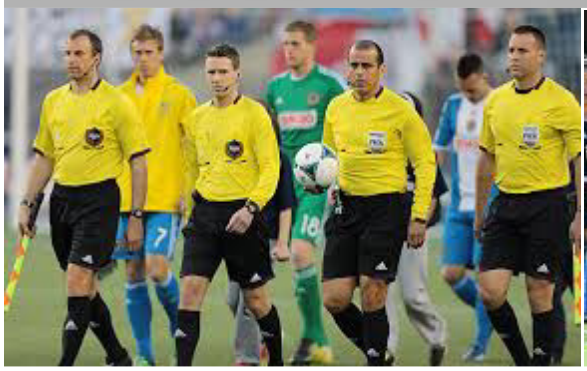

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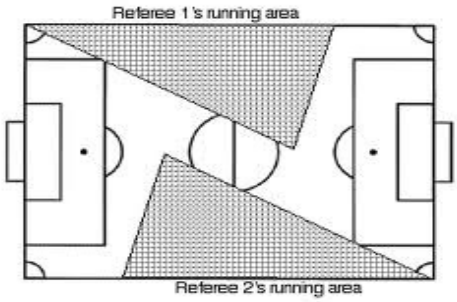

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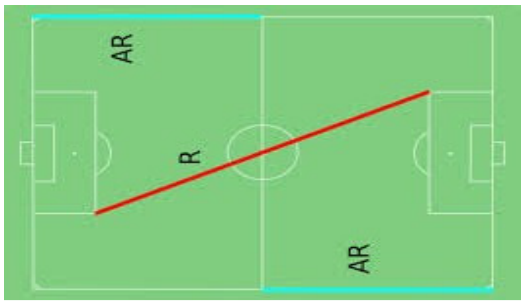

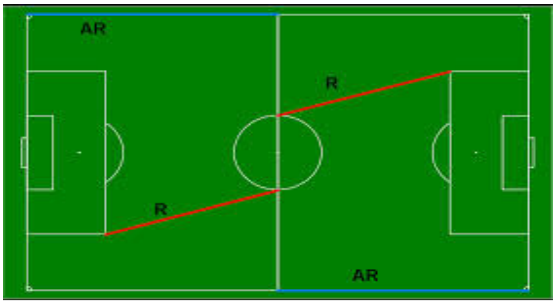

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VARIATION IN THE LEUKOCYTE COUNTS DURING AND AFTER EXERCISE AMONG ATHLETES AND NON ATHELETS

***Kota Sridhar Kumar** Abdul Khadeer**
*Faculty, University College of Physical Education, Kakatiya University, Warangal
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INTRODUCTION

In humans and other vertebrate animals the specialized cel groups include a gastrointestinal system to digest and absorb food, cardiovascular system to distribute food and oxygen and the products of metabolism, respiratory system to take up oxygen and eliminate carbondioxide, an excretory system to remove wastes, a nervous and endocrine system to co-ordinate and integrate the functions of the other system. In multi-cellular organisms each individual cell functions for the well being of the entire organism and the whole body functions for the benefit of each individual cell which is known as the homeostasis, a term coined by W.B.CANNON.

The stressful condition of the human body as in dynamic exercise increases the leukocytes, the mobile units of the body's defense system. As such there is an increase in neutrophils, lymphocytes and monocytes with a decrease in eosinophils and basophils. During brief exercise the leukocyte count rises rapidly mostly due to the mobilization of neutrophils and lymphocytes.

Regular exercise increases resistance to infections such as the common cold. There is accumulating evidence that exercise is a life style that offers some protection against malignancy. It has become clear that moderate exercise stimulates the immune system and may be some what responsible for exercise related reduction in illness.

Moderate exercise induces a release of many hormones including those involved in a stress response, those concerned with central neural transmission and those involved primarily in metabolic regulation. Anatomic connections between autonomic nerves and lymph glands and receptors for various hormones on lymphocytes, suggest that hormones may mediate exercise induced changes in immune function.

MATERIAL AND METHODS.

The study was conducted on male subjects, with age ranging from 18 -24 years, who are non-smoking and anon-alcoholic, not suffering with any ailment, disease or infection for the last one month till the completion of study. Each of the individual from both the sedentary men and athletes was medically examined and their past medical history has been carefully evaluated with an aim to exclude those individuals with cardiac or pulmonary disease or hypertension or diabetes mellitus. Thus unhealthy subjects were excluded and only the normal healthy male adults are accepted

for this study. All the subjects were free from any infection and are not taking any drugs. The criteria for selection of sedentary individuals was based on the fact that they have not been trained or exposed to any sort of athletic activity prior to the resent study. Even the individuals who are subjected to any type of regular recreational sports activity where deliberately excluded from the study. Thus, the sedentary individuals are the individuals whose physical activity is minimal in the daily life like shopkeepers are chosen. The criteria for selection of athletes is based on the fact that they have been trained or exposed to regular running for at least 3-4 years prior to the present study. Prior to the study each subject was informed in details of its objectives and the aim of the research protocol and the methods to be used. Their consent was obtained. They were well educated and motivated so as to extend the best co-operation in various exercise protocols.

EXPERIMENTAL PROTOCOL:

As a measure of dynamic exercise the subjects were asked to run for 15 minutes or otherwise the subjects were asked to run 3 Kms of distance. Twenty four hours before the experiment commenced subjects were refrained from taking any type of exercise and they are also abstained from caffeine containing beverages for 24 hours prior to & during the exercise.

No attempt was made to limit the food or the other liquid intake. Before the actual procedure is begun the individual is subjected to a proceeding period of rest ranging from half hour to one hour.

When he is ready to participate in the exercise protocol, the resting heart rate and the blood pressure are recorded. The heart rate is recorded by counting the pulse rate by palpating the radial pulse. Then the blood pressures both systolic and diastolic are recorded by using the sphygmomanometer and the stethoscope. These recording are made while the subject is made to lie flat on the table.

Blood samples are taken for the estimation of hemoglobin %, total leukocyte counts and the differential counts of the leukocytes by giving a prick to the tip of the ring finger with a lancet under sterile conditions. The hemoglobin estimation was done by suing Sahli's haemoglobinometer. The leukocyte count was done by staining with Turk's fluid with improved Neubauer's counting chamber under a compound microscope. The differential leukocyte count was done after staining the smear with Leishman stain with the help of oil immersion lens.

After making the initial recording of the above parameters at rest the subject is instructed to run for 10 minutes and the blood samples are collected to record the same. Continue the exercise till 15 minutes as

previously and then the subject is allowed to stop the exercise at the end of 15 minutes and the blood samples are collected for the same parameters 5 minutes after stopping the exercise.

STATISTICAL ANALYSIS:

Data are reported as mean and standard deviation. Means are compared between 2 groups by (students unpaired) t test. A p value of <0.05 was considered statistically significant.

ANALYSIS OF RESULTS:

RESTING CONDITIONS:

In athletes at rest the mean total leukocyte count is 6.64± 0.6745, the mean neutrophil count is 54.56 ± 2.7092, the mean lymphocyte count is 30.92 ± 1.8279, the mean monocyte count is 6.04 ± 0.6110, the mean eosonophil count is 7.84 ± 1.724 and the mean basophil count is 0.64 ± 0.4899.

In sedentary men at rest the mean total leukocyte count is 6.41± 0.6772, the mean neutrophil count is 53.32 ± 2.1548, the mean lymphocyte count is 31.08 ± 1.9562, the mean monocyte count is 8.12 ± 0.9713, the mean eosonophil count is 6.68 ± 0.6272 and the mean basophil count is 0.8 ± 0.4082.

DURING EXERCISE:

The total leukocyte count in athletes is (6.64 ± 0.6745) compared to the total leukocyte count in athletes during exercise (9.164 ± 0.7968). the total leukocyte count in athletes has increased by + 38%.

The mean neutrophil count in athletes is (54.56 ± 2.7092) is compared with mean neutrophil count of athletes during exercise (58.0 ± 1.8). There is a +6% increase in the neutrophil count during exercise.

There is 8% increase in lymphocyte count in athletes is (33.52 ± 1.7823) during exercise when compared with the athletes at rest is (30.92 ± 1.8239)

During exercise in athletes there is an increase 21% of monocyte count (7.28 ± 0.7371) as compared to monocyte count in athletes at rese is (6.04 ± 0.6110).

There is a decrease of 86% of eosinophil count in athletes during exercise is (1.12 ± 0.7257) observed when compared with the athletes during rest (7.84 ± 1.7243).

Basophil count when compared, in athletes during exercise with that of the athletes at rest (0.064 ± 0.4899), there is a decrease of 88% of basophils during exercise (0.08 ± 0.2769)

Total leukocyte count in the sedentary men during exercise is increased by 41% (9.06 ± 0.8297) when compared with the sedentary men at rest (6.412 ± 0.6772)

The mean neutrophil count of sedentary men during exercise is increased by 5% (55.88 ± 2.297) as compared with the sedentary men at rest (53.22 ± 2.154).

Lymphocyte count during exercise in sedentary men is increased by 8% (33.72 ± 1.990) as compared to the sedentary men at rest (31.08 ± 1.9562).

There is an increase of 12% monocyte count during exercise in sedentary men (9.12 ± 0.971) when compared with the sedentary men at rest (8.12 ± 0.9713)

82% decrease in the eosinophil count is observed in sedentary men during exercise (1.2 ± 0.5774) as compared with sedentary men at rest (6.68 ± 0.6272).

Basophil count of sedentary men is decreased by 90% during exercise (0.08 ± 0.276) when compared with the sedentary men at rest (0.8 ± 0.408)

AFTER EXERCISE:

The total leukocyte count in athletes is (6.64 ± 0.6745) compared to the total leukocyte count in athletes after exercise (9.452 ± 0.6564). The total leukocyte count in athletes has increased by + 42%.

The mean neutrophil count in athletes is (54.56 ± 2.7092) is compared with mean neutrophil count of athletes after exercise (58.28 ± 1.6713). There is a +7% increase in the neutrophil count after exercise.

There is 9% increase in lymphocyte count in athletes is (33.52 ± 1.7823) after exercise when compared with the athletes at rest is (30.92 ± 1.8239)

After exercise in athletes there is an increase 22% of monocyte count (7.36 ± 0.7571) as compared to monocyte count in athletes at rest is (6.04 ± 0.6110).

There is a decrease of 93% of eosinophil count in athletes after exercise is (0.52 ± 0.5099) observed when compared with the athletes during rest (7.84 ± 1.7243).

Basophil count when compared, in athletes after exercise with that of the athletes at rest (0.064 ± 0.4899), there is a decrease of 98% of basophils after exercise (0.08 ± 0.2769) the athletes at rest there is the decrease 88% of basophils is observed.

Total leukocyte count in the sedentary men after exercise is increased by 45% (9.316 ± 0.8778) when compared with the sedentary men at rest (6.412 ± 0.6772)

The mean neutrophil count of sedentary men during exercise is increased by 5% (55.96 ± 2.3) as compared with the sedentary men at rest (53.22 ± 2.154).

Lymphocyte count after exercise in sedentary men is increased by 9% (33.76 ± 1.963) as compared to the sedentary men at rest (31.08 ± 1.9562).

There is an increase of 12% monocyte count after exercise in sedentary men (9.12 ± 0.971) when compared with the sedentary men at rest (8.12 ± 0.9713)

84% decrease in the eosinophil count is observed in sedentary men after exercise (1.08 ± 0.493) as compared with sedentary men at rest (6.68 ± 0.6272).

Basophil count of sedentary men is decreased by 90% during exercise (0.08 ± 0.276) when compared with the sedentary men at rest (0.8 ± 0.408)

SUMMARY:

The very basic physiological mechanism are either to increase when they fall and decrease when they increase i.e. positive or negative feed back mechanism and also especially to meet the situation there is always a growth

of the tissue or organ like hypertrophy of muscles as the weight lifter keeps on increasing, as also the cardiac output increases in physical exercise. The leukocytes increases for defense in bacterial infections and also in stressful conditions the leukocytes respond to the hormonal stimuli to meet the situation. This response of leukocytosis is suggested to related to the increased production of cytokines and is also related to classical stress hormones like epinephrine, nor epinephrine, cortisol and growth hormone.

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EFFECT OF SPECIFIC EXERCISES ON PHYSICAL FITNESS COMPONENTS AND SKILL PERFORMANCE OF SCHOOL FOOTBALL PLAYERS

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INTRODUCTION:

The origin of soccer can be found in every corner of geography and history. The Chinese, Japanese, Italian, Ancient Greek, Persian, Viking, and many more played a game long before our era. The Chinese played "football" game date as for back as 3000 years ago. The ancient Greeks and Roman used football games to sharpen warriors for battle. In south and Central American a game called "Thatch" once flourished.

Football in India was spread during the date of the British Empire. Many football clubs in India were created during this time, and pre-date many of the organizations and clubs, such as FIFA, which are predominate in the game today. The first recorded game in India took place between 'Calcutta club of civilians' and the 'gentlemen of Barrack porn' in 1854. Calcutta FC was the first club to be established in 1872, though reports suggest that they were initially a rugby club and switched their attentions as late as 1894. other early includes Dalhousie club, Traders club and navel volunteer club.

STATEMENT OF THE PROBLEM:

The purpose of the study was to find out the effect of specific exercises on selected physical fitness components and skill performance of the school level football players.

HYPOTHESES:

1. It was hypothesized that there may be improve effect of specific exercises on selected physical fitness of school football players.
2. It was hypothesized that there may be improve effect of specific exercises on selected skill performance of school football players.

SIGNIFICANCE OF THE STUDY:

1. This study will be helpful the players to adopt suitable programme for the development of skill ability and performance.
2. This study will be helpful the coaches, trainers and physical education to give fundamental training schedule for football players to improve their skills.
3. The study will be helpful the coaches or physical education teachers to frame suitable programme to improve the physical fitness components.

SELECTION OF SUBJECTS:

The purpose of the present study was to find the effects of specific exercises on selected on physical fitness components and skill performance of the school level football players.To achieve the aim of this study the investigator had randomly selected twenty high school football players from Z.P. high school Dhanwada, Mahabubnagar. Their age ranged from 14 to 17 years.

SELECTION OF VARIABLES:

The following variables were considered for this present study as follows.

- **PHYSICAL FITNESS VARIABLES**

The following physical fitness components were selection for this study.

1. Speed.
2. Leg explosive power.

- **SKILL PERFORMANCE VARIABLES**

1. Dribbling.
2. Ball controlling.

CRITERION MEASURES:

The Following criterion measures were chosen for this study.

1. Speed was measured by using 50 yard dash and recorded to the nearest one-tenth of a second.
2. Leg explosive power was measured by using standing broad jump.
3. Dribbling was measured by using zigzag soccer ball dribbling test.
4. Ball controlling measured by using 30 second soccer ball juggling.

STATISTICAL TECHNIQDES:

The investigator conducted a pre test and post test for the selected subjects and the results obtained were analyzed statistically using descriptive analysis such as mean, standard deviation and t-test was applied to find out the level of significance.

ANALYSIS AND INTERPRETATION OF DATD:

The purpose of the study was to find out the effect of specific exercises on physical fitness components and skill performance of school football players. To achieve the purpose of the study twenty football players were selected from Z. P. high school Dhanwada, Mahabubnagar.

Zigzag Dribbling, juggling with the ball speed, leg explosive power were selected as the variables for this study. Pre test was conducted and specific training was provided for the period of eight weeks. Finally at the end of eight weeks of training the post test was conducted in all selected variables.

TABLE-1

Computation of t-ratio between the pre test and post test in speed.

Speed	Mean	Standard Deviation	't'-ratio	Table value
Pre-test	7.85	0.54	5.51	2.09
Post-test	7.50	0.47		

Table-1 reveals that the obtained t-ratio is greater than table value of 2.09 at 0.05 level of significance. So it is proved to be significant.

FIRGURE-1

Bar diagram showing the mean difference between the pre-test and post-test in speed.

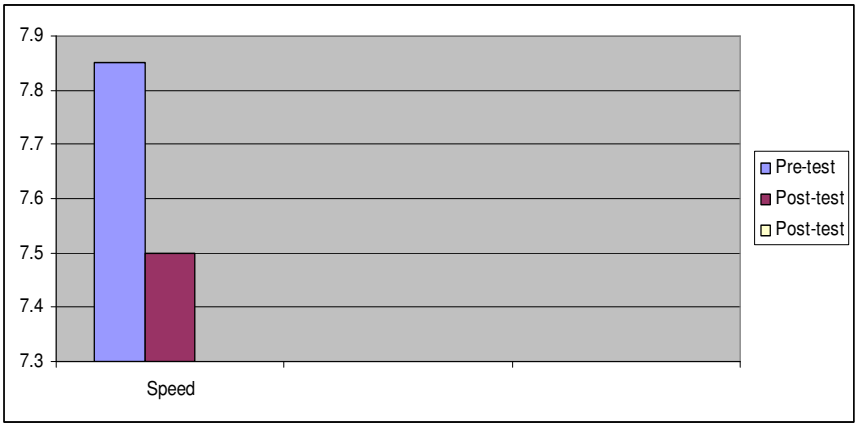


TABLE-2

Computation of t-ratio between the pre test and post test in leg explosive power.

Leg explosive power	Mean	Standard Deviation	't'-ratio	Table value
Pre-test	1.68	0.22	6.73	2.09
Post-test	1.74	0.23		

Table-2 reveals that the obtained t-ratio is greater than table value of 2.09 at 0.05 level of significance. So it is proved to be significant.

FIRGURE-2

Bar diagram showing the mean difference between the pre-test and post-test in Leg explosive power.

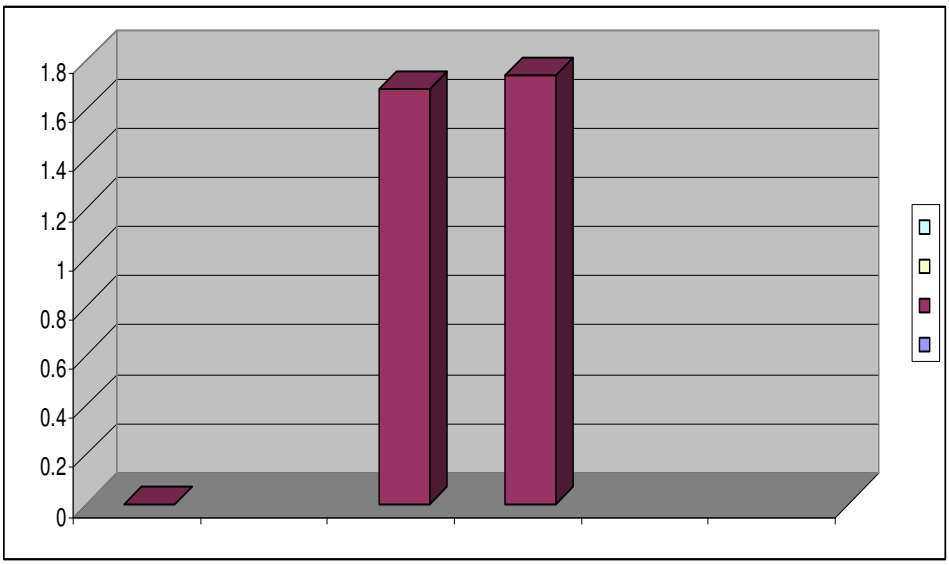


TABLE-3

Computation of t-ratio between the pre test and post test in dribbling.

Dribbling	Mean	Standard Deviation	't'-ratio	Table value
Pre-test	15.35	1.77	15.58	2.09
Post-test	14.07	1.49		

Table-3 reveals that the obtained t-ratio is greater than table value of 2.09 at 0.05 level of significance. So it is proved to be significant.

FIRGURE-3

Bar diagram showing the mean difference between the pre-test and post-test in Dribbling.

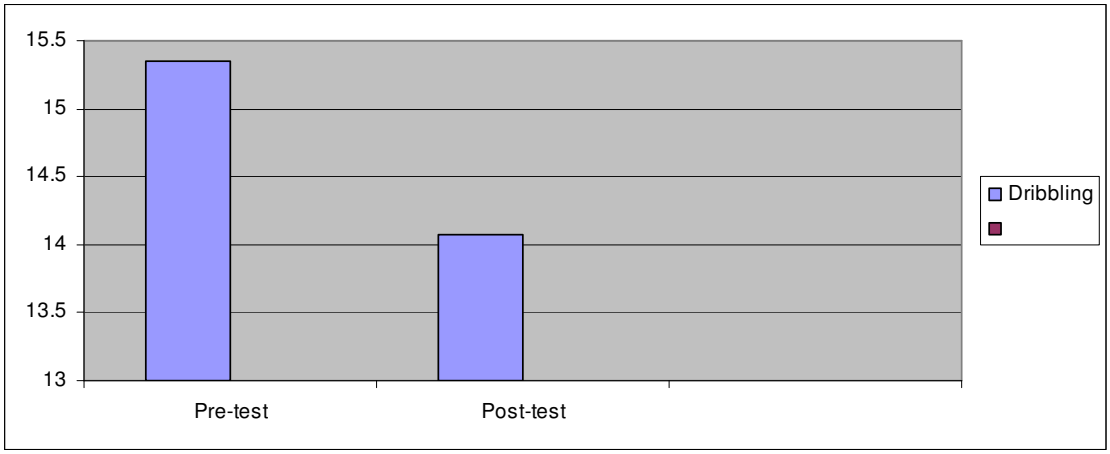


TABLE-4

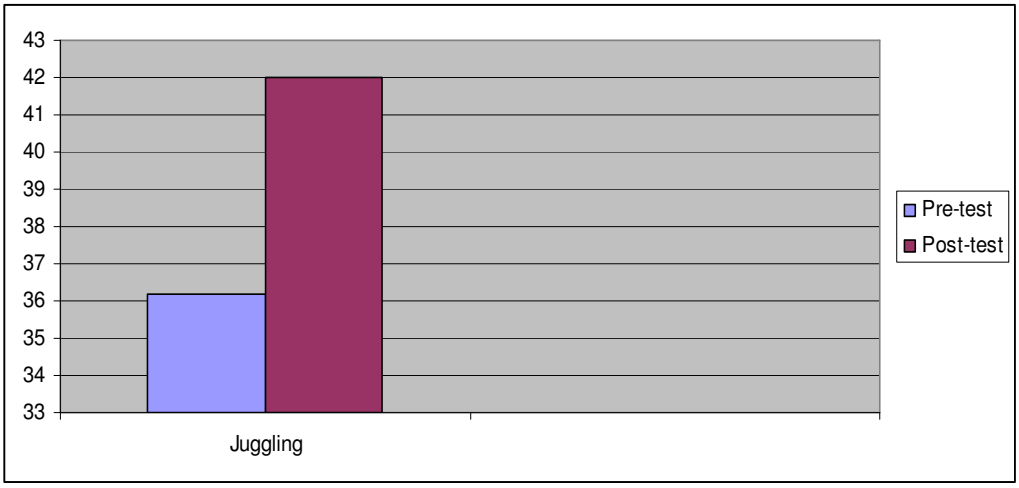
Computation of t-ratio between the pre test and post test in juggling the ball.

Juggling the ball	Mean	Standard Deviation	't'-ratio	Table value
Pre-test	36.20	7.05	16.12	2.09
Post-test	42.00	6.71		

Table-4 reveals that the obtained t-ratio is greater than table value of 2.09 at 0.05 level of significance. So it is proved to be significant.

FIRGURE-4

Bar diagram showing the mean difference between the pre-test and post-test in Juggling.



DISCUSSION ON HYPOTHESES:

It was hypothesized that there might be a significant improvement in specific skills and physical fitness components among the football players due to specific training.

The finding of the study shows that there was a significance difference on physical fitness components such as speed and leg explosive power among the football players and hence the first hypothesis was accepted.

The finding of the study shows that there was a significance difference on skill performance such dribbling and ball controlling among the football players and hence the second hypothesis was accepted.

CONCLUSION:

It was concluded that there was a significance difference on physical fitness components such as speed and leg explosive power. Skill performance such dribbling and ball controlling among the football players.

RECOMMENDATIONS:

The following recommendations have been made based on the results of this study.

- The similar study can be conducted on different age group.
- The same study can be conducted for college players.
- The similar study can be conducted for female players.
- The same study can be conducted at state level, national and international level players.
- The same study can be conducted for different type of variables.
- The training schedule can be strengthened for better performance.

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A STUDY ON PSYCHOLOGICAL TRAITS OF RANGA REDDY DISTRICT & HYDERABAD DISTRICT KABADDI PLAYERS

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INTRODUCTION

Sport psychology is a specialization within the brain psychology and kinesiology that seeks to understand psychological/mental factors that affect performance in sports, physical activity and exercise and apply these to enhance individual and team performance. It deals with increasing performance by managing emotions and minimizing the psychological effects of injury and poor performance. Some of the most important skills taught are goal setting, relaxation, visualization, self-talk, awareness and control, concentration, using rituals, attributions training and periodization. Sport psychology is the scientific study of people and their behaviours in sport. The main job of a sport psychologist is to recognize how participation in sport exercise and physical activity enhances a person's development.

Coach should give equal attention to both i.e. physically & mentally that is the ideal approach. It is the job of a coach to develop it and watch it flourish by combining physical and mental training with a great work ethic. The player and his team should be prepared mentally and physically to the best of its ability to increase the chance of success. It is important to talk about peak performance because this is what athletes are trying to achieve and what experts in the field of sports psychology are trying to achieve and what experts in the field of sports psychology are trying to help athletes and terms obtain. It's imperative to examine some of the universal characteristic of that best performance. This way it will have more control and awareness about these peak performances and they won't seem as mysterious **as** they once might have.

Success in sports requires your mind and your body and as an athlete it is very important to have a clear mental picture of what it is you are striving for. By taking some time to think about peak performances you have had in the past, it can aid you in making sure they happen more often. As a sport psychologist is important to be aware

of these characteristics so you can guide each one to help the athletes strengthen each area so they can achieve peak performances on a more consistent basis.

Psychology of sport means applying psychological theories and concepts to aspects of sport such as coaching and teaching. The sport psychologist users psychological assessment techniques and intervention strategies in an effort to help individuals to achieve their optimal performance. While sport psychology is concerned with analyzing human behaviour in various types of sport settings, it focuses on the mental aspects of performance.

SIGNIFICANCE OF THE STUDY

The study investigates the existing difference between Ranga Reddy District and Hyderabad District Kabaddi players in relation to their psychological traits.

OBJECTIVES OF THE STUDY

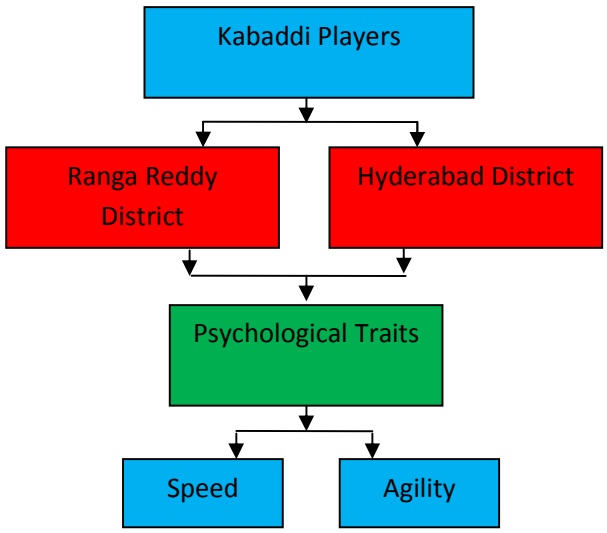
The present study finds out the existing difference between psychological traits of Ranga Reddy District and Hyderabad District Kabaddi players. To find out the existing difference between Ranga Reddy District and Hyderabad District Kabaddi players in relation to their **motivation**. To find out the existing difference between Ranga Reddy District and Hyderabad District Kabaddi players in relation to their **anxiety**.

HYPOTHESES:

There may not be any significant difference between Ranga Reddy district and Hyderabad district kabaddi players in relation to their psychological traits i.e. motivation and anxiety.

DESIGN OF THE STUDY:

The study has focused the following experimental design.



Sample of the Study

Sl. No.	Category of the subjects	Number of subjects
1.	Ranga Reddy District Kabaddi Players	50
2.	Hyderabad District Kabaddi Players	50

DATA COLLECTION PROCEDURE

The subjects of the study were in the age group between 20 to 24 years, 50 Ranga Reddy District Kabaddi players and 50 Hyderabad District Kabaddi players were considered. The researcher has collected the data separately for Ranga Reddy District Kabaddi players and Hyderabad District Kabaddi players. The subjects were tested two categories of psychological traits i.e. motivation and anxiety. Sinha scale was adopted for opinionnaire used to measure motivation. Sport Competition Anxiety Test (SCAT) that was developed by Martens, Vealey, and Burton in 1990.

RESULTS AND DISCUSSION

The results pertaining to the study were present in the following:

The table showing significant differences between Ranga Reddy District & Hyderabad District Kabaddi Players in relation to their Motivation.

Sl. No.	Subjects	N	Mean	S.D.	't' ratio	P value
1.	Ranga Reddy District	50	29.82	7.97	3.97	0.01
2.	Hyderabad District	50	26.04	9.13		

The table showing significant differences between Ranga Reddy District & Hyderabad District Kabaddi Players in relation to their Anxiety.

Sl. No.	Subjects	N	Mean	S.D.	't' ratio	P value
1.	Ranga Reddy District	50	15.00	6.98	2.28	0.05
2.	Hyderabad District	50	16.80	7.95		

CONCLUSION

The study under report has scientifically examined the various factors which influence the power game; the psychological variables like anxiety and motivation are playing a significant role in the present game. The advanced game techniques have greatly influenced the psychological variables of the standard players. The results of the study will certainly contribute to the promotion and betterment of Kabaddi game not only in Telangana but in India as well. However, the psychological variables like motivation, anxiety were recorded better results for Ranga Reddy District Kabaddi players.

In the present scenario the academic standards in Kabaddi game have been playing a significant role in the creeping performance of the game. The fluctuations noticed psychological variables will be attributed to the educational background of the Kabaddi players. But, the fact here was both players were well trained in all aspects due to their difference in exposure to various situations the results differ. By and large, the players exposed at higher levels of competition need to be fit physically, mentally and technically, so that the standards of the power game will remain at its best all the time at international level.

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Effects of Aerobic Training on Bio-Chemical Variables among Men College Students

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Introduction: The growing prevalence of sedentary lifestyles among youth population especially in college students causing poor fitness and wellness becomes an Universal public health problem. Absence of physical activities results to cardio-vascular diseases. Hence exercise is very important component for health, fitness and wellness. Many previous studies revealed that regular physical exercise will increase the High Density Lipoprotein (HDL level) and decreases total cholesterol and Low Density Lipoprotein (LDL).Durstin et.al. (2001) found that duration of aerobic exercise (number of miles run) rather than the intensity appears to have the biggest influence on HDL-C levels. Athletes trained with aerobic training have high level of HDL-C values compared to sedentary population. The LDLs are the major carriers of cholesterol towards tissue having athheragenic potential, while the HDLs carry cholesterol from peripheral tissues to the liver. Thus HDL gives protection against many cardiac problems. Hence HDL is consider as good cholesterol and LDL as bad cholesterol.

Although there are several reports in the literature with regard to the effects of Physical exercise on health related physical components and blood lipids, the effect of physical exercise in preventing sedentary problems among youth be focused with more specific research in this area, this research is organised.

Objectives: The principle objectives of this research are to bring awareness among young college students towards physical activity to improve fitness and wellness parameters. To bring down sedentary problems through positive utilization of their leisure time involving in health related physical activity and to reduce cholesterol levels in the target group.

Materials and Methods:

Subjects: Thirty (N=30) male college students volunteered to participate in this study. Before participation consent was obtained from all the subjects for participating in this experimental study. The subjects were randomly and equally assigned to exercise (n=15) and control group (n=15) by using a numbering table for randomization. General physical examination, blood lipid and blood composition test were performed for all participants both before and after sixteen weeks exercise programme under the supervision of a qualified doctor.

Protocol of Aerobic exercise Training: Subjects in the exercise group performed aerobic training with an intensity from 20% to 60% from week 2 to 16 and orientation in the first week. Training was performed 3 days in a week during 16 weeks each session 15 to 45 minutes Table No. (I) each training session started with 10 to 15 minutes warming up exercises and ended with 10 to 12 minutes cooling down exercises. **Measurement of Tools:**

Height and weight: Height without shoes was measured to the nearest 0.1cm with the portable height measure. Weight in light clothing was measured to the nearest 0.1kg on digital weighing machine.

Blood lipids measurements: Blood samples were collected in a medical centre in the morning LDL, HDL and Triglycerides measurements were performed by doctor.

Aerobic fitness test: Cooper's VO_2 max test was applied in order to measure aerobic fitness parameters of the subjects participated in this experiment.

Table I: Descriptive index of subjects

Variable	**Mean**	**SD**
Age in years	19.8	1.28
Weight (Kilograms)	61.58	9.08
Height (centimetre)	168.34	6.01

Table II: Aerobic exercise programme

Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Training duration (min)	15	15	20	20	20	25	25	25	30	30	30	35	35	35	40	40
Training intensity %	Orientation	20	20	25	25	30	30	35	35	40	40	45	45	50	55	60
Training frequency (Dy/W)	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03

Collection of data and analysis: To examine the bio-chemical variables blood samples were collected from the subjects one day before the beginning of training and one day after the training.

Statistical analysis: statistical technique used for analysing the collected data in the study was Mean, SD and P value.

Results: According to table III pre test and post test scores of body weight, Max VO_2, 12 mints running distance total cholesterol, HDL, LDL and Triglycerides has shown significant changes. The p value of all the variables has shown significant results as appended in the below table.

Table III: Changes in the health related and bio-chemical parameters in exercise and control groups.

Variables	Exercise group (n=15)			Control group (n=15)		
	Pre test	Post test	P	Pre test	Post test	p
Body weight (kg)	61.58	61.41	0.154	61.63	61.65	0.000
Max VO_2 (ml.kg-1.min-1)	49.74	58.28	0.001	49.82	50.06	0.000
12 minutes Running (meter)	2150	2468	0.0001	2158	2162	0.000
Total cholesterol (mg/dl)	174.68	178.64	0.154	173.52	173.56	0.000
HDL (mg/dl)	45.72	45.91	0.940	45.66	45.61	0.000
LDL (mg/dl)	106.27	97.79	0.014	107.16	106.88	0.000
Triglycerides (mg/dl)	128.14	104.33	0.029	129.11	128.66	0.000

Discussion and Conclusions: In this research 15 male subjects in experimental group concentration of cholesterol, Triglyceride, LDL and HDL after 16 weeks aerobic training programme have been studied. Extracted results in table no. III shows that regular aerobic training can make significant changes in concentration of blood serum lipids. This research is consistent with most of researches. This research in consistent with Grandapur (2006) findings. He also knows that regular aerobic exercise is the cause of decreasing concentration of Cholesterol, Triglyceride and LDL. Krause (2002) and others believe that at least 1200 calories a week or running 12 miles in a week are the cause of increasing HDL, which is consistence with this research.

From the study findings it was concluded that different bodily exercise with different intensity and duration can create different responses in blood serum lipid. From previous researches we can find that increasing the duration of exercises can be effective in decreasing blood lipid.

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COMPARISON BETWEEN TRIBAL AND NON-TRIBAL STUDENTS IN THE SELECTED PHYSICAL, PHYSIOLOGICAL VARIABLES .

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INTRODUCTION:

. Formation of a new race takes place when, over several generations, individuals in one group reproduce more frequently among themselves than they do with individuals in other groups. This process is most apparent when the individuals live in diverse geographic areas and therefore evolve unique, recognizable adaptations (such as skin color) that are advantageous in their specific environments. But differentiation also occurs under less extreme circumstances. Zoologists and evolutionists refer to such differentiated populations as races. (Within the formal taxonomic nomenclature of biology, races are termed subspecies). Zoologists have identified two or more races (subspecies) in most mammalian species. India is one of the few nations in the world with a thriving tribal population in different parts of the country. There are 537 different tribal communities spread all over India. As per official data, 258 tribal communities speaking about 106 different languages are notified as Scheduled Tribes. As per the 1991 census, the tribal population is 6.77 crore comprising about 8.08 percent of the total population of the country.

METHODOLOGY

The purpose of the study was to find out differences in physical, physiological and psychological factors between tribal and non-tribal students of Srikakulam, Vizianagaram and Visakhapatnam districts of Andhra Pradesh state. 50 students were selected from each category at random from the various Govt.Private,APTWR High Schools of Srikakulam, Vizianagaram and Visakhapattnam districts. The students belong to the sects of kotiyam, koondu, valmiki, bhagatha, kondadora, gadhaba, mugadora, vukadoralu and paidula were considered as tribal students. The fathers and fore-fathers of these students lived in hills and forests of the respective districts.

Selection of Tests:

The present study was undertaken primarily to assess the physical, biological differences among the tribal and non-tribal students. The physical (Speed, Explosive Power, Muscular Endurance, and Agility), physiological (VO_2 Max and Hemoglobin %) parameters were assessed by following the standard tests that are present in literature and suitable to the present study. The selected tests to assess dependent variables were presented in table - I.

Table - I

TESTS SELECTED TO ASSESS THE DEPENDENT VARIABLES.

S. No	Criterion variables	Test item	Unit of measurement
1	Speed	30 meters Flying start	Seconds
2	Explosive Power	Vertical Jump	Centimeters
3	Muscular Endurance	Sit-ups	Number
4	Agility	Potato Race	Seconds
5	VO_2 Max	Step-test	Liters/minute
6	Hemoglobin %	Blood Culture Test	Percentage

Statistical Technique

The data collected from the tribal and non-tribal students of Srikakulam, Vizianagaram and Visakhapatanam districts, on speed, explosive power, muscular endurance, agility, maximal oxygen uptake, hemoglobin level in blood, were statistically analyzed to find out the significant difference if any, by applying two way ANOVA.

Whenever the obtained F-ratio was found to be significant for interaction simple effect was applied as post-hoc test and Schefees test was applied when the f ratio among the districts was found to be significant. In all the cases .05 level of confidence was fixed to test the hypotheses.

Table – II

MEANS AND STANDARD DEVIATIONS OF TRIBAL AND NON-TRIBAL STUDENTS OF SRIKAKULAM, VIZIANAGARAM AND VISAKHAPATANAM IN SPEED

		Srikakulam	Vizianagaram	Visakhapatanam
Tribal	Mean Sec.	4.22	4.14	4.04
	S.D. Sec.	± 0.56	± 0.37	± 0.31
Non-tribal	Mean Sec	4.50	4.52	4.64
	S.D. Sec.	± 0.44	± 0.37	± 0.43

The means and standard deviations of the data on speed of tribal and non-tribal students of Srikakulam, Vizianagaram and Visakhapatanam were 4.22 ± 0.56, 4.14 ± 0.37, 4.04 ± 0.31 and 4.50 ± 0.44, 4.52 ± 0.37, 4.64 ± 0.43 respectively.

The means of tribal and non-tribal students of Srikakulam, Vizianagaram and Visakhapatanam districts in speed were presented in figure VI.

The data collected on speed of tribal and non-tribal students of Srikakulam, Vizianagaram and Visakhapatanam has been analysed and presented in Table-III.

Table-III indicates that the obtained 'F' ratio 74.30 between the races is much higher than the table value 3.89. It shows significant difference between tribal and non-tribal students in speed. Further the observation of the means shows that tribal students were significantly better than non-tribal students of three districts in speed.

TWO- WAY ANALYSIS OF VARIANCE FOR THE DATA ON SPEED OF TRIBAL AND NON-TRIBAL STUDENTS OF SRIKAKULAM, VIZIANAGARAM AND VISAKHAPATANAM DISTRICTS.

Sources of Variance	Sum of Squares	df.	Mean Squares	'F' ratio	Table Value
Total	66.38	299			
Between Rows(Race)	13.13	1	13.12	74.30*	3.89
Between Columns (Districts)	0.047	2	0.023	0.13	3.04
Interaction (Race×Districts)	1.275	2	0.637	3.61*	3.04
Error	51.94	294	0.177		

* **Significant at 0.05 level**

Table value for significance at 0.05 level with df. 1and 294 are 3.89, 2 and 294 are 3.04, respectively

Conclusions

The conclusions of the study are

1. Tribal students were significantly better than the non-tribal students of Srikakulam, Vizianagaram and Visakhapatnam districts in speed. There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapatnam districts and among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

2. In power tribal students were significantly better than the non-tribal students of Srikakulam, Vizianagaram and Visakhapatnam districts. There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapatnam districts except between Srikakulam and Visakhapatnam in favor of srikakulam . There were insignificant differences among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

3. Tribal students were significantly better than the non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts in muscular endurance. There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts and among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

4. In agility significant differences existed between tribal students and non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts. There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts except between Srikakulam and Visakhapattanam in favour of srikakulam and among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

5. In VO2 max tribal students were significantly better than the non-tribal students of Vizianagaram and Visakhapattanam districts and insignificant difference existed in Srikakulam district in favor of tribal students. There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts and among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

6. In hemoglobin significant differences existed between tribal students and non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts There were insignificant differences among tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts and among non-tribal students of Srikakulam, Vizianagaram and Visakhapattanam districts.

Recommendations

The results of the study necessitate suggesting the following recommendations.

1. The results of the study showed significant difference between tribal and non-tribal students in favour of tribal students, this would help to the physical educationists and coaches in selection of the teams in which physical parameters play a dominant role.

2. It is recommended that similar study may be conducted with different age groups.

3. Similar study may be conducted with different criterion variables.

4. Similar study may be conducted with different geographical locations.

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CKA - Canadian Kinesiology Alliance - Alliance Canadienne de Kinésiologie"

Job Satisfaction and Job Stress of Physical Education Teachers of Engineering Colleges in Jawaharlal Nehru Technical University (JNTU) Jurisdiction

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INTRODUCTION

Physical Education is an integral part of total education process in a field of endeavour which has its aim, the development of physically, mentally, emotionally, and socially fit citizen, through the medium of physical activities which has been selected with a view to realize this outcome- Charles A.Bucher (1979.). In its broadest perspective physical education covers play, exercise, recreation and sport and is characterized by a general programme of motor activity, skill, free play and exercise assuring strength, health, fitness and well being within and even outside education. Teaching is considered as an occupation with good job security and teachers are well paid for their services. The greatest positive aspect of teaching is the personal satisfaction it provides because it carries a Degree of personal involvement in the success of students. Today, Physical Education teachers are playing a very vital role and their work can be divided into five different categories of duties namely, planning, teaching, evaluative, administrative and various unclassified ones. Physical Education teachers feel their workload heavier, strenuous and difficult too. They face a lot of problems due to longer working hours, inadequate facilities/materials, clerical work and non congenial working conditions. In proportion to the expectations of the society, the Physical Education teachers are not given due place and recognition. This leads to stresses and dissatisfaction. The extent of job stress, however, depends largely upon background experiences, temperament and environmental conditions. Some of the physical education teachers feel that they have a heavy workload, less recognition from society, lack of co-operation, little opportunities for growth and advancement and so on. Those who are not satisfied with their jobs have high stress level and are less adjusted in comparison to those who have job satisfaction.

JOB SATISFACTION:

The term Job satisfaction devotes the extent to which an individual needs and expectations are satisfied and the extent to which the individual perceives that satisfaction as stemming from his total job situation.

JOB STRESS:

Job stress refers to the work load undertaken by a teacher of Physical Education as a part of his duties in an Educational Institution. Stress is defined as the anticipation inability to respond adequately to perceived demands accompanied by anticipation of negative consequences for inadequate responses.

METHODOLOGY: The purpose of the study was to investigate the relationship of teachers job satisfaction and job stress of physical education teachers of Engineering college in Jawaharlal Nehru Technical University (JNTU) area. The present investigation was an attempt to determine the Job Satisfaction and Job Stress of Physical Education Teachers of Engineering Colleges in Jawaharlal Nehru Technical University (JNTU) Area. Various Indian and foreign studies were reviewed. Descriptive Survey method has been used in this study. The sample consisted of 20 Physical Education Teachers from Government and Private Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area using stratified random sampling method. Standardized tools were adopted for the study are Job Satisfaction Scale of B.C. Muthaiah and Job Stress Scale of T.R. Polival were used for the physical Education teachers to find out the opinions on Job Satisfaction and Job Stress of Physical Education Teachers. The data were analyzed using various statistical methods like correlation, t-test and ANOVA by SPSS package. The score obtained by different groups are compared across the variables like gender, age, marital status, service, management type of college and locality with respect of Physical Education Teachers. The results indicated that there is a positive correlation between Physical Education Teachers Job Satisfaction and their Job Stress. The results show there is a significant relationship between Job Satisfaction and job Stress and the Physical Education Teachers showed average job satisfaction and above average Job stress in the Engineering colleges of Jawaharlal Nehru Technical University (JNTU) Jurisdiction.

OBJECTIVES OF THE STUDY:

The objectives of the study are :-

1. To find out the level of job satisfaction and job stress among physical education teachers working in different managements, Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) area.
2. To examine the inter-relationship between the Job Satisfaction and Job Stress of physical education teachers working in different managements, Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) area.
3. To find out the contributing causes of dissatisfaction among teachers so that appropriate measures can be taken-up by educational authority to minimize such causes.
4. To study the effect of type of the college on job satisfaction and job stress of college (Engineering College) Physical Education Teachers.
5. To find out the level of Degree of job satisfaction and job stress among the teachers on the basis of their age, sex, marital status, service, management, type of college and locality.

HYPOTHESIS OF THE STUDY

1. There will be no significant relationship between Job Satisfaction and Job Stress of physical educations teachers working Engineering colleges of Jawaharlal Nehru Technical University (JNTU) Area.
2. There will be no significant difference between physical education teachers based on their socio-economic variables towards their Job Satisfaction and Job Stress in Jawaharlal Nehru Technical University (JNTU)Area.

SIGNIFICANCE OF THE STUDY:-

The result of present study may be significant in the following ways: 1) This study might help to find out the Engineering of job satisfaction and job stress of teachers working in different management Engineering colleges of Jawaharlal Nehru Technical University (JNTU) area, 2)This study provides immense benefit for the administrators so as to understand conditions causing job stress to physical education teachers in order to ensure job satisfaction, 3) It might also help to indicate contributory causes of dissatisfaction among teachers so that appropriate measures can be taken by Educational authority to minimize such causes 4) It may help to find the effect of size of the college on job satisfaction and job stress of Engineering college physical education teachers and 5) It will help to find out the Engineering of job satisfaction and job stress among the Engineering college physical education teachers on the basis of their age, sex and job experience.

Table 1: Overall response of Physical Education Teachers towards their Job Satisfaction and Job Stress in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area.

Area	N	Min. Score	Max. Score	Mean	Mean Percent	Std. Deviation
Job Satisfaction	20	50	100	56.06	56.06	9.36
Job Stress	20	1	30	19.68	65.60	6.68

Table 1. observed that, the Physical Education teachers showed average response with respect to their Job Satisfaction and above average response towards their Job Stress in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) area. The mean and mean percentages are found to be 56.06 and 19.68 which are 56.06 %and 65.60% respectively.

Table 2: Overall response of Physical Education Teachers towards their Job Satisfaction and Job Stress in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area.

N	'r' – value	p-value
20	0.49	0.00

**Significant at 0.01 level

There is a significant high correlation between Job Satisfaction and Job Stress of Physical Education Teachers working in Engineering Colleges of

Jawaharlal Nehru Technical University (JNTU) Area. The 'r' – value is found to be 0.49 and the p-value is 0.00 which is significant at 0.01 level.

Table 3: Significant difference between Physical Education Teachers perceptions based on their socio-economic variables towards their Job Satisfaction and Job Stress of Physical Education Teachers in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU)Area.

Variable	Category	Job Satisfaction					Job Stress			
		N	Mean	Std. Dev.	t-value	p-value	Mean	Std. Dev.	t-value	p-value
Sex	Male	14	56.64	10.24	0.70	0.49	19.89	7.11	0.35	0.73
	Female	6	54.57	6.66			19.14	5.61		
Age	Below 40 Years	8	51.39	9.73	2.83	0.00	22.17	5.86	2.04	0.05
	Above 40 Years	12	58.69	8.17			18.28	6.79		
Marital Status	Married	16	57.74	9.35	2.36	0.02	19.16	7.18	-0.98	0.33
	Unmarried	4	50.75	7.46			21.33	4.62		
Service	Below 20 Years	12	56.31	10.39	0.19	0.85	19.65	5.75	3.15	0.00
	Above 20 Years	8	55.79	8.31			15.38	4.68		
Salary	Pay Scale	14	62.28	8.05	2.04	0.02	19.41	7.57	-0.38	0.70
	Consolidated Pay	6	56.56	823			20.17	4.88		
Management	Government	16	60.67	5.11	3.41	0.00	15.40	6.23	2.24	0.01
	Private	4	52.94	7.57			21.51	6.07		
, Type of Education	Girls	3	53.86	6.15	0.65	0.52	16.43	2.23	1.41	0.17
	Co-Education	17	56.38	9.90			20.26	7.10		
Locality	Rural	11	55.58	11.33	0.28	0.78	22.05	6.79	2.03	0.05
	Urban	9	56.35	8.11			18.23	6.29		

**Significant at 0.01, *Significant at 0.05 and NS : Not Significant

Results and Discussions:

Physical Education teachers showed average perceptions with respect to their Job Satisfaction and above average perceptions towards their Job Stress in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area. There is a significant relationship between Job Satisfaction and Job Stress of Physical Education Teachers working in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area. There is a significant difference between below 40 and above 40 years age group physical education teachers perceptions and above 40 years age group Physical education teachers having high

Job Satisfaction than that of below 40 years age group physical education teachers working in Engineering Colleges of Jawaharlal Nehru Technical University (JNTU) Area. There is a significant difference between married and unmarried Physical education teachers perceptions and married physical education teachers having high Job Satisfaction than that of unmarred physical education teachers working in Jawaharlal Nehru Technical University (JNTU) Area. Physical education teachers who are drawing pay scales are having high Job Satisfaction than that of who are drawing Consolidated Pay salary physical education teachers. There is a significant difference between government and private Engineering college physical education teachers perceptions and Government Engineering college physical education teachers having high Job Satisfaction than that Private Engineering college physical education teachers.

There is a significant difference between below 40 and above 40 years age group physical education teachers perceptions and below 40 years experienced teachers facing high Job Stress than that of above 40 years age group physical education teachers. There is a significant difference between below 20 and above 20 years experienced physical education teachers perceptions and below 20 years experienced physical education teachers facing high Job Stress than that of above 20 years experienced physical education teachers. There is a significant difference between government and private Engineering college physical education teachers perceptions and private Engineering college physical education teachers facing high Job Stress than that of government Engineering college physical education teachers. There is a significant difference between women Engineering college and Co-education Engineering college physical education teachers perceptions and co-education Engineering college physical education teachers facing high Job Stress than that of women Engineering college physical education teachers.

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A COMPARATIVE STUDY ON ENDURANCE AND AGILITY AMONG BASKET BALL PLAYERS & NET BALL PLAYERS OF OSMANIA UNIVERSITY

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INTRODUCTION

Physical fitness refers to the capacity of an athlete to meet the varied physical demands of their sport without reducing the athlete to a fatigued state. Physical fitness has been defined as a set of attributes or characteristics that people have or achieve that relates to the ability to perform physical activity. Physical fitness can also prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging. To stay healthy it is important to engage in physical activity. Physical fitness is the ability of the human body to function with vigor and alertness, without undue fatigue, and with ample energy to engage in leisure activities, and to meet physical stresses. Muscular strength and endurance, cardio respiratory integrity, and general alertness are the overt signs of physical fitness. Physical fitness is usually measured in relation to functional expectations-that is, typically, by periodic tests measuring strength, endurance, agility, coordination, and flexibility. In addition, stress testing, which ascertains the body's accommodation to powerful, sustained physical stimuli, is used to analyze fitness. If individuals are able to accommodate to the stressors, they are assumed to be fit. The level of physical fitness can be influenced by regular, systematic exercise. Moderate activity will maintain the individual at a level that is usually adequate to handle ordinary stress. If the fitness level is to be improved, however, it is necessary to participate in more intensive exercise that overloads the physiological systems and thus promotes change.

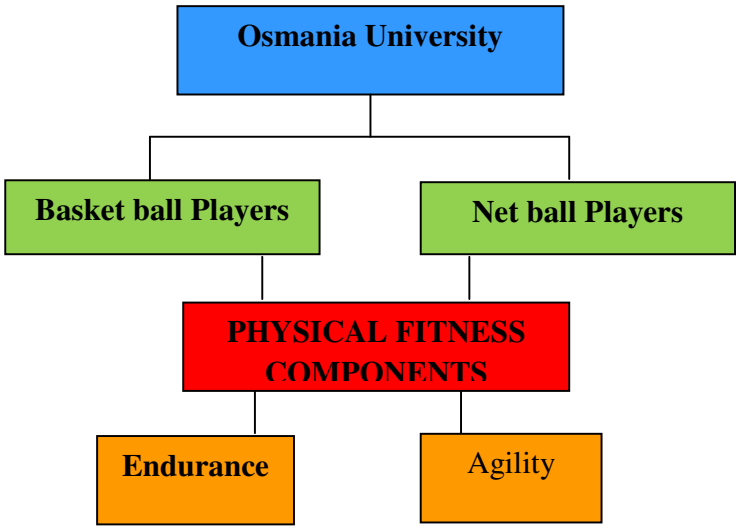
SIGINIFICANCE OF THE STUDY:

The study investigates the difference between Basket ball players and Net ball players in selected physical fitness components. The findings of the study may provide guidance to physical education teachers and coaches to prepare training schedules. It may further help the researchers to involve more number of schools and colleges. The findings of the study may add to the quantum of knowledge in the area of sports and physical education.

HYPOTHESES

1. There may not be any significant difference between Basket ball players and Net ball players in relation to their Physical fitness Endurance (Cooper Test 12 Minute Run).
2. There may not be any significant difference between Basket ball players and Net ball players in relation to their Agility (4x 10Mts Shuttle Run).

DESIGN OF THE STUDY:
The study has focused the following experimental design.



SAMPLE OF THE STUDY:
The study was formulated based on the simple random sampling. The samples were collected from the 50 Basket ball players and 50 Net ball players in the age group of 18- 22 years from Osmania University were considered for the study.

SHOWING THE SAMPLE OF THE STUDY

Sl.No	Name of the subjects	Number of subjects
1.	Basket ball players	50
2.	Net ball players	50

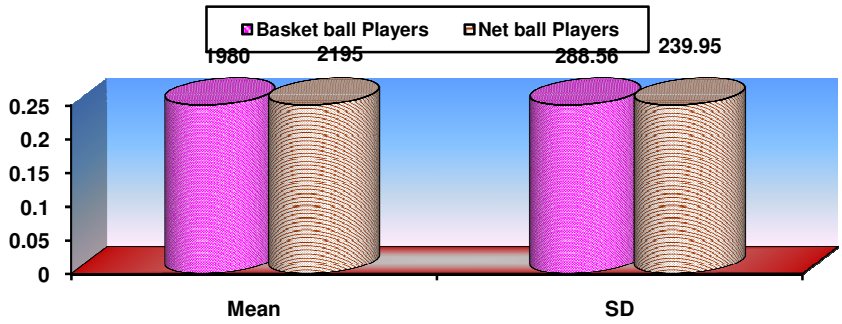
TOOLS USED
Physical fitness components

- Endurance (Cooper Test 12 Minute Run)
- Agility (4x 10Mts Shuttle Run)

DATA COLLECTION PROCEDURE
The subjects of the study were in the age group between 18 – 22 years from two groups i.e., basket ball players and net ball players. The Basket ball players consisting 25 boys and the Net ball players consisting of 25 boys from Osmania University were considered for the study.

RESULTS AND DISCUSSIONS
Table: 1 showing that the significant difference between Basket ball players and Net ball players in relation to their Endurance (Cooper Test 12 Minute Run) are presented.

Sl. No.	Subjects	No. of. Players	Mean	SD	df	t-value	p-value
1	Basket ball players	50	1980	288.56	98	4.01	0.001
2	Net ball players	50	2195	239.95			

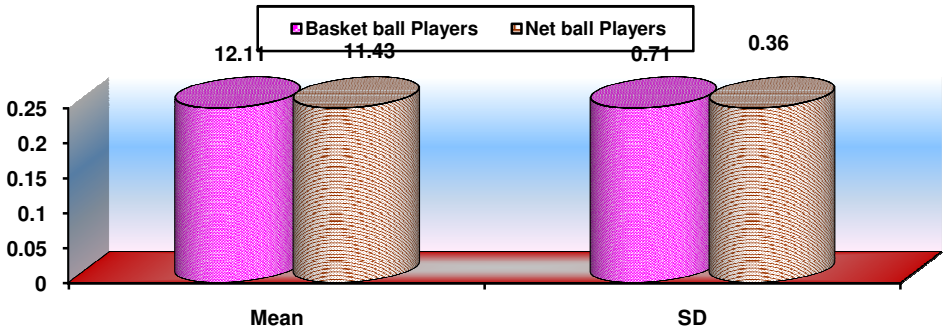


DISCUSSION

Table-1 and Graph-1 shows the mean, standard deviation, degrees of freedom, t-value and significance between Basket ball players and Net ball players of Osmania University relation to their Endurance (Cooper Test 12 Minute Run). The mean value of Basket ball players was 1980, standard deviation was 288.56 and the mean value of Net ball Players was 2195 and standard deviation was 239.95. The obtained t-ratio was 4.01, which was found to be significant at 0.00 levels.

Table: 2 showing that the significant difference between Basket ball players and Net ball players in relation to their Agility (4x 10Mts Shuttle Run) is presented.

Sl. No.	Subjects	No. of. Players	Mean	SD	df	t-value	p-value
1	Basket ball players	50	12.11	0.71	98	5.99	0.001
2	Net ball players	50	11.43	0.36			



DISCUSSION

Table-2 and Graph-2 shows the mean, standard deviation, degrees of freedom, t-value and significance between Basket ball players and Net ball players of Osmania University in relation to their Agility (4x 10Mts Shuttle Run). The mean value of Basket ball players was 12.11, standard deviation was 0.76 and the mean value of Net ball Players was 11.43 and standard deviation was 0.36. The obtained t-ratio was 5.99, which was found to be significant at 0.00 levels.

CONCLUSION

Hence it is concluded that there is a slight significance difference was found between Basket ball players and Net ball players in relation to the their endurance (cooper test 12 Minute Run)) showed in the table: 1 and there is a sleighing significance difference was found between Basket ball players and Net ball players in relation to their agility (4 x 10mts shuttle run) shown in the table 2. It is hypothesized that the Basket ball players and Net ball players have shown better impact on selected physical fitness components. Physical fitness is not an end in itself but a means to an end. It provides the basis for optimal physiological health and gives us the capacity to enjoy a full life. Although the most opportune time for developing lifelong fitness habits is in the childhood.

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ELECTROMYOGRAPHICAL COMPARISON OF CONCENTRIC AND ECCENTRIC PHASE DURING SELECTED ABDOMINAL EXERCISES

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Introduction

Fitness training exercises are designed to overload specific muscles in order to increase muscular strength and/or endurance. Therefore, one of the greatest challenges physical educators, coaches, trainers, therapist and physicians is to face the selection of appropriate exercises, phases and variations, to best isolate a targeted muscle or muscular groups.

An integrated component of most training programs is the use of exercises to increase abdominal strength, for example, crunches (curl-up), various types of sit-up, and other types of leg rises are all used to increase abdominal strength and endurance, and reduce the risk of lower back injuries. In recent years numerous companies have capitalized on this trend by developing devices for abdominal exercise. Despite manufacturer claims that these abdominal devices are superior to traditional crunches, published research fails to support these statements (Demont et al. 1999; Eric and Stuart 2000).

Three types of muscle contractions accomplish all motor actions involving skeletal muscle activities: concentric (shortening), eccentric (lengthening), and isometric (constant length). Of the three, isometric and concentric contractions are more widely studied, and the neural mechanisms that mediate isometric and concentric actions are better understood.

Concentric Contraction

During the concentric contraction, the working muscle shortens, pulling the bones on either side of the joint closer together. The amount of force that a muscle is able to generate is increased with the number of motor units utilized. At the start of this concentric contraction, only a small number of motor units are activated, generating minimal force. On repetition speed at which the movement is completely

controlled then (with no swinging) maximum recruitment of fibers is required to generate maximum force, but if you let momentum do some of the work then, you won't use as many muscle fibers to lift the weight. At the end of the concentric contraction, a muscle is in its shortest position. Some exercise physiologists and many bodybuilders recommend that you pause here for a second or two to contract the working muscle as intensely as possible, a technique called peak contraction. Others question the need to stop at any point during the repetition.

Steven Fleck, PhD, CSCS, former head of the physical conditioning program for the U.S. Olympic Committee, believes that using the appropriate resistance is more important than generating a peak contraction. "If the weight is light, you can never reach maximal contraction," he says. "But if you manage the resistance right, you'll get near-maximal contraction at some point during the range of motion."

Eccentric contraction

Whether or not you pause at the end of the concentric half of the repetition, eventually you have to return to the start position. This half of the repetition is called the eccentric phase, which many bodybuilders mistakenly treat as an afterthought. As you lower a dumbbell during a curl, for example, the biceps lengthens, even though it's still contracted to some degree. (Were it not for this contraction, the weight would simply fall back to the start instead of returning in a controlled manner.) During the eccentric phase, nerve impulses continue to signal motor units to fire, even though fewer motor units are incorporated than during the concentric contraction. As a result, more stress is placed upon each of the activated muscle fibers.

Eccentric contractions occur when activated muscles are lengthened. This mode of muscle function occurs frequently in the activities of daily living and in athletic competition.

This review examines the experimental evidence that provides the foundation for our current understanding of the benefits, consequences and control of eccentric contractions. Over the past several decades, numerous studies have established that eccentric contractions can maximize the force exerted and the work performed by muscle; that they are associated with a greater mechanical efficiency; that they can attenuate the mechanical effects of impact forces; and that they reduce the tissue

damage associated with exercise. Eccentric muscle contractions, which generate a significant proportion of our daily-living movements [e.g., walking upstairs (concentric) and downstairs (eccentric); raising a water glass to the mouth (concentric) and returning it to the table (eccentric)], are less well understood.

A major advantage of eccentric muscle actions is that this type of muscle activity develops greater tension than concentric actions (Bigland and Lippold 1954). Numerous athletic training and recreational conditioning programs also include eccentric muscle activities as a major component of these programs (Alfredson et al. 1998; Bobbert 1990). Eccentric training induces adaptive changes in the muscle, which may reduce future tissue damage and pain (Hortobágyi et al., 1996). Eccentric contractions require less energy expenditure, and such energy efficiency may improve the functional capacity of an individual with limited physiological reserves (Bigland-Ritchie and Woods 1986; Moritani et al., 1992).

Review of Literature

Little is known about how eccentric training or exercise affects the CNS. The results of many studies suggest that the CNS may control concentric and eccentric muscle actions differently. One of the most reported observations is that for a given force to be generated, electromyographic (EMG) activities are lower during eccentric than concentric contractions (Bigland and Lippold 1954; Moritani et al. 1992; Tesch et al. 1990).

Despite abundant evidence that different nervous system control strategies may exist for human concentric and eccentric muscle contractions, no data are available to indicate that the brain signal differs for eccentric versus concentric muscle actions.

The kinetic and kinematics information from the muscle and joint movement-related cortical potential (MRCP) was derived from the electroencephalograph (EEG) signals of the eccentric and concentric muscle contractions. Although the elbow flexor muscle activation (EMG) was lower during eccentric than concentric actions, the amplitude of two major MRCP components was significantly greater for eccentric than for concentric actions. The MRCP onset time for the eccentric task occurred earlier than that for the concentric task. The greater cortical signal for eccentric muscle actions suggests that the brain probably plans and programs eccentric movements differently from concentric muscle tasks (Fang et al 2001).

Hypothesis

Based on the previous research done it is hypothesized that there will be significant EMG differences between the concentric and eccentric phase of contraction in selected abdominal exercises.

Procedure

Subject Ten selected male All India Intervarsity Level Players volunteered to participate in this study. The mean age, height, and body weight of the subjects was 20.6 yrs., 167 cm. and 62 kg, respectively. Subjects were instructed on how to perform each exercise properly prior to collection of data. After receiving an explanation of the experimental protocol, each subject practiced the proper technique. Subject selection was limited to individuals with sufficiently low subcutaneous adipose tissue in order to permit accurate measurement of muscle activity.

Experimental Device EMG recordings were recorded from the upper and lower portions of the rectus abdominis. To ensure valid comparisons in our EMG data, range of motion (ROM) and velocity of movement were controlled across devices and subjects.

The skin over the target muscle was abraded and cleaned to assure a low skin resistance. The palpitation techniques were used to determine the muscular quadrants (Kelley, 1971). Bipolar surface electrodes were secured over the bellies of the Upper Umbilicus and Hypogastria. The ground electrode was secured slightly superior to the Lateral Malleolus of the right leg.

Muscle activity was measured using a standard EMG system (Student Physiograph for Group experimentation and research, Biodevices, Ambala). Bipolar silver chloride surface electrodes were placed on the skin overlying the right upper portion of the rectus abdominis (Upper Umbilical), right lower portion of the rectus abdominis (Hypogastria). An unshielded ground electrode was placed on the skin overlying the Lateral Malleolus. The electrodes were oriented parallel to the muscle fibers and an interelectrode distance was maintained consistent from subject to subject. Prior to electrode application, the skin over each muscle was shaved and cleansed with sprit to reduce the impedance at the skin electrode interface. EMG

recordings were determined and the analysis was conducted as elaborated by Kelley, 1971.

Experimental Design

After appropriate instruction on the proper technique for execution of the abdominal exercise, subjects performed three abdominal exercises. The mechanics of performing abdominal exercises in this study used the traditional sit-up exercises. The traditional sit-up exercises: Straight leg sit-up, bent leg sit-up, and crunches with the hands clasped in front (on the chest). All subjects were tested from the supine lying position. Each subject was instructed to perform the exercises as per the instructions and practice training given. All data for each subject were collected during a single session. To ensure temporal consistency, each subject was instructed to perform each set with a given rhythm along the amplified watch beat through a constant ROM and at a constant speed during the concentric and eccentric phase. An angle-marked projector (24°, 48° and 72°) was used to ascertain the speed of motion and was used to pace each phase of exercise at a rate of 3.00 seconds (concentric and eccentric). Sufficient rest was allowed between sets to avoid fatigue. None of the subjects commented that they felt fatigued at any point during their data collection session.

Statistical Analyses

Statistical analyses performed on the mean EMG amplitude values using a paired t-test procedure for each of the 3 exercises. Reported differences were accepted as statistically non significant at $p \geq 0.05$

CONCENTRIC AND ECCENTRIC PHASE

Tabulated t-value: tab.t = 2.26

Bent Leg Sit-ups Cal.-t Crunches Cal.-t Upper Umbilicus 1.41 Upper

Umbilicus

1.43 Upper

Umbilicus

0.77

Hypogastria 0.63 Hypogastria 0.46 Hypogastria 0.29

Significant = Cal.t > tab.t

Non Significant = Cal.t < tab.t

Result

The statistical analysis paired t-test showed no significant differences between the concentric and eccentric phase of contraction during the three selected abdominal exercises.

Mean EMG data showed variations that for each exercise tested in the upper umbilicas (Up.Um.) and hypogastria (Hypo) region of the rectus abdominis.

The mean values of the EMG Amplitudes of during Concentric and Eccentric phase of Abdominal Exercises in Rectus Abdominis muscles.

Table-1

Sit – up exercises	Upper Umbilicus		Hypogastria	
	Con.	Ecc.	Con.	Ecc.
SLS	10.00	8.70	10.51	9.67
BLS	11.10	8.97	9.52	8.86
CR	10.00	8.31	12.00	11.49

SLS- Straight Leg Sit-up; BLS- Bent Leg Sit-up; CR-Crunches

Graphical representation of concentric and eccentric phases of contraction during abdominal exercises in rectus abdominis muscle

Figure-1

Discussion

This study supports previous findings that there is no significant difference in abdominal muscle intensity between the concentric and eccentric contraction and on any traditional abdominal exercises without adding any external resistance during the

course of exercises. But there is increase in abdominal muscle activity during the course of exercises.

The principal reason for the lower (non-significant) abdominal activity in the eccentric phase compared to the concentric phase, was that the vertical lift against the gravitational force provide enough resistance to require substantial muscle recruitment in the concentric contraction. The findings are similar to those reported by Clark et al (2003).

The minimal abdominal muscle recruitment while performing downward motion (eccentric) in a supine lying position produced enough load to require comparable abdominal muscle activity due to the controlled motion as recorded during the abdominal exercise.

In order to provide greater overload to the abdominal musculature on a traditional abdominal exercise, additional resistance must be provided. In summary, all abdominal exercise elicited abdominal muscle activity during concentric and eccentric phase of contraction when used with proper technique. The perfect way to perform an abdominal exercise is to elicit significantly greater abdominal muscle recruitment.

Practical Applications

The data collected in this study verify that abdominal exercises used in a supine position elicit abdominal muscle activity when performing a traditional abdominal exercise.

As the different traditional techniques of abdominal exercises do not differ significantly in the activation of the designated muscles, hence any one of these exercise techniques may be performed to enhance strength and/or endurance.

As there is no significant difference between the concentric and eccentric phase of contraction during the selected abdominal exercises, so the ECCENTRIC PHASE of contraction should be performed consistently, because the eccentric phase of contraction can maximize the force exerted and the work performed by muscle; associated with a greater mechanical efficiency; can attenuate the mechanical effects of impact forces and reduce the tissue damage, pain and injuries associated with exercise.

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THE EFFECTS OF PRE-SEASON TRAINING PACKAGE ON SELECTED SKILL PERFORMANCE VARIABLES OF BADMINTON PLAYERS

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INTRODUCTION

The developing tendencies in international sports, especially in team games are identified as the increase in game tempo, tougher body game and greater variability in technique and tactics. An increased performance level can only be achieved by working and training of all major components i.e. technique, coordination, tactics, physical fitness, physiological qualities and psychological qualities **(Srinivasan M, 2012).**Badminton is a very simple and an easy game to learn. With a little practice, one can become an outstanding player of this game. One has to hit the shuttlecock in such a way that it crosses the net and reaches on other side of the court. Main aim of every player is to serve or return the shuttle in such a way that the opponent player finds it difficult to hit it. In this manner, this game becomes very enjoyable and full of excitement. Thus, basic equipment a player uses is a racket, shuttlecock and the net **(PriyankaNarang,2001).**

Badminton needs technical ability which is the proper execution of a variety of strokes such as drop, clear, smash, receive, and drive and so on. It also demands tactical ability and judgment in selecting the appropriate stroke for a certain situation, and strong physical and mental strength which can sustain the athlete until the end of the match**(Han-Kook Sung, &Yeon-Ja Kim, 2001).**

Sports training is the total process of preparation of a sportsman, through different means and forms for better performance. Sports performance is the result and expression of the total personality of the sportsman. The educational aspect of sports training is unfortunately overlooked by coaches and physical education teachers in India **(Hardayal Singh, 1997).**

METHODOLOGY

SELECTION OF SUBJECTS

For this study, thirty inter-collegiate men badminton players were selected as subjects. They were selected from Sport Authority of Andhra Pradesh (SAAP) Badminton Academy, Tirupati. Andhra Pradesh. The age of the subjects ranged from 16 to 19 years.

SELECTION OF VARIABLES

INDEPENDENT VARIABLES

The data on the skill performance variables were collected from two groups. The selected groups are given below:

- Specific pre-season training (ST)
- Traditional training (TT)

DEPENDENT VARIABLES

Skill performance variables

- Short serve
- Long serve

CRITERION MEASURES

- Short serve was measured by French short service test.
- Long serve was measured by Poole long service test.

EXPERIMENTAL DESIGN

For this study, thirty inter-collegiate men badminton players were selected as subjects. They were selected from Sport Authority of Andhra Pradesh (SAAP) Badminton Academy, Tirupati. Andhra Pradesh. The age of the subjects ranged from 16 to 19 years. The study was formulated as a true random group design. The subjects (n=15) were randomly assigned to two equal groups of fifteen (men) badminton players each namely, specific pre-season training (ST, Group I), traditional training (TT, Group II). The subjects were tested for short serve and long serve Twelve weeks of intervention was given to the specific pre-season training group and to thetraditional training group.

SPECIFIC PRE-SEASON TRAINING SCHEDULE

Training Aim	Weeks and percentage of intensity											
	1	2	3	4	5	6	7	8	9	10	11	12
Warm up												
Flexibility training	50%	50%	60%	70%	75%	70%	65%	70%	65%	80%	90%	70%
Endurance training	55%		65%		85%		70%	70%	70%		90%	
Speed training		55%		75%		65%				85%		70%
Strength training		55%		70%		65%		65%		80%		75%
Technique & tactics training	40%	55%	60%	75%	90%	70%	75%	70%	75%	70%	95%	70%
Coordinative abilities training	45%	50%	60%	70%	70%	65%	70%	65%	70%	85%	90%	70%
Plyometric exercises	40%	50%	60%	75%	80%	65%	70%	70%	70%	85%	95%	70%
Ladder drills	40%	50%	55%	70%	80%	60%	70%	70%	70%	85%	95%	65%
Active recovery												
Warm down												

STATISTICAL TECHNIQUE

The following statistical techniques were used for the analysis of data in this study. Analysis of Covariance (ANCOVA) was applied to determine the significance of mean difference between the twogroup's namely specific pre-season training and traditional training. In all cases, the criterion for statistical significance was set at 0.05 level of confidence ($P<0.05$).

RESULTS

TABLE- I
COMPUTATION OFANALYSIS OF COVARIANCE OF SPECIFIC PRE-SEASON TRAINING GROUP AND TRADITIONAL TRAINING GROUP ON SHORT SERVE

	ST Group	TT Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Means	58.20	57.00	**BG**	10.80	1	10.80	0.11
			WG	2766.40	28	98.80	
Post-Test Means	71.67	60.87	**BG**	874.80	1	874.80	7.95*
			WG	3081.07	28	110.04	
Adjusted Post-Test Means	71.09	61.43	**BG**	697.78	1	697.78	31.22*
			WG	603.51	27	22.35	

BG- Between Group Means *Significant
WG- Within Group Means(Table Value for 0.05 Level for df1&28 = 4.19)
df- Degrees of Freedom (Table Value for 0.05 Level for df1&27 = 4.21)
ST- Specific pre-season training TT- Traditional training

RESULTS ON SHORT SERVE

An examination of Table – I indicates the results of ANCOVA for pretest scores of the specific pre-season training group and traditional training group. The obtained F-ratio for the pre-test was 0.11 (P>0.05) indicating that the random sampling was successful and the table F-ratio was4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28.

The obtained F-ratio for the post-test was7.95 (P<0.05) and the table F-ratio was4.19. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 28.

The adjusted post-test means of specific pre-season training group and traditional training group were 71.09and61.43respectively. The obtained F-ratio for the adjusted post-test means was31.22 (P < 0.05) and the table F-ratio was4.21. Hence the adjusted post-test mean short serve F-ratio was significant at 0.05 level of confidence for the degree of freedom 1and 27.

Pre-test, post-testand adjusted post-testmean difference of the specific pre-season training group and traditional training group on short serve was presented in Figure I.

FIGURE - I

BAR DIAGRAM SHOWING PRE-TEST, POST-TEST AND ADJUSTED POST-TEST MEAN DIFFERENCES OF SPECIFIC PRE-SEASON TRAINING GROUP AND TRADITIONAL TRAINING GROUP ON SHORT SERVE

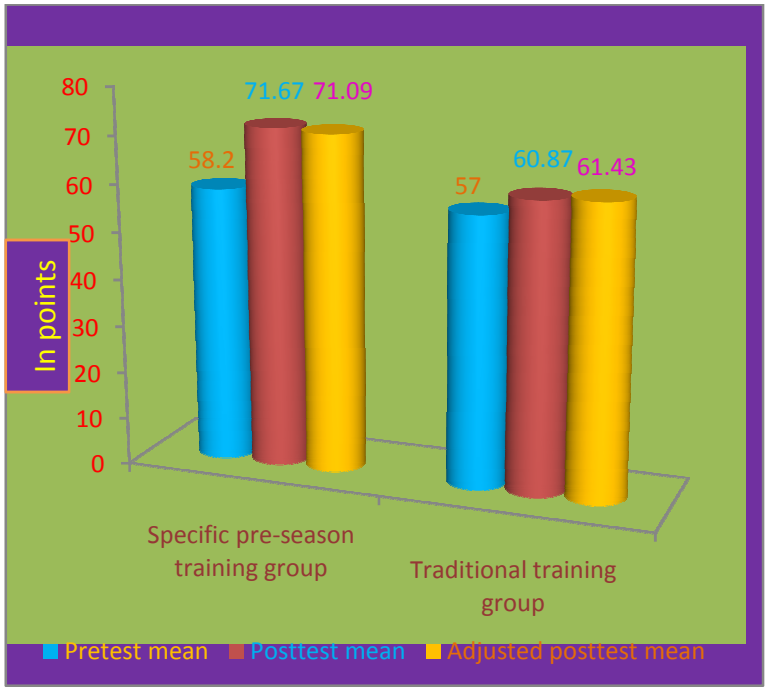


TABLE- II

COMPUTATION OFANALYSIS OF COVARIANCE OF SPECIFIC PRE-SEASON TRAINING GROUP AND TRADITIONAL TRAINING GROUP ON LONG SERVE

	ST Group	TT Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Means	31.27	31.40	**BG**	0.133	1	0.13	0.005
			WG	704.533	28	25.16	
Post-Test Means	40.47	35.93	**BG**	154.133	1	154.13	7.56*
			WG	570.667	28	20.38	
Adjusted Post-Test Means	40.52	35.88	**BG**	161.532	1	161.53	40.14*
			WG	108.647	27	4.02	

RESULTS ON LONG SERVE

An examination of Table – II indicates the results of ANCOVA for pretest scores of the specific pre-season training group and traditional training group. The obtained F-ratio for the pre-test was 0.005 (P>0.05) indicating that the random sampling was successful and the table F-ratio was4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28.

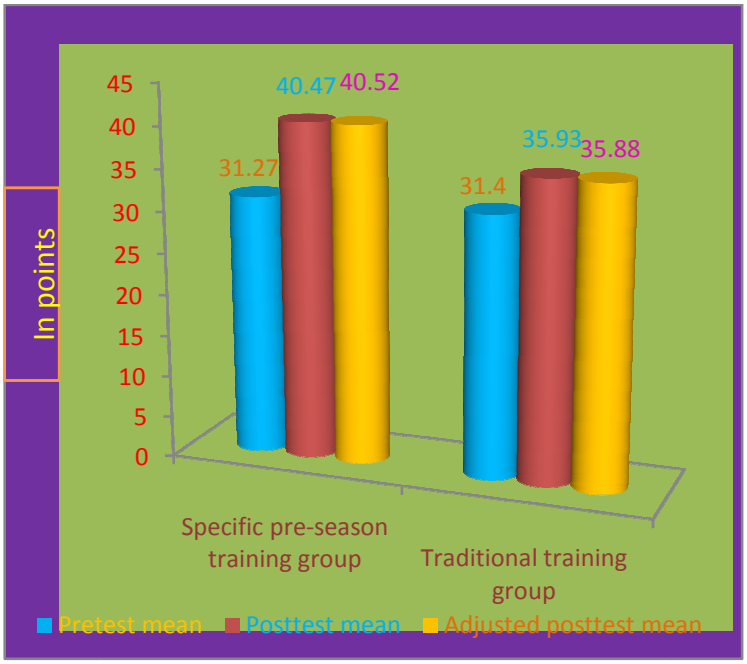
The obtained F-ratio for the post-test was7.56 (P<0.05) and the table F-ratio was4.19. Hence the post-test mean F-ratio wassignificant at 0.05 level of confidence for the degree of freedom 1 and 28.

The adjusted post-test means of specific pre-season training group and traditional training group were 40.52and35.88respectively. The obtained F-ratio for the adjusted post-test means was40.14 (P < 0.05) and the table F-ratio was4.21. Hence the adjusted post-test mean long serve F-ratio was significant at 0.05 level of confidence for the degree of freedom 1and 27.

Pre-test, post-testand adjusted post-testmean difference of the specific pre-season training group and traditional training group on long serve waspresented in Figure II.

FIGURE - II

BAR DIAGRAM SHOWING PRE-TEST, POST-TEST AND ADJUSTED POST-TEST MEAN DIFFERENCES OF SPECIFIC PRE-SEASON TRAINING GROUP AND TRADITIONAL TRAINING GROUP ON LONG SERVE



DISCUSSION ON FINDINGS

The ultimategoal of the researcher was to examine the significant differences between the specific pre-season training and traditional training to improve the selected skill performance variables of badminton players. The theme behind this study was to observe the effects of pre-season training package on selected skill performance variables of badminton players. To achieve this, two different training groups were designed as specific pre-season training (ST) group andtraditional training (TT) group. The study indicated that the specific pre-season training (ST) group and traditional training (TT) group significantly improved the selected dependent variables short serve and long serve.

The results on short serve and long serve showed that there were significant effects due to the influence of specific pre-season training (ST) and traditional training (TT). The results of the study are supported by the following authors.

Manikandan and Sureshkumar (2012)concluded that the ladder training group showed significant improvement on volley pass and serve.

Jayachandra (2012) indicated that the upper body plyometric training with skill movement training improved the cricket ball throwing ability better than the upper body plyometric training without skill movement training.

Ashok Kumar (2012) showed that aerobic training followed by strength training yielded a positive influence on speed, flexibility, aerobic capacity and dribbling performance of male basketball players.

Gurmeet Singh and Yogesh. (2011) concluded that the three different feedback methods significantly increased the clear and smash of badminton beginners.

O'keeffe et al. (2007) evaluated that the fundamental throw teaching programme showed significant learning effects in the fundamental overarm throw but also in the specific sport skills of the badminton overhead clear.

Perez-Gomez et. al. (2008) indicated that a 6 week of strength training combined with weight lifting and plyometric exercises resulted in significant improvements inkicking performance in football (soccer).

CONCLUSION

Based on the findings the following conclusions were derived

1. It was concluded that effect ofspecific pre-season training and traditional training showed a statistically positive sign over the course of the training period on the selected short serve and long serve of badminton players.

2. It was concluded that the effect of specific pre-season training showed significant improvement in short serve and long serve than the traditional training.

RECOMMENDATIONS

1. It is recommended that the specific pre-season training be utilized as a useful training tool to improve the skill performance variables such as short serve and long serve.
2. It is also recommended that similar pre-season training program be evaluated for women badminton players.
3. It is also recommended that various types of variables such as bio chemical and psychological variables be included in the future research.

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