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Effect of Selected Plyometric Programme on Motor Fitness Variables of Basketball College Men

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Abstract

The purpose of this research is to find out the effect of plyometric exercises on selected motor fitness variables among college men basketball players. To achieve the purpose the investigator selected 30 basketball players from Dhanalakshmi Srinivasan College of Physical Education, Perambalur, Tamilnadu, India. The subjects were tested of their motor fitness variables, explosive power, speed and agility both prior to and after the eight weeks plyometric training. The obtained data were subjected to statistical treatment using ' t' test and the results proved that there was significant differences due to eight weeks plyometric exercises on selected motor fitness variables, Speed, Agility and Leg explosive power.

Keywords: Speed, Agility, Leg explosive power.

Introduction

A good deal of time is needed to keep oneself constantly fit. Unfortunately we are always short of time. We live in a labour saving, highly mechanized society which is eliminating more and more physical exertion from our everyday lives. But the effects of a sedentary life style can be seen in the people around us. The national interest in developing and maintaining the physicals fitness of our youth continues to be high. The word plyometric is derived from the Greek word, "Plethyein" which means "to increase" and the word "Isometric" which means equal length. Plyometric (Plyo - more greater; metric - measured quantity) exercises is based upon the belief that a rapid lengthening of a muscle just prior to a contraction will result in a much stronger contraction.

The purpose of muscular contraction is the production of force. In the human body the production of internal forces is enormous, much more than what is required to move the concerned segments. In soccer, we are interested in the highest amount of force production in the shortest amount of time, that is, explosive power. Power can be defined as the product of force and velocity. The term plyometric can be used to include both depth jumping and hopping and bounding drills. They are very dynamic movements which use gravitational force of the body and the contractibility and elasticity of muscle tissues to increase the force of stress on related muscles (Will and Everlyhe Freeman, 1984).

Plyometric exercises are based upon the belief that a rapid lengthening of a muscle just prior to contraction will result in a much stronger contraction. The added contractile strength is believed to be done to stretching of muscle spindles involved in myotatic reflex and resulting in an increased frequency of motor unit discharges stimulations of other receptors and increased number of activated motor units. Evidence indicates that plyometric exercises were systematically carried out by 1972 Gold medal winners Valeri Borzov and James Jusis. The term plyometric can be used to include both depth jumping and hopping and bounding drills. They are very dynamic movements which use gravitational force on the body and the contractibility and elasticity of muscle tissue to increase the force or stress on related muscle.

Methodology

The purpose of this study was to find out the effect of selected plyometric exercises on the performance of leg explosive power of college men basketball players. In order to achieve the purpose of this study, thirty college level men basketball players were selected from Dhanalakshmi Srinivasan College of Physical Education, Perambalur, Tamilnadu, India. The age group of the subjects were between 18 to 23 years. For the purpose of this study, the investigator selected the following motor fitness variables:

1, Speed
2. Agility
3. Leg Explosive Power

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These tests and data must be analysed in ways appropriate to the research design. Such analysis can only be accomplished through the application of pertinent statistics. The data collected in this study were treated statistically by correlated 't' test was used to test the mean difference between the pre and post test both for the basketball players.

Result

The pre and post means, mean difference, standard deviations and the 't' test for difference as calculated for speed, agility and explosive strength are presented in tables below

Table I. The Mean, Mean Difference, Standard Deviation and 't' test for difference Between Pre and Post Test for Control Group in Leg Explosive Power

	Mean	Mean Difference	Std Deviation	Obtained 't' value
Pre Test	2.22	0.22	0.21	5.66*
Post Test	2.44			

df(29)(0.05) = 2.05
* Significant at 0.05 level

In Table I the result of the effect of Plyometric training on explosive power, measured through standing broad jump was shown. For pre and post test mean values of 2.22 and 2.44 meters, respectively the obtained 'f ratio was 5.66. Since the obtained ^{4}t' value of 5.66 was greater than the required table value of 2.05 to be significant at 0.05 level, the null hypothesis is rejected at 0.05 level of significance. There was significant difference between the pre and post test mean of the pre and post test scores.

Table II. The Mean, Mean Difference, Standard Deviation and 't' test for difference Between Pre and Post Test for Control Group in Speed

	Mean	Mean Difference	Std Deviation	Obtained 't'value
Pre Test	7.92	-0.25	0.46	2.94*
Post Test	7.68			

df(29)(0.05) = 2.05
* Significant at 0.05 level

In Table II the result of the effect of Plyometric training on speed, measured through standing broad jump was shown. For pre and post test mean values of 7.92 and 7.68 seconds, respectively the obtained 'f ratio was 2.94. Since the obtained.'t' value of 2.94 was greater than the required table value of 2.05 to be significant at 0.05 level, the null hypothesis is rejected at 0.05 level of significance. There was significant difference between the pre and post test mean of the pre and post test scores.

Table III. The Mean, Mean Difference, Standard Deviation and 't' test for difference Between Pre and Post Test for Control Group in Agility

	Mean	Mean Difference	Std Deviation	Obtained 't'value
Pre Test	18.68	-0.55	1.00	3.04*
Post Test	18.13			

df(29)(0.05) = 2.05
* Significant at 0.05 level

In Table III the result of the effect of Plyometric training on agility, measured through standing broad jump was shown. For pre and post test mean values of 18.68 and 18.13 seconds, respectively the obtained 't' ratio was 3.04. Since the obtained 't' value of 3.04 was greater than the required table value

of 2.05 to be significant at 0.05 level, the null hypothesis is rejected at 0.05 level of significance. There was significant difference between the pre and post test mean of the pre and post test scores.

Conclusions

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

1. It was concluded that the college men basketball players' motor fitness component explosive power can be significantly improved through selected plyometric exercises.
2. It was concluded that the college men basketball players' motor fitness component speed can be significantly improved through selected plyometric exercises.
3. It was concluded that the college men basketball players' motor fitness component agility can be significantly improved through selected plyometric exercises.
4. The null hypothesis that there would not be any sig nificant difference due to plyometric training was rejected and alternative hypothesis that there would be significant difference was accepted at alpha level of 0.05.

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