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Plyometric training on selected bio motor abilities of basketball players

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Abstract

The purpose of the study was to find out the effect of plyometric training on selected bio motor abilities of Pondicherry university basketball players. To achieve the study thirty basketball players from Pondicherry University, studying in various departments were randomly selected as subjects. They were divided into two equal groups and each group consisted of 15 subjects. Group I underwent plyometric training for three days per week for twelve weeks and group II acted as control who did not participate any special training apart from the regular curricular activities. The subjects were tested on selected criterion variables such as leg strength, speed, cardio-respiratory endurance and flexibility at prior to and immediately after the training period. The selected criterion variables such as leg strength was measured by using leg lift with dynamometer, speed was measured by conducting 50 meters dash, cardio-respiratory endurance was measured by using John Cooper's 12 minutes run/walk test and flexibility was measured by using sit and reach test. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between groups on each selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate.

Keywords: plyometric training, selected bio motor abilities, basketball players

Introduction

Sports training is a scientifically based and pedagogically organized process which through planned and systematic effect on performance ability and performance readiness aims at sports perfection and performance improvement as well as at the contest in sports competition. Sport training is a planned and controlled process in which for achieving a goal changes in complex sports motor performance ability to act and behavior are made through measure of content methods and organization. The word plyometric is derived from the Greek word *plyo* meaning 'to increase' or from the "measure" plyometric refers to exercise that enable muscle to reach maximal strength in as short a time as possible. Jumping exercise are important in sports requiring high levels of speed strength (ability to exert maximum force during high-speed activity) to complete movements such as sprinting, jumping and throwing. These types of exercises use the force of gravity (by having the athlete step off a box for example) to store energy in the muscles, and then immediately release the energy in the opposite direction.

Statement of the problem

The study was designed to examine the effect of plyometric training on selected bio motor abilities of university basketball players.

Hypothesis

It was hypothesized that there may be a significant difference between experimental group and control group on selected criterion variables.

Delimitations

1. Only 30 men basketball player studying in various departments from Pondicherry university were selected as subjects.
2. The age of the subjects were ranged between 19 to 25 years.

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3. The selected subjects were assigned into two groups namely Group I which acted as experimental group and group II acted as control group and each group consist of 15 subjects.
4. The experimental group underwent in-season plyometric training programmer for three days per week' for 12 weeks.
5. Among the strength components strength, speed, cardiorespiratory endurance and flexibility were selected as criterion variables.
6. The following standardized test items assessed the selected criterion variables for this study leg strength was assessed by leg lift with dynamometer, speed was assessed by 50 meters dash, cardiorespiratory endurance was assed by conduction john Cooper's 12 minutes run/walk test and flexibility was assessed by sit and reach test respectively.
7. The data were collected at prior to and immediately after the experimental period.

Limitations

The following limitations were considered when interpreting the results of the study:

1. The changes in climatic condition such as temperature, at atmospheric pressure, humidity during the training as well as testing periods could not be controlled and their influence on the result of the study was recognized as a limitation.
2. The weight and height of the subjects were not considered.
3. Motivational techniques were not used to the subjects.
4. Even though the subjects were residing in the hostel there food habits and life style were considered as limitations.
5. The previous experience of the subjects in the field of sports and games, which might be influencing on the training and data collection, was not considered.

Definitions and explanation of the terms

Sports training

Sports training are a scientifically based and systematic effect on performance ability and performance readiness aims at sports perfection and performance improvement as well as at the contest in sports competition.

Strength

Strength may be defined as the capacity to exert force or the ability to do work against resistance.

Speed

“Speed’ is the performance prerequisite to do motor actions

under given conditions (movement task, external factors, individual prerequisites) in minimum of time”.

Flexibility

Flexibility is the ability to endure strains or distortion with a capacity to recover rapidly from strains, that enables the individual to perform an immediate repetition of movement.

Cardio Respiratory Endurance

The ability of the heart and lungs to work at optimal efficiency during continuous exercise for the prolonged period of time without occurring fatigue.

Significance of the study

The ultimate goal of research in physical education is to help coaches and physical educators train their athletes and players based on new concepts to improve their performance in competitions. A unique aspect of the work is that it includes recommendations for the practical use of research findings. Polymeric training is one of the important training regiments to improve bio motor abilities, which are basic for athletic performance.

Methodology

selection of subjects, selection of variables, selection of tests, orientation of the subjects, tester’s competency, collection of the data, instrument reliability, and reliability of the data, pilot study, training programmer, test administrations, experimental design and statistical procedure were explained.

Selection of subjects

The study was to find out the effect of plyometric training on selected biomotor abilities of Pondicherry University basketball players. to achieve the study thirty basketball players from Pondicherry university, studying in various departments and colleges were randomly selected as subjects,. They were divided into two equal groups and each group consisted of 15 subjects. Group I underwent plyometric training for three days per week for twelve weeks and group II acted as control who did not participate any special training apart from the regular curricula Selection of Variables.Among the strength and power parameters, the following variables such as leg strength, speed, cardio-respiratory endurance and flexibility were selected as criterion variables.

Tests Selection

S. No.	Criterion variables	Test items	Unit of Measurements
1.	Leg Strength	Leg lift with Dynamometer	Kilograms
2.	Speed	50 meters dash	Seconds
3.	Cardio – respiratory Endurance	John Cooper’s 12 minutes run/walk	Meters
4.	Flexibility	Sit and reach	centimeters

Experimewntal design and statistical procedure

The random group design was used as experimental design. The purpose study was to find out effect of polymeric training programmer on selected bio motor abilities. To achieve this purpose thirty basketball players from various departments of physical education and Pondicherry University, Puducherry, were selected as subjects. They were divided into two equal groups of fifteen subjects each. Group I underwent plyometric training for a three days per week for twelve weeks and group II acted as control group. The selected subjects were tested on selected criterion variables at prior to and immediately after

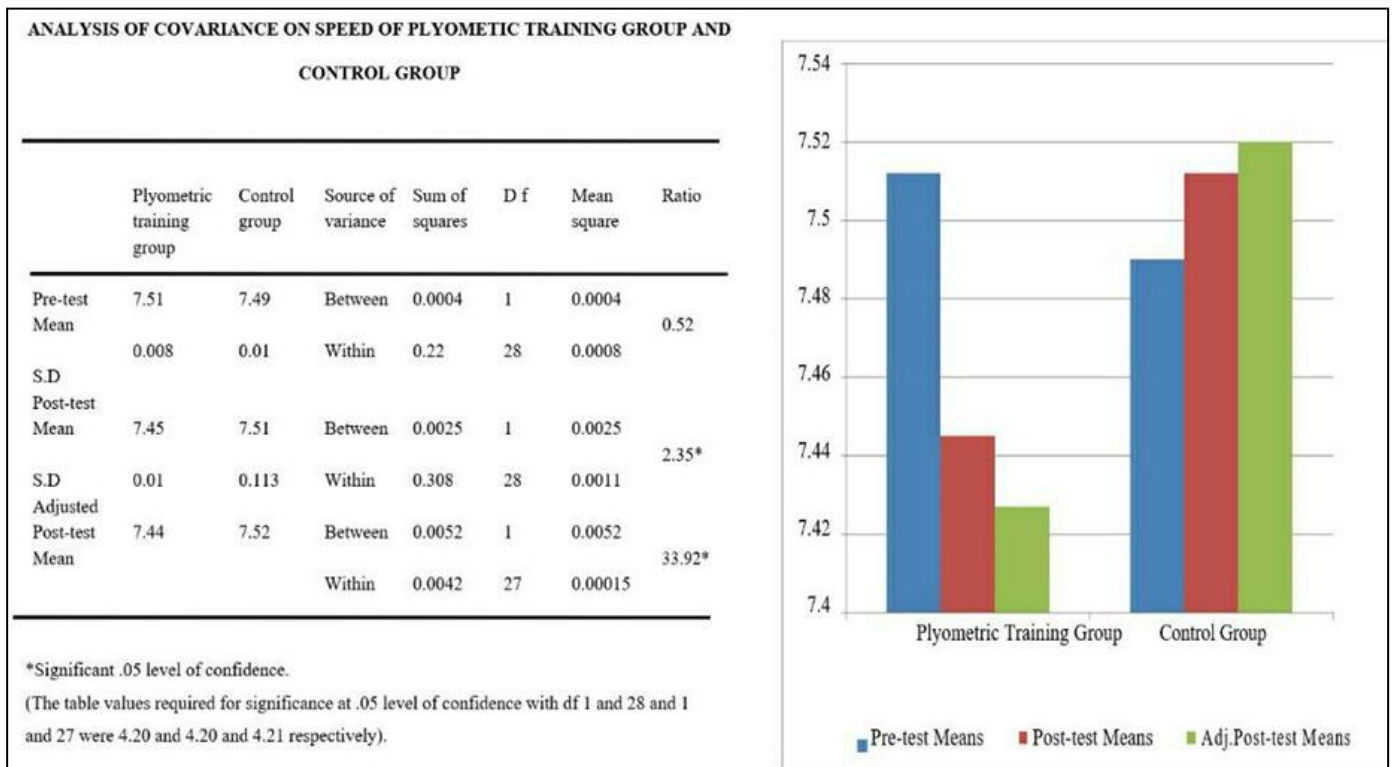
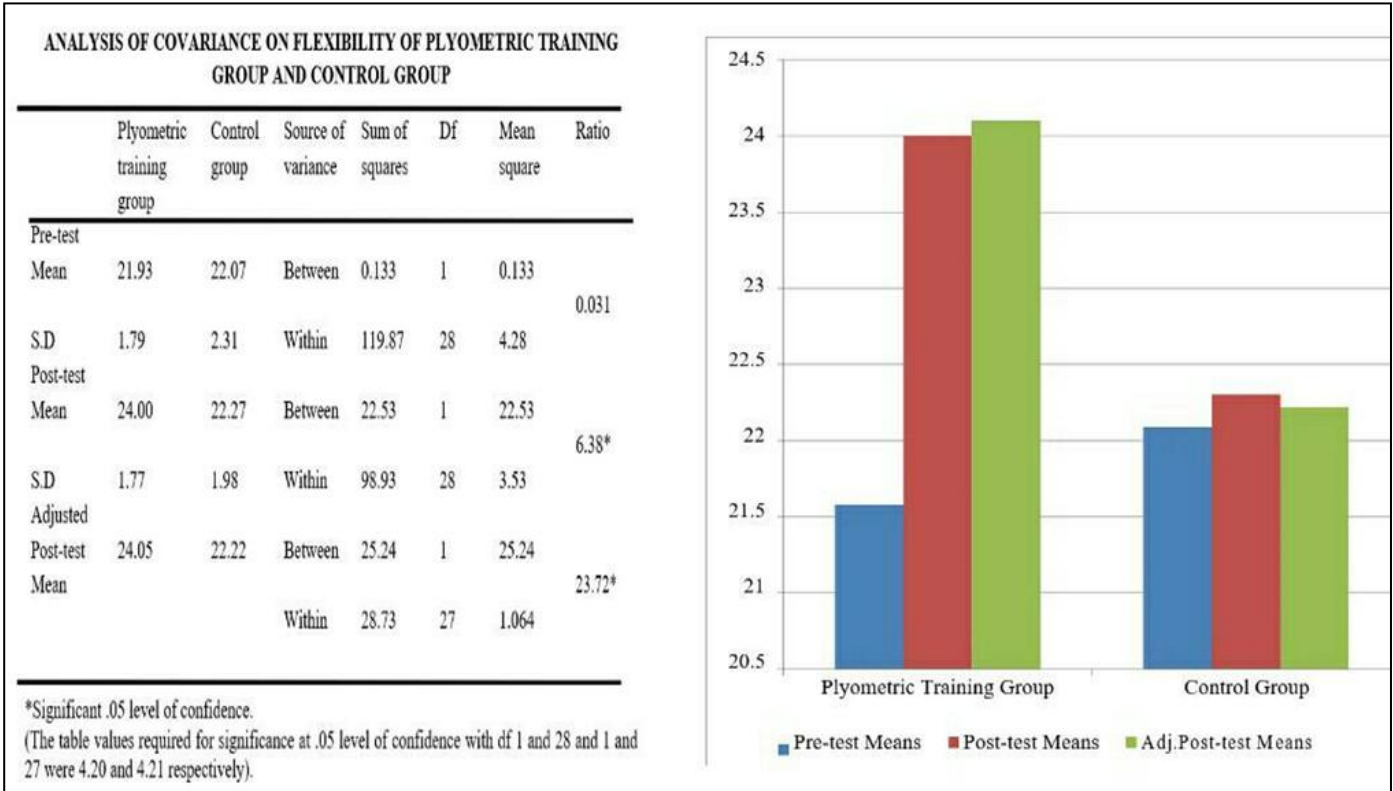
the training programmer and were statistically examined for significant differences, if any, by applying analysis of covariance (ANCOVA). In all the cases, .05 level of confidence was used to test the significance, which was considered an appropriate.

Analysis of the data and interpretation of the study

The purpose of the study was to find out the of plyometric training on selected bio motor abilities for Pondicherry University basketball players. To achieve the study thirty basketball players from Pondicherry University, studying in

various departments and colleges were randomly selected as subjects. They were divided into two equal groups and each group consisted of 15 subjects. Group I underwent plyometric training for three days per week for twelve weeks and group II acted as – control who did not participate any special training apart from the regular curricular activities. The subjects were tested on selected criterion variables such as leg strength, speed, cardio-respiratory endurance and flexibility at prior to and immediately after the training period. The selected criterion

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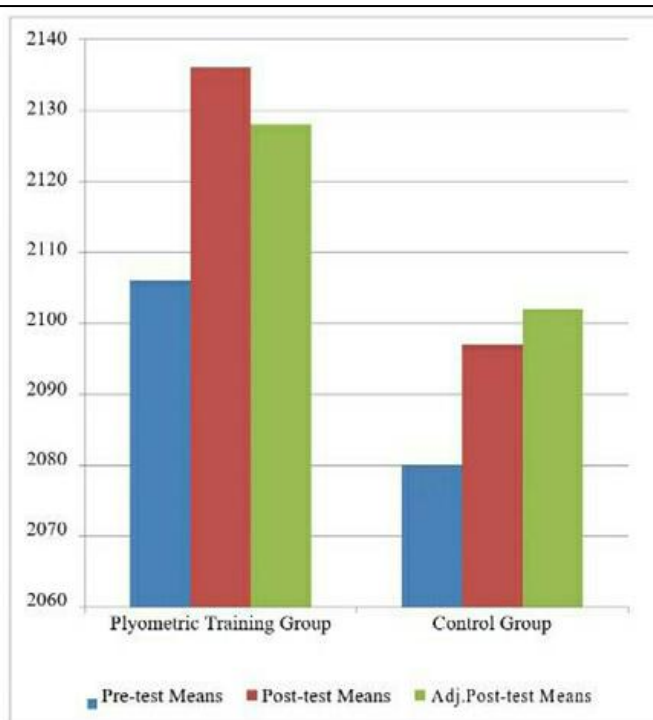
ANALYSIS OF COVARIANCE ON CARDIO-RESPIRATORY ENDURANCE OF

PLYOMETRIC TRAINING GROUP AND CONTROL GROUP

	Plyometric training group	Control group	Source of variance	Sum of squares	df	Mean square	Ratio
Pre-test Mean	2104.67	2088.00	Between	2083.33	1	2083.33	0.64
S.D	55.40	58.82	Within	91413.33	28	3264.76	
Post-test Mean	2135.33	2095.33	Between	12000.00	1	12000.00	4.28*
S.D	54.36	51.33	Within	78546.67	28	2805.24	
Adjusted Post-test Mean	2128.62	2102.05	Between	5174.92	1	5174.92	7.03*
			Within	19149.15	27	709.23	

*Significant .05 level of confidence.

(The table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.20 and 4.21 respectively).



Discussion and findings

The results of the study showed that there was a significant difference and significant improvement on selected bio motor abilities such as leg strength, speed, cardio-respiratory endurance and flexibility the plyometric training group and control group.

Summary

The purpose of the study was to find out the of plyometric training on selected bio motor abilities of Pondicherry university basketball players. To achieve the study thirty basketball players from Pondicherry University, studying in various departments were randomly selected as subjects. They were divided into two equal groups and each group consisted of 15 subjects. Group I underwent plyometric training for three days per week for twelve, weeks and group II acted as control who did not participate any special training apart from the regular curricular activities. The subjects were tested on selected criterion variables such as leg strength, speed, cardio-respiratory endurance and flexibility at prior to and immediately after the training period. The selected criterion variables such as leg strength was measured by using leg lift with dynamometer, speed was measured by conducting 50 meters dash, cardio-respiratory endurance was measured by using John Cooper's 12 minutes run/walk test and flexibility was measured by using sit and reach test. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between groups on each selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate.

Conclusions

1. There was a significant difference between plyometric training group and control group on leg strength.
2. There was a significant difference between plyometric training group and control group on speed.
3. There was a significant difference between plyometric training group and control group on cardio-respiratory

endurance.

4. There was a significant difference between plyometric training group and control group on flexibility.
5. There was a significant improvement on selected criterion variables such as leg strength, speed, cardio-respiratory endurance and flexibility due to the plyometric training.

Recommendations

1. A similar study may be done with many number of physical, physiological and biochemical variables other than strength and power parameters.
2. A similar study can be done with different age groups.
3. A similar study may be conducted with female subjects.
4. A similar study may be done with different games.
5. A similar study may be conducted with more-subjects on elaborate and extensive manner.

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