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Effect of isometric exercises on shoulder strength of rural school boys

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Abstract
Purpose: The purpose of this study was to determine the effectiveness of 4 months isometric exercises on shoulder strength of the high school boys. Isometric exercises are a form of exercise involving the static contraction of muscle without any visible movement in the angle of joint. In this study we were use only un-weighted isometric exercise. In un-weighted isometrics the exerciser uses only themselves for resistance.
Design of the Study: Pre-posttest experimental design was used to in this study
Methodology: For accomplish the study only 20 boys students of rural area high school of Haryana state will be selected for the present study. 20 fresh students would be included in the isometric exercises experimental group. Age group of the samples will be 12 to 14 years boys of high school. Selected isometric exercises will be provided to isometric experimental group only. The domain of the study will be delimited to rural high school boys of Haryana state.
Result: Statistically a positive effect of isometric exercises was found on shoulder strength of rural school boys.

Keywords: isometric exercises, shoulder strength

Introduction
Isometric exercises, also known as static strength training, are contractions of a particular muscle for an extended period of time. Simply put, an isometric exercises that involves muscle engagement without any movement. Instead, you pick one position and hold it. For example, in a plank or wall sit, the muscles are working without actively changing lengths. There are large number of exercises which are consisted in Isometric training are like i.e. plank, wall sit, calf raise hold, isometric push-up, dead hang pull-up hold, scapular retraction, flexed-arm hang, hollow-body hold and bridge etc. Using only one's body weight for resistance. They are usually conducted in concert with stretches. Isometric exercises when performed with full of energy and with variety. These can benefit both muscular and cardiovascular fitness, in addition to improve psychomotor skills such as balance, agility and coordination.

Objective of the Study
- To find out the effect of isometric exercises on shoulder strength of the school boys.

Hypotheses
- There will be significant difference within the isometric experimental group of age 12 to 14 years.

Methodology
- The present study will highlight the twenty boy's student's data those who are belong to rural area's high school of Haryana state. The isometric exercises experimental group will include twenty fresh students. Age group of the samples will be "12 to 14" years boys of high school. Selected isometric exercises will be provided to isometric experimental group only. The domain of the study will be delimited to rural high school boys of Haryana state. Experimental Group (12 to 14 years) (pre) v/s experimental Group (12 to 14 years) (post).

Training Program
- 10 min – General Warming–up, 40 min – Isometric exercises workout, plank, forearm plank, side plank, isometric push-up, chest squeeze, handstand, wall sit, calf raise hold, isometric push-up, dead hang pull-up hold, scapular retraction, flexed-arm hang, hollow-body hold and bridge etc.10 min – Cooling down

Tools and technique used
The pull up test is widely used as a measure of shoulder strength.
Purpose: This test measures upper body muscle strength and endurance.
Equipment Required: Horizontal overhead bar, set at an adequate height so that the participants can hang from it with their arms fully extended and feet not touching the floor. (See pull-up bars) Pre-Test: Explain the test procedures to the subject. Perform screening of health risks and obtain informed consent. Prepare forms and then record basic information such as age, height, body weight, gender and test conditions. Measure and record the height of the bar. Perform a standard warm-up. See more details of pre-test procedures.
Procedure: Grasp the overhead bar using either an overhand grip (palms facing away from body) or underhand

grip (palms facing toward body), with the arms fully extended. The subject then raises the body until the chin clears the top of the bar, then lowers again to a position with the arms fully extended. The pull-ups should be done in a smooth motion. Jerky motion, swinging the body, and kicking or bending the legs is not permitted. As many full pull-ups as possible are performed.

Scoring: The total number of correctly completed pull-ups is recorded. The type of grip should also be recorded with the results.

Table 1: Comparison of Pre and Post Phase Means of Isometric Experimental (12-14 Years) Age Group in their Strength using 'T' Test

Variable	Groups	Phase	N	Mean	SD	(*df*)	('t'-value)	Sig.
Strength	Isometric Experimental (12-14) Years	Pre	20	2.15	1.08	19	-11.00	.000
		Post	20	4.90	1.41			

The table: 1 shows the paired sample't' statistics of Isometric Experimental Group. The mean and SD of pre-test was 2.15±1.08 and post-test was 4.90±1.41. The calculated value of paired't' was -11.00 which was significant at 0.05 level of alpha ($p<0.05$). While, a significant difference was noticed between the means of pre-test and post-test phases of isometric experimental (12-14 years) group in their Shoulder Strength. That is why, hypothesis is accepted.

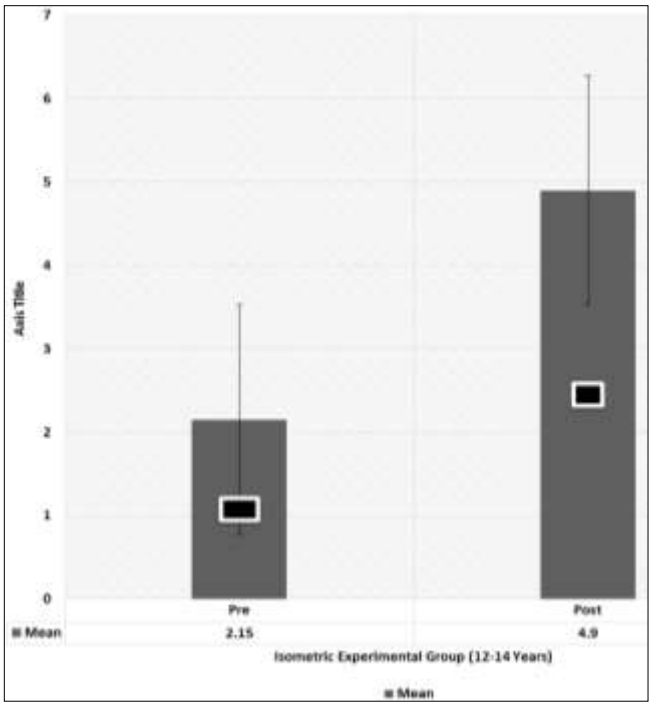

Fig 1: Graphical Representation of Mean Scores of Isometric Experimental Group (12-14 Years) in their Strength

Conclusions

- Isometric Experimental group pre in terms of mean and standard deviation and it was observed that mean and standard deviation at pre phase was 2.15±1.08 and at post phase was 4.90±1.41 respectively. It was concluded that pre and post phase of isometric experimental group and it was take into notice that calculated value of t was -11.00 respectively which was considerable at 0.05 alpha level and shows a significant difference between pre and post phase of measurement. So the hypothesis which was formulated earlier that "There will be significant difference within the isometric experimental group of age 12 to 14 years". was accepted. A positive effect of isometric exercises was find out on shoulder strength of rural school boys.

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