

A Study on Cardiovascular Endurance and Stress Among Women Athletes

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Abstract: Sport involves different forms muscular movements by excreting bodily energy along with specific skills. To perform in any sport, people require certain types of physical fitness. Stress implies to a negative emotional state which is accompanied by physiological and psychological changes. Cardiovascular endurance indicates one's efficiency of his/her heart to function normally during various sorts of physical activities. The present study was carried out to examine the level of and cardiovascular endurance of female athletes belonging to rural and urban colleges in Dharwad District. A sample comprising of 88 women athletes belonging to Dharwad District were selected using purposive random sampling procedure. The stress scale and three-minute step test was administered to measure the stress level and cardiovascular endurance respectively. The obtained data was analyzed using independent t test. The findings of the study suggest significant difference in the stress level and cardiovascular endurance of women athletes belonging to rural and urban colleges in Dharwad District.

Keywords: Cardiovascular endurance, Stress, Purposive.

1. Introduction

A sport is essential part of every athlete's life. To take part in any sports or athletic activity, good level of physical fitness is the prerequisite. Physical fitness implies a state of good health and well-being. The mastery or excellence in any sort of athletics depends mainly on his or her physical fitness. The physical fitness includes health related physical fitness as well as skill-based fitness. Attaining physical fitness standards require strong determination in terms of regular physical exercise and good food habits. The maintenance of physical fitness standards is very essential to participate in competitive sports and achieve success. In addition to physical fitness, there is need for good mental health, social support and training to become a successful athletic athlete.

Stress is one of the crucial aspects which is discussed in the area of sports. According to Baum (1990) stress refers to the "negative emotional experience accompanied by predictable biochemical, physiological, cognitive and behavioural changes that are directed either toward altering the stressful event or accommodating its effects".

Stress can act as either positive or negative element on athlete's performance. It is universal among the athletes who participate in competitive sports. The positive stress always acts as a motivating agent which in turn enhances biopsychosocial

health of athletes. The most commonly observable stressors among athletes are competitive stress, organizational stress and personal stress.

Cardiovascular endurance is a health-related physical fitness component. It is also termed as cardiorespiratory fitness. Johnson and Nelson (1988) defined cardiovascular endurance as "Johnson and Nelson (1988) as "the ability of the circulatory and respiratory system to adjust and to recover from the effects of exercise or work".

Cardiovascular endurance is nothing but an athlete's ability to do prolonged exercise for minutes and hours without getting much exhausted. It implies the total health status of an athlete. Cardiovascular endurance can be enhanced by regular physical activities such as aerobic and anaerobic exercises.

There is ample number of studies carried out by researchers to study the physical fitness among male athletes as well as non-athletes in India. But, there are limited studies undertaken to explore about the physical fitness among women athletes in India. The present study was carried out in order to compare the stress level and cardiovascular endurance among women athletes of Dharwad District belonging to rural and urban areas.

2. Review of Literature

Kumar (2016) compared the difference in the cardiovascular endurance between 15 female athletes and 15 female non-athletes. The age range of the participants was 20-24 years. The participants were administered with Harvard bench step test. The data was analyzed using independent 't' test. The results implied significantly higher cardiovascular endurance between female athletes than female non-athletes. The researcher emphasized the significance of regular practice improves cardiovascular endurance among women athletes.

Yet in another study, Gaurav et al. (2015) measured the difference in the cardiovascular endurance between adolescent athletes and non-athletes of Punjab state. A group of 60 athletes were selected out of which 30 individuals were athletes and 30 were non-athletes aged between 17 to 18 years. The subjects were administered with 12-minute run and walk test. The result was analyzed using independent 't' test and it was revealed that adolescent athletes hold significantly higher cardiovascular endurance compared to non-athletes.

Mishra et al. (2016) compared depression, stress and anxiety

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among athletes and non-athletes. The participants were administered with DASS questionnaire. The statistical analysis of the data showed significant differences in the stress and depression among athletes and non-athletes depicting greater stress and depression among non-athletes. But, there was no significant difference observed in the anxiety levels of athletes and non-athletes.

Asztalos *et al.* (2012) assessed the influence of stress on the sports participation of men and women who have been involved in sports activities. A group of 738 male participants and 644 female participants' age ranging from 20 to 65 years were chosen for the study. The obtained data was interpreted using MANOVA. The results implied insignificant difference in the stress levels of male and female participants.

3. Methodology

Aim: To measure the stress and cardiovascular endurance of women athletes belonging to rural and urban areas of Dharwad district.

A. Hypothesis

- There would be a significant difference in the cardiovascular endurance of women athletes belonging to rural and urban areas of Dharwad District.
- There would be a significant difference in the stress levels of women athletes belonging to rural and urban areas of Dharwad District.

B. Research Design

The researcher adopted a purposive sampling research design to conduct the study.

C. Procedure

A group of 88 female athletes studying in different colleges of Dharwad District were approached for the study. The purpose of the study was explained to them before administering the tests and acceptance to participate in the study was obtained. Then the stress scale and Skubic and Hodgkins three-minute step test were administered to study the stress level and cardiovascular endurance of women athletes respectively.

D. Tool Used for the Study

The stress scale and three-minute step test were used to study the stress level and cardiovascular endurance among women athletes.

1) Stress Scale

It is a rating scale developed by Dr. Sudheer. K.V. (2018) to measure stress level among women athletes. The five-point rating scale consists 11 statements with Strongly Agree, Agree, Uncertain, Disagree and Strongly Disagree responses. The athletes have to read statements carefully and then select any one response to each statement without leaving any statements unanswered. The rating scale can be answered completely within 10 minutes. The scoring has to be conducted using established norms. A score of 5 to be given for the response Strongly Agree, 4 for Agree, 3 for Uncertain, 2 for Disagree and

1 for Strongly Disagree. The maximum possible score in the scale is 55. The higher the higher will be the stress level. The scale has good level of reliability and validity.

2) Three-Minute Step Test

It was developed by Skubic and Hodgkins to measure the cardiovascular endurance of women athletes. The athletes are supposed to step 24 steps in every minute. At the end of their exercise, they have to sit for a minute, then for 30 seconds their palpitations are noted. Then, those scores are compared with the established norms to determine the level of cardiovascular endurance. The athletes who are unable to complete stepping for three minutes, their total time taken is noted and their pulse rate is to be counted after one minute, usually for 30 seconds. Then the scores are compared with the standardized norms to interpret their cardiovascular endurance. The gross numbers of beats indicate the performance score of the athlete.

E. Statistical Analysis

- The descriptive statistical methods such as mean, Standard deviation and independent t-test was used to compare the stress level and cardiovascular endurance among women athletes.

4. Results and Discussion

Table 1

The mean and standard deviation scores of stress level among women athletes belonging to Dharwad District in relation to their locality (N= 88)

Variables	Locality	N	Mean	SD	t value
Stress	Rural	39	35.49	4.55	4.249***
	Urban	49	40.06	5.36	
Cardiovascular Endurance	Rural	39	54.41	8.13	2.515*
	Urban	49	50.59	6.11	

*Significant at 0.01 level, ***Significant at 0.001 level

The above table depicts the stress level and cardiovascular endurance of women athletes belonging to Dharwad District in relation to their locality. Under stress variable, the mean score obtained by the women athletes of rural areas is 35.49 ± 4.55 and urban areas mean score is 40.06 ± 5.36 . The t-value is 4.249, which is highly significant at 0.001 level. Meanwhile under cardiovascular endurance, the mean score obtained by the women athletes of rural areas is 54.41 ± 8.13 and urban areas mean score is 50.59 ± 6.11 . The t-value is 2.515 which is also significant at 0.05 level. Thus, from the results it is evident that there is significant difference in the stress levels as well as cardiovascular endurance of women athletes belonging to rural and urban areas. With regard to stress, the women athletes belonging to rural areas possess significantly lower stress level than the women athletes of urban areas whereas under cardiovascular endurance the women athletes' belonging to urban areas hold significantly greater level of cardiovascular endurance than the women athletes belonging rural areas. Thus, from the results it is evident that locality has significant influence over stress and cardiovascular endurance of women athletes of Dharwad District. Hence, two the hypotheses which states that – "There would be significant difference in the stress level of women athletes belonging to Dharwad District" as well as "There would be significant difference cardiovascular endurance of women athletes belonging to Dharwad District" is accepted.

5. Conclusion

- There is significant difference in the stress level among women athletes belonging to rural and urban areas of Dharwad Districts. The women athletes belonging to rural areas have significantly lower stress than the women athletes belonging to urban areas of Dharwad District.
- There is significant difference in the cardiovascular endurance of women athletes belonging rural and urban areas of Dharwad District. The women athletes belonging to urban areas holds significantly higher cardiovascular endurance compared to the women athletes belonging to rural areas of Dharwad District.
- The concerned management, teachers, trainers and parents have to provide proper training and supporting environment to reduce the stress level as well as to improve cardiovascular endurance among women athletes.

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