

Research Paper :

Assesment of the cardio-vascular fitness and self-concept of badminton players of low and high performance ability

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ABSTRACT

Thirty male badminton players (15 District and 15 State level) were randomly selected for this study. All the players residing in Lucknow city and their age ranged from 19 to 25 years. The criteria measures chosen for this study were data on cardio-vascular efficiency of above mentioned badminton players which was measured with the help of Harward step test and self-concept assessed through the questionnaire. The questionnaire which was used in a present study had 48 questions each having five possible answers and corresponding scores. The scores made by the subjects on the 48 questions were added to obtained the final self-concept score. To find the significant difference among high and low performance badminton players in their cardio-vascular fitness and self-concept (each dimension) ability 't' test was employed. It was observed that high and low level badminton players had significant difference among them in cardio-vascular fitness as obtained 't' ratio of 2.27 was greater than the required 't' value 2.05. Whereas high and low performance badminton players did not show significant difference among them in all dimensions of self-concept.

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Human beings are psycho-physical in nature. They have bodies which obey certain definite laws of growth. These must be kept in a state of health and physical fitness. Education of body through physical exercises, sports and athletics activities help to develop qualities of initiative, courage, discipline, fair play and team spirit. We cannot realize fully our intellectual capabilities without health and physical vigour. No great nation can be built without strong physical foundation. The sports performance depends largely on physical fitness, strength, muscular endurance, flexibility and cardio-vascular efficiency are the basic components of physical fitness. Although the physical fitness characteristics of strength, muscular endurance and flexibility are important. They are more effectively linked to the strength of the heart and lungs. Hence, cardio-vascular endurance is the most essential physical fitness components.

The statement is also supported by Johnson and Nelson, they state that cardio-vascular endurance is unquestionably one of the key component of physical fitness and to some physical educators, it is the single most indicative measures of person's physical condition.

badminton is a game which although played in a relatively small area, involves almost continuous movement on the court and thereby puts considerable demand on the cardio-vascular systems of the player. To enable badminton players at higher level of competition to maintain their speed, reflex and agility for long duration, cardio-vascular efficiency plays an important role.

An individual develops an idea or a picture about himself in terms of his physique appearance physical power etc. through interaction with others as well as through self-observation. The complex of his ideas about himself is called his self-concept. It is the basic to human nature to project this self-concept in the form of an ideal self and then to attempt for the realization of this projected self. What an individual thinks of himself is therefore of vital significance as he would strive to become in reality what he conceives to be in thought. Self-concept is the most important single attribute and key to understanding the behaviour of an individual. The importance of role of self-concept as a determinate the human behaviour and its acceptance as a concise measure and critical factor of personality is increasingly realized. Adjustment,

academic achievement and general behaviour are among the development features of an individual. The importance of cardio-vascular fitness and self-concept has been accepted in relation to the performance in different competitive sports. In light of the literature and personal experience in the field of sports, specially, in badminton, scholar is of the opinion that effect of cardio-vascular fitness and self-concept will be worth studying on different levels of badminton players.

Objective:

To assess the cardio-vascular fitness and self-concept of badminton players of low and high performance ability.

Hypothesis:

It was hypothesized that there would be significant difference between badminton players of low and high performance ability in their self-concept and cardio-vascular fitness.

METHODOLOGY

Thirty male badminton players (15 District level and 15 State level) who had participated recently in their respective competitions were randomly selected for this study. All the players were residing in Lucknow city and their age ranged from 19 to 25 years. To test the hypothesis, the following criteria measure were chosen. Self-concept of the players was assessed through a standard questionnaire prepared by Sherry *et al.* (2004).

Cardio-vascular fitness:

To measure this fitness of the players Harward step test was employed (Montoye, 1969).

The raw scores of each dimension of each subject were converted into standard score. The composite scores of each subject were computed by adding the standard scores of all the eight dimensions of subject (Table 1).

Table 1: Areas of self-concept		
Sr. No.	Dimensions	Factor
1.	Health and physique	A
2.	Temperamental qualities	B
3.	Academic status	C
4.	Intellectual abilities	D
5.	Habits and behaviour	E
6.	Emotional tendencies	F
7.	Mental health	G
8.	Socio-economic status	H

Statistical analysis:

Data on cardio-vascular efficiency of the subjects were measured with the help of Harward step test. The fitness index (score) was obtained using the following formula:

$$\text{Fitness index} = \frac{\text{Duration of exercise in seconds} \times 100}{2 \times \text{sum of pulse counts after exercise}}$$

For scoring the self-concept, a questionnaire prepared by Sherry *et al.*, was used in the present study, which has forty-eight questions each having five possible answers and corresponding scores. The scores made by the subjects on the forty eight questions were added to obtain the final self-concept score. After administering the test on physical and psychological dimensions through Harward step test and self-concept questionnaire respectively on high and low level badminton players. The significance of difference between the mean was worked out by the following formula:

$$t' = \frac{DM}{\sigma DM}$$

where,

DM = difference between both the means,

σDM = Standard errors of the difference between the mean,

For the mean difference to be significant at 0.05 level of confidence the 't' value obtained should be greater than 2.05.

OBSERVATIONS AND DISCUSSION

The comparison of cardio-vascular efficiency among high and low performance level of badminton players showed significant difference. Hence, hypothesis for this variable is accepted. To compare the cardio-vascular efficiency of high and low level performance Badminton players 't' test was employed and data related to this are presented in Table 2.

Degree of freedom = 28

Significant at 0.05 level of confidence.

't' value needed to be significant at 0.05 level with 28 degree of freedom is 2.05.

The analysis of data in Table 2 shows that there is a significant difference between high level and low level Badminton Players of Lucknow District in the cardio-vascular efficiency as obtained 't' ratio of 2.27 is greater than the required 't' value 2.05.

Degree of freedom = 28

't' value needed to be significant at .05 level with 28

Table 2: Significance of difference of mean of high and low level badminton players on their cardio-vascular efficiency

Group	Mean	S.D.	Mean difference	S.E. of difference mean	't' value
High level badminton players	87.86	18.2	21.06	9.27	2.27
Low level badminton players	66.80	29.6			

N= 30

Table 3: Significance of difference of mean of high and low level badminton players in their of self concept (N=30)

Dimension	Factor	Group	Mean	D M	σ DM	't' value
Self-concept	Composite score of all factor	High level	50.28	1.43	10.30	0.14
		Low level	51.71			

N= 30

degree of freedom is 2.05.

In considering the composite score *i.e.* the total of standard score of the eight dimensions of self-concept the means found for high and low level badminton players were 50.28 and 51.71, respectively (Table 3). The mean difference obtained 1.43 which was not statistically significant at 0.05 level of confidence, as the 't' value was 0.14, which is lower than the required value of 2.05.

The reason may be attributed to the fact that high performance level badminton players were able to bear more stress produced by the game. It has been proved that physical fitness of a player is directly related to his performance in any game. Hence, the high performance level badminton players will have better cardio-vascular efficiency. Insignificant difference was observed in the dimensions of the self-concept among high and low level performance badminton players. Hence, hypothesis for this dimension is rejected. Basically, Badminton is an expensive game. Hence, mostly players from high and upper middle class play this game. As they belong to almost same socio-economic status, they acquire almost same experience on and off the field, which are responsible for the development of self-concept of an individual. Hence, their way of thinking, attitudes and behaviour patterns develop in the same direction. This may be the reason for the insignificant difference in self-concept of high and low performance level badminton players.

Conclusion:

Within the limitations identified and on the basis of the results of the study, the following conclusions were

drawn-

– High performance level badminton players had significantly more cardio-vascular efficiency than those of low performance level badminton players.

– They did not have significant difference among them in the dimensions of health and physique, temperamental qualities, academic status, intellectual ability, habits and behavior, emotional tendencies, mental health and socio-economic status.

– No significant difference was found among them in their self-concept.

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