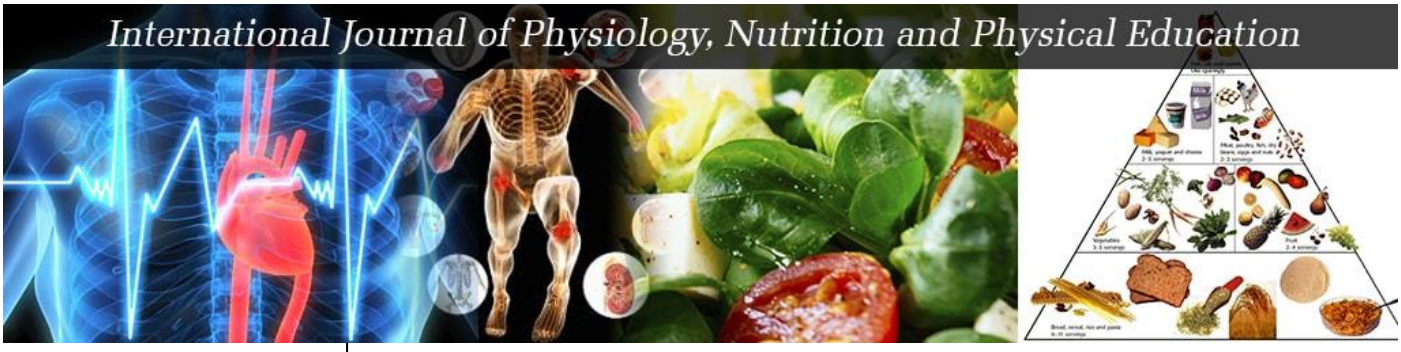

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Exploration study on physical fitness among offensives and defensive male Kabaddi players of Nagpur district

Dr. Lemdeo B Nagalwade

Abstract
The present study aims to explore the physical fitness among offensive and defensive male Kabaddi players at Inter District Kabaddi Competition of Nagpur District in Maharashtra. For this study, experimental method and physical fitness tests (Speed–30 meters run, Agility (shuttle run)–30 meters run, Endurance– 800 meters run) are applied to Kabaddi players to compare their physical fitness performance., 20 offensive and 20 defensive Kabaddi players at Inter District Kabaddi Competition of Nagpur District were selected randomly for this study. The age group of the subjects was between 14 to 17 years. The data was computed and analysed by using descriptive statistics like mean, standard deviation and t-test in order to compare the significant difference between offensive and defensive Kabaddi players. The result reveals that the overall physical fitness performance of offensive Kabaddi players is high as compared to defensive Kabaddi players. The result indicates that there are significant differences between offensive and defensive kabaddi players at Inter District Kabaddi Competition of Nagpur District.

Keywords: Physical fitness, kabaddi, speed, agility, endurance, offensive, defensive

Introduction
Physical fitness refers to maximum functional capacity of all system of the body. We are exercising when ever we move and keeping our body tuned and in a good running order. The body of human is framed in such a way that it can jump, climb, bend, stretch and do more tedious work. The human body becomes more stronger as it exerts more and muscles involvement matters a lot in shaping it. Exercise helps in improving our health and builds up our energy and stamina.

Physical fitness is a state of health and well- being and, more especially, the ability to carry out daily task with vigor and alertness, and to meet unforeseen emergencies without undue fatigue. Fitness can also be defined as any form of physical movement that utilizes multiple muscle groups in the body.

Fitness is the condition of being physically fit and healthy and involves attributes that include, but are not limited to mental acuity, cardiorespiratory endurance, muscular strength, muscular endurance, body composition, and flexibility. While there is a standard definition for fitness, each individual can have their own personal understanding of what fitness means. To some individuals, being fit means the ability to complete a marathon or lift a lot of weight. To another, it could mean walking around the block without becoming short of breath. Your definition of fitness will be influenced by your interests, physical abilities, and goals. No matter what the definition, it is important for every individual to keep their personal definition of fitness within a healthy framework. This means you should have realistic expectations and maintain balance and moderation in all aspects of life. Set small, attainable goals and avoid giving too much power to the numerical measurements of fitness. This can help your journey to fitness seem much less daunting and much more enjoyable

Physical fitness is generally achieved through proper nutrition, sufficient rest and moderate-vigorous physical exercise. Physical fitness is one of the most important keys to a healthy body. It is the reason, a state of general well-being marked by physical health and mental stability. A person who is fit is capable of living life to its fullest extent. People who are physically fit are less prone to medical conditions and are more able to function at the peak of

intellectual capacity.

Components of Physical Fitness
Physical fitness can be broadly divided into Metabolic fitness, Health- related and Skill-related.

Metabolic Fitness
It depicts the physiological systems' state of health when they are at rest.

- **Blood pressure:** It involves indirect measuring the effectiveness of the heartbeat, adequacy of blood volume and presence of any obstruction to vascular flow through the use of sphygmomanometer and a stethoscope. Normal BP is 120/80
- **Pulse rate:** It is the number of throbbing sensations felt over a peripheral artery when the heart beats. Normal ranges from 60 to 100 pulses per min.
- **Blood insulin:** Insulin test measures blood samples for the amount circulating insulin, responsible for blood glucose usage by surrounding tissue. Normal values are 5 to 20µm/mL while fasting. Lower than normal suggest Type 1 diabetes and above normal level suggests Type 2 diabetes.

Health- related Fitness
Good health have a strong relationship with health related components of physical fitness because it determines the ability of an individual to perform daily activities with vigor and demonstrate the capacities associated with low risk of premature development of the hypokinetic diseases. It is also known as physiological fitness.
The main aims of health-related fitness testing are:

- Educating clients about their present health-related fitness status in relationship to standard age and sex-matched normative values
- Providing data that are helpful for making clinical decision while prescribing exercises to address all fitness components
- Collecting baseline and follow up data that allow evaluation of progress by exercise program participants
- Motivating participants by establishing SMART goals
- Stratifying cardiovascular risk

The components of health-related fitness includes: body composition, muscular endurance, muscular strength, cardiovascular endurance and flexibility.

Body Composition
Body composition can be expressed as the relative percentage of body mass that is fat and fat-free tissue using a two-compartment model. It can be measured with both laboratory and field techniques that vary in terms of complexity, cost, and accuracy. Anthropometric methods are: Body mass index, Circumferences and Skinfold measurements. Hydrodensitometry weighing, plethysmography are some methods used in lab.

Skin fold thickness: Measurements involve measuring skin and subcutaneous adipose tissues at several different standard anatomical sites around the body and converting these measurements to percentage body fat.

% body fat = (fat weight/total body weight) * 100

BMI: Key index for relating a person's body weight to height.

BMI= M/(H*H), where M= body mass in kilograms and H= height in meters
(A higher BMI score usually indicates higher levels of body fat)

Waist to hip ratio: Measured using a tape measure around the waist and the largest hip circumference. The ratio is a simple calculation of the waist girth divided by the hip girth.

Muscular Fitness
It include muscular endurance and strength. They determine bone mass, glucose tolerance, musculotendinous integrity, and ability to carry out ADLs. Muscle function tests are very specific to the muscle group tested, the type of contraction, the velocity of muscle movement, the type of equipment, and the joint range of motion.

Muscular Strength: It is the muscle's ability to exert force at high intensities over short periods of time. It can be assessed either statically or dynamically. Static or isometric strength can be assessed by using various devices such as dynamometer and tensiometers. 1 repetition maximum (1-RM), the greatest resistance that can be moved through the full range of motion in a controlled manner with good posture, is the standard for dynamic strength assessment.
Muscular Endurance: It is the ability of muscle group to execute repeated contractions over a period of time sufficient to cause muscle fatigue, or to maintain a specific percentage of the maximal voluntary contraction for a prolonged period of time. Absolute muscular endurance is the total number of repetitions at a given amount of resistance is measured. Relative muscular endurance is the number of repetitions performed at a percentage of the 1 -RM (eg: 75%) which is in both pre- and post-testing.

Cardiorespiratory Endurance
Cardiorespiratory fitness is related to the ability to perform large muscle, dynamic, moderate to high intensity exercise for prolonged periods. The performance depends upon the functional state of the respiratory, cardiovascular, and skeletal muscle systems. The criterion measure of cardiorespiratory fitness is determined by maximal oxygen uptake (VO2max). The best measure of cardio-respiratory fitness is VO2 max, volume (V) of oxygen used when a person reaches his or her maximum (max) ability to supply oxygen (O_2) to muscle tissue during exercise.

Flexibility
Flexibility is the ability to move a joint through its complete range of motion. It is important in the ability to carry out ADLs and in athletic performance. It depends on a number of specific variables including distensibility of the joint capsule, adequate warm-up, and muscle viscosity. Flexibility is joint specific, thus, no single flexibility test can be used to evaluate total body flexibility. Goniometers, inclinometers, electrogoniometers, the Leighton flexometer and tape measures are some common devices to measure flexibility in degrees. Sit and reach test is one of the flexibility test.

Skill-related Fitness
It is also known as performance-related fitness components. It is associated with athletic competition but should be considered in the overall fitness of all individuals. These

components are pertaining with the athletic ability of an individual. There are 6 components of physical fitness: balance, co-ordination, agility, speed, power, and reaction time.

Balance

Balance is the ability of an individual to maintain their line of gravity within their base of support. It can be classified into static and dynamic. Balance is control by three different system: somatosensory, visual and vestibular system. It can be assessed by various outcome tools such as berg balance scale, BESTest, etc.

1) One leg stance test- Individual is asked to stand on 1 leg for 10s with eyes open or closed
2) Sharpened Romberg's test- Individual stands with both feet in tandem (feet touching heel to toe) with eyes closed to mask the problem with balance.
3) Time up and Go test- This balance test measures the time needed to rise to standing from a chair, walk 3m, turn, walk back to chair and sit down.

Coordination

It is the ability to use the senses, such as sight and hearing, together with body parts in performing motor tasks smoothly and accurately. Alternate hand wall toss test is one the test via which co-ordination can be assessed.

Finger to Nose test- This test is designed to observe the smoothness and timing of arm movement. The individual is asked to repetitively touch the nose using the index finger and then to touch the clinician's outstretched finger.

Power

It is the rate at which one is able to exert maximal force. Vertical jump test and hop test are some examples of power testing for lower extremity. Medicine ball throw test can be used to assess upper extremity power.

Agility

Agility is defined as "a rapid whole-body movement with change of velocity or direction in response to a stimulus". It performs a series of explosive power movements in a rapid succession in opposing directions.

Reaction Time

Reaction time is related to the time elapsed between stimulation and the beginning of the reaction to it. Reaction time is affected by several variables including attentive, cognitive and motor functions. Three basic reaction time paradigms have been described:

- Simple reaction time has a single stimulus and a single predefined response,
- Recognition reaction time has several false stimuli mixed with one correct stimulus prompting the response, and
- Choice reaction time involves multiple stimuli and differing responses for each stimulus.

It can be assessed via Ruler drop test. Please watch the video below to understand this test.

Speed

It relates to the ability to perform a movement within a short period of time. Speed combined with strength will provide power and force. Sprint test is one of the example of the test that can be used to examine person's speed.

Objective of the Study

The main objective of the study is:

To study the physical fitness among offensive and defensive male Kabaddi players at Inter District Kabaddi Competition of Nagpur District.

Hypothesis

Based above objective of the study, the following hypothesis has been tested.

There are significant differences in physical fitness among offensive and defensive male Kabaddi players at Inter District Kabaddi Competition of Nagpur District.

Significance of the Study

The study on physical fitness among Kabaddi players has more significance.

This study will help to compare the order of dominance components of physical fitness of offensive and defensive Kabaddi players.

This study also will help to physical education teachers for picking up talent persons for training then according to requirements.

The study may be helping in determining the student's weakness in a particular component.

Methodology

The purpose of the present research study is to explore the level of physical fitness among male offensive and defensive male Kabaddi players at Inter District Kabaddi Competition of Nagpur District in Maharashtra. This study is based on primary and secondary sources of data. To collect the primary data through questionnaire on physical fitness among Kabaddi players, 20 offensive and 20 defensive Kabaddi players at Inter District Kabaddi Competition of Nagpur District have been selected randomly for this study. The age group of the subjects was between 14 to 17 years. For this study, the experimental method has been used to compare the physical fitness among the offensive and defensive male Kabaddi players. The physical fitness tests (Speed30 meters run, Agility (shuttle run)-30 meters run, Endurance-800 meters run) have been applied to Kabaddi players to compare their physical fitness performance. The data was computed and analysed by using descriptive statistics like mean, standard deviation and t-test in order to compare the significant difference between offensive and defensive male Kabaddi players.

Results and Discussion

Physical fitness performance between offensive and defensive male Kabaddi players was showed in the Table 1. Mean and Standard deviation and t-test values of the selected dimensions of offensive and defensive male Kabaddi players were computed and presented in the Table 1.

Table 1: Physical Fitness Performance between Offensive and Defensive Kabaddi Players

Physical Fitness Components	Type of the Player	N	Mean	S.D	t - value	df	Sig.	Result
	Offensive Player	20	0.049	0.0041				
Speed					2.968	38.0	0.0050	Significant
	Defensive Player	20	0.046	0.0023				
	Offensive Player	20	0.229	0.0099				
Agility					0.656	38.0	0.5156	Insignificant
	Defensive Player	20	0.227	0.0138				
	Offensive Player	20	2.507	0.1264				
Endurance					- 3.114	38.0	0.0030	Significant
	Defensive Player	20	2.723	0.2841				

The result reveals s that the mean and standard deviation values on the speed variable for offensive players and defensive male Kabaddi players were recorded as 0.049, 0.0041 and 0.046, 0.0023 respectively. It shows that the offensive Kabaddi players have performed significantly better than their defensive Kabaddi players. The 't' value is 2.968 and it is statistically significant. It indicates that there is a significant deference between offensive and defensive Kabaddi players. The mean and standard deviation values on agility variable for offensive and defensive male Kabaddi players were recorded as 0.229, 0.0099and 0.227, 0.0138 respectively. It shows that the offensive Kabaddi players have performed slightly better than their defensive Kabaddi players. The 't' value is 0.656 and it is statistically insignificant. It indicates that there is no significant deference between offensive and defensive Kabaddi players. The mean and standard deviation values on the endurance variable for offensive players and defensive male Kabaddi players were recorded as 2.507, 0.1264 and 2.723, 0.2841 respectively. It shows that the offensive Kabaddi players have performed significantly better than their defensive Kabaddi players. The 't' value is - 3.114 and it is statistically significant. It indicates that there is a significant deference between offensive and defensive Kabaddi players.

Conclusion

In conclusion, the results of the present study confirm that offensive male Kabaddi players are comparatively better than defensive male Kabaddi players of Nagpur District in Maharashtra. Offensive male Kabaddi players are superior to defensive male Kabaddi players in Speed and Agility where as defensive male Kabaddi players are superior to offensive male Kabaddi players in Endurance. This shows that regular energetic activity produces physical fitness improvements among Kabaddi players.

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