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A comparative study of effect of aerobic training on physical fitness of kabaddi players of physical department of Mewar University Chittorgarh Rajasthan

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Abstract

The purpose of this study was to find out the effect of aerobic training on physical fitness components among kabaddi players of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. For this purpose 40-male students from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, were selected as subjects by employing simple Random sampling method and the age group of subjects were ranged between 21-30 years. All the subjects were equally distributed in two groups one control group (N=20), the experimental group (N=20). The experimental group were given 42 day's aerobic training and no training was given to the control group.

The data were collected before and after the end of six weeks training programme by administrating following tests.

40-Yard shuttle run for agility and Harvard step test for cardiovascular endurance. The criterion measures were recorded in meter per second for agility, and fitness index was calculated for cardiovascular endurance. To find out the significant effect of aerobic training the mean difference and t-test was applied between pre and post test scores of experimental and control group. The level of significant was set at 0.05 level of confidence.

The findings of this study showed significant effect on agility, and cardiovascular endurance.

Keywords: Comparative study, Agility, Among Football, and Handball Players etc.

Introduction

Kabaddi is a wrestling sport from India. Two teams occupy opposite halves of a small swimming pool or field and take turns sending a "raider" into the other half, to win points by tackling members of the opposing team; then the raider tries to return to his own half. The raider must not cross the lobby unless he touches any of his opponents. If he does so then he will be declared as "out". There is also a bonus line which ensures extra points for the raider if he manages to touch it and return to his side of the field successfully. The word Kabaddi is derived from a Tamil word meaning "holding of hand", which is indeed the crucial aspect of play. It is the national game of Bangladesh, and the state game of Tamil Nadu, Karnataka, Punjab and Andhra Pradesh in India. In the international team version of kabaddi, two teams of seven members each occupy opposite halves of a field of 10 m × 13 m in case of men and 8 m × 12 m in case of women.

Each has three supplementary players held in reserve. The game is played with 20-minute halves and a five-minute halftime break during which the teams exchange sides. Teams take turns sending a "raider" to the opposite team's half, where the goal is to tag or wrestle ("confine") members of the opposite team before returning to the home half. Tagged members are "out" and temporarily sent off the field. The goal of the defenders is to stop the raider from returning to the home side before taking a breath. If any of the seven players cross the lobby without touching the raider he will be declared as "out".

The raider is sent off the field if: the raider crosses a boundary line, a part of the raider's body touches the ground outside the boundary (except during a struggle with an opposing team member). Each time when a player is "out", the opposing team earns a point. A team scores a bonus of two points, called a "lona", if the entire opposing team is declared "out". At the end of the game, the team with the most points wins.

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Matches are categorized based on age and weight. Six officials supervise a match: one referee, two umpires, a scorer and two assistant scorers.

Modern Kabaddi is a synthesis of the game played in various forms under different names. Kabaddi received international exposure during the 1936 Berlin Olympics, demonstrated by Hanuman Vyayam Prasarak Mandal, Amaravati and Maharashtra. The game was introduced in the Indian Olympic Games at Calcutta in 1938. In 1950 the All India Kabaddi Federation came into existence and compiled standard rules. The Amateur Kabaddi Federation of India (AKFI) was founded in 1973. After formation of the Amateur Kabaddi Federation of India, the first men's nationals were held in Madras (renamed Chennai), while the women's were in Calcutta (renamed Kolkata) in 1955. The AKFI has given new shape to the rules and has the right to modify them. The Asian Kabaddi Federation (AKF) was founded under the chairmanship of Mr. Janardan Singh Gehlot. Kabaddi was introduced and popularised in Japan in 1979. The Asian Amateur Kabaddi Federation sent Professor Sunder Ram of India to tour Japan for two months to introduce the game. In 1979, a return test between Bangladesh and India was held at different places of India including Mumbai, Hyderabad, and Punjab.

The Asian Kabaddi Championship was arranged in 1980 and India emerged as champion and Bangladesh runner-up. Bangladesh became runner-up again in 1985 in the Asian Kabaddi Championship held in Jaipur, India. The other teams in the tournament were Nepal, Malaysia and Japan. The game was included for the first time in the Asian Games in Beijing in 1990. India, China, Japan, Malaysia, Sri Lanka, Pakistan and Bangladesh took part. India won the gold medal and has also won gold at the following six Asian Games in Hiroshima in 1994, Bangkok in 1998, Busan in 2002, Doha in 2006 and Guangzhou in 2010. An attempt to popularise kabaddi in Great Britain was carried out by Channel 4, who commissioned a programme dedicated to the sport. The programme, Kabaddi in the early 1990s, however, failed to capture viewer attention despite fixtures such as West Bengal Police versus the Punjab. Kabaddi was axed in 1992, but not before its presenter Krishnan Guru-Murthy suffered a collapsed lung while participating in the sport. Alt-rock band The Cooper Temple Clause formed a kabaddi team in 2001 and was, at one stage, ranked seventh in the British domestic standings.

Physical Fitness

This is probably the most popular and frequently used term in physical education and to develop physical fitness is the most important objective of physical educators. According to Nixon and Cozens (1964), it was the desire to establish a scientific approach to the development of physical fitness which formed the basis of the first meeting of physical educators in 1885 when the profession of physical education originated.

The United States President's Council on Physical Fitness and Sports defined the term physical fitness as "the ability to carry out daily tasks with vigour and alertness without undue fatigue, with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies" (Clarke, 1971). General fitness implies the ability of a person to live most effectively with his/her potential, which depend upon the physical, mental, emotional, social and spiritual components of fitness which are highly interrelated. The primary components of physical fitness which are highly interrelated. The primary

components of physical fitness identified by the president's Council on Physical Fitness and Sports were muscular strength, muscular endurance and cardio respiratory endurance.

However, later on the president council also included some other motor performance components namely agility, speed, flexibility and balance in physical fitness. But keeping in view the general opinion of the majority of the researchers, the author has not included the components such as speed, agility, power and balance (which are more important for success in specified sports) as essential components of basic physical fitness. However the author defines physical fitness by the group of five components, namely muscular strength, muscular endurance, cardiovascular endurance, freedom from obesity (proper body composition) and flexibility. It is important to mention here that some of the experts (e.g) Clarke and Clarke, 1987, AAHPERD, 1980, 1984) call such fitness tests which include the measurement of percentage body fat, as health-related physical fitness tests. The physicians Kraus and Raab (1961) demonstrated that certain diseases like low back pain, obesity, hypertension, degenerative cardiovascular diseases, abdominal ptosis, foot problems etc. are the conditions produced by sedentary life style of the affluent and tension producing society.

These diseases are the consequent of lack of exercise and are termed as hypo kinetic diseases. It has also been reported that sedentary people suffer a higher incidence of coronary heart disease than active persons (Moris *et al*, 173, Parffenbarger and Hale, 1975). Hence, this concept of physical fitness directly conveys a meaning of healthful living. Through the process of factor analysis, Fleishman (1964) and Falls *et al*. (1965) have prescribed specific physical fitness test batteries.

Aerobic training

Ever increasing industrialization and more sedentary lifestyles along with many of the customs of our consumer society have brought about an increase in recent decades of so-called, "diseases of civilization" (i.e. diabetes, hypertension, arteriosclerosis, obesity, high cholesterol, etc).

In spite of many information programs about the benefits of exercise during midlife, statistics reveal that few people in this age group take part in exercise programs during their leisure time.

The positive effects of regular aerobic exercise on health have been demonstrated in many studies. Nevertheless, the effects of physical activity on the different body systems differ depending on duration intensity, number of sessions, type of exercise, and age.

Most of these studies were performed with young subjects and in some cases, a geriatric population, but very few were performed esthetic studies are carried out with well-controlled groups (with good situation. However, in real life situations, physicians see "normal" midlife people who exercise a few times per week, without professional supervision. It is of interest to know the effects of aerobic exercise are as positive in these cases as in the scientific studies.

Purpose of the Study

1. The main purpose of the study was to find out the effect of aerobic training on physical fitness components of kabaddi players
2. To find out the effect of aerobic training on agility.
3. To find out the effect of aerobic training on cardiovascular Endurance.
4. The purpose of the study was to measure the physical fitness level of kabaddi players.

Methodology

The researcher had decided to conduct the study of “Effect of Aerobic training on some physical fitness components of kabaddi players”. For this study it was required to design the experiment. In the present chapter, the design of study has been presented under the following headings:

- Source of data
- Selection of Subjects
- Sampling Method
- Criterion Measures
- Collection of data

Source of Data

The subjects were selected from the department of physical education and sports, sports authority of India of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Selection of Subjects

Forty male subjects of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad were selected as subjects for this study. All the subjects were divided into two groups (experimental and control group) consisting of 20 subjects each.

Sampling Method

The subjects were selected by using simple random sampling method.

Weekly Training Schedule for Experimental Group

Day	Duration (Min.)	Training Task	Training Means and Methods	Distance (km.)	Intensity
Monday	25	Basic Endurance	Continuous Running	2	Medium
	5	Relaxation	Walking and jogging		
Tuesday	30	Basic Endurance	Continuous Running along the road	4	Low
	15	Strength exercise	Stretching Exercise (triceps, Biceps, Calf muscles, etc.) Neck, shoulder, hip, ankle rotation etc.		
Wednesday	25	Basic Endurance	Continuous Running along the road and over the hill	4	Medium
	15	Stretching Exercise	Triceps, Side wing, Hamstring, Quadriceps, calf muscles, abdominal forward and back ward lean.		
	10	Relaxation	Easy Walking and jogging		
Thursday	05	Speed, Strength Endurance	General warming up, 100m, 200m run.		
	30	Basic Endurance	Running and Walking	4	
Friday	10	Relaxation	Limbering down, Easy Jogging and Walk	1	Medium
	25	Basic Endurance	Continuous running with changing speed	4	Low, Medium, Fast
	10	Agility Development	Hopping Alternate high knee action, twisting on the exercises		
Saturday	5	Relaxation	Limbering down, Easy Jogging and Walk		
	20	Basic Endurance	Continuous running	2	Medium
	15	Strength Development	Hill Running up and down		
		Supplementary training	Training Exercise standing Broad jump three times each		
Sunday	5	Relaxation	Easy Walking and jogging		
		Rest			

Statistical analysis and interpretation of data

In the chapter the gathered data from pre-test and post-test of control group –A, and Experimental group –B are control group-A, and Experimental group –B are presented in tables, graphs, figures and dissuasion and finding are also presented in this chapter. The purpose of this study was to find out the effect of six week (42 days) Aerobic training on physical fitness components and physiological variables. The data collected qualitatively on four different test of Agility, and cardio-Vascular endurance of control group –A (N=20), and

Procedure

Administration of Test: 40 yard shuttle run:

Equipment: Chalk powder, two wooden blocks, measuring tape, stop watch

Purpose: to measure agility of subjects.

Cardiovascular Endurance

Equipments: 20-inch bench, stopwatch, metronome (optional) pen, dairy.

Purpose: to measure cardiovascular endurance.

Procedure: There are two methods of administrating Harvard step test. In this study the research scholar applied the long method.

Collection of Data

The necessary data was collected by administrating the tests for measuring the selected variables. Before collecting the data, the subjects will be given a chance to practice the prescribed tests so that they should become familiar with the tests and know exactly what is to be done.

Experimental Procedure of training design

Sr. No.	Name of Group	Type of group	Type of Training
1	A	Experimental	Aerobic Training
2	B	Control	No Training

experimental groups (N=20) were analyzed by using the ‘t’ test and post-test means of both groups to find out the significant difference among the selected variables as, Agility, cardio-Vascular endurance of two groups of students of Dr. BAMU and the subjects were selected by using Random sampling method from new boys hostel.

Level of Significance: To test the hypothesis the level of significance was set at 0.05 level of confidence which was considered adequate and reliable for the purpose of this study.

Findings

The data collected on 40-male subjects before and after six week training program on agility and cardio-Vascular endurance was analyzed by comparing the means of pre and post test of control and experimental groups and was again statistically analyzed by applying t-test to check the significant difference among selected variables. Therefore separate tables and graphs have been presented for each variable as follows.

Table 1: Agility mean and standard deviation between pre and post test of control group

Control group	Mean	S.D	D.F	t-test
Pre test	11.999	1.702	38	0.845
Post test	12.412	1.366		

*Level of Significance = 0.05

Tabulated 't' 0.05 (38) = 2.021

Table-1 reveals that there is not significant difference between means of pre and post test of control group, because mean of pre test is 11.999 is slightly less than mean of post test is 12.412. To check the significant difference between pre and post test of control group the data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between pre-test where S.D. = 1.702 and Post test where S.D. = 1.366. There was not significant difference between pre and post test of control group because value of calculated 't' = .845 which is less than tabulated 't' = 2.021 at 0.05 level of confidence, which shows no improvement was found in agility of control group because no training was given to the subjects of control group.

Table 2: Agility mean, standard deviation and t-test between pre and post test of experimental group.

Experimental Group	Mean	S.D.	D.F.	T-Test.
Pre-Test	11.775	1.292	38	2.255
Post-Test	10.840	1.331		

*Level of Significance = 0.05

Tabulated 't' 0.05 (38) = 2.021

Table-1 reveals that there is least significant difference between means of pre and post test of experimental group, because mean of pre test is 11.775 is greater than mean of post test is 10.840, and there mean difference is .935. To check the significant difference between pre and post test of control group the data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between pre-test where S.D. = .083 and Post test where S.D. = .089. There was significant difference between pre and post test of experimental group because value of calculated 't' = 2.255 which is greater than tabulated 't' = 2.021 at 0.05 level of confidence, which shows six weeks aerobic training have improved the agility of experimental group.

Table 3: Cardio-vascular endurance between pre and post test of control group

Control Group	Mean	S.D.	D.F.	T-Test.
Pre. Test	95.736	24.458	38	0.877
Post Test	101.099	12.262		

*Level of Significance = 0.05

Tabulated 't' 0.05 (38) = 2.021

Table-10 reveals that there is significant difference between means of pre and post test of control group, because mean of pre test is 95.736 is less than mean of post test is 101.099, To

check the significant difference between pre and post test of control group the data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between pre-test where S.D. = 24.458 and Post test where S.D. = 12.262 and their Combine standard error = 6.118. There was not significant difference between pre and post test of control group because value of calculated 't' = 0.877 which is less than tabulated 't' = 2.021 at 0.05 level of confidence, which shows no improvement was found in Cardio-Vascular Endurance of control group because no training was given to the subjects of control group.

Table 4: Cardio-vascular endurance between pre and post test of experimental group

Experimental Group	Mean	S.D.	D.F.	T-Test
Pre. Test	92.010	6.471	38	1.034
Post Test	94.088	6.238		

*Level of Significance = 0.05

Tabulated 't' 0.05 (38) = 2.021

Table-11 reveals that there is significant difference between means of pre and post test of experimental group, because mean of pre test is 92.010 is less than mean of post test is 94.088, To check the significant difference between pre and post test of experimental group the data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between pre-test where S.D. = 6.471 and Post test where S.D. = 6.238 There was least significant difference between pre and post test of experimental group because value of calculated 't' = 1.034 which is greater than tabulated 't' = 2.021 at 0.05 level of confidence, which shows six weeks aerobic training have least effect of six weeks aerobic training on the Cardio-Vascular Endurance of experimental group.

Discussion on findings

It has been observed from the analysis of data that there was significant difference between the same variables among the groups after the administration of training programme except strength. And there was no improvement in strength.

For Agility

The agility showed significant improvement as the planned training program shows the significant effect. Hence aerobic training program of six weeks was adequate for agility.

For Cardio-Vascular endurance

The Cardio-Vascular endurance showed significant improvement as the planned training program shows the significant effect. Hence aerobic training program of six weeks was adequate for Cardio-Vascular endurance.

Conclusion

Within the limitations of the study and from statistical analysis the following conclusion was drawn.

After six weeks training programme their was significant effect on agility and cardio-vascular endurance.

Recommendation

In the light of results obtained and conclusions drawn the following recommendation were made for future investigations and for practical applications:

1. This study may be repeated to other physiological variables on the same subjects.
2. The same study may be constructed with longer duration

of training programme.

3. The similar study may be repeated on the female subjects.
4. The same study may be repeated on the other class of the society for different age groups.
5. To make this study more authentic and valid, the study may be repeated on the larger sample.
6. Coaches and physical education teachers are recommended to undertake this type of studies for selecting and planning the training programmes for the players.
7. The result of this study can be used to get better and advance outcome.
8. In this study only four variables was taken, but this can be done on more or less variables.
9. The similar study can be carried out on the total physical fitness.

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