

CARDIOVASCULAR ENDURANCE AND PLYOMETRIC EXERCISE : IMPACT ON WOMEN VOLLEYBALL PLAYERS

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Abstract : Volleyball is a competitive and recreational sport for school and College women. The purpose of the study was to effects of Plyometric exercise on Cardiovascular Endurance in Women Volleyball players. The 25 volleyball players were selected for sample size of the study and their age ranged between 20 -25 years. Only training was given to the experimental groups. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The Plyometric exercise training program was planned as 12 weeks 4 day a week and 30 minutes in a day. The Plyometrics exercise includes Front Box Jump, Lateral Box Jump, Weighted Lateral Jumps, Broad Jumps,Skater Jumps, Scissor Jumps, Dot Drill,Lateral Box Shuffles, Abdominal muscular endurance was measured by performing the 1-minute bent knee sit-up test . The result reveals that Plyometric exercise improve Cardiovascular Endurance in female volleyball players.

Key words : Plyometric exercise, Volleyball, Women, Cardiovascular Endurance

INTRODUCTION

Volleyball is a perfect sport for school and College women. It can be done indoors or outside, with fairly basic materials. It's also a fantastic tool for working on teamwork, hand-eye coordination and movement. Cardiovascular endurance is the **ability to exercise without becoming overly tired** because your heart, lungs and blood vessels are healthy. Cardiovascular endurance tests **monitor how well the heart, lungs, and muscles perform during moderate to high-intensity exercise**. Increasing Cardiovascular endurance improves oxygen uptake in the lungs and heart and can help a person sustain physical activity for longer (<https://www.medicalnewstoday.com/articles/325487>). Other names for Cardiovascular endurance include cardiovascular fitness, cardiovascular endurance, and Cardiovascular fitness. Volleyball can help circulate more blood, oxygen, and nutrients into the body as well as enhance your energy levels to improve your overall well-being. Volleyball can help circulate more blood, oxygen, and nutrients into the body as well as enhance your energy levels to improve your overall well-being (<https://www.centerforprofessionalrecovery.com/the-physical-and-mental-health-benefits-of-volleyball/>). Plyometric tone the entire body, burn calories, and improve cardiovascular health. They also boost your stamina and metabolism. In addition, plyometric exercises **rapidly stretch your muscles**, allowing you to move more efficiently (<https://www.healthline.com/health/exercise-fitness/plyometric-exercises>).

MATERIALS AND METHODS

The Plyometric exercise programme were planned for 4 days a week 30 minutes in a day for 12 weeks including 10 minutes warm up period and 05 minutes cool down. The following Plyometric exercise was taken for women Volleyball players. The Plyometric exercise includes Front Box Jump, Lateral Box Jump, Weighted Lateral Jumps, Broad Jumps,Skater Jumps, Scissor Jumps, Dot Drill, Lateral Box Shuffles, Barbell Squat Jumps,Medicine ball chest pass test, Squat Jump , Bent knee sit ups, Squat thrust, Strudel thrust, Bench press, Pull ups, Depth jump. Two groups were targeted, Plyometric exercise group (Experimental group) and control group . 25 women Volleyball players from Chandrapur as experimental group selected under plyometrics exercise group and 25 women Volleyball players as a control group . Only training was given to the experimental groups. Voluntary to participate in the stretching exercise training programmes. Exclusion criteria were the presence of chronic medical conditions such as asthma, or any other condition that would put the subjects at risk when performing the experimental tests. The subjects were free of smoking, alcohol and caffeine consumption, antioxidant supplementation and drugs during the programmes. They completed an informed consent document to participate in the study. This study involves the impact of Plyometric exercise intervention training programme on muscular endurance of students in experimental design.

Assessment of Cardiovascular Endurance:

This component was evaluated by using 12 minute Run & Walk Test.

The 12 minute run test requires the person being tested to run or walk as far as possible in a 12 minute period. The objective of the test is to measure the maximum distance covered by the individual during the 12 minute period and is usually carried out on a running track by placing cones at various distances to enable measuring of the distance. A stopwatch is required for ensuring that the individual runs for the correct amount of time. When time is over, at that time investigator gives signal to stop. Subject was stands right there where he stops. Then investigator measures the crossed distance by the subject.

Table 1

Mean Scores , STANDARD DEVIATION (SDS)S AND T-TEST OF PRE AND POST - TEST OF PHYSICAL FITNESS WITH RESPECT TO CARDIO - VASCULAR ENDURANCE THROUGH 12 MINUTE RUN & WALK TEST OF CONTROL GROUP.

Variable	Tests	No	Means	S. D.s	T-ratio
Cardio-Vascular Endurance	Pre-test	50	2002.67	50.35	0.65 NS
	Post-Test	50	2009.56	26.03	

Table- 1 shows the Mean Scores (MS) and Standard deviation (SDs) of Pre and Post - Test of Cardio-Vascular Endurance (CVE) among Control group.

Man Scores Mean Scores (MS) and Standard deviation (SDs) of Cardio-Vascular Endurance (CVE) of Pre and Post - Test of Control Group have been depicted graphically in figure-1.

FIGURE 1

Mean Scores AND STANDARD DEVIATION (SDS)S OF PRE AND POST - TEST OF PHYSICAL FITNESS WITH RESPECT TO CARDIO - VASCULAR ENDURANCE THROUGH 12 MINUTE RUN & WALK TEST OF CONTROL GROUP

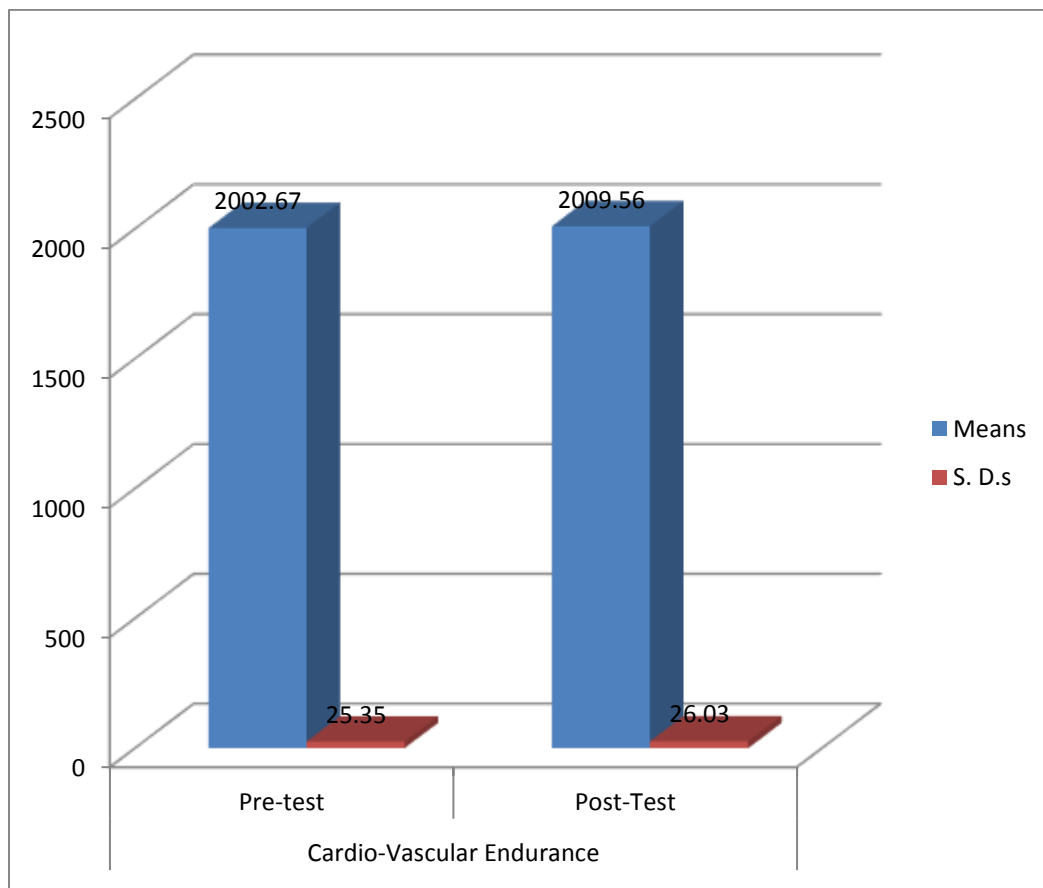


TABLE- 2

Mean Scores (MS), STANDARD DEVIATION (SDS) AND T-TEST OF PRE AND POST - TEST OF PHYSICAL FITNESS WITH RESPECT TO CARDIO - VASCULAR ENDURANCE THROUGH 12 MINUTE RUN & WALK TEST OF EXPERIMENTAL GROUP.

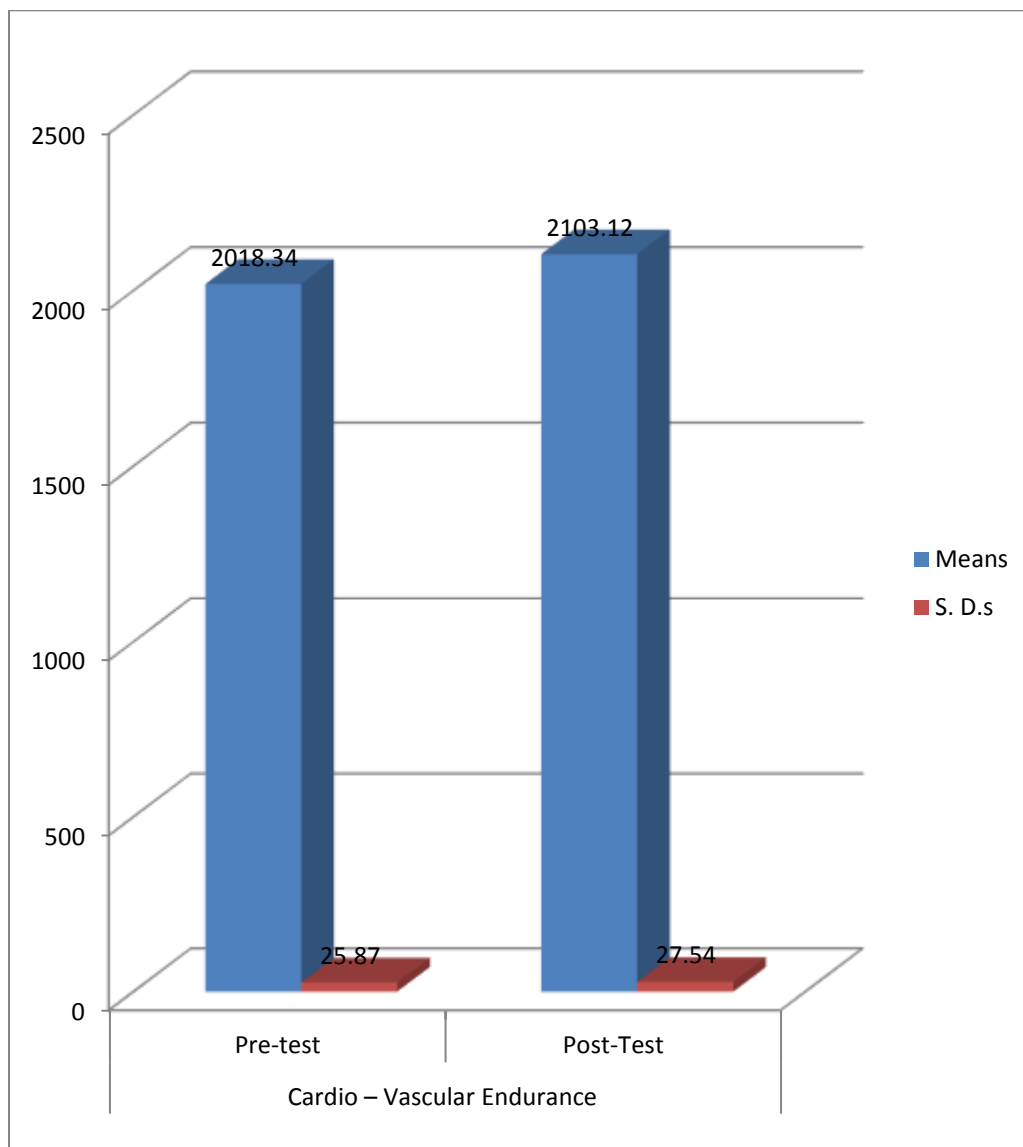
Variable	Tests	No	Means	S. D.s	T-ratio
Cardio – Vascular Endurance	Pre-test	50	2018.34	50.87	41.56 *
	Post-Test	50	2103.12	27.54	

*= Significant

Table 2 shows the Mean Scores and Standard deviation (SDs) of Pre and Post - Test with t-test of Cardio – Vascular Endurance(CVE) among experimental group.

The Mean Scores (MS) and Standard deviation (SDs) of Pre and Post - Test of Cardio – Vascular Endurance(CVE) among experimental group has been presented in figure-2

FIGURE-2 SHOWS Mean Scores AND STANDARD DEVIATION (SDS)S OF PRE AND POST - TEST OF CARDIO-VASCULAR ENDURANCE AMONG EXPERIMENTAL GROUP



DISCUSSION

With regard to pre-test of Cardio-Vascular Endurance (CVE) of Control group, they have obtained Mean Scores (MS) 2002.67 and the standard deviation (SDs) was 50.35 respectively. Furthermore, the Post-test of Cardio-Vascular Endurance (CVE), they have obtained Mean Scores (MS) 2009.56 and the standard deviation (SDs) was 26.03 respectively, which are given in table- 1, the findings of the study revealed that there was No significant difference of Cardio-Vascular Endurance (CVE) was found between pre and post test of Control group.

With regard to pre-test of Cardio – Vascular Endurance (CVE) of experimental group, they have obtained Mean Scores (MS) 2018.34 and the standard deviation (SDs) was 50.87 respectively. Furthermore, the Post-test of Cardio – Vascular Endurance (CVE) of experimental group, they have obtained Mean Scores (MS) 2103.12 and the standard deviation (SDs) was 27.54 respectively, which are given in table- 2, the result of the study shows that there was significant difference of Cardio – Vascular Endurance (CVE) was found between pre and post of test of experimental group. The Findings of the study revealed that, Plyometric exercise significantly improve the Cardio – Vascular Endurance (CVE) of women's Volleyball players. Volleyball is a competitive sport of two teams with six players separated by a net. The object of the game is to get the volleyball over the net by passing the ball and communicating with your team. The volleyball players during match and training require an adequate supply of oxygen to the muscle and other nutrients to work properly during high-intensity or extended periods of exercise. If the muscles do not get enough nutrients, waste products begin to accumulate and cause *fatigue* and decline the performance. In volleyball, your upper body is strengthened as well as your arms, shoulders, thigh and lower leg muscles. It can also tone and strengthen the cardiovascular and respiratory system. Volleyball can help circulate more blood, oxygen, and nutrients into the body as well as enhance your energy levels to improve your overall well-being. (<https://www.centerforprofessionalrecovery.com/the-physical-and-mental-health-benefits-of-volleyball/>). Plyometric are total-body cardio exercises that are designed to push your muscles to their full potential in a short amount of time build endurance, speed, and strength, work on agility, balance, coordination, help improve cardiovascular fitness.

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