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Comparison of intensive and extensive interval training on strength of physical education students of Annamalai University

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Abstract

The purpose of the study was to analyze the effect of intensive and extensive interval training on strength. To achieve the purpose of the study, forty-five male students studying bachelor's degree in physical education, from the Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu, India were selected as subjects at random. The age, height and weight of the subjects ranged from 19 to 21 years, 160 to 175 cms and 50 to 60 kg respectively. The selected subjects were medically examined by a qualified physician and certified that they were medically and physically fit enough to undergo the intensive and extensive interval running programme.

The selected subjects were randomly assigned into three groups of 15 each namely experimental group I, experimental group II and a control group. The experimental group I underwent Intensive Interval Training and experimental group II underwent Extensive Interval Training and group III acted as control, who did not participate in any special training apart from their regular physical education programme of the curriculum. The experimental groups underwent the respective training programme for three days a week for twelve weeks. It is inferred that twelve weeks of intensive interval training and extensive interval training groups have significantly improved the muscular strength as compared to the control group. The results also reveal that there were no significant differences exist between intensive interval training group and extensive interval training group in improving muscular strength.

Keywords: Intensive and extensive interval training and strength

Introduction

Intensive interval training

The interval training constitutes the intermittent variation of exertion and active recovery periods within a training unit. Characteristics of the extensive interval method are short exertion periods with high load intensity (Competition Specific Endurance or Intensive Strength Endurance) with the duration of the recovery periods being short enough as to not result in full recovery.

Objectives of the Study

The purpose of the study was to analyze the effect of intensive and extensive interval training on Strength.

Methodology

The interval running programmes were scheduled for one session a day. The training schedule was administered for both the experimental groups. During the training period the experimental groups underwent their respective training programme three days per week (alternate days) for twelve weeks in addition to their regular programme of the course of study as per their curriculum. Group I underwent high intensity with low repetition interval running, Group II underwent moderate intensity with high repetition interval running. Prior to every training sessions both the groups had ten to fifteen minutes of warm-up exercise involving jogging, calisthenics and stretching exercises.

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Strength endurance (Bent Knee Sit-ups)

Purpose

To assess the strength endurance.

Equipment

Stopwatch, a whistle and score sheets.

Procedure

The subject lay on back with knees bent, feet on the floor and heels between 10-12 inches from the buttocks. The fingers were clasped behind the neck and the elbows placed flat on the floor. The feet were held in place by a partner. The abdominal muscles tightened, head and elbows touched to the knees. The subject returned to starting position and repeated the exercise.

Scoring

The number of correctly sit-ups per minute was recorded.

Collection of the Data

Experimental Design and Statistical Procedure

The selected subjects were randomly assigned into three groups of 15 each namely experimental group I, experimental group II and a control group. The experimental group I underwent Intensive Interval Training and experimental group II underwent Extensive Interval Training and group III acted as control, who did not participate in any special training

apart from their regular physical education programme of the curriculum.

The data on selected strength was collected by administrating standard test and procedure. Pretest data were collected two days before the training programme and post-test data were collected two days after the training programme. The data collected from the three groups were statistically analyzed by analysis of covariance (ANCOVA). To make adjustment for difference in initial means, the adjusted post means were calculated. Post hoc test was applied to determine which of the paired mean difference was significant, since three groups are involved. In all cases to test the significance 0.05 level of confidence was utilized.

Analysis of the data

The pre and post test data collected from the experimental and control groups on selected speed, strength, power and endurance parameters were statistically analyzed by analysis of covariance (ANCOVA) and the results are presented below.

Muscular Strength

The pre and posttest data on muscular strength of the intensive interval training, extensive interval training and control groups have been analysed statistically and the results are presented in table-I.

Table I: Analysis of Covariance on Muscular Strength of Intensive Interval Training Extensive Interval Training and Control Groups

| | Group I | Group II | Group III | Source of variance | Sum of Squares | df | Mean squares | 'F' ratio |
|------------------------|---------|----------|-----------|--------------------|----------------|----|--------------|-----------|
| Pretest Mean SD | 34.2 | 36.4 | 33.73 | Between | 60.84 | 2 | 30.42 | 1.99 |
| | 4.55 | 2.84 | 4.09 | Within | 638.93 | 42 | 15.21 | |
| Posttest Mean SD | 37.13 | 40.46 | 33.46 | Between | 367.77 | 2 | 183.88 | 12.67* |
| | 4.70 | 2.69 | 3.75 | Within | 609.2 | 42 | 14.50 | |
| Adjusted Posttest Mean | 37.62 | 39.11 | 34.34 | Between | 168.02 | 2 | 84.01 | 20.86* |
| | | | | Within | 165.13 | 41 | 4.03 | |

* Significant at .05 level of confidence. (The table values required for significance at .05 level of confidence for degree of freedom 2 and 41 is 3.23 and degree of freedom 2 and 42 is 3.22.)

The pretest means on muscular strength of intensive interval training, extensive interval training groups and control group are 34.2, 36.4 and 33.73 respectively. The obtained 'F' ratio value on the scores of pretest means 1.99 was lesser than the required F ratio value 3.22 for significance at 0.05 level of confidence with degrees of freedom 2 and 42. The result of the study reveals that there was no significant differences existed between the experimental and control groups during the pretest period.

The posttest means on muscular strength of intensive interval training, extensive interval training groups and control group are 37.13, 40.46 and 33.46 respectively. The obtained posttest 'F' ratio value of 12.67 was greater than the required table value of 3.22 for significance at 0.05 level of confidence with degrees of freedom 2 and 42. It reveals that significant

differences existed between the groups after twelve weeks of training.

The adjusted posttest means on muscular strength of intensive interval training, extensive interval training groups and control group are 37.62, 39.11 and 34.34 respectively. The obtained 'F' ratio value 20.86 was greater than the required table value of 3.23 for significance at 0.05 level of confidence with degrees of freedom 2 and 41. The result of the study shows that significant differences existed between the adjusted posttest mean of the intensive interval training, extensive interval training and control groups in improving muscular strength.

Since the adjusted posttest mean 'F' value was found to be significant, the results were subjected to post hoc analysis using Scheffe's test. The results were presented in table- II.

Table 2: Scheffe's Test for the Adjusted Post Test Paired Means Differences on Muscular Strength

| adjusted posttest MEANS | | | | Confidence Interval |
|-----------------------------------|-----------------------------------|---------------|-----------------|---------------------|
| Intensive Interval Training Group | Extensive Interval Training Group | Control Group | Mean Difference | |
| 37.62 | 39.11 | | 1.49 | 1.71 |
| 37.62 | | 34.34 | 3.28* | 1.71 |
| | 39.11 | 34.34 | 4.77* | 1.71 |

*Significant at .05 level of confidence

Table-II indicates that the adjusted posttest mean difference on muscular strength between intensive interval training and extensive interval training groups, intensive interval training and control groups, extensive interval training and control groups are 1.49, 3.28 and 4.77 respectively, which are higher than the confidence interval value of 1.71 at 0.05 level of confidence.

It is inferred that twelve weeks of intensive interval training and extensive interval training groups have significantly improved the muscular strength as compared to the control group. The results also reveal that there were no significant differences exist between intensive interval training group and extensive interval training group in improving muscular strength.

Result

It is inferred that twelve weeks of intensive interval training and extensive interval training groups have significantly improved the muscular strength as compared to the control group. The results also reveal that there were no significant differences exist between intensive interval training group and extensive interval training group in improving muscular strength.

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