

Effect of Varied Intensity of Plyometric Training on Physiological Variable of Female Volleyball Players

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ABSTRACT

The purpose of the study is to find out the effects of varied intensity of Plyometric training on selected motor fitness and physiological variables among college female volleyball players. To achieve the purpose of this study, sixty (N=60) female volleyball players were selected from different colleges of Andhra Pradesh who represented their colleges in intercollegiate level volleyball tournaments. The selected subjects were of age group ranging from 19 to 24 years with standard deviation of ± 2.1 . The subjects were randomly divided into four groups and each group contained fifteen subjects. Group I acted as experimental group I and Group II acted as experimental group II group III acted as experimental group III and the fourth group was considered as control group. Pre test scores were obtained using standard tests on selected physiological variable VO₂ max before the experimental period and the post test scores were obtained immediately after the twelve weeks experimental period. The difference between the pre-test and post-test means were subjected to statistical treatment using ANCOVA, which was the effect of varied intensities of plyometric training. In all cases 0.05 levels were fixed to test of the study.

Keywords: *Financial literacy, financial knowledge, investment decision.*

Physical education is a form of education that emphasizes the use of the body and its different muscles to accomplish certain goals. As a whole, it is an essential component of education and a crucial stage in the learning process. Physical education, a crucial part of any curriculum, uses exercise as a means to an end: the holistic development of each student. Therefore, in addition to academic development, a person's personality attributes like physical health, emotional stability, social behaviour, etc., can be illuminated through the huge muscle - play activity. Each student has the chance to evaluate his fitness level and gain knowledge and skills through the physical education curriculum that will help him

succeed academically, socially, and personally in high school, college, and beyond.

Fitness has always been one of the primary goals of physical education programs. The need of maintaining a healthy environment in order to endure stress, avoid exhaustion, and have the energy to live a full, active life has grown over the years, necessitating new priorities, aims, and priorities in general.

OBJECTIVES OF THE STUDY

The primary goal of this study was to construct a range of plyometric training intensities; when subjects were categorised as low, medium, or high, the investigator would submit them to plyo for twelve weeks at varying intensities. The secondary objective of the study was to compare the effects of different plyometric exercises on certain variables. Consequently, the following are the precise aims of the research.

1. To formulate different intensities of plyometric training for the benefit of college level volleyball players.
2. To measure selected motor fitness and physiological variables of college level volleyball players.
3. To experiment with different intensities of plyometric training for 12 weeks and compare the effect with control group.
4. To determine which of the intensity of plyometric training, whether low or medium or high beneficially alter selected motor fitness and physiological variables of college level volleyball players.

STATEMENT OF THE PROBLEM

The purpose of this study was to find out the effect of varied intensity of plyometric training on physiological variable of female volleyball players.

HYPOTHESIS

1. Compared to the control group, volleyball players would show significant improvements in selected physiological variable as VO₂ max, as a result of low, medium, and high intensity plyometric exercises.
2. Varied intensities of plyometric training would have no significant impact on certain physiological variables of female collegiate volleyball players was put forth.

LIMITATIONS

The following factors were considered in analysing the data and interpreting the results; these restrictions were imposed by the research investigation.

- The study did not account for the respondents' physical characteristics or other contextual variables, such as their weather, cultural background, socioeconomic status, or other environmental influences.
- The participants who were involved in other extracurricular activities were not subject to any kind of control.
- Despite verbal encouragement, there was no effort to distinguish between respondents' levels of motivation during testing and training.
- When carrying out the experiment, the researcher failed to take the location into account.
- According to the experts' classification, the workouts were categorised as low, medium, or high intensity.

METHODOLOGY

This particular component was the sole focus of the investigation.

- The study's subjects were chosen at random from a pool of sixty men's volleyball players from various institutions in Andhra Pradesh. These players had all competed for their college at the intercollegiate level.
- The experimental investigation included a total of four groups, each consisting of fifteen (15) male volleyball players.
- The participants were all between the ages of 19 and 24.
- In the study, varying intensities of plyometric exercise were simply defined as low, medium, and high.
- The study's dependent and independent variables are as follows.

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Fifteen subjects. Group I acted as experimental group I and Group II acted as experimental group II, group III acted as experimental group III and the fourth group was considered as control group.

The investigator reviewed scientific journals, books and periodicals on different training methods especially plyometric exercises. Based on the experience gained and in consultation with the Guide the following dependent and independent variables were selected for this study.

Independent Variable

- Plyometric Training

Dependent Variable

- VO₂ max

RESULTS ON VO₂ max

The descriptive statistics comparing the initial and final means of VO₂ max due to varied intensities (low, medium and high intensity) of plyometric training, and control groups of college men volleyball players is presented in Table XX.

Table I

Descriptive Statistics on Low, Medium and High Intensity Plyometric training and Control Groups on VO₂ max

Groups	Test	Mean	Standard Deviation	RANGE	
				Min	Max
Low Intensity Plyometric training	Initial	56.57	2.56	53.00	59.67
	Final	60.60	3.33	54.33	64.33
	Adjusted Mean	60.75			
Medium Intensity Plyometric training	Initial	56.73	1.49	53.89	59.44
	Final	59.56	5.31	41.00	63.00
	Adjusted Mean	59.57			
High Intensity Plyometric training	Initial	56.57	1.63	53.44	59.00
	Final	61.21	1.35	59.22	63.22
	Adjusted	61.36			

	Mean				
Control Group	Initial	57.09	3.74	53.22	65.44
	Final	57.56	3.49	53.44	65.44
	Adjusted Mean	57.26			

Table I shows that the pre test mean on VO₂ max of low intensity plyometric training group was 56.57 with standard deviation ± 2.56 pre test mean of medium intensity plyometric training group was 56.73 with standard deviation ± 1.49 , the pre test mean of high intensity plyometric training group was 56.57 with standard deviation ± 1.63 , the pre test mean of control group was 57.09 with standard deviation ± 3.74 .

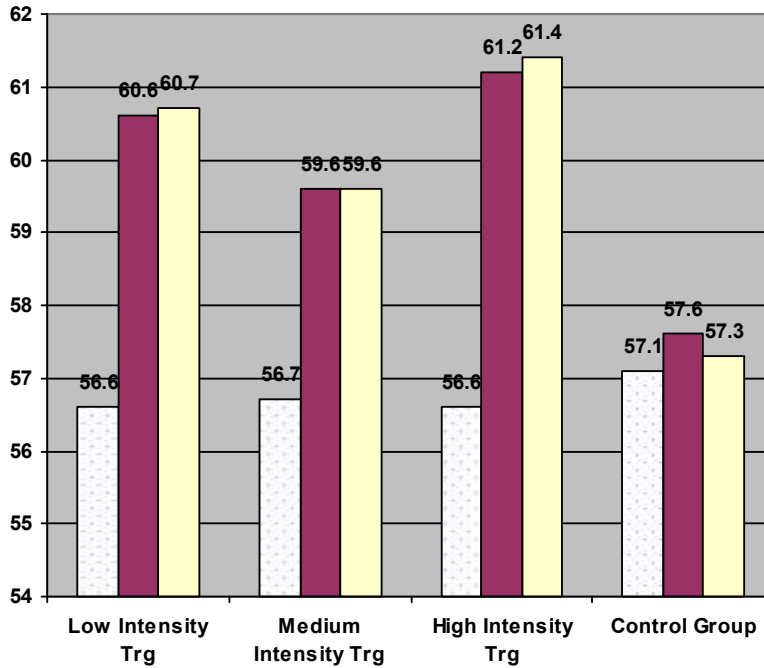
The descriptive statistics on post test mean on VO₂ max of low intensity plyometric training group was 60.60 with standard deviation ± 3.33 post test mean of medium intensity plyometric training group was 59.56 with standard deviation ± 5.31 , the post test mean of high intensity plyometric training group was 61.21 with standard deviation ± 5.31 , the post test mean of control group was 57.56 with standard deviation ± 3.49 .

The adjusted mean on VO₂ max on low intensity plyometric training group was 60.75, medium intensity plyometric training group was 59.57, high intensity plyometric training group was 61.36 and control group was 57.26, as shown in Table I.

The obtained mean values on the experimental and control groups were presented in Figure II.

Figure II

BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED MEANS ON VO₂ max DUE TO LOW, MEDIUM AND HIGH INTENSITY PLYOMETRIC TRAINING AND CONTROL GROUPS



The results on descriptive statistics proved that there exists differences in different intensities of plyometric training compared to control group of variable VO₂ max. And to test statistical significance of the differences, the obtained data on VO₂ max using ANCOVA was presented in Table III.

Table III**COMPUTATION OF ANALYSIS OF COVARIANCE DUE TO LOW, MEDIUM AND HIGH INTENSITY PLYOMETRIC TRAINING AND CONTROL GROUP ON VO₂ max**

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre Test Mean	Between	2.69	3	0.90	0.14
	Within	355.43	56	6.35	
Post Test Mean	Between	114.95	3	38.32	2.88*
	Within	745.92	56	13.32	
Adjusted Post Test Mean	Between	146.22	3	48.74	5.66*
	Within	473.48	55	8.61	

Required $F_{(0.05), (df 3, 56)} = 2.77$

* Significant at 0.05 level of confidence

As shown in Table II, the obtained F ratio of 0.14 on pre test means of the groups was not significant at 0.05 level as the obtained F value was less than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was no significant difference in means of the groups at initial stage.

The results presented in Table II, the obtained F ratio of 2.88 on post test means of the groups was significant at 0.05 level as the obtained F value was greater than the required table F value of 2.77 to be significant at 0.05 level. This shows that there was significant difference in means of the groups at post test stage.

Taking into consideration of the pre test means and post test means, adjusted post test means were determined and analysis of covariance was done. The obtained F value on adjusted means was 5.66. The obtained F value was greater than the required value of 2.77 and hence it was accepted that there was significant differences among the adjusted means on the VO₂ max of the subjects.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Plyometric test. The results were presented in Table III.

Table III

Multiple Comparisons between Low, Medium, and High intensity plyometric training and Control Groups and Scheffe's Post Hoc Analysis on VO2 max

Low intensity plyometric training Group	Medium intensity plyometric training Group	High intensity plyometric training Group	Control Group	MEAN DIFF	C.I
60.75	59.57			1.18	3.06
60.75		61.36		-0.61	3.06
60.75			57.26	3.49*	3.06
	59.57	61.36		-1.79	3.06
	59.57		57.26	2.31	3.06
		61.36	57.26	4.10*	3.06

* Significant at 0.05 level.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence plyometric was 3.06. The following paired mean comparisons were greater than the required confidence plyometric and were significant at 0.05 level.

Low intensity plyometric training Vs Control Groups (MD: 3.49)

High intensity plyometric training Vs Control Groups (MD: 4.10)

The following paired mean comparisons were less than the required confidence plyometric and were not significant at 0.05 level.

Low intensity plyometric training Vs Medium intensity plyometric training Groups (MD: 1.18)

Low intensity plyometric training Vs High intensity plyometric training Groups (MD: -0.61)

Medium intensity plyometric training Vs High intensity plyometric training Group (MD: -1.79)

Medium intensity plyometric training Vs Control Groups (MD: 2.31)

FINDINGS

Based on the results it was found that varied intensities of plyometric training, namely, low, medium and high intensity plyometric training can significantly alter selected motor fitness variables, Agility and physiological variables, VO₂ max compared to control group.

CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn.

It is concluded that twelve weeks varied intensities of plyometric training significantly altered physiological variable, VO₂ max among college male volleyball players compared to control group. Comparison among the experimental groups proved that there were no significant differences among experimental groups on VO₂ max of women college volleyball players.

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