

EFFECT OF PLYOMETRIC EXERCISE ON IMPROVEMENT OF THE VERTICAL JUMPING ABILITY AMONG COLLEGE LEVEL VOLLEY BALL PLAYERS



PHYSICAL EDUCATION

Keywords:

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ABSTRACT

The research sample numbered 34 examinees; it is drawn from the Junior and Sub junior age level. The basic criteria for selections: all the examinees were experienced form= 5 years. They were all members of SAI West Zone volleyball Centre Aurangabad. They had all been training volleyball for a period of four to six years; they all Participated as competitions in the various competitions; They all had five training sessions a week during the preliminary period, and the sessions lasted from 90 to 120 minutes; They were tested at the start and at the end of the experiment; All the volleyball players were physically healthy and the data on the injured players was not used in the statistical analyses. By means, the examinees were divided into an experimental group (E), numbering 17 volleyball players, and a control group numbering 17 players (C). For the purpose of analyzing the changes in the results for the dependent variables in the period between the initial and final measuring, the dependent sample test was used, and the relevance of the conclusions drawn was determined at the $p < 0.05$ levels for the data collected at the final measuring, the covariance analysis was used. The data had been shown graphically, using MS Excel and further processed with the SPSS Software for Windows. Researchers to find out the improvement of jumps through statistical treatment. These three jumps (Vertical, Spike, Block) have been used as a test of leg power. Since the early part of this century when the test was first documented (Sargent, 1921), many variations in protocol have been employed.

I. INTRODUCTION

Volleyball is played by millions of people around the world. In many countries it has been ranked as a top level competitive sport. On February 9, 1895, in Holyoke, Massachusetts (USA), William G. Morgan, a YMCA physical education director, created a new game called *Mintonette* as a pastime to be played (preferably) indoors and by any number of players. The game took some of its characteristics from tennis and handball. Another indoor sport, basketball, was catching on in the area, having been invented just ten miles (sixteen kilometers) away in the city of Springfield, Massachusetts, only four years before. Mintonette was designed to be an indoor sport, less rough than basketball, for older members of the YMCA, while still requiring a bit of athletic effort. Plyometric is a popular training technique used by many coaches today. It has been touted as a way to the bridge gap between sheer strength and power. The term plyometric can be used to describe any exercise that allows the athlete to take advantage of the stretch-shortening cycle to produce an explosive movement. Although plyometric has been around many years there is still debate on its effectiveness and safety. In theory of strength training the specific training for the increase of explosive type strength is referred to as "plyometric training" and training method is called "plyometric method". "plyometric is a speed-strength training a combination of strength and speed". Plyometric exercises are helping athletes in volleyball, football, basketball, weight lifting and other sports. Any sports skill demanding power the combination of speed and strength can benefit from

plyometric training. Because of mass utilization of plyometric training in all sports level, plyometric has relatively new interest in the scientific community. The scientific jury is still out on this one, but new evidence shows that plyometric training is very effective and is not harmful for athletes.

LIMITATIONS

- The study is limited to the Ernakulam & Thrissurs district volleyball players, only those subjects are selected who have participated in last 3-5 years in the various volleyball tournaments and selected university team.
- The dependent variable in this study encompasses only two parameters (Block jump, Vertical jump) which might influence playing status in this sport.
- The effect of selected plyometric exercises are measured before and after training and investigation. There are two tests, which is vertical jump.
- . Researcher selects only specific plyometric exercise in the plyometric training program.

DE-LIMITATIONS

- The subjects for the study were the volleyball players of Christ college irinjakkuda and SreeSankaracharya University of Sanskrit.
- Total number of subjects limited as 17.
- The age group of the students was between 18 - 24.
- The subjects selected only male volleyball players.

HYPOTHESIS

- 1.Plyometric exercise is helpful in maintaining physical fitness of volleyball players
- 2.Plyometric exercise can help to improve jumping ability of the volleyball players.
- 3.Plyometric exercise can make effect on the performance of volleyball.

II. METHODOLOGY

SELECTION OF SUBJECT

Different state level and university level volleyball players selected as the subjects. The male subjects are selected for the study. Range of age between 18-24 years. There are total 34 subjects are selected for the study.

DESIGN OF THE STUDY

Table showing the details of training load on volleyball players

Sr.No.	Name of jump	Repetition	Set	Rest between	
				Rep.	Set
1	Split squat jump	8 (1rep=10 jumps)	2	30 sec	2 min
2	Double leg tuck jump	6 (1 rep=6 jumps)	2	30 sec	3 min
3	Double leg zigzag hop	6 (10 cones)	2	30 sec	3 min
4	Double leg vertical power jump	6 (1 rep=8 jumps)	2	30 sec	3 min
5	Hurdle hop	6 (5 hurdles)	2	30 sec	3 min

STATISTICAL METHODOLOGY

Following is the statistical formulas are applied for the calculation of results in order to find out the improvement of jumps.

Statistical Methodology used:

- 1) Arithmetic Mean
- 2) Sample Standard Deviation (S.D.)=s
- 3) Independent t-test
- 4) Paired t-test
- 5) p- Value

III. ANALYSIS OF DATA , RESULTS AND DISCUSSIONS

Collection. Tabulation & Graphical Analysis of Data

Control Group Vertical Jump

T-Test

Paired Sample Statistics

Control Group		Training	Mean	N	Std.Deviation	Std.Error
Pair 1	Improvement Of Vertical Jump	After	.4947	17	.0551	.0134
		Before	.4847	17	.0564	.0137

Null Hypothesis H0 = There is No significant difference between Means of Vertical Jump of After & Before training.

Alternate Hypothesis H1 = There is significant difference between Vertical Jump of After & before training.

Paired Sample Test

*As p-Value>0.05 the difference between mean is Not significant (NS)

Conclusion:- The Null Hypothesis H0 is accepted & Alternate

Hypothesis H1 is rejected

Experimental Group Vertical Jump

T-Test

Paired Sample Statistics

Control Group		Training	Mean	N	Std.Deviation	Std.Error
Pair 1	Improvement of Vertical Jump	After	.5876	17	.0885	.0215
		Before	.5241	17	.0702	.0170

Null Hypothesis H0 = There is no significant difference between Means of Vertical Jump of After and Before training.

Alternate Hypothesis H1 = There is significant difference between Vertical Jump Before and After training.

Paired Sample Test

Control Group	Paired Differences	t	p-Value
	Mean		
Improvement of Vertical Jump (Before & After training)	.0635	7.198	0.0000*

*As p-Value <0.05 the difference between mean is significant

CONCLUSION

The Null Hypothesis H0 is rejected & Alternate Hypothesis H1 is accepted.

SUMMARY

The research sample numbered 34 examinees; it is drawn from the Junior and Sub junior age level. The basic criteria for selections: all the examinees were experienced form= 5 years. They were all members of SAI West Zone volleyball Centre Aurangabad. They had all been training volleyball for a period of four to six years; they all Participated as competitions in the various competitions; They all had five training sessions a week during the preliminary period, and the sessions lasted from 90 to 120 minutes; They were tested at the start and at the end of the experiment; All the volleyball players were physically healthy and the data on the injured players was not used in the statistical analyses. By means, the examinees were divided into an experimental group (E), numbering 17 volleyball players, and a control group numbering 17 players (C). Due to the nature of experiment, it was necessary that the data for the experimental and control group be gathered at both the initial and final measuring. For the purpose of analyzing the changes in the results for the dependent variables in the period between the initial and final measuring, the dependent sample test was used, and the relevance of the conclusions drawn was determined at the p<0.05 levels for the data collected at the final measuring, the covariance analysis was used. The data had been shown graphically, using MS Excel and further processed with the SPSS Software for Windows. Researchers to find out the improvement of jumps through statistical treatment. These three jumps (Vertical, Spike, Block) have been used as a test of leg power. Since the early part of this century when the test was firsts documented

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REFERENCES

- [1] Adams, K. (1992). "The effect of six week of squat plyometric and squat-plyometric training on power production".
- [2] Hufschmidt, A., Jung, R., Schmidtbleicher, D. et al. (1984). *Haltung and Bewegung beim Menschen. Physiologie, Pathophysiologie, Gangentwicklung und Sporttraining*. Berlin-Ercolessi, D. (1999). *La caduta dal salto. Super Volley*, (1), 79-82.
- [3] Forthomme B, Croisier JL, Ciccarone G, Crielaard JM, Cloes M. Factors Correlated With Volleyball Spike Velocity. *Am J Sports Med*. 2005 Jul 11; [Epub ahead of print] Fox, Edward, L., & Donald, Mathews, K.(1971). *The physiological basis of physical education and athletics*. Philadelphia: W.B. Saunders.
- [4] Gabbett T, Georgieff B, Anderson S, Cotton B, Savovic D, Nicholson L. 2006 Feb;20(1):29-35 Athlete and Coach Support Services, Queensland Academy of Sport, Australia. Gabbett TJ "2005 OCT;37(10):1814-9 Queensland Academy of Sport, Sunnybank