

Comparative Effect of Different Types Aerobic Training Programmes on Strength Performance of Volleyball Players

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Abstract

The aim of the study was to compare the effect of different types aerobic training programmes on strength performance of Volleyball players. For this study, sixty (N=60) male Volleyball players who were participated in Anna University Zone-III inter collegiate Volleyball tournament during the year 2017-2018 were randomly selected as subjects. The age of the subjects were ranged from 18 to 21 years. The subjects were divided at random into four groups of fifteen in each (n=15). Group-I underwent Floor Aerobics Training, Group-II underwent Step Aerobics Training, Group-III underwent Aqua Aerobics Training and Group-IV was acted as the Control. The duration of the training period was restricted to twelve weeks and the number of sessions per week was confined to three. The dependent variables selected for this study was strength and it was assessed through push-ups test. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variable. The data obtained from the experimental groups and control group before and after the experimental period were statistically analyzed with 't'-test and Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's Post hoc test was applied to determine the paired mean differences. The level of confidence was fixed at 0.05 for all the cases. The Aqua aerobics training had shown more significant improvement in strength than other groups.

Keywords:

Floor Aerobics, Step Aerobics, Aqua Aerobics, Strength

Introduction

The word 'training', in its broad sense, refers to any organized and systematic instructional process, which aims at enhancing man's ability with regard to physical, psychological and intellectual aspects. In the field of sports, training is a process, which involves preparation of a sportsperson to attain highest level of sports performance. To improve sports performance, one has to, regularly and systematically, perform a variety of exercises. Mere execution of an exercise does not ensure improvement of performance. Actual effect of exercise depends upon several factors of which the important ones are training load, means of recovery, assessment of loading and performance capacity, sports equipment, nutrition, psychological characteristics and methods adopted for imparting theoretical instruction. If these factors are disregarded, the usefulness of the physical exercise decreases and the sportsperson does not realize optimal benefit (*Abadi et al., 2017*).

Sports training is a special process of preparation of sports persons based on scientific principles aimed at improving and maintaining higher performance capacity in different sports activities. It is a particular type of training designed to improve fitness and abilities to perform in a given sport. It includes strength in training, corrective and restorative exercises, conditioning and cardiovascular training. It also includes mental and psychological training and advice on nutritional values (*Gabbett et al., 2006*).

Aerobic Training wellness alludes to perseverance, or the capacity to continue work for delayed periods. The expression "vigorous" suggests that the oxygen important to achieve the work is taken up by the person during the movement. With longer exercise time, more oxygen consuming digestion is included, and practice enduring over 12 minutes is generally cultivated by vigorous digestion. In vigorous work, oxygen is gotten from the air and is moved from the lungs to the blood and afterward to the muscles through the circulatory framework. Maximal oxygen take-up or maximal vigorous force (VO_{2max}) is the marker of high-impact wellness. Aerobic exercise (otherwise called cardio) is actual exercise of moderately low power that relies fundamentally upon the oxygen consuming energy-creating measure. High-impact in a real sense signifies "living in air", and alludes to the utilization of oxygen to enough fulfill energy needs during exercise through high-impact digestion (*Panneer Selvam and Sundar, 2018*).

For the most part, light-to-direct power exercises that are adequately upheld by oxygen consuming digestion can be performed for expanded timeframes. The force ought to be somewhere in the range of 60 and 85% of most extreme pulse.

Aerobic wellness is needy upon age and sex and it tends to be improved via preparing. It is most noteworthy at ages 18, 19 years in guys and at 15 to 20 years for females, and it diminishes with age in adulthood. When all is said in done, guys have higher VO_{2max} than females. The primary purpose behind this is that vigorous wellness is legitimately identified with sans fat body weight, which comprises for the most part of the heaviness of muscles in the body, and all things considered, guys have a higher bulk than females. Similarly as with other physiological capacities, there are enormous individual contrasts in VO_{2max} of individuals of a similar sex and age. A few people show high VO_{2max} without practicing as a result of hereditary and different elements, while others who practice routinely don't show high VO_{2max} (*Nikic and Dejan, 2013*).

METHODOLOGY

Sixty (N=60) male Volleyball players who were participated in Anna University Zone-III inter collegiate Volleyball tournament during the year 2017-2018 were randomly selected as subjects. The age of the subjects were ranged from 18 to 21 years. The subjects were divided at random into four groups of fifteen in each (n=15). Group-I underwent Floor Aerobics Training, Group-II underwent Step Aerobics Training, Group-III underwent Aqua Aerobics Training and Group-IV was acted as the Control. The duration of the training period was restricted to twelve weeks and the number of sessions per week was confined to three. The dependent variables selected for this study was strength and it was assessed through push-ups test. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variable. The data obtained from the experimental groups and control group before and after the experimental period were statistically analyzed with 't'-test and Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's Post hoc test was applied to determine the paired mean differences.

RESULTS & DISCUSSION

The analysis of dependent 't'-test on the data obtained Strength of the subjects in the Pre-test and Post-test of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group have been presented in Table-1.

Table – 1

Mean and Dependent 't' Test for the Pre and Post Tests on Strength of Experimental Groups and Control Group

Groups	n	Pre Test		Post Test		t-test
		Mean	SD	Mean	SD	
Floor Aerobics Training Group	15	17.13	1.93	20.87	1.93	4.15*
Step Aerobics Training Group	15	17.00	2.45	20.40	1.20	3.37*
Aqua Aerobics Training Group	15	16.07	2.46	24.47	1.50	7.74*
Control Group	15	16.47	2.16	16.53	2.12	0.06

* Significant at 0.05 level.

(Table value required for significance at .05 level for 't'-test with df 14 is 2.15)

n = Number of Subjects per group

SD = Standard Deviation

Table-1 indicates that the pre-test mean and standard deviation on Strength of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group were 17.13(1.93), 17.00(2.45), 16.07(2.46), and 16.47(2.16) respectively. In case of post-test mean and standard deviation were 20.87(1.93), 20.40(1.20), 24.47(1.50) and 16.53(2.12) respectively.

The obtained dependent t-ratio values between the pre and post test means on Strength of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group are 4.15, 3.37, 7.74 and 0.06 respectively.

The table value required for significant difference with df 14 at 0.05 level is 2.15. It was concluded that Experimental groups such as Strength of Floor Aerobics Training group, Step Aerobics Training group and Aqua Aerobics Training group had registered significant improvement in Strength. In case of Control group had not registered significant improvement in Strength.

The results of the Analysis of Covariance on Strength n of the pre, post, and adjusted test scores of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group are presented in Table – 4.2.

Table – 4.2

Analysis of Covariance on Strength of Experimental Groups and Control Group

Test	Floor Aerobics Training Group	Step Aerobics Training Group	Aqua Aerobics Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F Ratio
Pre Test Mean	17.13	17.00	16.07	16.47	Between	10.93	3	3.64	0.67
					Within	306.40	56	5.47	
Post Test Mean	20.87	20.40	24.47	16.53	Between	473.93	3	157.98	62.83*
					Within	140.80	56	2.51	
Adjusted Post Test Mean	20.76	20.32	24.61	16.58	Between	482.75	3	160.92	71.19*
					Within	124.32	55	2.26	

* Significant at 0.05 level of confidence
(Strength Scores in Numbers)

Table value for df (3, 56) at 0.05 level = 2.76 Table value for df (3, 55) at 0.05 level = 2.78

The table-2 indicates that the obtained F-ratio value 0.67 for pre test mean of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group on Strength is lesser than the required table value of 2.76 for significance with df 3 and 56 at 0.05 level of confidence.

The obtained F-ratio value of 62.83 for post test mean of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group on Strength is more than the required table value of 2.76 for significance with df 3 and 56 at 0.05 level of confidence.

The obtained F-ratio value of 71.19 for adjusted post test mean of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group on Strength is higher than the required table value of 2.78 for significance with df 3 and 55 at 0.05 level of confidence.

The results of the study indicated that there are significant differences among the post test and adjusted post-test means of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group in Strength

To determine which of the paired means have a significant difference, the Scheffe's test is applied as post hoc test and the results are presented in Table-3.

Table –3
Scheffe's test for the Differences between the Adjusted Post test Paired means on Strength

Adjusted Post-test Means				Mean Difference	Confidence Interval
Floor Aerobics Training Group	Step Aerobics Training Group	Aqua Aerobics Training Group	Control Group		
20.76	20.32			0.44	1.58
20.76		24.61		3.85*	1.58
20.76			16.58	4.18*	1.58
	20.32	24.61		4.28*	1.58
	20.32		16.58	3.74*	1.58
		24.61	16.58	8.03*	1.58

* Significant at 0.05 level of confidence

Table-3 indicates that the adjusted post test mean differences on Strength between Floor Aerobics Training group and Aqua Aerobics Training, Floor Aerobics Training group and Control group, Step Aerobics Training group and Aqua Aerobics Training group, Step Aerobics Training group and Control group and Aqua Aerobics Training group and Control group were 3.85, 4.18, 4.28, 3.74 and 8.03 respectively, which are greater than the confidence interval value of 1.58 on Strength on at 0.05 level of confidence.

Further the table-3 indicates that the adjusted post test mean differences on Strength between Floor Aerobics Training group and Step Aerobics Training group is 0.44, which is less than the confidence interval value of 1.58 on Strength on at 0.05 level of confidence.

The results of the study showed that there was a significant difference between Floor Aerobics Training group and Aqua Aerobics Training, Floor Aerobics Training group and Control group, Step Aerobics Training group and Aqua Aerobics Training group, Step Aerobics Training group and Control group and Aqua Aerobics Training group and Control group on Strength. Further the results of the study showed that there was no significant difference between Floor Aerobics Training group and Step Aerobics Training group, on Strength.

The above data also reveal that Aqua Aerobics Training group had shown better performance than Floor Aerobics Training group, Step Aerobics Training group and Control group on Strength.

The pre, post and adjusted post mean values of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group on Strength are graphically represented in the Figure -1.

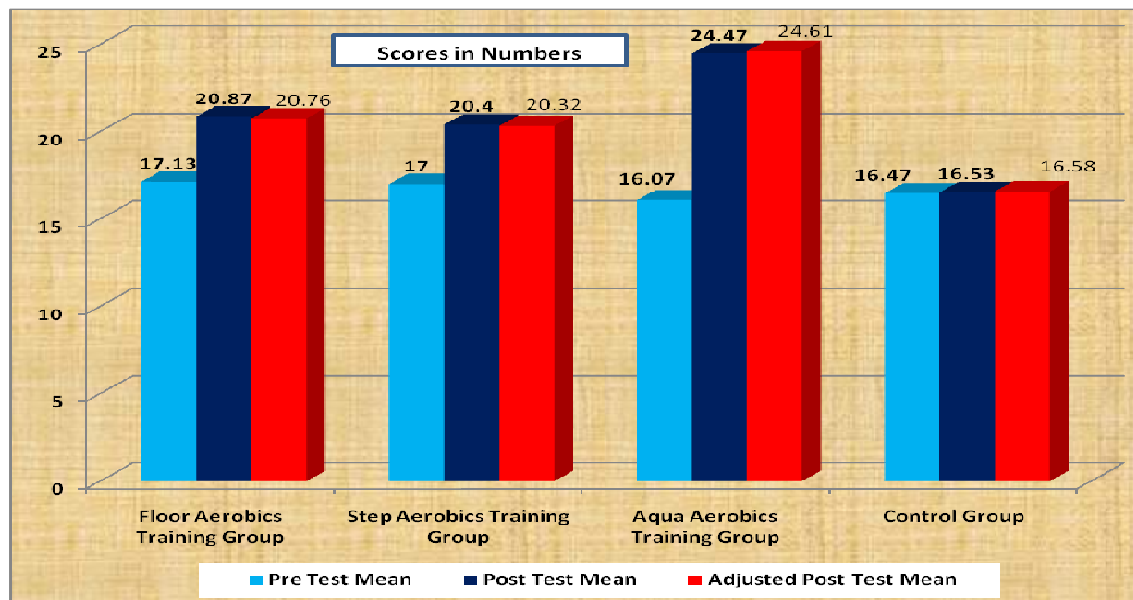


Figure:1. The Pre, Post and Adjusted Post test Mean values of Floor Aerobics Training group, Step Aerobics Training group, Aqua Aerobics Training group and Control group on Strength

CONCLUSIONS

From the above results and discussions the following conclusions were drawn

- 1) The aqua aerobics training had shown significant improvement in Strength among men volleyball players after undergoing aqua aerobics training for a period of twelve weeks.
- 2) Significant differences in achievements were found among floor aerobic training group, step aerobics training group, aqua aerobic training group and control group on Strength.

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