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Effect of Resistance Training on Selected Leg Strength and Explosive Power

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Abstract

The purpose of the present study was to find the effect of resistance training on leg strength and explosive power among male basketball players of Annamalai University. For this purpose, thirty male basketball players, with the age group of 18 – 25 years, studying in the Department of Physical Education and Sports Sciences, Annamalai University were selected as subjects. They were divided into two equal groups, such as, group – I (n – 15) underwent resistance training and group – II (n = 15) acted as control group who did not participate in any special training but allowed to take part in their regular basketball playing and training programme. The resistance training programme was carried out for this study was three days per week for eight weeks. Prior to and after the training period the subjects were tested for leg strength and explosive power in terms of vertical. Leg strength was assessed by using leg lift with dynamometer and explosive power in terms of vertical distances was assessed by administering Sergeant jump. The Analysis of Covariance (ANCOVA) was used as statistical tool. It was concluded from the results of the study, that after the resistance training programme, there was a significant improvement in the leg strength and explosive power in terms of vertical distance for resistance training group when compared with the control group.

Keywords: Resistance training, leg strength, back strength and explosive power.

Introduction

Training is a systematic process of repetitive progressive exercise of work involving, learning and acclimatization (C.E. Kalf and D. Arnheim, 1963). Training means, various physical exercises and other objects methods and procedures, which are used for the improvement maintenance and recovery of performance capacity and performance readiness (Hardayal Singh, 1991). The word training means different things in different fields. In sports the word training is generally understood to be a synonyms of doing physical exercise. In a narrow sense training is physical exercise for the improvement of performance (Hardayal Singh, 1993). 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 (Hardayal Singh, 1993). There are different training methods such as resistance training, interval training, fartlek training, circuit training, continuous running, pressure training etc., which aims at improving different qualities. Among them running resistance training is the training which aims to develop strength endurance. Resistance training is use of resistance other than the resistance of the body to develop specific areas of the body. Generally, it is used to develop muscular strength and power. It also develops muscular endurance, elasticity and co-ordination.

Strength is a vital factor on which the sports performance depends. Depending upon the magnitude and type of resistance to be tackled in various sports, the sportsman of different sports and different level and type of strength to achieve good performance.

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Materials and Methods

This study under investigation involves the experimentation of resistance training on leg strength and explosive power in terms of vertical distance. Only male basketball players those who were studying in the Department of Physical Education and Sports Sciences, Annamalai University and aged between 18 and 25 years were selected. The selected thirty male basketball players were randomly divided into two groups of fifteen each, out of which group – I (n = 15) underwent resistance training, and group - II (n = 15) remained as control. The training programme was carried out for three days per week during morning session only (6 am to 8 am) for eight weeks. Leg strength were measured by using dynamometer, explosive power in terms of vertical distances was measured by using the Sergeant jump. After assessing the 1 RM test for all male basketball players in experimental group, the training load was fixed accordingly. Then the experimental group

underwent resistance training programme for 3 days per week for 8 weeks. The control group did not participate in any special training programme on strenuous physical activities apart from their day to day activities. The experimental group underwent their resistance training programme under the instruction and supervision of the investigators. The data were collected on selected criterion variables such as leg strength and explosive power in terms of vertical distance were measured by using leg lift with the dynamometer and Sergeant jump before and after the eight weeks of resistance training programme as pre and post test. Analysis of covariance (ANACOVA) was applied to find out significant difference if any between the experimental and control group.

Analysis of Data

The data collected prior to and after the experimental periods on leg strength and explosive power in terms of vertical distance on resistance training group and control group were analysed and presented in the following table -I.

Table I. Analysis of Covariance and 'F' ratio for Leg Strength, Back Strength, Body Resistance and Body Composition Measures for Resistance Training Group and Control Group

Variable Name	Group Name	Resistance Training Group	Control Group	'F' Ratio
Leg Strength	**Pre-test Mean ± S.D**	58.66 ± 1.08	58.97 ± 1.21	0.88
	Post-test Mean ± S.D.	62.12 ± 1.00	58.99 ± 1.58	28.33*
	Adj. Post-test Mean ± S.D.	62.28	60.10	31.21*
Explosive Power in terms of Vertical Distances	**Pre-test Mean ± S.D**	42.31 ± 1.22	42.36 ± 1.09	1.0001
	Post-test Mean ± S.D.	48.32 ± 0.99	42.32 ± 6.56	5.533*
	Adj. Post-test Mean ± S.D.	47.59	52.41	10.22*

* Significant at .05 level of confidence.
(The table value required for significance at .05 level of confidence with df 1 and 18 and 1 and 17 were 4.41 and 4.45 respectively).

Results

Table - I showed that there was a significant difference between resistance training group and control group on leg strength, explosive power in terms of vertical distance. Further the results of the study showed that there was a significant improvement on leg strength due to eight weeks of resistance training programme. The result of the study also shows that there was a significant increase in explosive power in terms of vertical distance for resistance training group when compared with the control group.

Conclusions

1. There was a significant difference between resistance training and control groups on leg strength and explosive power in terms of vertical distance.
2. There was a significant improvement on leg strength after the eight weeks of resistance training programme.
3. There was also a significant improvement in explosive power in terms of vertical distances after the resistance training programme.

Reference

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