**RESISTANCE TRAINING AND ITS EFFECTS ON EXPLOSIVE POWER AMONG WOMEN TEACHER TRAINEES**

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**Abstract**

*The intention of this study was to analyze resistance training and its effects on explosive power among women teacher trainees. Forty teacher-training female students (n=40) were randomly selected as subjects and their ages ranged between 18 to 22 years. The selected subjects were randomly assigned into two equal groups such as an experimental group (EG) and a control group (CG) with twenty subjects each (n=20). The experimental groups underwent their respective experimental treatment for six weeks three days per week and a session on each day. The control group was not exposed to any specific training apart from their curriculum. Leg explosive power was taken as the variable for this investigation. The pre and post-test were conducted one day before and after the experimental treatment. Analysis of covariance (ANCOVA) was used to analyze the collected data. The results revealed that the experimental group (EG) produced significant improvement (p ≤ 0.05) due to resistance training on leg explosive power when compared to the control group (CG).*

**Key Words**: Resistance training, leg explosive power

**INTRODUCTION**

Resistance training is an anaerobic form of exercise (Teng *et al*., 2008). The adaptation changes and health implications of resistance exercise are very dynamic and variable for each individual. The percentage of one repetition maximum (1RM) method was used in this training program. It is the maximum load that can be lifted successfully one time through the full range of movement (Fielding *et al*., 2002). The increases in muscular strength during the initial periods of a resistance training program are not associated with changes in the cross-sectional area of the muscle (Sale, 1988). Changes in strength evidenced in the first few weeks of resistance training are more associated with neural adaptations (Moritani & deVries, 1979), which encompass the development of more efficient neural pathways along the route to the muscle. Resistance training is performing with weights, either free weight, the weight on a gymnasium machine, or your own body weight. It will help to improve the strength, power, and size of muscles. Over the last three decades, the use of resistance training has been used to enhance muscular power and size (Bloomfield, 1994).

The most peculiar factors for explosive power development must be formed in neuromuscular properties (Bosco *et al*., 1992 Rhea *et al*., 2009). Increases in the cross-sectional area of muscle fibers range from 20% to 45% in most training studies (Staron *et al*., 1991). The fast-twitch (glycolytic) muscle fiber has the potential to show greater increases in size as compared to slow-twitch (oxidative) muscle fiber (Hather *et al*., 1991). The length of the jump will depend to a greater degree upon the force or push the jumpers can generate the ability to outline the force is explosive power.

**METHODS**

The purpose of this study was to analyze resistance training and its effects on explosive power among women teacher trainees. Forty (n=40) students from the Mahatma Gandhi University Kottayam; Kerala were selected as subjects and the age of students were between 18 to 22 years. The selected subjects were randomly divided into two equal groups of twenty subjects each (n=20). The groups were one experimental group (EG) and one control (CG). During the training period, the experimental groups underwent their respective training program for six weeks 3 days a week, and a session on each day. Control group (CG), who did not participate in any specific training apart from their curriculum. Moderate intensity (60-70%) of resistance was used in this experiment. Leg explosive power was selected as a dependent variable for this study. It was measured by using a standing broad jump. These are the exercise used as resistance 1. bench press 2. half squat 3. push press 4. heel raises 5. arm curl 6. leg curl 7. leg press 8. military press and 9.sit ups. The pre and post-test were conducted one day before and after the experimental treatment.

**DATA ANALYSIS**

**Results**

Mean and standard deviation were calculated for leg explosive power for each training group. And the data were analyzed by using analysis of covariance (ANCOVA). Statistical significance was fixed at 0.05 levels.

**Table – Ι**

**ANALYSIS OF COVARIANCE ON LEG EXPLOSIVE POWER OF EXPERIMENTAL GROUP AND THE CONTROL GROUP**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test | | Experimental Group | Control Group | **Source of Variance** | **Sum of Squares** | | df | **Mean Squares** | F ratio |
| Pretest | Mean | 1.51 | 1.52 | B | | 0.0018 | **1** | 0.0018 | 0.09 |
| SD | 0.14 | 0.14 | W | | 0.75 | 38 | 0.02 |
| Post test | Mean | 1.75 | 1.53 | B | | 0.45 | **1** | 0.45 | 19.53\* |
| SD | 0.17 | 0.13 | W | | 0.88 | 38 | 0.02 |
| Adjusted Post test | Mean | 1.75 | 1.53 | B | | 0.51 | **1** | 0.51 | 165.8\* |
| SD | 0.17 | 0.13 | W | | 0.11 | 38 | 0.0031 |

**\*** Significant, F = (df 1, 38) (0.05) = 4.10; (P ≤ 0.05), F = (df 1, 37) (0.05) = 4.11; (P ≤ 0.05)

Table Ι shows that the pre-test mean of the experimental and control groups are 1.51 and 1.52 respectively. The obtained F ratio of 0.09 for the pre-test mean is less than the table value 4.10 for df 1 and 38 required for significance at 0.05 level. The post-test mean of the experimental and control groups are 1.75 and 1.53 respectively. The obtained F ratio of 19.53 for the post-test mean is higher than the table value 4.10 for df 1 and 38 required for significance at 0.05 level. The adjusted post-test mean of the experimental and control groups are 1.75 and 1.53 respectively. The obtained F ratio of 165.8 for the adjusted post-test mean is higher than the required table value of 4.11 for df 1 and 37 required for significance at 0.05 level.

The result of the study indicated that there was a significant difference between the adjusted post-tests mean of the resistance training group and control group on leg explosive power at 0.05 levels.



**Conclusion**

Resistance training has been shown to increase factors associated with explosiveness. Any practical application requires careful implementation and individual experimentation. In summary, the leg explosive power can be improved during the age between 21 and 26 years of female students and favor the prescription of moderate intensity resistance training program during the initial adaptation period. It is concluded that the resistance exercise is best for improving leg explosive power as compared to the control group.

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