



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2021; 6(2): 20-22

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www.theyogicjournal.com

Received: 14-05-2021

Accepted: 17-06-2021

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Combined effect of plyometric and mobility training on selected physical fitness variables among college women players

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Abstract

The purpose of the study was to find out the effect of combined effect of plyometric and mobility training on selected physical fitness variables among college women players. To achieve this purpose, forty five women players in the age group of 18 to 23 years from various classes and departments of Annamalai University, Chidambaram, Tamil Nadu, India during the year 2019-2020 were selected as subjects at random from the total population of 90 students. The selected forty five subjects were divided into three equal groups of fifteen each as two experimental groups and one control group, in which group – I (n=15) underwent plyometric training for three days per week for six weeks, group – II (n=15) underwent the combination of mobility and plyometric training for three days per week for six weeks and group – III (n=15) acted as control who are not participate any training apart from their regular activities. The selected criterion variables such as abdominal strength, speed, leg explosive power and flexibility were assessed before and after the training period. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA) and Scheffé's Post-Hoc Test. From the results of the study it was found that there was a significant difference when compared with the control group.

Keywords: Plyometric training, mobility training, abdominal strength, speed, leg explosive power and flexibility

Introduction

In sports the word “Training” is generally understood to be a synonym of doing physical exercises. In a narrow sense, training is doing physical exercises for the improvement of performance.

Plyometric is a popular training technique used by many coaches today. It has been tested as a way to bridge the gap between sheer strength and power. Plyometric training is a method of developing explosive power and ultimately, improving athletic performance. Plyometric exercises include jumps, hops, skips, bounds and throws

Mobility, or joint mobility, is the ability to move a limb through the full range of motion—with control. Mobility is based on voluntary movement while flexibility involves static holds and is often dependent upon gravity or passive forces. We use “mobility” to express how well you can move through the appropriate functional range of motion for a joint within a given movement pattern.

Methodology

To achieve this purpose, forty five women players in the age group of 18 to 23 years from various classes and departments of Annamalai University, Chidambaram, Tamil Nadu, India during the year 2019-2020 were selected as subjects at random from the total population of 90 students. The selected forty five subjects were divided into three equal groups of fifteen each as two experimental groups and one control group, in which group – I (n=15) underwent plyometric training for three days per week for six weeks, group – II (n=15) underwent the combination of mobility and plyometric training for three days per week for six weeks and group – III (n=15) acted as control who are not participate any training apart from their regular activities.

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Analysis of data

The data collected prior to and after the experimental periods on abdominal strength, leg explosive power, speed and

flexibility on combined of mobility and plyometric training group, plyometric training and control group were analysed and presented in the following table -I.

Table 1: Analysis of covariance and 'f' ratio for abdominal strength, speed, leg explosive power and flexibility for combined of mobility and plyometric training, plyometric training and control group

Variable Name	Group Name	Control Group	Plyometric Group	Combined Group	'F' Ratio
Abdominal strength (in Numbers)	Pre-test Mean ± S.D	37.13 ± 1.15	37.2 ± 1.25	37.2 ± 1.21	0.001
	Post-test Mean ± S.D.	37.32 ± 1.16	39.13 ± 1.31	42.21 ± 1.36	3.935*
	Adj. Post-test Mean ± S.D.	37.50	39.17	42.19	23.250*
Leg explosive power (in Meters)	Pre-test Mean ± S.D	1.816 ± 0.12	1.818 ± 0.135	1.822 ± 0.13	.003
	Post-test Mean ± S.D.	1.819 ± 0.12	1.978 ± 0.22	2.141 ± 0.31	3.034*
	Adj. Post-test Mean ± S.D.	1.822	1.979	2.139	3.265*
Speed (in Seconds)	Pre-test Mean ± S.D	7.9 ± 0.008	7.89 ± 0.0089	7.9 ± 0.0083	.006
	Post-test Mean ± S.D.	7.88 ± 0.0081	7.59 ± 0.0092	7.48 ± 0.0097	6.766*
	Adj. Post-test Mean ± S.D.	7.89	7.589	7.492	15.095*
Flexibility(in Centimeters)	Pre-test Mean ± S.D	5.91 ± 0.71	5.9 ± 0.72	5.9 ± 0.71	.001
	Post-test Mean ± S.D.	5.89 ± 0.70	7.19 ± 0.92	8.42 ± 0.97	3.657*
	Adj. Post-test Mean ± S.D.	5.912	7.187	8.439	29.012*

* Significant at .05 level of confidence

The table value required for significance at .05 level of confidence with df 2 and 43 and 2 and 42 were 3.21 and 3.22 respectively

Further to determine which of the paired means has a significant improvement, Scheffé S test was applied as post-

hoc test. The result of the follow-up test is presented in Table - II.

Table 2: Scheffé S Test for the Difference between the Adjusted Post-Test Mean of Abdominal Strength, Leg Explosive Power, Speed and Flexibility

Adjusted Post-test Mean of Abdominal Strength				
Combined Group	Plyometric Group	Control Group	Mean Difference	Confidence interval at .05 level
42.19		37.50	4.69*	0.601
42.19	39.17		3.02	0.601
	39.17	37.50	1.67*	0.601
Leg Explosive Power				
2.139		1.822	0.317*	0.037
2.139	1.979		0.16*	0.037
	1.979	1.822	0.157*	0.037
Speed				
7.492		7.89	0.398*	0.27
7.492	7.589		0.097	0.27
	7.589	7.89	0.301*	0.27
Flexibility				
8.439		5.912	2.527*	0.037
8.439	7.187		1.252*	0.037
	7.187	5.912	1.275*	0.037

* Significant at 0.05 level of confidence

Results

The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. Since there was three groups were involved in this study, the Scheffé S test was used as pos-hoc test and it was shown in Table - II.

Table - I showed that the results of the study there was a significant difference between combined of mobility and plyometric training, plyometric training and control group abdominal strength, speed, leg explosive power and flexibility. Further the results of the study showed that there was a significant improvement on abdominal strength due to six weeks of programme. However the improvement was in favour of experimental group. The results of the study also shown that there was a significant difference between combined of mobility and plyometric training, plyometric training and control group on abdominal strength, speed, leg

explosive power and flexibility.

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. There was a significant improvement due to the plyometric training and combination of mobility and plyometric training on abdominal strength, flexibility, explosive power and speed when compared with the control group.
2. The improvement in criterion variable such as abdominal strength was higher for the combination of mobility and plyometric group than the plyometric training group.
3. The improvement in flexibility was higher for combination of mobility and plyometric group when compared with the plyometric training group and control group.
4. Significant improvements noticed on selected motor ability components such as abdominal strength, flexibility, leg explosive power and speed due to

combination of mobility and plyometric training and plyometric training.

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