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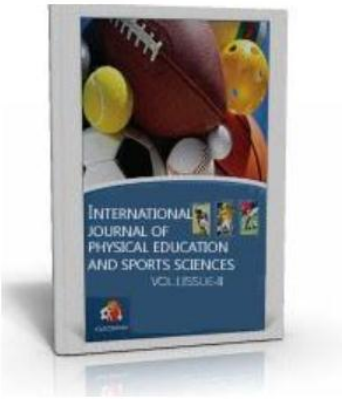
Comparison of Physical Fitness between Basketball and Volleyball Players



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ABSTRACT

The purpose of the present study was to compare the Physical fitness among Basketball & Volleyball Players of Lakshmibai National University of Physical Education, Gwalior, India. Forty (40) male University Players were selected. Twenty (20) male subjects were selected from each group. The subjects age ranged from 22±3 years. The variables for the study were Cardiovascular Endurances, Muscular Endurance, Agility and Flexibility. The statistical analysis of data revealed that Volleyball & Basketball players had significant differences in Cardiovascular Endurance, Agility and Muscular Endurance Whereas no significant difference was found in flexibility between basketball and volleyball players at 0.05 level of significance.

Key Variables:- *Cardio Vascular Endurance, Agility, Muscular Endurance, Flexibility*.

INTRODUCTION:

Lack of activity destroys the good condition of every human being while movement & methodical physical exercise save it & preserve it.

Physical fitness is a matter of fundamental importance for an individual's well-being as well as for the progress and security of a nation. It is the base for all other forms of excellence. Health & physical fitness have remained the motto of man from ancient times (Robert, 1973). Sportsmen are physically fit when they can meet both ordinary & the unusual demands of daily life safely & effectively without being overly fatigued and still have energy left for leisure & recreational activities (Hoeger, 2007). Today is an era of minimum input & maximum output and for this; every possible work is being done to increase efficiency.

Every perspective angle is being thoroughly scrutinized by researchers & scientists together, so that sportsperson can get maximum mechanical advantage to improve their physical

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fitness (Gardiner, 1955). It is known fact that doing sports is the for-most effective way to keep oneself healthy. A physically fit sportsman can perform better and will have a long and rich life. His entire success in life depends on his/her physical fitness. In fact the desire to establish a scientific approach to the development of physical fitness was the primary reason for meeting of physical education in 1985 that resulted in the birth of as profession (Nixon, 1956) .Even the research findings show that high level of technique perfection alone can't produces success in competitive sports. Most of games & sports demand higher level of physical fitness to achieve the high level of performance (Johnson & Buskisk, 1975). Physical fitness improves the total personality of the human being; it can be useful for optimum performance of the game and sports in competitive situations.

Performance of an athlete in the sports is not only depends upon the scientific and good quality equipments, clothing, training schedule but also contributes to the success of an athlete in sports such as agility, balance, coordination, speed, power & reaction time. Athlete who wishes to achieve high level of performance should have good physical fitness and regular physical exercise that stimulates growth & development. Fitness improves general health & is essential for full & vigorous living. Physical fitness is the ability to do daily task with vigor & alertness without undue fatigue & with ample energy to engage in leisure pursuit & to meet emergency situations (Hoeger 2007). Therefore the purpose of this study was to compare the physical fitness between Volleyball and Basketball players.

MATERIALS & METHODS:

For the purpose of this study (N=40) subjects were purposively selected from Lakshmibai National University of Physical Education (LNUPE), Gwalior, India ,who had participated in All India Inter University tournament or west zone in either basketball or volleyball. Each group had twenty subjects and administration of the test i.e. physical fitness was carried out at LNUPE campus at the end of coaching camp in the year 2010.The age of subjects ranged from 22±3 years. For comparing physical fitness between Volleyball and Basketball players on the selected variables, data was obtained by administering the selected variables and test.

VARIABLES

1) **Cardiovascular Endurance:** 12 min. run-walk test was used to measure cardio vascular endurance & performance was recorded nearest every 25 meters.

2) **Muscular Endurance:** Bend knee sit-ups were used to measure the muscular endurance of abdominal and performance was recorded in number.

3) **Agility:** 4 X 10meters shuttle run was used for measuring agility and performance was recorded to nearest tenth of seconds.

4) **Flexibility:** Sit & reach test was used and performance was recorded in cm.

FINDINGS:

To compare the Physical Fitness between Basketball & Volleyball players, independent 't' test was applied at 0.05 level of significance. The statistical analysis of physical fitness variables are given in table-1.

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Table – 1

Descriptive Analysis of Physical Fitness of Volleyball and Basketball Players

Variables	Sports	Mean	SD	N
Cardio Respiratory Endurance	Volleyball	2172.75	141.41	20
	Basketball	2305.40	131.56	20
Muscular Endurance	Volleyball	53.40	8.83	20
	Basketball	43.90	7.10	20
Agility	Volleyball	10.55	.82	20
	Basketball	10.01	.71	20
Flexibility	Volleyball	38.45	4.58	20
	Basketball	40.85	3.40	20

It is evident from table-1 that performance on cardiovascular endurance, agility and flexibility of basketball players are better than volleyball players whereas muscular endurance of volleyball players is better than basketball players. However, whether physical fitness of basketball and volleyball players differs significantly independent t test was applied and results are given in table-2.

Table – 2

Comparison of Physical Fitness Variables between Volleyball and Basketball Players

Varibles	Std. Error Difference	t	df	p-value
Cardio Respiratory Endurance	43.19	3.07	38	.00
Muscular Endurance	2.53	3.75	38	.00
Agility	0.24	2.21	38	.03
Flexibility	1.27	1.88	38	.06

Table 2 reveals that significant difference was found in cardiovascular endurance, agility and muscular endurance between basketball and volleyball players as the p-value ($p<0.05$) are less than 0.05. Whereas no significant difference was found in flexibility between basketball and volleyball players as the p-value ($p<0.05$) is greater than 0.05.

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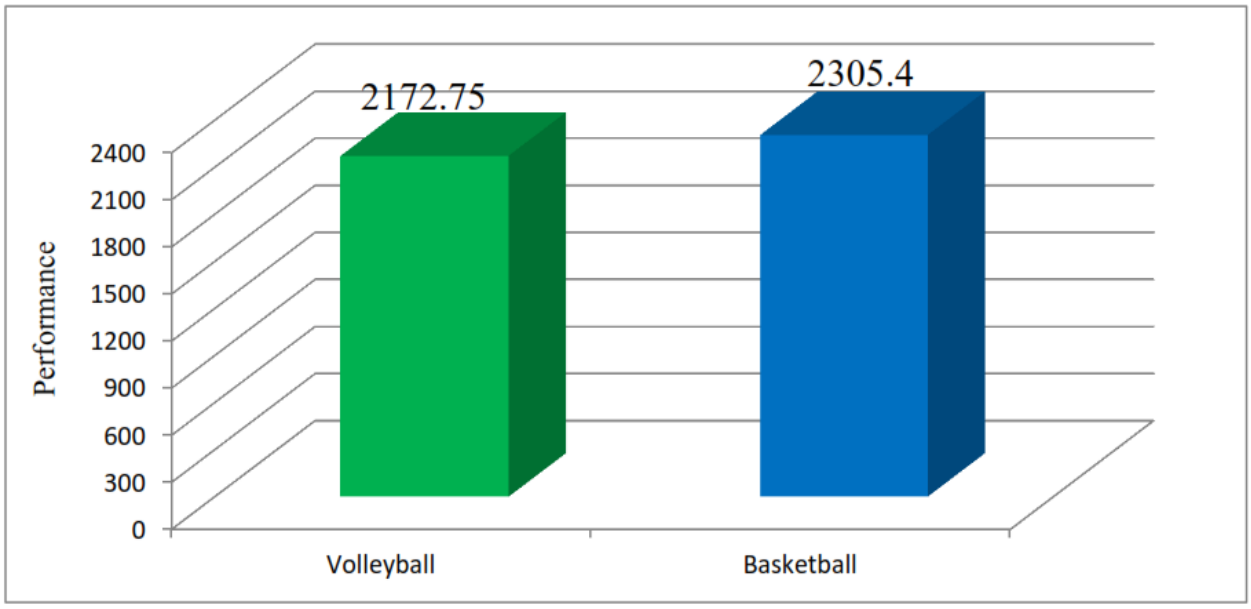

Figure-1: Graphical representation of Cardio Vascular Endurance of Volleyball and Basketball Players

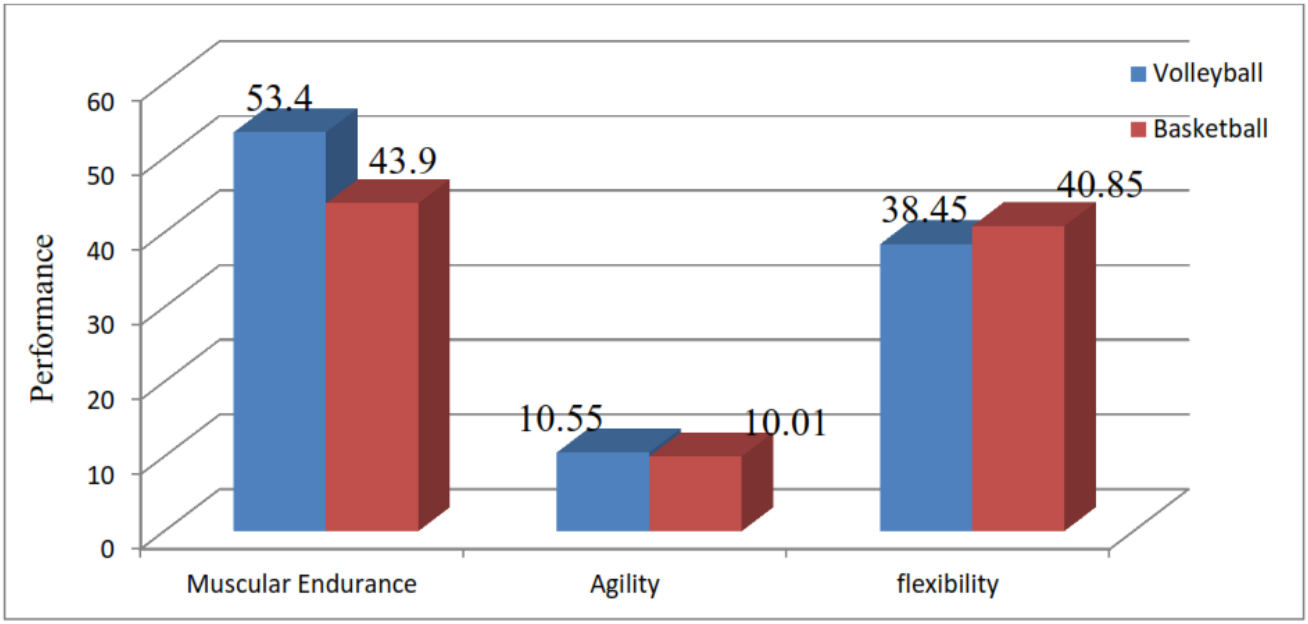

Figure-2: Graphical representation of Muscular Endurance, Agility and Flexibility of Volleyball and Basketball Players

DISCUSSION:

The finding of the present study showed that there was significant difference between basketball & volleyball players in case of cardiovascular endurance, agility and muscular endurance whereas no significant difference was found in flexibility between basketball and volleyball players at 0.05 level of significance.

Basketball players have better cardiovascular endurance and agility than volleyball players because the game of basketball is characterized by frequent starts, stops, and changes of

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direction including running, jumping, jogging etc. and all movements are maintained over a period of 40 minutes at fairly high tempo which puts lot of stress on the circulatory and respiratory system of the players where as in case of volleyball nature of the game and involvement of cardiovascular endurance is may be much inferior to that of basketball and a volleyball player have to restrict their movements to a limited area which is much lesser to that of basketball. Basketball players performed frequent dodging and faking movements to beat the opponents on the court and move quickly towards the basket where as in volleyball such kind of movements are restricted only at the time of spiking. Elite basketball players have been found to have superior agility and sprint times compared to average-level players (Delextrat, 2008). Basketball performance is thought to be mainly dependent on the players anaerobic ability, high aerobic fitness is also important for improved performance (Stone,1993). Studies have shown that a good level of aerobic capacity is important for good performance for athletes (Paffenbarger,1991).

Muscular Endurance of volleyballers was found high may be due to the reason that a volleyball player needs to smash ,block ,service etc all these movements need muscular strength and endurance where as in basketball only dribbling ,shooting is restricted which involve less muscular strength and endurance as compared to volleyball. Muscular strength especially of legs, arms, abdomen and fingers are the important requirement of a volleyball player. Spiking contributes 44% of the game which is the outcome of muscular strength and power of legs and arms. Strength of arms muscles for diving, rolling, blocking and even in serving plays a dominant part in the volleyball game (Horak, J. 1978).

Flexibility of volleyball and Basketball players was found to be similar because of the fact that both the games need high and similar level of flexibility. Both games required jumping, sudden change movements and involve more muscles of trunk to perform movements which improves the flexibility of basketball and volleyball players upto the same extent. In volleyball and basketball the players have to move suddenly in forward direction, sideways or downward directions, so flexibility of hip and back is of utmost importance. Lee E.J. et al. (1989) have found significant and positive correlation between vertical jump and hip flexion.

Therefore it can be revealed that overall physical fitness of basketball players is better than volleyball players on selected variables. Physical fitness is very important for all the games and sports and forms a condition for higher performance. Mal (1982) stated that the components of physical fitness like strength, speed, endurance, flexibility and the various coordinative abilities are essential for a high technique and tactical efficiency. Depending upon the demand of the game, each factor of physical fitness should be optimally developed. Findings of this exploratory study suggest that the players of volleyball and basketball differ significantly in relation to physical fitness variables. Further investigations are needed on the above studied variables along with physiological variables to assess relationships among them and with performances in volleyball and basketball players. The information derived from this study will not only serve scientists and coaches in their selection of young athletes, but provide guidelines for training programs for volleyball and basketball players.

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