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Effect of eccentric contraction exercise training on shoulder flexion of gymnast

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Abstract
The present study is conducted to investigate the effect of eccentric contraction training program on shoulder flexion ability of gymnast of 10 to 15 years age group. For the same eccentric exercise training was given to gymnasts for 12 weeks. The present study is carried out on the male gymnast of Marathwada Sanskrutik Mandal's gymnastics centre, Aurangabad, Maharashtra. Total 30 samples who are at least state level gymnastics players are selected for the training from Marathwada Sanskrutik Mandal's gymnastics centre, Aurangabad, Maharashtra. All 30 samples are experimental group. The 'Single group Pre-test Post-test design' is employed to conduct the experiment. Initially Shoulder flexion Pre-test is conducted for Experimental group. Experimental group are exposed to eccentric contraction training program for 12 weeks. Shoulder flexion Post-test is conducted for Experimental group, after 12 weeks of training. Mean, Standard deviation is employed for descriptive statistical analysis. Paired sample t-test, is employed for inferential statistical analysis. On the basis of statistical findings the present study concludes that eccentric contraction exercise training program improves shoulder flexion ability.

Keywords: eccentric contraction training, shoulder flexion, gymnast

Introduction
Eccentric contraction exercise training program is currently the fastest and most effective way known to increase strength. Eccentrics are a type of muscle contraction that occurs as the muscle fibers lengthen, such as when a weight is lowered through a range of motion, or when a person walks downhill. The contractile force generated by the muscle is weaker than an opposing force, which causes the muscle to stretch. Also known as "negative" contraction, eccentric muscle work provides unique Responses and benefits compared to conventional exercises Muscles resist force rather than produce it, requiring 80% less oxygen compared to Concentric work. Gymnastics is a highly technical game which required all motor qualities. Strength is one of the most important ability of gymnast,
All types of strengths like maximum strength relative strength, explosive strength, statics strength plays vital role in gymnast's performance. So effective strength training is very important to improve gymnastics performance.

Statement of the Problem
"The Effect of Eccentric Contraction Exercise Training on Shoulder Flexion of Gymnast"

Objectives of the Study
1. To study the effect of eccentric contraction exercise training program on shoulder flexion of gymnast.

Area of the Research
1. The present study is carried out on the state level gymnastics players of the Marathwada Sanskrutik Mandal's Gymnastics Centre, Aurangabad, and Maharashtra.
2. Only male gymnastics players are considered for the study.

Hypotheses
1. There is no difference in the shoulder flexion of the gymnast after imparting them for eccentric contraction training program.

Methodology
Sample
30 male state level gymnast of age group between 10 to 15 years practicing at Marathwada Sanskrutik Mandal's Gymnastics Centre, Aurangabad, Maharashtra were considered for the present study.

Variables
Independent Variables: 1) Eccentric contraction training program.

Dependent Variable: 1) Scores of Shoulder flexion test.

Tools of collection of data
1. Dynamometer.

Experimental design
For the present study the Single Group Pre-Test Post-Test design is used.

Procedure
1. Pre-test is conducted to measure Shoulder flexion of the gymnast with the help of dynamometer.
2. All the gymnast then exposed to eccentric contraction exercise training program for 12 weeks.

3. Post-test is conducted to measure Shoulder flexion of the gymnast with the help of dynamometer after 12 weeks of eccentric contraction training program.
4. The raw scores on pre-tests and post-tests are tabulated for further statistical analysis.

Statistical methods

1. Mean, Standard deviation is employed for descriptive statistical analysis.
2. Paired sample t-test is employed for inferential statistical analysis.

Analysis and interpretation of the data

Table 1: Showing the within group comparison for Shoulder flexion test

Variables	Groups	N	Mean	Standard deviation	Standard. error mean	Mean difference	't' value	df
Shoulder Flexion Test	Pre-test	30	9.3907	4.07593	.74416	4.473	-6.591	29
	Post-test		13.8643	4.98897	.91086			

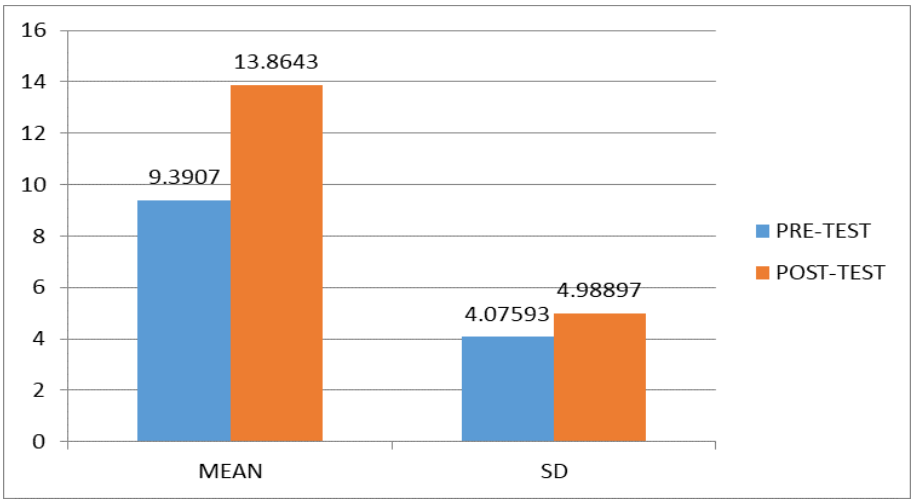

Fig 1: Showing the comparison between pre-test and post-test mean scores of the gymnasts for shoulder flexion test.

Interpretation

Table depicts the following facts regarding pre-test and post-test mean scores of the gymnasts for shoulder flexion test.

1. Mean score of the gymnast for the pre-test is 9.390 with standard deviation of 4.075.
2. Mean score of the gymnast for the post-test is 13.864 with standard deviation of 4.988.
3. The mean difference from pre-test to post-test is 4.473.
4. Paired sample t-test was used at 0.05 level of significance. The obtained t- value -6.591at 29 degree of freedom was found significant at 0.05 level of significance further confirms that the mean difference is insignificant.

Conclusions

1. Eccentric contraction training program has improved the Shoulder flexion of the competitive gymnasts.

Recommendations

1. Further investigations may be made to study the effect of different types of strength training program to develop strength ability in competitive gymnast.
2. Present study is conducted on male players. Similar kind of study may be undertaken for girls.

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