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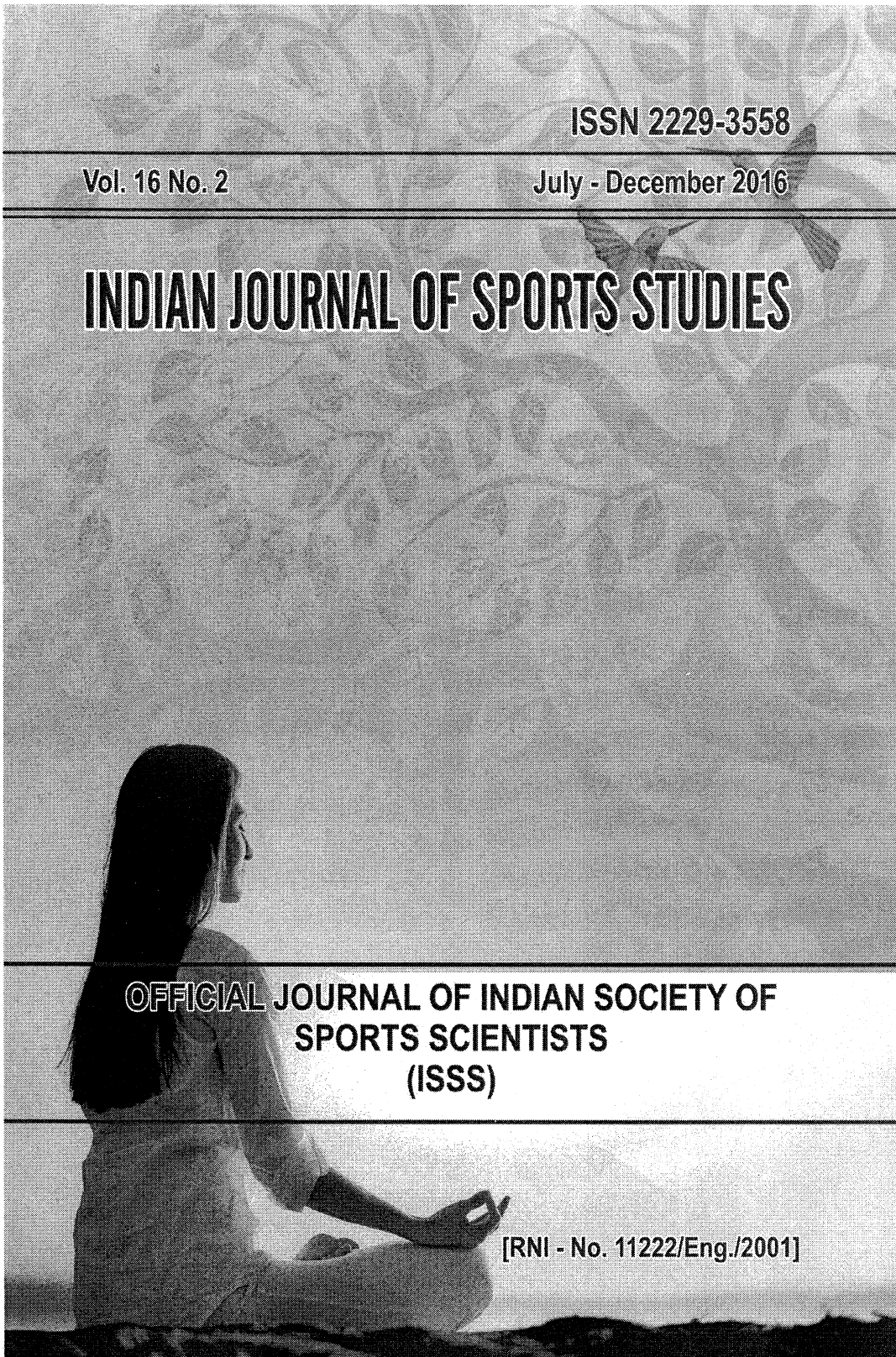
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PREFACE

Sports being the socio-cultural phenomenon have its own significance in the country in general and the immediate social environment in particular. The high achiever in sports will get greater importance in the society and hence, the social status a sportsman gets in the society is very high compared with a no sportsman. The achievement in sports depends on the needs, desires and intrinsic and extrinsic motives of sports person. Achievement motivation in sports is "an athlete's disposition to - approach or avoid a competitive situation" (Cox, 1990). Generally, a remarkable difference can be identified between casual and competitive sports performance. The performance in a competitive situation could often be troubled by personality characteristics of an individual.

Prof. N.B. Shukla

Editor

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DNA TESTING: A NEW HORIZON FORTALENT IDENTIFICATION

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Introduction

Deoxyribonucleic acid (DNA) is an informational molecule encoding the genetic instructions used in the development and functioning of all known living organisms and many viruses. Along with RNA and proteins, DNA is one of the three major macromolecules that are essential for all known forms of life. Genetic information is encoded as a sequence of nucleotides (guanine, adenine, thymine, and cytosine) recorded using the letters G, A, T, and C. Most DNA molecules are double-stranded helices, consisting of two long polymers of simple units called nucleotides, molecules with backbones made of alternating sugars (deoxyribose) and phosphate groups, with the nucleobases (G, A, T, C) attached to the sugars.

DNA is well-suited for biological information storage, since the DNA backbone is resistant to cleavage and the double-stranded structure provides the molecule with a built-in duplicate of the encoded information.

Genetics has long played a role in the understanding of sports performance. Certain body types are well suited to particular types of athletic functions and movements. The Rift Valley of Africa, which includes countries such as Kenya and Ethiopia, has produced more world- and Olympic-champion distance runners than any other place on Earth, due to the slender, relatively long-striding people of that district, who live at altitudes in excess of 6,562 ft (2,000 m). These physical attributes have created a superlative human form for distance running. The people who live near the Baltic Sea in northeast Europe, including Lithuanians and Russians, possess tall, lean, muscular frames, ideally suited to sports such as basketball. These two examples are based on a broad range of experience and athletic success that these groups have enjoyed in the stated sports; genetics research seeks to uncover the scientific foundation in support of these observations.

Genetics is a science distinct from considerations of race or ethnicity. Since 1990, there have been intense research undertakings that have delved into the issues surrounding human genetics, the most comprehensive of them the Human Genome Project. It is now understood that 99.9% of the human DNA sequence is common to all of the world population. The 0.1 % remainder is the source of all genetic differences between people. With the intermingling of different populations over the centuries, it may be no exaggeration that while there are certain clear genetic traits that are common to broad groupings of people, individual uniqueness is so profound that every person of the world's population of almost seven billion could be described as being- their own race.

The conflict between how much athletic ability is rooted in individual genetics as opposed to the influence of training and other factors is often expressed as "nature versus nurture." Genetic makeup will never be determinative in the success of an athlete in a particular sport; gene structure will be a very useful indicator by potential success that must be weighed with the nurturing that athletes receive in their chosen disciplines. Although precise attribution between athletic nature and nurture are impossible, it is a generally accepted sport science proposition that genes represent approximately 50% of athletic variation in performance, with 50% attributable to both the individual athlete's response to training, as well as social factors, such as the support provided to the athlete in pursuit of his or her goals.

An example is the very tall northern European male, who at a height of 7 ft (2 m) would seem to be a far more attractive recruit to the sport of basketball than a person 5 ft 10 in (1.7 m). The gene-governing height present in the taller male represents a potential dominant physical factor, but never a determinative one, as height is but one component of basketball success. Coordination, agility, spatial sense, determination, resilience, and intelligence are all traits that are essential; each is one that may not be capable of development in an athlete, irrespective of height. The fact that a runner comes from the Rift Valley area of Africa, with the genetic makeup that has been a basis for the multitude of successes for similar athletes in middle distances and the marathon, does not guarantee elite athletic status, as training and the determination to compete against similarly endowed and talented runners will spell the difference. Genetics provides certain indications, but not crystal clear predictions, of future

success in any sport. An identified genetic trait, coupled with specific training adaptations, will generally create the desired sport result.

There are a number of critical training factors constructed upon the inherent individual physical traits that will influence athletic success. The ability to increase one's maximum oxygen uptake, expressed as VOZ max, is one such factor. A greater VOZ max represents a correspondingly enhanced ability to convert the bodily fuel sources into energy. VOZ max is a genetic characteristic that may be typically increased through training between 10% and 15%; exceptional athletes have experienced VOZ max gains of 30%.

Interrelationship between genetic makeup and training determination, studies with elite endurance athletes such as cyclist Lance Armstrong confirm that intense, long-term endurance training will modify the ratio of fast-twitch, explosive muscle fibers and slow-twitch, endurance fibers present in the musculoskeletal structure, producing more useful sport-specific muscles.

It is also apparent that the importance of genetics in the prediction of athletic performance is less pronounced when the sport requires the development of a specific set of technical skills, placing primary emphasis upon efficient technique and error-free execution. The physiology of the athlete is of less importance in spoils such as tennis and golf, where repetitions of defined, predetermined maneuvers-such as a tennis serve or a pitching wedge shot in golf-will determine success.

The mental toughness or determination of the individual athlete is also a potential equalizing factor when balanced against apparently superior genetics. It has been said that sport success represents a combination of preparation, training, determination, and genetic makeup. Genetic

research has tended to confirm that while certain types of people have a genetic predisposition to success in certain types of sport, that favorable genetic makeup is never a guarantee that the athlete will achieve success.

Various Types of DNA Testavailable

Paternity Test:

DNA paternity testing determines whether a man could be the biological father of a child. We all inherit our DNA (the genetic material) from our biological parents.

Siblingship Test:

A siblingship test is a DNA test conducted to determine if two children share one or both parents (i.e., if they are half or full siblings).

Grand parentage Test:

A grandparentage DNA test determines whether a couple could be the biological grandparents of a child. It is an indirect way to determine family relationships.

Ancestry DNA Test:

Our Ancestry DNA tests examine your DNA to find out where your ancestors came from thousands of years ago.

Maternity Test:

Maternity DNA testing determines whether a woman could be the biological mother of a child. Like a DNA paternity test, it compares a child's DNA pattern with that of the alleged mother.

Prenatal Paternity DNA Test

In test is done for prenatal testing. This test is very sensitivities in nature. Special care is taken while conducting this kind of test and everything is kept confidential.

Infidelity DNA Test

Infidelity DNA Testing is a new service from advanced DNA designed to help you confirm or dispel any suspicions you may have about your partners' fidelity. Through our DNA testing for Infidelity services, we are able to analyse your samples in our laboratory to verify the presence of human biological stains and to assist in the identification of the likely donors.

DNA Profile

Advanced DNA profile provides the unique identification of a person to obtain a record of their genetic profile, a unique combination of 16 markers found in their DNA that serves as a permanent genetic ID.

Twin Zygosity Test

A twin zygosity test is a DNA test that definitively shows whether twins are identical or fraternal.

Avuncular DNA Test

Avuncular testing assesses whether an individual is the Aunt or Uncle of another person.

Y-Chromosome Testing

Y-Chromosome Test is used to provide additional evidence in difficult paternity cases in which the alleged father is not available for testing-indirectly, it can tell whether or not a child is related to the alleged father's brothers and other male relatives who share a common paternal line.

Talent Identification DNA Test for Athletes

Pro Genetic DNA Test

Pro Genetic Test gives parents and athletes the same opportunities for testing talent identification as do professional and Olympic athletes. This DNA testing help specifically to show athletes, trainers or anyone where their genetic advantage lies.

Knowing this information may be helpful, not in eliminating choices for sport activities, but adding exposure to a host of team or individual spoil events. This test is one tool of many that can help interested individuals realize their athletic potential.

According to leading exercise scientists, the next major wave in improving sports performance will arise from an improved understanding of the genetic basis of fitness - and the application of that knowledge to optimizing event selection and improving training regimes.

Benefits

- Gives parents and coaches early information on their child's genetic predisposition for success in team or individual speed/power or endurance sports.
- Genetic predisposition determination can be valuable in outlining training and conditioning programs necessary for athletic and sport development
- Applies a simple, safe and non-invasive sampling method

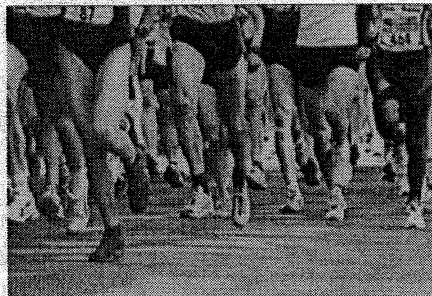
- Safe to use on the youngest of athletes
- Test results may be used later in development with other athletic performance

Scientists have discovered a gene that influences our sports performance. Since then, extensive research has been completed on the subject of the ACTN3 Sports Gene on sports performance. The *ACTN3* gene instructs our body to produce a protein called alpha-Actinin 3. This protein contributes to the muscle's ability to generate forceful, repetitive muscle contraction.

Depending on which variation of the *ACTN3* gene you have, you can be assigned to one of 3 Sports Performance Types. Everyone has two copies of the *ACTN3* gene, with one copy inherited from each parent. In any one gene there may be subtle variations.

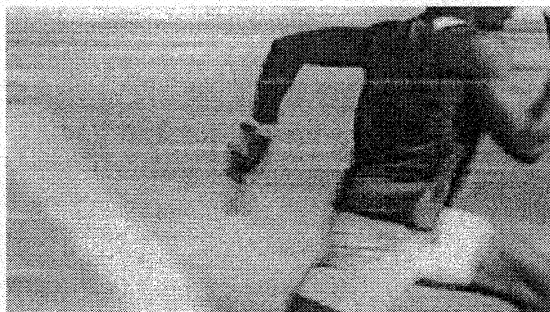
1. XX -TYPE Endurance:

During DNA testing of an individual it is found that the *R577X* variant present in both copies of your *ACTN3* gene these kind of individuals are good for endurance kind of games and sports such as triathlon, long-distance swimming events > 400 m or running events >1000m.



2. RR-TYPE Speed:

During the DNA testing if it found that an individual is missing the *R577X* variant from both copies of the *ACTN3* gene. Those kind of individuals are more suitable for sprint-power events such as track events <800m, swimming events < 200m, field events, short-distance track cycling, rugby, body building and weightlifting.



3. RX-TYPE Mixed Pattern:

If it is found during testing that an individual You have the *R577X* variant present in one of the two copies of your *ACTN3* gene. If you have this combination you may be equally suited for both endurance and sprint-power events.



Conclusion:

The mental toughness or determination of the individual athlete is also a potential equalizing factor when balanced against apparently superior genetics. It has been said that sport success represents a combination of preparation, training, determination, and genetic makeup. Genetic research has tended to confirm that while certain types of people have a genetic predisposition to success in certain types of sport, that favorable genetic makeup is never a guarantee that the athlete will achieve success. On the bases of newly developed DNA test for talent identification of athletes we can be divided them in three groups ie., Endurance, Speed and Mixed Pattern.

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EFFECT OF PRANAYAM ON SLECTED BODY COMPOSITION VARIABLES OF NETBALL PLAYERS

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Yocic exercise are scientific means for strengthen of all living or atrophying muscle fibers and Ossues. This system teaches how to awake new life pulsation in active tissues. In this context it is different from other A system of exercise in as much as it is different from other system exercise in as much as 'it teaches one how to concentrate his alienation on the awakened energy which is tile direct gives of power, strength and vitality of all the parts of the body. It develops will power along with body strength. This aspect of yoga 5 technically known as "asanas" which was developed by the Latin, hotha yogic into a well organized system of physical culture.

Prancyama is a science of Respiration. It consists of three phases Purack, Kumbhak, Rechak. High abdominal pressure created in pranayama by the action and counter action of the different anatomical parts together with the upward pull of the crbra, is responsible for wakening of Kundalini.

The word Pronayam is a compound consisting of two members: Kapal and Bhati in sanskrit Kapal means the skull and Bhati is derived from a Sanskrit rat meaning to shine. Hence Pranayam means an exercise that makes the skull shining. Pranayam is one of the six cleansing processes, known in Hatha yoga as shat kriysa, and is intended to clear the nosal passages contained in the skull, along with the remaining parts of the respiratory system. As the exercise necessarily cleanses a part of the skull, the name Kapalabhoti is appropriately given to it.

The assessment of body composition is generally performed in order to determine and monitor one's health and fitness status, and to aid in planning training programs for athletes. It has been well established that a high percentage of body fat (low lean body mass) is associated with a higher risk of heart disease, diabetes, hypertension, cancer, hyper lipidemia and a variety of other health problems. On the other hand, a high percentage of lean body mass arid low-fat mass is associated with athletic prowess and good health.

OBJECTIVES OF THE STUDY

To know the effect of Pranayam on Body Fat Percentage

To know the effect of Pranayam on Lean Body Mass.

To know the effect of Pranayam on water content

To know the effect of Pranayam on Basal Metabolic Rate.

Methodology Subject

Thirty male Inter University Netball Players of CCS University, Meerut were selected randomly. The age group was from 17-22 years. Further two groups i.e. one experimental group and one control group (each of 15 students) were randomly selected from the selected subjects.

Criterion Measures:

The criterion measures chosen for testing hypothesis were: Body Fat Percentage (%age), Lean Body Mass (Kilogram), Water Content (%age) and Basal Metabolic Rate (Kilo calories).

Training of Pranayam:

There were two groups i.e. control group and experimental group. Control group was not given any kind practice of pranayama however experimental group was exposed to training of Pranayam pranayama for the duration of twelve week. Both the groups were performing their regular practice of the game. For the experimental group the duration of training session was half-an-hour and the training was conducted in the afternoon 3:00 to 3:30 pm from Monday to Friday.

Design of the Study:

- Random group design was utilized for the purpose of the study.

Administration of Tests

The tests for Body fat percentage, lean body mass, water content and basal metabolic rate were administered in the Yoga Research laboratory of CCS University, Meerut with the help of a team of fester and research assistant under the guidance and supervision of the experts using Body composition analyzer with following standard procedure:

- Measure the exact height.
- Step on the equipment.
- Track the exact weight minus the additional weight.
- Feed the build of an individual (standard/Athletic)
- Feed in the gender.
- Feed the age of an individual.
- Feed the age of an individual.
- Feed the height in cms.
- Enter n wait for the process to complete.
- Take out the analyses from print out.
- **Statistical Technique:**

In order to find out the effect of pranayam on selected Body composition variables, Paired 't' test was applied at 0.05 level of significance.

- **Analysis of Data and Result of the Study:**

The statistical analysis of data and results of the study are presented from table 1-4.

Analysis of Data and Result of the study:

The statistical analysis of data and results of the study are presented from table 1-4.

Table-1

Body fat Percentage

Experimental group	3.68	2.60	5.47*
Control group	0.007	0.0764	0.354
* Significant t 0.05(14)=	1.761		

Table-2

Lean body mass

Experimental group	1.01	0.405	9.65*
Control group	0.64	1.471	1.747
* Significant t 0.05(14)=	1.761		

Table-3

Water Content

Experimental group	1.25	0.287	17.24*
Control group	0.69	1.810	1.475
* Significant t 0.05(14)=	1.761		

Table-4

Besal Metabolic Rate

Experimental group	139.7	57.45	9.410*
Control group	0.533	1.45	1.422
* Significant t 0.05(14)=	1.761		

Conclusions: within the limitations of the present study the following conclusions were drawn:

- Significant effect was found on body fat percentage and no change was found in control group.
- Significant effect was found on lean body mass and no change was found in control group.
- Significant effect was found on body water content and no change was found in control group.
- Significant effect was found on basal metabolic rate and no change was found in control group.

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AGRARIAN INDIA & PHYSICAL FITNESS ACTIVITY- 'KUSHTI': AN OVERVIEW

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Agricultural farming and physical fitness has emerged from a long historical background. It is a process that has taken place and still takes place in various formal and informal ways. It has been culture from primitive time to the present days. Primitive human's physical activities, like hunting, fishing and archery were mainly devoted for food gathering, self-defense from wild animals and recreation.

As the time passed away food grains from agricultural farming become the main source of livelihood and besides hunting, fishing and archery, wrestling also become the medium of recreation in the rural India. Today, though no longer driven by subsistence requirements, fitness remains paramount to people's health and wellbeing. If agricultural activity is necessary to produce food grains for livelihood, then physical activity like wrestling is important for fitness of body. Physical fitness of body is very important factor for maintaining body in working condition. Like India, in China teaching of Confucius encouraged people in participation in physical activity. Consequently, the Chinese developed Cong Fu gymnastics to keep body in good working condition. "Exercise for body and music for mind" was slogan of ancient Greek.

The economy of India is agrarian and agricultural production of country depends on the physical capacity of agricultural workers. If agricultural workers are physically healthy and strong, then it will ultimately increase quantum of production. Agriculture and its allied activities lead to produce nutritious products like fresh fruits, vegetables and also milk and ghee. Consumption of these nutritious products with physical exercise like Kushti gives healthy and fit body.

Thus, physical fitness and agricultural activity is inter-related. To maintain body fit and healthy most to rural Indian practice Kushti or wrestling. Wrestling is disciplined way of life that demands rigorous physical and moral training. In this regards it is analogous to the life of rural Indian peasantry. ..

Wrestling is the oldest sport in India. A form of wrestling was found, within scriptures, in this region of the globe dating back 4,000 years ago. The earliest mention of Kushti (also called 'Dangal') is in the Mahabharata an epic that traces its origin to 4000BC. In this epic the warrior Bhima wrestles with the Rakshas King Jarasandha. This is a famous episode and the two had a wrestling bout that lasted for 13 days and at the end Bhima broke Jarasandha backbone and tore apart his body with his bare hands. Over the centuries this form of wrestling continued in India. Because the writings are so old, it is hard to state exactly what the genesis of the sport's rules are. But, these artifacts give more evidence that wrestling truly is the world's oldest sport. Also, during colonial and post-colonial period wrestlers or pahalwans played very important role. They were put in the service of Zamindars in the form of Lathial to protect Zamindars and to help in the collection of land revenue from tenants.

No one knows exactly where Kushti originated. Style of Indian wrestling, also known as Pehlwani and the person referred as Pehlwan. The sport is older than the boundaries that separate the counties of the Indian subcontinent. Therefore, the wrestlers in both India and Pakistan have much respect for each other since they share a common past. Most Kushti wrestlers are vegetarians. Therefore, their diet consists of lentils, flatbread, and clarified butter (ghee). To get the protein they need to keep their strength up they eat a mixture of almonds and milk. This mixture is high in protein and calories.

Unlike most forms of wrestling, there are no points awarded during a Kushti match. There is only one way in which a winner is declared: by pin. Matches are conducted by fixed times (there are no periods or rest, just one continue match). Since matches can only be won by a pin, one can take his opponent down dozens of times during his match. However, if wrestler does not secure a pin, the match will end in a draw. A pin is earned once if opponent's shoulders immediately touch the ground. No blows with the hands are allowed and the men grapple with each other face to face. Matches vary in length depending on how old the contestants are- kids' matches last in 2 in minutes, juniors have matches that last in 5 minutes and seniors have matches that last in 15 minutes. The finals of some tournaments or big matches will be contested with no time limit. They simply wrestle until a pin is earned. Even though there is a "ring" made of chalk on the ground, there are no actual boundaries during a Kushti match. There have been contests that have ended up within the midst of the spectators. The

two opponents continue to wrestle even in the spectators' area until a pin is secured. There is no rest period or 'rounds' and the match once started goes on till one of the players is defeated or signals his acceptance of defeat. Earlier bouts never had a referee and normally this part was played by the Chief Guest who could be a Maharaja. But modern Kushti matches have incorporated a referee.

Akhara is the place where the wrestlers training take place. This is a school for wrestlers where a strict regimen of diet, training and personal life is followed. Normally no non-vegetarian food is served and the stress is on almonds, milk, fruits and pure ghee. The members of the Akhara also lead a celibate life and sex is taboo. The traditional Indian wrestling takes place in "Akhada". Akhada is a place for practicing the Indian wrestling, in other words the school of wrestling. Indian wrestler or pehlwan live under some strict set of rules made by the trainer or ustad or Guru who is invariably a Kushti champion himself. There are very few Akhada's are remaining in India. Some dedicated peoples are still working to keep alive Indian wrestling. The exercise system for the Phelwans also follows the Indian system of exercise and includes exercising with large wooden clubs, Dands (push-ups) and Baithaks (squats). Weights are rarely used and the wrestlers build up their strength by using clubs of various weights and sizes.

This is very popular sport in India as well as in neighbor countries. In Indian wrestling physical training means to build strength and develop muscle. There are some specific exercises that wrestler should do on daily basis, Surya Namaskara, Shirshasan, the Dand and Baithak. The freestyle type of Indian wrestling is one of the most popular and traditional sport of country. Punjab, Haryana and UP are well known for its wrestlers or Pahalwan and its one of best place to learn Kushti or Indian wrestling.

Most of countries have a traditional style of wrestling. In India, Wrestling takes place in a clay or dirt pit. The soil is mixed with ghee and other things and is tended before each practice. Traditional Indian wrestling isn't just a sport - it's an ancient sub-culture where wrestlers live and train together and follow strict rules on everything from what they can eat to what they can do in their spare time. The focus is on living a pure life, building strength and honing their wrestling skills.

After downfall wrestling or Kushti again revived in 19th and 20th century under the patronage of the Maharajas and royalty in India. The Maharaja of Patiala Bhupinder

Singh is famous for having nursed the world Champion Gama Bux. It is on record that Gama in a normal wrestling match floored the world champion Stanislaus Zbyszko in 1935. According to David P. Willoughby's the super athletes, Gama (Gulam Mohammed) was a lowerclass, illiterate Muslim from northwest India, who was a champion wrestler from 1910 until his retirement in the early 1940s Gama's first great accomplishment came at a national exercise competition held by the Rajah of Jodhpur, Jaswant Singh, around 1888. Although only ten years old, Gama persuaded his maternal uncle, Buta Pahalwan, to take him along and then managed to convince his skeptical uncle to introduce him to the Rajah so as to get permission to compete. After hearing that Gama was the son of the great Aziz Baksh, permission was granted. The main contest in the competition was to see who could do the most baithaks (deep knee-bends), one of the most common exercises in a wrestler's regimen. Indian wrestlers regularly do hundreds if not thousands every day, and even at ten years old Gama's daily routine included five hundred. Over four hundred wrestlers from around the country had gathered in Jodhpur for the contest, and at the Rajah's signal the competition began. As wrestlers became tired they left the field until only one hundred or so remained. As more and more retired, all eyes turned on Gama, until, after a number of hours had passed; only fifteen wrestlers were left exercising. At this point Raja Jaswant Singh ended the contest saying that the ten year old boy was clearly the winner in such a field of stalwart national champions. Later, upon being asked how many baithaks he had done, Gama replied that he could not remember, but probably several thousand. Gama was consuming twenty litres of milk, half a litre of clarified butter, 3/4 of a kilogram of butter, and four kilograms of fruit per day. In has won many wrestling champion during this period. India has won titles in Commonwealth Games held at Jamaica. India has hosted the world wrestling championships. The famous Indian wrestler, Sushil Kumar has won medal in the 2008 Beijing Olympic Games. Sushil Kumar has also made a history by reaching in the final of London 2012 Summer Olympics. The Indian World Champion wrestler Sushil Kumar is the winner of the gold medal in the 66 kg freestyle competition at the FILA 2010. Yogeshwar Dutt another Indian wrestler has won a bronze medal in London Olympic Games 2012. The great Khali, the giant wrestler from India real name Dalip Singh Rana also know as Giant Singh. Khali the great is a professional wrestler of WWE. Khali is the first Indian professional wrestler to be signed a contract by World Wrestling Entertainment. He was a police officer in the Punjab state police. Khali has

faced many challenges to its entire journey from Dalip Singh Rana to the giant wrestler.

In contemporary India, physical fitness practice like Dand and Baithak related to wrestling or Kushti, have been included in the physical examination test for recruitment of personnel of police and armed forces. During 20th century wrestling or Kushti become popular in rural India. In local fairs Dangal have been organized, in which wrestlers or pahalwans from different parts of country were used to take part. Presently the Champion Phelwan in India is given the title Rustam-e-Hind after name of the hero of the Iranian epic. Unfortunately this sport is confined to India and Pakistan.

Thus, Kushti has been one of the main physical activity of body fitness in the rural India. It has a very closed relation with areas dominated by agricultural activity. That is why Kushti or wrestling become a passion in the

agriculture based states of UP, Bihar, Punjab, Haryana and MP. Traditional Indian Kushti and agricultural activities are intermixed and correlated activities as both are related to mud or clay of our motherland.

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Effect of sports culture on health related physical fitness components

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Abstract

Introduction: Health related physical fitness is very important for living in a productive manner with full enjoyment of life. The social culture with regular physical activity contributes the potential developmental status with optimum health and better quality of livelihood. Exercises comprise with movement and different games have some positive benefits to the different fitness factors. The purpose of the study was to find out the influence of a 09-week sports culture programme on health-related physical fitness components, which were cardio respiratory endurance, flexibility, abdominal strength endurance, upper body strength endurance and body mass index of middle-aged women. Sample: 20 women aged between 25-40 of Kapasdanga, Hooghly in West Bengal were considered as the subjects for the study. Method: There was single group design as no Control groups were there. The subjects underwent training thrice a week for 09 weeks. The pre and post-tests were conducted on the subjects to collect the data on the variables of the study. Analysis of data: The data were analyzed by appropriate statistical procedure to determine the significance of improvements. Findings and Conclusion: Significant ($p < .005$) differences were found in case of all the fitness variables as the effect of sports culture. It was concluded that the sports culture comprises with regular physical exercises, playing different sports and some theoretical informative classes has positive beneficial effects to middle aged female.

Key- words: Culture, Sports Culture, Fitness, Physical Fitness, Health related physical fitness

Introduction:

Culture is the mixture of different factors such as knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society

stimulated by the environment, climate, culture, socioeconomic condition etc. We have a great tradition of competitive games and play with entertainment. Among the different developmental factors the physical, physiological, psychological and social developmental factors are most important and the benefits of exercises on these factors have already been established. The intensity, volume and the type of such exercise is an interesting area of search to the physical education and sports professional. How different sports may be consider as the different movement oriented program for the betterment of the middle aged women is very important as the middle aged women are the careers of the future citizen. hen if they absorb the culture of exercise and play for their development then it must be transformed to the next generation and gradually the whole society Benefitted from it. Under this consideration having some experience of research about the effect of exercise on different developmental factors of female in different age the present research work was formulated.

The purpose of the study was to found the development of health related physical fitness variables through the sports culture. The emphasis of the present study was given on to the movement culture with the help of different sports and general fitness training and found its effect on the general health related fitness parameter.

The body fatness is inversely related to most fitness items, while physical activity is positively related to only several fitness items [3][2][5].The physical activity level (PAL) and activity related energy expenditure (AEE) was found to increase with age, showing the importance of age dependent recommendations [1]. The effects on performance and work capacity of a short term (3 week) integrated body weight reduction programme at a constant metabolic load concluded that the changes in exercise capacity induced by the present programme offer significant advantages for obese patients that can be quantified in terms of an improvement in their ability to perform everyday activities [7]. Accordingly the observations reinforce the importance of regular physical activity in the prevention and reduction of obesity related health risk, independent of corresponding reduction in body weight [9].In case of the association between life style related modifiable health risks (Physical activity, cardio respiratory fitness and obesity) and work performance the lifestyle related modifiable health risk factors significantly impact employee work performance [4].

MATERIALS AND METHODS

About 20 middle aged women age ranging between 25-40years were considered as the subject of this study. The test of the fitness variables was taken in the clubroom. After that in the second day the 1.5 km. run and walk were taken on the playground which was previously marked. The same tests were conducted by the same personnel following same method on all the subjects after successful completion of 9 weeks sports culture program comprises with fitness exercises, stretching, joint mobility exercise, different sports programme and lecture session and the data were recorded.

The Health Related Physical Fitness variables are as follows:

- a. Cardio-respiratory Endurance (C.R.E.); 1.5 km run and walk (in min. & sec.)
- b. Flexibility (Flex.) ; V-sit & Reach (in mtr.)
- c. Upper body strength endurance (U.B.S.E.); Flexed arm hang (in Sec.)
- d. Abdominal strength endurance (A.S.E.) ; Partial curl-ups(in no.)
- e. B.M.I. ; Weight (Kg.)/ Height² (mtr.)

RESULTS AND DISCUSSION

The p-values of different means and different co-relations in pre and post exercise conditions of fitness variables have presented in the following different tables and the results and discussions are takes place accordingly.

Table-1: Means, S.D. and p-value of different Health related Physical Fitness variables in

Pre and Post-test conditions.

FitnessVariables	Pre Test		Post'fcst		p-value	Alpha
	Mean	SD	Mean	SD		
Cardio Respiratory Endurance (min.)	19.47	2.29	.168-8-1	.90	.0001	.05
Flexibility (Cm.)	12.80	5.82	15.60	5.53	.007	OS -05
Abdominal strength Endurance	GS	99	2.20	1.51	.0001	.05

(No.)							
Upper Body Strength Endurance(o.)	.60	2.60	0.88	1.19	.0001	.05	
B.M.L(I{g.hntr)	28.69	4.23	23.95	3.57	.0001	.05	

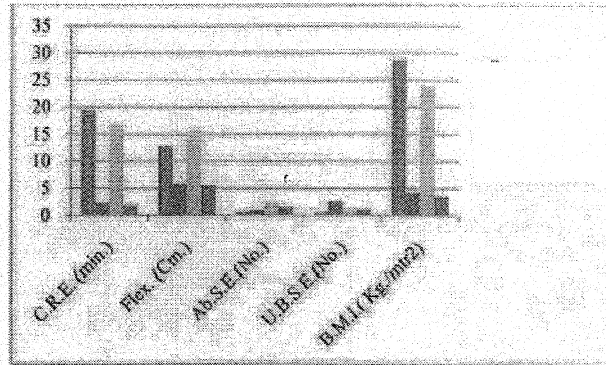


Fig: The graphical representation of comparison in Means and S.D. of different health related physical fitness variables in pre and post training session.

Table- 1 shows the mean and S.D. of different Health Related Physical Fitness variables in two phase of training. Except Flexibility significant differences were found in case of different other variables. As the computed p-value (Bold) is lower than the significance level alpha-0.05, then it is clear that the mean of Cardio-respiratory endurance, Flexibility, Abdominal strength endurance, Upper body strength endurance and Body mass index in pre and post exercise condition bears significant differences. The graphical presentation of comparison in means and S.D. of cardio respiratory endurance, flexibility, upper body strength endurance, abdominal strength endurance and body mass index are shown in the given figure.

Table-2: Correlations of Health Related physical fitness variables in pre and post-test.

Variables	C.R.E. PRE	Flex. PRE	A.S.E. PRE	U.B.S.E. PRE	C.R.E. POST	Plcx. POST	A.S.E. POST	U.B.S.E. POST
C.R.E. PRE	0	0.395	0.076	0.505	0.002	0.394	0.601	0.486
flex. PRE	0.395	0	0.466	0.664	0.775	0.000	0.778	0.433
A.S.E. PRE	0.076	0.466	0	0.011	0.046	0.619	0.004	0.111
U.B.S.E. PRE	0.505	0.664	0.011	0	0.052	0.321	0.008	0.014
C.R.E. POST	0.002	0.775	0.046	0.052	0	0.359	0.036	0.007
Plcx. POST	0.394	0.000	0.619	0.321	0.359	0	0.749	0.302
A.S.E. POST	0.601	0.778	0.004	0.008	0.036	0.749	0	0.008
U.B.S.E. POST	0.486	0.433	0.111	0.014	0.007	0.302	0.008	0

Values in bold are different from 0 with a significance level alpha 0.05

Table-2 shows the correlations of different health related physical fitness variables in pre and post-test. Significant positive relations were found in ease of endurance, flexibility, abdominal strength endurance, and upper body strength endurance considering their pre and post measurements. Abdominal strength endurance and upper body strength endurance both in pre and post tests were significantly correlated but after training only in case of post data it has found that the cardio respiratory endurance was significantly correlated with both the strength endurance i.e. Abdominal and upper body.

A Sahana et al. (2010) founds that cardio-respiratory endurance, flexibility; muscular strength endurance and decreased skin fold thickness (body fat %) among the experimental group of middle-aged women after 12 weeks of aerobic training. Irwin et al. reported that an increase in duration (min/week) of physical activity had a significant association with the reduction of total fat. A review by Ross and Janssen suggested that all increase (> 1500 kcal/week) in physical activity for a short period (=16 week) was associated with a reduction in total fat mass in a dose-response manner. Here in this study due to very moderate intensity activity consisting of different sports and exercises, the results also support the said results as significance changes occurred in case different physical fitness parameters except flexibility as the intensity of the joint mobility exercises were very poor. Robbert (2002) has mentioned that exercise aids in weight loss and maintenance by burning more calories. There is an increase in Body Weight during the period of 20 to 50 years of age but an identifiable reduction in Body Weight is noticed during pre-70 years, Brochu et al. (1983) and Silver et al. (1993).

CONCLUSIONS:

On consideration of the above results and discussion it may be concluded that the sports culture comprises with regular low intensity physical exercises, playing different sports and some theoretical informative classes has positive beneficial effects. The effect of sports culture on the basis of planned and scientific application of long term low intensity practice, practice match, quality interaction with potential sports culture leaders must have fitness benefits of middle aged female.

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ERGOGENIC AIDES ITS EFFECT ON PERFORMANCE OF ATHLETES

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Sport today is big business and to success in sports has become highly valued and very competitive. For this reason many athletes have turned to ergogenic aids to give them that winning edge (Julie Heysmand. 2016).

An ergogenic aid is a substance used to increase the potential for work out. The word ergogenic derived from the Greek words "ergo" meaning work "gen" meaning the production of the term ergogenic aid refers to substance that can increase the capacity for bodily or mental labor, especially eliminating fatigue symptom. Ergogenic aids are dietary supplements intended to enhance athlete performance. In the context of exercise or sports. An ergogenic aid can be broadly defined as a technique or substance used for the purpose of enhancing performance by improving energy efficiency. Athletes often look for a "magic bullet" that can give them an advantage over their opponent. Many athletes have turned to ergogenic aids in hopes of achieving edge on their opponents. The term ergogenic means "tending to increase work" and in the context of sports, includes technique used to increase energy production and performance. Nutrition and psychological ergogenic aid continue to be used regularly and safely. The use of carbohydrate loading, vitamins, electrolyte solutions, ritual preparation procedure, visualization and stress management technique receives little attention in the popular press. But these can be considered ergogenic aids. The ergogenic aids receiving the greatest attention in the last several decades are the pharmacology aids. Anabolic-androgenic steroids, blood doping, erythropoietin, human growth hormone, clenbuterol and caffeine are some of the ergogenic aids currently used by athletes attempting to achieve superior performance.

Throughout history athletes have experimented with ergogenic aids to improve performance. Since the very first Olympic Games athletes have tried various means to give them the "Winning edge". Ancient Greek Olympians ate mushrooms to enhance their performance, the Aztecs ate human for the same reasons and Roman gladiators were "doped up" to make their fights more exciting for the paying audience. In the 19th

century, the French concocted vin mariani. A drink of coca leaves and wine. Which reportedly reduce fatigue and hunger sensation during prolonged activity. In the late 1800s marathon runners frequently drank alcohol during races. Brandy, champagne, and another then-popular "stimulant", strychnine. Were used American athletes. In 20th century. The use of stimulants in 1952 Olympic winter games, followed by suspicious of anabolic steroid use by the soviet athletes in 1954. Focused attention on the use of ergogenic aids. In the 1960s saw the dramatic increase in drug abuse, with amphetamines in the deaths of several cyclists. The apparent wide spread use of anabolic steroids at the 1964 Olympics was severe enough to warrant drug testing at the 1968 Olympic games. Improvement in detecting using mass spectrometry and gas chromatography resulted in the disqualification of 19 athletes from the pan American Games in 1983, and in the surrender of silver medal by Martti Vainio 1984 Olympic Games and gold medal by Ben Johnson 1988 Olympic Games, Today ergogenic aids and drugs continue to play a role in sports and have been the focus of much controversy.

Ergogenic aids can be classified as nutritional, pharmacological, physiological, psychological and mechanical. They may be legal or illegal, safe or unsafe.

Nutritional ergogenic aids refer to substances that enhance performance and are either nutrients, metabolic by-product of nutrients, food extracts, or substances commonly found in foods (e.g. caffeine and creatine) that are provided in amounts ergogenic aids work by entering a well-established nutritional metabolic pathway or because they consist of one or more known nutrients. For instance, taking extra carbohydrates to improve performance makes the carbohydrate, by definition, a nutritional ergogenic aid. Also, taking creatine monohydrate to improve sprint performance makes creatine a nutritional ergogenic aid because creatine is a normal constituent of food, its consumption causes creatine to enter a known metabolic pathway.

In most cases, the performance-enhancement claims attribute to ergogenic aids exceed reality. Since many of the products are considered foods, nutrients, or nutrient based products, there are few controls for government's agencies to police these claims. The only truly credible sources of information come from public scientific works and the office of Dietary supplements of the National Institute of Health, where

improvements are seen, it is often due to placebo effect: people believe it will help, so it actually helps even though there is no biological basis for the improvement. In other cases, improvements occur because the product is providing a chemical missing from the foods that an athlete commonly consumes. For instance, body builders often take protein powder or amino acid powders to aid the enlargement of muscle mass. However, studies indicate that the rate of protein usage by the body is well below the level consumed by those who take this protein powder. The body's limits for using protein to build muscle and maintain tissue is much lower than the amount of protein commonly consumed through food and protein supplements. The upper limits of protein usage is below 2 grams per kilogram of body weight and those who take protein supplements often take more than 3 grams of protein per kilograms of body weight. The excess protein is burned as a fuel or stored as fat, but it can't be used to build mere muscle. It is also known that body builders frequently consume an inadequate level of energy. This energy inadequacy makes it difficult for them to support their larger muscle mass. The reason the extra protein appears to be ergogenic is more likely to be because of the calories provided than because of its potential tissue-building effect.

The non-nutritional ergogenic aids, including anabolic steroid and their analogues, continue to be used by athletes, but because they are nearly universally banned by sports organizing bodies. (IOC, NCAA, USOC, and so on). These are some banned performance enhancing drugs. Amphetamine are central nervous systems stimulating drugs that increase alertness and self confidence, improve concentration, decrease appetite and create a feeling of increase energy. Amphetamine such as Benzedrine, Adderall, and Dexedrine have a high potential for addiction and are on the banned substances list of most, if not all sports organizations. Anabolic Steroids are synthetic version of the male hormone testosterone, non medical use of anabolic steroids is illegal, but some athletes continue to use them in an attempt to improve sports performance, despite evidence that using this way can cause many serious health problem. The manufactured version of DHEA (Dehydroepiandrosterone) as well as the designer steroids. Androstenedione and tetrahydrogestrinone are all precursors to hormones, such as testosterone, and work in similar manner to anabolic-androgenic steroids. Caffeine is naturally occurring substance that has been used by endurance athlete for years as a way to stay alert and improve endurance. While generally not harmful, it

does have side effects. Ephedrine is classified as a supplement and is freely available, but is not on the banned list of many sports organizations. Research has not found any improvement in strength, endurance, reaction time, anaerobic capacity, or recovery time with ephedrine supplements, but there are serious side effects athletes should be wary of. Erythropoietin is a naturally-occurring hormone, produced by the kidneys that stimulates the production of red blood cells. This hormone can also be manufactured and injected. Most recently, Erythropoietin is on the banned substance list, some claim cyclists continue to use it to boost performance. Hem Assist is a class of drug called a hemoglobin-based oxygen carrier (HBOC). HBOCs are experimental drugs that carry oxygen in the blood for a short period of time. They are designed to act as blood substitutes for trauma patients. Hem Assist was in the final stage of clinical trials in 1998, when research was stopped due to safety concerns. Now it is banned. Blood doping involves putting extra blood into the body which increases the level of hemoglobin thereby providing an increased oxygen carrying capacity for delivery to and use by the working muscle. The extra blood can be the athlete's which has been previously withdrawn or can be from another person. Blood doping is banned in sports because of the potential danger to an athlete's health and the unfair advantages associated with the practice. The risks associated with blood doping are bacterial infection, congestive heart failure, hypertension and blood clots. Oxygen is essential for the production of energy by aerobic processes. The greater the body's capacity to supply oxygen to muscle during exercise, the greater the ability to maintain aerobic activity without fatigue. If a person can improve their capacity to utilize oxygen they are likely to improve their performance in endurance events. To increase the oxygen carrying capacity of the blood some athletes train at higher altitudes where the air contains less oxygen. The body then adapts to the shortage of oxygen by increasing the number of red blood cells. When the athlete returns to sea level the increased oxygen carrying capacity of the blood should enable the athlete to push harder and faster.

Clearly the use of banned ergogenic aids to enhance performance in sports is unacceptable and will be an issue which continues to be addressed at an international level. There is no place in sports for any activity which puts the health of an athlete in danger. However, the search will continue for new techniques and substances to give athletes a winning edge as they strive to be best in their field.

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AGGRESSION IN SPORTS: ROLE OF GENDER & SUCCESS ORIENTATION

Amrita Pande

Abstract:

Aggression is a multifaceted phenomenon. It is associated with gender and also with success orientation. 84 sports person participated in the study; 50% were males and 50% were females. They were administered Aggression Questionnaire by Buss & Perry; and Success Orientation Scale by Zander. Two hypothesis were tested, the first stated that males have significantly more aggression than females; and the second read as, individual success oriented sportsperson have significantly more aggression than group success oriented sportsperson. A 2x2 factorial design was used. Data were treated by 2 way ANOVA Results Supported hypothesis.

Introduction: -

Aggression is defined as physical or verbal behaviour intended to hurt someone. This definition covers two distinct types of aggression hostile aggression and instrumental aggression. Hostile aggression springs from anger, its goal is to injure. Instrumental aggression aims to hurt only as a means to some other end. Aggression could be seen among every human being and primates also. Even sports may be arranged along a scale according to the intensity and type of aggression inherent in each. Some sports require that a great deal of physical force be directed against one's opponent, whereas others require forceful actions against the environment instead of direct aggression. Many sports, however, require the individuals aggress within structured rules and specified conditions (Cratty, 1983).

Researchers, specially of social psychology and psychology made attempts to search the biological factors in aggression. Freud (1905) hypothesized that aggressive behaviour is principally the result of an innate biological motive that he called "death instinct." The specific aggressive behaviour patterns in a given individual are influenced by experience and learning processes that take place during childhood, but the underlying basis for aggression is biological (Krans, 1997).

Lorenz (1966) also believed that aggressive behaviour is largely instinctual- a biological given built into the organism by birth. The biological mechanism of human aggression lie in the genetic substance of behaviour. (Edelbrock, et al. 1995).

However, social learning theory holds that observing such behaviour in people who serve as models learns most aggressive behaviour. Bandura (1965) conducted a classic series of studies to test this approach, and got supporting evidences. Recent studies also support the social learning hypothesis (Kobayashi, et al. 1995). This approach seems to be a note useful in explaining aggression in sports. The cognitive "removal" of guilt associated with aggressive acts in sports has been discussed by Vaz (1996), as well as others (Silva, 1978). Essentially, it is often found that in athletes higher level of aggression are sanctioned by teammates, coaches and others observing and impinging upon the athletes performance.

There are degrees of aggressive behaviour in sport some of which are productive and desirable, but others are potentially catastrophic. An individual may harbor aggressive feelings towards life, people and competitive situations as a result of early child rearing. As this individual reaches a high level of activation in a sports situation, these feelings may become focused on an opponent, a team, or coach, which may result in a direct act of aggression held within the rules of the sport.

Researchers revealed gender differences in aggression. Bjorkqvist (1994), on the other hand found that there is no gender difference with regard, to aggression. Eagly and Steffen (1986) conducted meta-analytic review of gender differences and found that men were somewhat more aggressive than women on average. Crick & Grotpeter (1995) found that girls were significantly more relationally aggressive than were boys. Thus, research studies brought out different results. Present study intends to search gender (sex) difference in aggression among sportspersons; and examine the extent to which individual success oriented and group success oriented sport persons differ from each other with regards to aggression.

Main aim of the study is to examine gender difference between selected male and female sport persons in aggressive behaviour, and study whether the individual success oriented sportpersons differ significantly from each other in aggressive behaviour.

Hypotheses: -

Following hypotheses were tested in the study:

1. Aggression is significantly more among the male sport persons than the female sport persons.
2. Individual success oriented sports persons are significantly more aggressive than group success oriented sport persons.

Sample: -

Total sample of study consisted of 84 Ss only. All were sport persons, having age range 21 to 24 years. Male-Female ratio was 1:1. The subjects were selected first randomly from two physical educational institutes of Nagpur and then classified in four groups on the basis of gender and success orientation.

Tools Used For Data Collection

1. Aggression Questionnaire: - This questionnaire is constructed by Buss & Perry (1992). There are 29 statements in this questionnaire. Each statement is provided with 5 alternatives ranging from "extremely uncharacteristic of me" though "extremely characteristic of me". It measures four factors of aggression namely physical aggression, verbal aggression, anger and hostility. In this study only total score is taken which provides aggression measures. Reliability of the questionnaire was .83.
2. Success Orientation Scale: - This scale is consummated by Zander. It is a short scale having 12 items only. Each item is provided with two point scale i.e. Yes/No. Reliability of the scale is

Procedure Of Data Collection

The instruments were administered on small groups of Ss, consisting 10-15 Ss each. Before administering the scales rapport was formed through informal conversations. There were no time limits to toe scale, but the subjects were told to work as fast as they can. Filled copies were collected at the end.

Results & Discussion

In this study gender and success orientation were treated as independent variables and aggression was treated as dependent variable. Each independent variable was varied at two levels, so a 2x2 factorial design was used. Original sample was divided into four classified groups. This classification had shown unequal cell frequency. Since two way analysis of variance was to be used it was necessary to keep equal cell frequency. In one group minimum cell frequency was 21, so in each group cell frequency was kept 21. Extra subjects were deleted randomly. Means and Standard Deviation obtained by the four classified groups are shown in the following table.

Table No. 1. Means and SDs obtained by four classified groups on aggression measure

Group	A1B1	A1B2	A2B1	A2B2
X	62.38	50.57	48.95	38.86
S	6.87	5.80	4.52	4.76

A1= males, A2= Females, B1= Individual Success Oriented, B2= Group Success Oriented Even from the face value of means, it is clear that the four classified groups differ remarkably from each other. Examination of means and Sds shows that the distribution of scores in each of the four classified group is more or normal. When the data were treated by two way Analysis of Variance (ANOVA) the following results were obtained.

Table No. 2. Sunuuary of two way ANOVA.

Source of Variance	Ss	df	MS	F
A: Gender	3318.8 5	1	3318.8 5	107.16* *
B: Success Orientation	2519.0 5	1	2519.0 5	81.34** 1
AxB:	15.43	1	15.43	0.50

Within	2477.6 1	8 0	30.97	
Total	8330.95	83		

From the ANOVA results it is clear that males and females differ significantly from each other on aggression ($F = 107.16$, $df = 1 \text{ \& } 80$, $p < .01$) Males exhibited significantly more aggression than females. Meta-analytic review by Eagly and Stetien (1986) found similar results. Success Orientation also brought out significant results ($P = 81.34$, $df = 1 \text{ \& } 80$, $p < .01$). Sportpersons

having predominance of individual success orientation had shown significantly more aggression than the sportpersons having group success orientation.

From the results, it appears that gender and success orientation functioned independently in the process of generating aggression among the sport persons. On the basis of the results, the following conclusions were drawn: -

- Males sport persons were significantly more aggressive than female sport persons.
- Sport persons having individual success orientation were significantly more aggressive than the sport persons having group success orientation.

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IMPACT OF YOGIC GLOBLISATION IN 21ST CENTURY

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In worldwide area, "yoga" refers to traditional physical and mental disciplines with the goal of attaining a state of mind characterized by imperturbable calmness, happiness, and wisdom. But in the past century, yoga has also become established as- (1) a scientifically validated system of alternative health care, and, (2) a form of physical exercise.

Yoga has been practiced for more than 5,000 years. Although in the West it has been known mainly as a system of breathing exercises, physical postures and meditation, yoga has traditionally also included lifestyle guidelines and ethical standards in support of spiritual development.

Since ancient times, people in India believed that the human body is indeed an instrument of *dharma*. Hence the body is to be properly nourished, and maintained. In medieval Karnataka people gave as much importance to physical exercise as to literary education. The principle of "a sound mind in a sound body" was not only accepted but also faithfully practiced. The system of *yoga* was the first step in spiritual training. *Yoga* comprises full-fledged toning of the body and mind. It includes the use of various body postures to control breathing and muscle movements.

The spread of literacy in the West between 1500 and 1800 coincided with a new awareness that fitness helps the mind. Gymnasiums opened across Europe, the first in Copenhagen in 1799. The German *Turnverein* movement grew, expanding to the United States with immigration. Per Ling developed a teaching system for physical education in Stockholm in 1814, and Otto Spiess (1810-1858) popularized another system in Germany. As public schools in Germany, Denmark, and the United States tried these systems, physical education joined baccalaureate curricula, becoming a major at Columbia University in 1901 and elsewhere later.

Japan's schools have linked physical and mental training since the 17th century. Public schools with compulsory physical education were founded in 1872; the

trend since 1945 has been toward individual physical and mental development. The Soviet Union, after 1917, placed great emphasis on physical education, both in schools and in special physical education institutes.

Today, physical education is a required course in many primary and secondary schools in countries with compulsory education. Most teaching takes place inside gymnasiums or other facilities built specifically for physical education activities, although outdoor sports are also emphasized

Yoga helps us to develop and maintain physical fitness, alertness and overall health. It strengthens our muscles, skeletal frame and Cardio-vascular system and helps us to maintain a healthy weight. Yoga boosts our Immune System and helps prevent various diseases such as heart disease, diabetes, improves mental health and prevents depression.

Benefits of Yoga:

- Reduces the risk of heart disease, high blood pressure, bone diseases, Diabetes and
- Controls body weight and composition.
- Keeps flexible and agile.
- Helps relieve stress, anxiety and prevents depression.
- Increases strength and stamina.
- Promotes sound sleep.
- Increases digestion.

Aim of globalisation in yoga:

- To promote the value of Yoga in India and abroad.
- To open an ashram with all the facilities and run regular full time/ part time yoga teacher training courses and to give free yoga training to school students and financially backward youth and train them to become yoga teachers and get job placements as yoga teachers in India and abroad.

- To educate people with benefits of Yogic therapy benefits, beyond the common belief that Yoga is for spiritual enlightenment only
- To continue to spread the ancient art of Yoga.
- To lobby to the Health Department of India to build world class Yoga hospitals to treat patients suffering from various ailments which can be treated by the practice of Yoga.
- To lobby with the Olympic Committee to include Yoga as a bonafide sport in the Olympic game.

In the Western world, one aspect of yoga known as Asana, has grown increasingly popular as a form of physical exercise. Although some Western forms of yoga seem to have little to do with spirituality, mainly emphasizing fitness and health, as the practice of yoga has spread, it has increasingly acknowledged and incorporated its traditional spiritual roots. In the past 10 years, most yoga schools have grown to take an approach that is more in tune with traditional yoga, incorporating mental and spiritual development as well as purely physical culture. "The concept of yoga is broadening as more people take it up," says one of the leading figures in yoga theory and practice, Swami Satyananda Saraswati.

Yoga was introduced to American society in the late 19th century by Swami Vivekananda, the founder of the Vedanta Society. He traveled and lectured on Indian philosophy in the U.S. for three years, and taught yoga in group classes. In the 1960's two close disciples of T. Kriahnamacharya, B.K.S. Iyengar and T.K.V. Desikachar, brought a health-oriented approach to yoga to America, with great success. Both teachers developed therapeutic treatments for respiratory, cardiac, stroke, and injury victims, as well as therapies for mental illness and disabilities. In the 1980's Dean Ornish, MD, a follower of Swami Satchidananda, published research establishing yoga's positive impact on heart disease, legitimizes yoga for many Westerners.

A survey released in December 2008 by the National Center for Complementary and Alternative Medicine focused on who used complementary and alternative medicine (CAM), what was used, and why it was used in the United States by adults age 18 years and over during 2007. According to this survey, Yoga was the 6th most commonly used CAM therapy in the United States during 2007, with 6.1

percent participating. Yoga is considered a mind-body intervention that is used to reduce the health effects of generalized stress.

Yoga dates back to over 5,000 years, and is a form of a spiritual practice in India. In the West, Yoga as an alternative medicine has evolved from its founding philosophy into a form known as Yoga Therapy. In the UK this has taken the form of a National Occupational Standard, (NOS) for the delivery of Yoga Therapy to clients.

Today, yoga is a lucrative and growing business. A 2008 poll by Harris Interactive on behalf of *Yoga Journal* magazine revealed that about 15.8 million Americans spend nearly \$6 billion annually on yoga classes. The same study found that of the non-practitioners of yoga polled, nearly 8 percent, or 18.3 million Americans, say they are extremely interested in yoga.

Yoga is believed to calm the nervous system and balance the body, mind, and spirit. It is thought by its practitioners to prevent specific diseases and maladies by keeping the energy meridians open and life energy flowing. Yoga has been used to lower blood pressure, reduce stress, and improve coordination, flexibility, concentration, sleep, and digestion.

It has also been used as supplementary therapy for such diverse conditions as cancer, diabetes, asthma, AIDS and Irritable Bowel Syndrome.

Restorative yoga is often associated with healing from diseases. Restorative yoga is yoga practiced in a very relaxed state by using supports instead of muscular tension to maintain the pose alignments. Restorative poses help relieve the effects of chronic stress in several ways. At first total relaxation. Second, to move the spine in all directions. Third, a well-sequenced restorative practice. Because we stand or sit most of the day, blood and lymph fluid accumulate in the lower extremities. By changing the relationship of the legs to gravity, fluids are returned to the upper body and heart function is enhanced. Fourth, restorative yoga alternately stimulates and soothes the organs.

The popularization in the West of the medical aspect of Yoga is largely attributed to Dr. Swami Sivananda Saraswati's Bihar School of Yoga¹ and Dr. Nagarathna Raghuram MBBS MD FRCP, Chief Medical Director of Swami Vivekananda Yoga University. Most yoga classes consist of a combination of physical

exercises, breathing exercises, and meditation. These characteristics make yoga a particularly beneficial kind of exercise for people with certain health conditions, including heart disease/hypertension, asthma, and back problems.

In 2005, scientists at the University Of Texas conducted an experiment on 61 breast cancer patients. Thirty of the patients participated in yoga around the time of their radiation treatments. The yoga was customized for the cancer patients; it focused on breathing and relaxation, and excluded difficult exercises, given possible limitations on range of motion. The study found increased physical function, slightly better levels of social functioning, and lower levels of sleep dysfunction and fatigue. But there was no difference in rates of anxiety or depression.

In the West, Yoga has become popular as a physical exercise. Currently, it is estimated that about 16 million Americans and about 5 million Europeans practice a form of yoga. But it is still followed in a manner consistent with tradition throughout the Indian subcontinent. The traditional guru-student relationship that exists without sanction from organized institutions, and which gave rise to all the yogis who made their way internationally in the 20th century, has been maintained in Indian, Nepalese and some Tibetan circles.

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