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Effects of short term stretching, plyometric and resistance training on selected strength and power parameters of college men sports participants

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Abstract

The purpose of the study was to find out the Effects of short term Stretching, Plyometric and Resistance Training on selected strength and power parameters of college men sports participants. To achieve the purpose of the present study, forty five physical education students from Department of Physical Education, Bharathiar University, Coimbatore, were randomly selected as subjects and their age ranged from 18 to 25 years. The subjects were divided into three equal groups. Experimental Group I named as Stretching followed by Resistance training (SRTG), Experimental Group II named as Plyometric followed by Resistance training (PRTG) and Group III acted as control group (CG) pre – test was conducted for all the groups on selected variables and the score was recorded in their respective units as pre – test score. After pre – test the experimental group were treated with their respective training for three day per week for a paired of six weeks. After completion of six weeks of training post – test was conducted on selected variables and the score were records in their respective units as post – test score. The pre and post test scores were analysed with analysis of Co – variance and Schaffer s post hoc test. In all the cases.0.5 level of significance was fixed. The results of the study showed that there was a significant difference found among the experimental groups. Plyometric and Resistance training (PRTG) Group is found to be better than other groups.

Keywords: Arm strength, leg strength, abdominal strength, arm explosive power and leg explosive power

Introduction

In today's world, a sport plays an important role in our lives. Today, millions of people under modern conditions participate in it, and sports have got woven in to the fabric of modern life, providing a counter weight to the excessive comforts and indulgences of today. The field of sports is currently undergoing remarkable scientific changes. Over 3000 years ago the Greeks saw the need to provide effective and efficient training for the athletes takes part in the Olympics games. But since 1950, many countries have recognized the importance of an effective sports training program in a wide range of activities not only for the success in major international competitions but also for the development of healthy participants. Training is an adaptation process of structure and function of the body organic through regular respected load which results in achieving higher performance. The training process must be consciously planned according to the principle of pedagogies. It is scientific process. It is a planned and systematic process, sports training is a unified process of education and improvement.

Methodology

The purpose of the study was to find out the Effects of short term Stretching, Plyometric and Resistance Training on selected strength and power parameters of college men sports participants. To achieve the purpose of the present study, forty five physical education students from Department of Physical Education, Bharathiar University, Coimbatore, were selected as subjects at random and their age ranged from 18 to 25 years. The subjects were divided into three groups consisting of 15 each. The present study is an experimental one and to test the effect of varied forms of intervening strategies, the care was taken in distributing the samples to each experimental group.

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For this, the selected samples (N= 45) were divided into three equal groups. Experimental Group I named as Stretching followed by Resistance training (SRTG), Experimental Group II named as Plyometric followed by Resistance training (PRTG) and Group III acted as control group (CG). They are doing the regular physical practice the experimental group were given specific training for 3 days a week for six weeks in total. Among the strength and power parameters only Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power were selected variables. Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power were assessed by standardized tests.

Analysis of the data

The data collected from the experimental groups and control group on pre and after experimental on selected variables were statistically examined by analyses of covariance (ANCOVA) if there was any significant difference among the treatment means of each variable. Scheffe’s post hoc test was applied to test the significance of difference between the paired adjusted means at 0.05 level of confidence. The analysis of covariance (ANCOVA) on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power of experimental groups and control group have been analysed and presented in Table-1.

Table 1: Analysis of covariance for experimental groups and control group on strength variables

| Variables | Adjusted post-test means | | | Source of variance | Sum of square | DF | Mean square | “F” |
|---------------------|---------------------------|---------------------------|---------------|--------------------|---------------|----|-------------|-------|
| | Stretching and resistance | Plyometric and resistance | Control group | | | | | |
| Arm strength | 11.19 | 13.10 | 8.38 | Between | 15.72 | 2 | 77.86 | 5.96 |
| | | | | Within | 42.03 | 41 | 1.03 | |
| Leg strength | 127.15 | 131.70 | 117.09 | Between | 1662.41 | 2 | 831.21 | 63.29 |
| | | | | Within | 538.50 | 41 | 13.13 | |
| Abdominal strength | 49.83 | 51.94 | 46.36 | Between | 37.63 | 2 | 118.82 | 2.96 |
| | | | | Within | 212.19 | 41 | 5.18 | |
| Arm explosive power | 7.54 | 8.08 | 6.85 | Between | 10.98 | 2 | 5.49 | 27.84 |
| | | | | Within | 8.08 | 41 | 0.20 | |
| Leg explosive power | 2.17 | 2.33 | 1.96 | Between | 0.93 | 2 | 0.47 | 48.56 |
| | | | | Within | 0.39 | 41 | 0.01 | |

*Significant at 0.05 level of confidence

Table 1 shows that the adjusted post test mean value of Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power for Group I named as Stretching followed by Resistance training (SRTG), Group II named as Plyometric followed by Resistance training (PRTG) and Group III acted as control group (CG) were (11.19, 13.10, 8.38),(127.15, 131.70, 117.09),(49.83, 51.94, 46.36),(7.54, 8.08,6.85) and (2.17, 2.33, 1.96) respectively. The obtained F – ratio (5.96),(63.29),(2.94), (27.84) and (48.56) for the

adjusted post test mean was more than the table value 3.23 for df 2 and 41 required for significance at 0.05 level of confidence. The results of the study indicate that there was a significant mean difference on post test means of experimental group and control group on the decrease of Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power. To determine which of the paired mean had a significant difference scheffe s test was applied as post hoc test and the results are presented in table 2

Table 2: The scheffe s test for the difference between the adjusted post tests paired mean on strength variables

| Certain variables | Stretching and resistance | Plyometric and resistance | Control group | Mean diff | Required critical value |
|---------------------|---------------------------|---------------------------|---------------|-----------|-------------------------|
| Arm strength | 11.19 | 13.10 | | 1.92* | 0.80 |
| | 11.19 | ..... | 8.38 | 2.81* | |
|  | ..... | 13.10 | 8.38 | 4.73* | |
| Leg strength | 127.15 | 131.70 | | 4.55* | 2.87 |
| | 127.15 | ..... | 117.09 | 10.06* | |
|  | ..... | 131.70 | 117.09 | 14.61* | |
| Abdominal strength | 49.83 | 51.94 | | 2.11* | 1.80 |
| | 49.83 | ..... | 46.36 | 3.46* | |
|  | ..... | 51.94 | 46.36 | 5.58* | |
| Arm explosive power | 7.54 | 8.08 | | 0.53* | 0.35 |
| | 7.54 | ..... | 6.85 | 0.69 | |
|  | ..... | 8.08 | 6.85 | 1.23* | |
| Leg explosive power | 2.17 | 2.33 | | 0.16* | 0.08 |
| | 2.17 | ..... | 1.96 | 0.21* | |
|  | ..... | 2.33 | 1.96 | 0.37* | |

*Significant at 0.05 level of confidence

Table 2 shows that the adjusted post mean for differences on Stretching followed by Resistance training (SRTG), Plyometric followed by Resistance training (PRTG) and control group (CG), Stretching followed by Resistance training group, Plyometric followed by Resistance training group and control group on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power were (1.92, 2.81,4.73), (4.55, 10.06, 14.61), (2.11,

3.46, 5.5),(0.53, 0.69, 1.23) and (0.16,0.21,0.37) respectively. The values are greater than the confidence interval value (0.80), (2.87), (1.87), (0.35) and (0.08) which shows significant differences at 0.05 level of confidence. The adjusted post test means values of experimental group and the control group on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power were graphically represented in the figures.

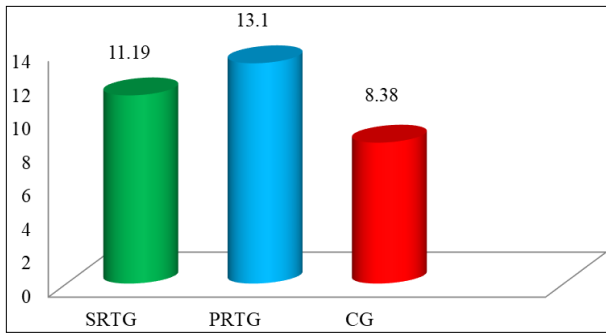


Fig 1: Bar diagram on ordered adjusted mean of arm strength

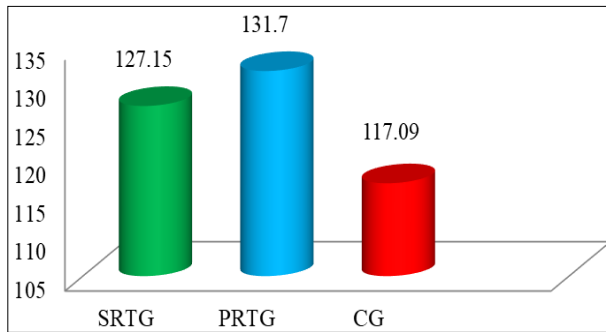


Fig 2: Bar diagram on ordered adjusted mean of leg strength

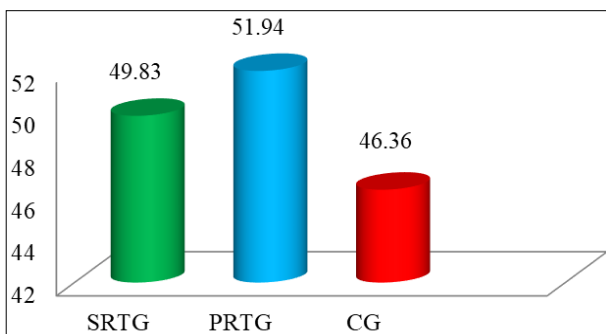


Fig 3: Bar diagram on ordered adjusted mean of abdominal strength

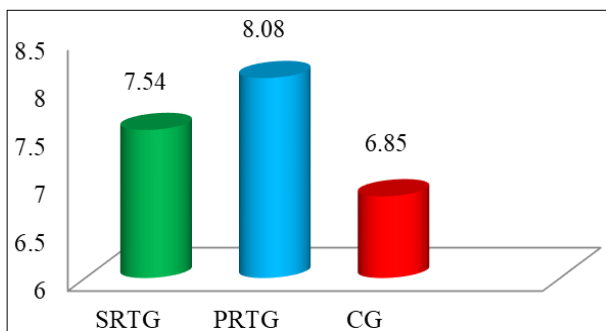


Fig 4: Bar diagram on ordered adjusted mean of arm explosive power

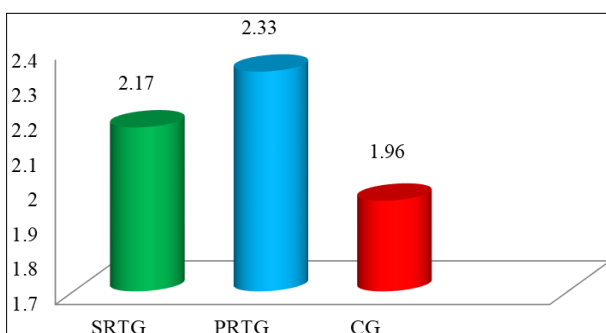


Fig 4: Bar diagram on ordered adjusted mean of leg explosive power

Results and discussion

Both the experimental groups showed significant improvement on pre to post test on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power with control group.

When comparing the effect of (SRTG) and (PRTG), the plyometric followed by resistance training showed significant improvement on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power of college men sports participant.

Conclusion

1. The comparative effect of two experimental groups showed better improvement when compared to control group on pre to post test on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power.
2. The plyometric followed by resistance training programme showed better improvement than the stretching followed by resistance training group on Arm strength, Leg strength, Abdominal strength, Arm explosive power and Leg explosive power.

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