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A Study of Circuit Resistance Training Effect on Leg Strength

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Abstract

The purpose of the study was to find out the effect of circuit resistance training on leg strength. To achieve this purpose of the study, thirty men students studying bachelor degree in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu were selected as subjects and they were divided into two equal groups of fifteen subjects each, such as circuit resistance training group and control group. The Group I underwent circuit resistance training programme for three days per week for twelve weeks and Group II acted as control which did not participate in any special training programme apart from the regular physical education activities as per the curriculum. The following criterion variable namely leg strength was selected as criterion variable and was tested by using leg lift with dynamometer. All the subjects of two groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any, between the groups. The .05 level of confidence was fixed to find out the level of significance which was considered as an appropriate. The results of the study revealed that there was a significant difference between circuit resistance training group and control group on leg strength. And also the results of the study showed that there was a significant improvement on leg strength due to circuit resistance training.

Keywords: Circuit Resistance Training, Leg Strength, Ancova.

Introduction

Circuit training is designed to develop cardio-respiratory endurance as well as flexibility, strength and muscular endurance in essential muscle groups. It is an efficient training method in terms gain made in short time. In a circuit weight training session, heart rates average around 80% of max, but oxygen consumption only 40% of V02max, which is the minmum level for aerobic fitness improvements. The energy cost of a circuit training session of this kind has been shown to be 6-9 Kcal/min depending on bodyweight, similar to a game of tennis or a leisurely cycle. Thus circuit weight training routine should be considered a low to moderate form of aerobic training, with the being much less than with traditional training. Circuit training sessions with rest periods of 60 seconds have shown no improvement in V02max, so keeping the rest periods minimal is important for an aerobic-training stimulus. This can be done by alternating between upper- and lower-body exercises, so that while the arms are recovering the legs are working and the heart rate is kept going continuously. Leg strength is the capacity of the lower limbs to exert muscular force.

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Methodology

The purpose of the study was to find out the effect of circuit resistance training on leg strength. To achieve this purpose of the study, thirty men students studying bachelor degree in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu were selected as subjects and they were divided into two equal groups of fifteen subjects each, such as circuit resistance training group and control group. The Group I underwent circuit resistance training programme for three days per week for twelve weeks and Group II acted as control which did not participate in any special training programme apart from the regular physical education activities as per the curriculum. The following criterion variable namely leg strength was selected as criterion variable and was tested by using leg lift with dynamometer. All the subjects of two groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any, between the groups. The .05 level of confidence was fixed to find out the level of significance which was considered as an appropriate.

Analysis of the Data

The analysis of covariance on leg strength of pre and post tests for circuit resistance training group and control group was used to analysis the data which is

presented in Table I.

Table I. Analysis of covariance of the data on leg strength of pre and post tests scores of circuit resistance training group and control group

Test	Circuit Resistance Training Group	Control Group	Source of variance	Sum of variance	df	Mean Squares	Obtained "F" Ratio
Pre Test							
Mean	91.86	92.01	Between	0.006	1	0.006	1.00
S.D.	1.32	1.21	Within	0.18	28	0.006	
Post Test							
Mean	98.11	92.72	Between	0.82	1	0.82	54.67*
S.D.	1.89	1.20	Within	0.42	28	0.015	
Adjusted Post Test							
Mean	98.20	92.72	Between	0.82	1	0.82	51.25*
			Within	0.44	27	0.016	

* Significant at .05 level of confidence.
(The table value required for significance at .05 level of confidence with df 1 and 28, 1 and 27 were 4.20 and 4.215 respectively)

Table I shows that the adjusted post-test means on leg strength of circuit resistance training group and control group are 98.20 and 92.72 respectively. The obtained "F" ratio of 51.25 for adjusted post-test mean is greater than the table value of 4.215 for df 1 and 27 required for significance at .05 level of confidence on leg strength.

The results of the study showed that there was a significant difference between the adjusted post test mean of circuit resistance training group and control group on leg strength.

Results

1. There was a significant difference among circuit resistance training group and control group on leg strength.
2. There was a significant improvement on leg strength due to circuit resistance training.

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