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Effect of tempo and circuit training programme on selected physical anthropometric and skill related performance on powerlifters

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Abstract

The Purpose of the study was to effect of tempo and circuit training programme on selected physical anthropometric and skill related performance on state level powerlifters. For the study, forty five state level powerlifters Puducherry, where selected and their age ranged from 19 to 23 years the subjects were divided into three groups one control and two experimental groups. The two experimental groups were subjected to a training programme for six weeks each group consisted of 15 subjects Group-I(n=15) underwent tempo training, Group-II (n=15) circuit training and Group-III (n=15) acted as control that it not participant any training the training was given 3days each groups the subjects were tested before and after experimental periods on the selected physical anthropometric and skill related performance variables. The collected data were statistically analysed by using analysis of covariance (ANCOVA) to find out the significant level.

Keywords: handgrip strength, Thigh girth, 1RM and Dead lift

Introduction

The sports training should not be limited to the above mentioned concept. It must be understood in a wider sense since physical exercises undoubtedly are the principal means of improving performance. But the sports performance is improved by other means also which should be included in the concept of sports training. Such means, which are most commonly used along with physical exercises, are theoretical instructions, discussions, tasks of observations, physiotherapeutic measures for recovery from fatigue, psycoregulative procedures and so on. These means and the physical exercises, in actual training proves are used in a complex integrated manner. In reality, we can not separate physical exercises from other means. Hence, the concept of sports training must include all the means for the improvement of performance. The sports training therefore is the total process of preparation of sportsmen, through different means and forms for better performance

Circuit Training

Circuit training can be made more stressful by arranging the exercise in a form known as stage training. In circuit training when one set of an exercise is completed, the athlete moves on to the next exercise and so on until each of the exercise has been completed once. The circuit is then repeated until all the sets have been completed. In stage training the athletes one set of an exercise a short break, then repeats a second set, and so on until all the sets of that exercise have been completed. The athlete then moves on to the next exercise. Another passivity is to group two exercises together one exercise acting as the recovery period for the other.

Deadlift

Deadlift is the third of three events performed in a powerlifting competition. It is one of the most important strength training movements for the upper body, especially the back. In my opinion this exercise requires the least technique compared to bench press and squat. Nonetheless, straightforwardness and simplicity is what made it so popular.

Method

To achieve the purpose of the study forty five male powerlifters were selected from the Pondicherry powerlifters and age ranged from 18 to 23years. The study was formulated as parallel group design, consisting of two experimental groups and one control group. The groups were equated into three groups, groups - I (n = 15) underwent tempo training, group- II (n = 15) underwent circuit training, and group III (n=15) remained as control. All the training programme was carried out for three days per week for a period of 6 weeks. The control group was not allowed to participate in the experimental treatment. Each training session will be for 60 min which includes warming up and cooling down. To determine the effects of tempo and circuit training exercise on power lifting males. following variables, physical = hand grip strength, anthropometric = thigh girth and skill related = dead lift performance (1rm).

Collection of Data

The pre- test data were collected two days before the training programme and the post- test data were collected two days after the training programme. In both the cases the data were collected in single days of the same time.

Results of the Study

The data pertaining to the variables under study have been examined by analyzing the variables separately in order to determine the difference if any among the groups (control and experimental) and in different stages (pre and post). The data which are obtained from the subjects are analysed statistically by the application of analysis of co -variance (ANCOVA). Then they obtained ‘F’ ratio is tested at 0.5 and 0.01 level of significant.

Analysis of covariance pre-test post-test on hand grip Strength

| | Exp- I | E Xp- II | Control Group | SOV | SS | MSS | Df | ‘F’ Ratio |
|--------------------|--------|----------|---------------|-----|-------|-------|----|------------|
| Pre test mean | 26.80 | 27.00 | 26.67 | B | 0.84 | 0.42 | 2 | 0.28 |
| SD | 1.22 | 0.97 | 1.35 | W | 63.73 | 1.52 | 42 | |
| Post test mean | 27.80 | 29.13 | 26.42 | B | 38.93 | 19.47 | 2 | 14.63 * |
| SD | 1.22 | 0.96 | 1.15 | W | 55.42 | 1.33 | 42 | |
| Adjusted test Mean | 27.82 | 28.98 | 27.01 | B | 29.01 | 14.51 | 2 | 110.41* |
| | | | | W | 5.36 | 0.13 | 41 | |

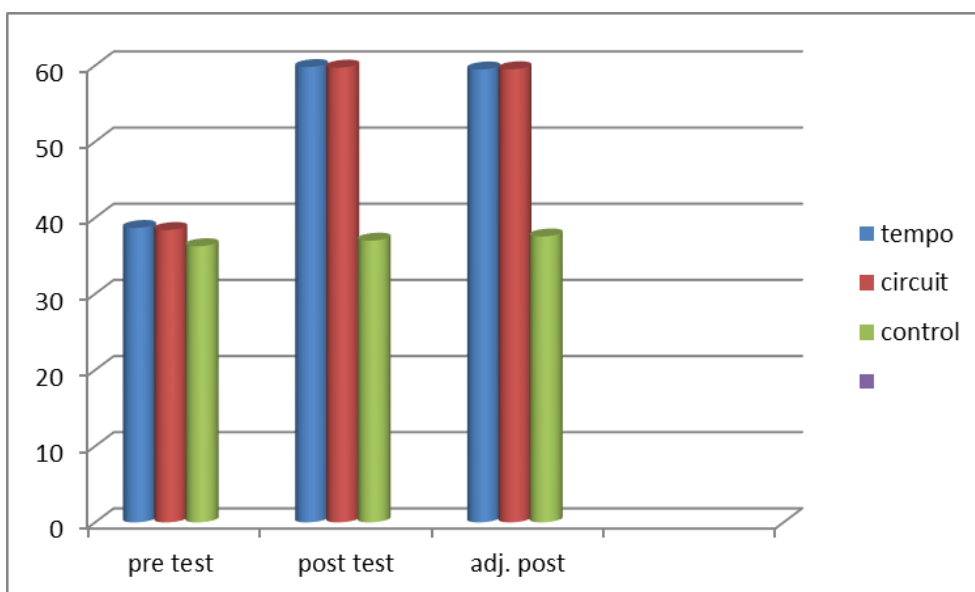
Results of analysis of covariance are presented in Table pretest and post test scores of hand grip strength. From the table it can be seen that the obtained ‘F’ value was 110.41 was greater than the required table F value of 3.23 at 0.05 level of confidence.

following a significant analysis of covariance for tempo training group, circuit training group and control group. The adjusted general hand grip strength on means in order of magnitude and the difference between this means for the control and two experimental groups are given in the table the mean difference between the circuit and tempo training group was 1.16. In the comparison between circuit training group and control group were 0.81 and comparison between tempo training group and control group were 1.97. which was significant at 0.05 level confidences. This result shows that the circuit training group had a batter improvement when compared to the tempo training group and control group. The mean result was shown on the graph.

| Experimental group –I | Experimental group –II | Control group | Mean difference | CI |
|-----------------------|------------------------|---------------|-----------------|-------|
| 27.82 | 28.98 | | 1.16 | 0.334 |
| 27.82 | | 27.01 | 0.81 | |
| | 28.98 | 27.01 | 1.97 | |

Scheffe’s table shows post-hoc method of testing the significant of the difference between the paired means

Graphical illustration of pre test post test and adjusted post test mean of control and experimental groups on hand grip strength



Analysis of covariance pre-test and post-test on thigh girth

| | Ex- group I | Ex- group II | Control group | SOV | SS | MSS | Df | 'F' ratio |
|--------------------|-------------|--------------|---------------|-----|---------|--------|----|-----------|
| Pre test mean | 26.60 | 26.80 | 26.73 | B | 0.3111 | 0.155 | 2 | 0.18 |
| SD | 0.95 | 0.75 | 1.00 | W | 36.9333 | 0.429 | 42 | |
| Post test mean | 26.73 | 25.80 | 23.80 | B | 67.3778 | 33.688 | 2 | 47.59* |
| SD | 0.77 | 0.75 | 0.91 | W | 29.7333 | 0.707 | 42 | |
| Adjusted test Mean | 26.82 | 25.73 | 23.78 | B | 71.0242 | 35.514 | 2 | 271.40* |
| | | | | W | 5.3651 | 0.130 | 42 | |

Results of analysis of covariance are presented in Table pretest and post test scores of thigh girth. From the table it

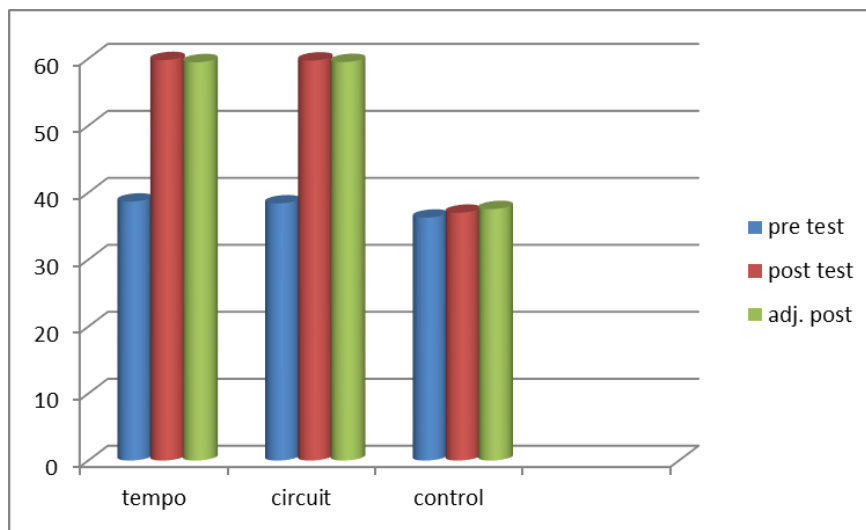
can be seen that the obtained 'F' value was 0.18 was lesser than the table F value of 3.22 at 0.05 level of confidence.

| Experimental group I | Experimental group II | Control group | Mean difference | CI |
|----------------------|-----------------------|---------------|-----------------|-------|
| 27.82 | 28.98 | | 1.16* | 0.334 |
| 27.82 | | 27.01 | 0.81* | |
| | 28.98 | 27.01 | 1.97* | |

Scheffe's table shows post-hoc method of testing the significant of the difference between the paired means following a significant analysis of covariance for tempo training group, circuit training group and control group. The adjusted general thigh girth on means in order of magnitude and the difference between this means for the control and two experimental groups are given in the table the mean difference between the tempo and circuit training group was

1.16. in the comparison between tempo training group and control group were 0.81 and comparison between circuit training group and control group training were 1.97. That was significant at 0.05 level confidences. This result shows that the tempo training group had a better improvement when compared to the circuit training group and control group. the mean result was shown on the graph.

Graphical illustration of pre test post test and adjusted post test mean of control and experimental groups on thigh girth



Analysis of covariance pre-test and post-test on dead lift performance

| | Ex- group I | Ex- group II | Control group | SOV | SS | MSS | Df | 'F' ratio |
|--------------------|-------------|--------------|---------------|-----|---------|---------|----|-----------|
| Pre test mean | 38.67 | 38.40 | 36.27 | B | 51.91 | 25.96 | 2 | 1.12 |
| SD | 3.89 | 5.98 | 3.77 | W | 975.42 | 23.23 | 42 | |
| Post test mean | 59.80 | 59.73 | 37.00 | B | 5183.24 | 2591.62 | 2 | 111.60* |
| SD | 5.28 | 5.42 | 1.63 | W | 975.33 | 23.22 | 42 | |
| Adjusted test Mean | 59.48 | 59.51 | 37.55 | B | 4576.27 | 2288.14 | 2 | 110.64* |
| | | | | W | 847.93 | 20.68 | 42 | |

Results of analysis of covariance are presented in Table pretest and post test scores of dead lift performance. From the table it can be seen that the obtained 'F' value was 1.12

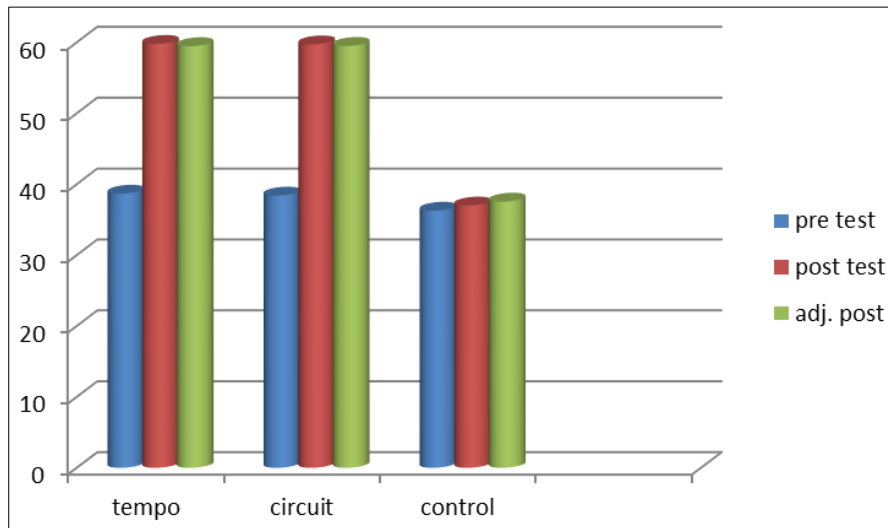
was lesser than the table F value of 3.22 at 0.05 level of confidence.

| Experimental group I | Experimental group II | Control group | Mean difference | CI |
|----------------------|-----------------------|---------------|-----------------|------|
| 59.48 | 59.51 | | 0.03 | 6.98 |
| 59.48 | | 37.55 | 21.93* | |
| | 59.51 | 37.55 | 21.96* | |

Scheffe's table shows post-hoc method of testing the significant of the difference between the paired means following a significant analysis of covariance for tempo training group, circuit training group and control group. The adjusted general thigh girth on means in order of magnitude and the difference between this means for the control and two experimental groups are given in the table the mean difference between the tempo and circuit training group was

0.03 in the comparison between tempo training group and control group were 21.93 and comparison between circuit training group and control group training were 21.96. that was significant at 0.05 level confidences. This result shows that the tempo training group had a better improvement when compared to the circuit training group and control group. The mean result was shown on the graph

Graphical illustration of pre test post test and adjusted post test mean of control and experimental groups on dead lift



Conclusion and Recommendations

The results revealed that there was significant tempo and circuit training among power lifters. Tempo and circuit training resulted in changes in hand grip strength, thigh girth and developed for dead lift performances. When compared to tempo and circuit training group circuit group was good comparably than the tempo training group. Similar longitude of studies may be undertaken by increasing the power and intensity of training programme. Therefore it was concluded that wherever possible, tempo training must be used appropriately in order to improve the powerlifting dead lift performance. Those sports personals like weightlifters, power lifters and foot ball players can make use of this study. The result may be useful for the physical education teachers and coaches to get maximum outcome.

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