EFFECT OF WEIGHT TRAINING ON HAND GRIP STRENGTH OF PONDICHERRY UNIVERSITY STUDENTS

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ABSTRACT

The purpose of this study was to analyze the effect of weight training on right hand grip strength and left hand grip strength of Pondicherry university students. Thirty (N=30) Male Pondicherry university students were randomly selected from Pondicherry university, Puducherry. Their age ranged from 20 to 26 years. The subjects were divided into two equal groups; one experimental group (A) and another control group (B) each consisting of 15 subjects. The experimental group underwent weight training for the duration of twelve weeks and control group did not participated in any training. The data collected before and after the training programme. Analysis of Co-variance (ANCOVA) was applied to find out the significance difference between two groups. Findings of the study suggested that the weight training group hand grip strength was significantly improved than control group after 12 weeks of training programme.

KEYWORDS: weight training, hand grip strength.

1. INTRODUCTION

Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the force of gravity (in the form of weighted bars, dumbbells or weight stacks) to oppose the force generated by muscle through concentric or eccentric contraction. Weight training programme use a variety of specialized equipment to target specific muscle groups and types of movement. Weight training differs from bodybuilding, Olympic weightlifting, power lifting, and strongman, which are sports rather than forms of exercise. Weight training, however, is often part of the athlete's training regimen. Weights are exercise equipment used for strength training. The term is typically used as a shortened form of the term free weights, but it can also refer to any exercise machine that uses weighted plates to generate the major opposing force. Weight training can be a demanding activity and if done incorrectly could cause injury or pain. But it doesn't have to be intimidating, in fact should feel the weights calling name, each time enter gym. Weight training is a key element to maintaining a fit and healthy body, as well as improving athletic performance. Weight training builds muscle, fastens metabolism, burns fat and is the basis of a strong, firm muscular body. Better performances can be the product of a number of factors. This product is primarily the outcome of efficient technique, the progression of speed and the maturing competitive attitude on a sound basis of general endurance, all round strength and general mobility. The development of all round strength is best achieved via circuit training and then progressing this through weight training.
Methodology

SELECTION OF SUBJECTS

The purpose of this study was to analyze the effect of weight training on Right hand grip strength and left hand grip strength of Pondicherry university students. Thirty (N=30) Male Pondicherry university students were randomly selected from Pondicherry university, Puducherry. Their age ranged from 20 to 26 years. The subjects were divided into two equal groups; one experimental group (A) and another control group (B) each consisting of 15 subjects. The experimental group underwent in weight training for the duration of twelve weeks, training was given five days per week. The subjects were tested on the right and left hand grip strength by using Hand grip dynamometer test at the beginning and the end of the experimental period.

TABLE I

ANALYSIS OF COVARIANCE FOR PRE TEST AND POST TEST DATA ON RIGHT HAND GRIP STRENGTH OF CONTROL GROUP AND EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Weight Training Group</th>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean square</th>
<th>‘F’ ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test Mean</td>
<td>16.67</td>
<td>16.00</td>
<td>B</td>
<td>3.333</td>
<td>1</td>
<td>3.33</td>
<td>0.45</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.55</td>
<td>2.88</td>
<td>W</td>
<td>207.33</td>
<td>28</td>
<td>7.41</td>
<td></td>
</tr>
<tr>
<td>Post-test Mean</td>
<td>16.60</td>
<td>18.60</td>
<td>B</td>
<td>30.00</td>
<td>1</td>
<td>30.00</td>
<td>6.03</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.17</td>
<td>2.29</td>
<td>W</td>
<td>139.20</td>
<td>28</td>
<td>4.97</td>
<td></td>
</tr>
<tr>
<td>Adjusted Post-test Mean</td>
<td>16.34</td>
<td>18.86</td>
<td>B</td>
<td>47.15</td>
<td>1</td>
<td>47.15</td>
<td>134.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W</td>
<td>9.48</td>
<td>27</td>
<td>.351</td>
<td></td>
</tr>
</tbody>
</table>

B: Between the variables; W: Within the variables

* Significant at 0.05 level.

Required table value at 0.05 level of significance for 1 & 28 degrees of freedom = 4.20
It was observed from table – I, the pre test means on right hand grip strength of the control and experimental groups are 16.67 and 16.00 respectively. The obtained ‘F’ ratio value 0.450 for the pre test mean was lesser than the required table value 4.20 for 1 & 28 degrees of freedom at 0.05 level of significance. This reveals that there was no significant difference between the control and the experimental groups on right hand grip strength before the commencement of the experimental training. It was inferred that the selection of the subjects for the two groups were successful.

The post test means on right hand grip strength of the control and the experimental groups were 16.60 and 18.60 respectively. The obtained ‘F’ ratio value 6.034 for the post test data is greater than the required table value 4.20 for 1 & 28 degrees of freedom at 0.05 levels of significance. It discloses that there is a statistically significant difference between the control and the experimental group on right hand grip strength after the experimental training.

The adjusted post test means on right hand grip strength of the control and experimental groups were 16.34 and 18.86 respectively. The obtained ‘F’ ratio value of 134.33 for the adjusted post test mean was greater than the required table value 4.21 for 1 & 27 degrees of freedom at 0.05 level of confidence. It reveals that there was significant change on right hand grip strength as a result of the experimental training. Since the result has revealed that there was a significance difference, the hypothesis was accepted.

GRAPHICAL REPRESENTATION ON PRE-TEST, POST-TEST AND ADJUSTED POST-TEST MEANS ON RIGHT HAND GRIP STRENGTH OF CONTROL GROUP AND EXPERIMENTAL GROUP
TABLE II

ANALYSIS OF COVARIANCE FOR PRE TEST AND POST TEST DATA ON LEFT HAND GRIP STRENGTH OF CONTROL GROUP AND EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean square</th>
<th>‘F’ ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test Mean</td>
<td>17.40</td>
<td>1</td>
<td>17.40</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>16.93</td>
<td>28</td>
<td>122.53</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>16.34</td>
<td>28</td>
<td>115.33</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>20.13</td>
<td>28</td>
<td>115.33</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>17.20</td>
<td>28</td>
<td>25.81</td>
<td>1.63</td>
</tr>
</tbody>
</table>

B: Between the variables; W: Within the variables

* Significant at 0.05 level. Required table value at 0.05 level of significance for 1 & 28 degrees of freedom = 4.20
1 & 27 degrees of freedom = 4.21

It is observed from table - II that the pre test means on left hand grip strength of the control and experimental groups are 17.40 and 16.93 respectively. The obtained ‘F’ ratio value 0.373 for the pre test mean is lesser than the required table value 4.20 for 1 & 28 degrees of freedom.
freedom at 0.05 level of significance. This result reveals that there is no significance difference between the control and the experimental groups on left hand grip strength before the commencement of the experimental training. It is inferred that the selection of the subjects for the two groups were successful.

The post test means on Left hand grip strength of the control and the experimental groups are 17.40 and 20.13 respectively. The obtained ‘F’ ratio value 4.119 for the post test data was greater than the required table value 4.20 for 1 & 28 degrees of freedom at 0.05 levels of significance. It discloses that there was a statistically significance difference between the control and the experimental groups on left hand grip strength after the experimental training.

The adjusted post test means on left hand grip strength of the control and experimental groups were 17.20 and 20.33 respectively. The obtained ‘F’ ratio value of 75.948 for the adjusted post test mean was greater than the required table value 4.21 for 1 & 27 degrees of freedom at 0.05 level of confidence. It reveals that there was significant change on left hand grip strength as a result of the experimental training. Since the result has revealed that there is a significance difference, the hypothesis was accepted.

GRAPHICAL REPRESENTATION ON PRE-TEST, POST-TEST AND ADJUSTED POST-TEST MEANS ON LEFT HAND GRIP STRENGTH OF CONTROL GROUP AND EXPERIMENTAL GROUP
Fig. 2
Discussion

The purpose of the present study was to analyze the effect of weight training on hand grip strength in Pondicherry university students. The finding of the study reveals that significant improvement on right and left hand grip strength of experimental group (weight training exercise) than the control group after the twelve weeks of training program.

Conclusion

On the basis of findings and within the limitations it was concluded that the participation in 12 weeks of weight training significantly improved on right and left hand grip strength. The researcher suggests that weight training should be introduced to students at each level of education system. The present research study has been supported by the following authors,

References


2 Joe Wuebben and Jim Stoppani, “Stronger Arms and Upper body” (Human Kinetics 166.
