



EFFECT OF STRENGTH TRAINING ON SELECTED COORDINATIVE ABILITIES

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ABSTRACT

The purpose of the study was to determine the effect of strength training on the selected coordinative abilities. To achieve the purpose fifteen school boys were randomly selected from Ramakrishna Mission Vidyalaya High School, Periyanaickenpalayam, Coimbatore. The age of the subjects ranged from 12 to 14 years. The selected subjects were considered as only one group. The following criterion variables were selected for the study namely, Differentiation ability of upper limbs, Dynamic balancing ability and Complex reaction ability. The training period was for eight weeks except on Fridays, Saturdays and Sundays in each week. Data were collected from each subject before and after the eight weeks of strength training. The collected data were statistically analyzed by using 't' ratio. It was found that there is no significant improvement in differentiation ability of upper limbs due to the treatment of strength training. It was also found that there is a significant improvement on dynamic balancing ability and complex reaction ability due to the treatment of strength training.

Key Words: Strength training, coordinative abilities.

INTRODUCTION

Strength is the ability to overcome resistance or to act against resistance. Strength should not be considered a product of only muscular contractions. It is, in fact, a product of voluntary muscle contractions caused by the neuro-muscular system. Strength training is a superb way of getting the entire body in good shape. Many think that weight lifting is for the upper body as well as arms only. But with the right equipment, one'll be able to easily exercise the lower portion of the body, just like the chest as well as the legs. It may seem that all about using weights is definitely an advantage.

Training is an educational process. People can learn new information, re-learn and reinforce existing knowledge and skills, and most importantly have time to think and consider what new options can help them improve their effectiveness at work. Effective training conveys relevant and useful information that inform participants and develop skills and behaviors that can be transferred back to the workplace.

Coordinative abilities are understood as relatively stabilized and generalized pattern of motor control and regulation processes. These enable the sportsman to do a group of movements with better quality and effect [Zimmermann 1983, Hirtz 1985, Harre 1986 and Meinel and Schnabel 1987]

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It is the ability to achieve a high level of fine tuning or harmony of individual movement phases and body part movements. Differentiation Ability is to be particularly stressed when the aim is to achieve high level of mastery over sports movements and their effective application in competition. Differentiation Ability appears in different forms in different sports as each sport puts different types of demands on the control and regulation processes. [Hardayal Singh, 1993]

METHODOLOGY

The purpose of the study was to find out the effects of strength training on the selected coordinative abilities. To achieve the purpose of the study, 15 school boys were selected as subjects from Sri Ramakrishna Misson Vidyalaya High School, SRKV post, Periyanaickenpalayam, Coimbatore, Tamil Nadu by applying random sampling method. The age of the subjects ranged from twelve to fourteen years. The selected subjects were considered as one group. The following criterion variables were selected for the study namely, Differentiation ability of upper limbs, Dynamic balancing ability and Complex reaction ability. The training period was for eight weeks except on Fridays, Saturdays and Sundays of each week.

SELECTION OF VARIABLES

Independent variables

- ❖ Strength training

DEPENDENT VARIABLES

- ❖ Coordinative abilities
 - Differentiation ability of upper limbs
 - Dynamic balancing ability
 - Complex reaction ability

EXPERIMENTAL DESIGN

For this study, fifteen school boys were randomly selected from Ramakrishna Mission Vidyalaya High School, Periyanaickenpalayam, Coimbatore, Tamilnadu. The selected subjects were considered as one group. The following criterion variables were selected for the study namely, Differentiation ability of upper limbs, Dynamic balancing ability and Complex reaction ability. The training period was for eight weeks except on Fridays, Saturdays and Sundays of every week.

TABLE-I
TOOLS AND TECHNIQUE

Variables	Name of the Test	Unit of measurement
Differentiation ability of upper limbs	Backward ball throw	points
Dynamic balancing ability	Balancing with long nose	In seconds
Complex reaction ability	Ball reaction exercise	In centimeter

TRAINING PROGRAMME

Strength training was given to the subjects. The training period was for eight weeks except on Fridays, Saturdays and Sundays in each week. The following exercises were given to the subjects namely, Dumbbell bench press, Dumbbell curl, Concentration curl, Hammer curl, Reverse wrist curl, Wrist curl, Dumbbell triceps curl, Triceps kickback, Lying dumbbell press, Front dumbbell press, Push up, One arm dumbbell row, Chin up, Sit up, Inclined leg raise, Hanging leg raise, Dumbbell side bend, Good morning (with stick), Standing calf raise, One leg toe raise (with dumbbell), Bridging and Floor hip abduction. Pre and post test were conducted prior to and after the intervention.

STATISTICAL TECHNIQUE

The following statistical procedure was employed to find out the effect of strength training on the selected coordinative abilities. 't' ratio was calculated to find out the significant difference between the mean of pre and post tests of the group.

RESULTS AND DISCUSSION

STRENGTH TRAINING GROUP ON DIFFERENTIATION ABILITY OF UPPER LIMBS

The data obtained on differentiation ability of upper limbs as a result of strength training were analyzed using the t ratio and are presented in table-II.

TABLE II
TABLE SHOWING MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF STRENGTH TRAINING GROUP ON DIFFERENTIATION ABILITY OF UPPER LIMBS

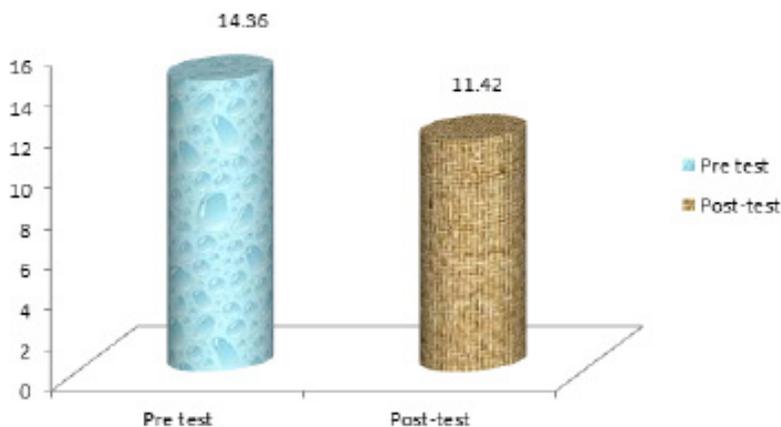
Group	Mean	MD	SD	Std. Error of the mean	DF	't'	Table value
Pre test	7.27	-0.87	3.10	0.80	14	1.57	2.14
Post-test	8.13		2.26	0.58			

* Significant at 0.05 level of confidence

To find out the significant difference between the pre test and post test on the differentiation ability of upper limbs of the strength training group, 't' ratio was employed and the level of significance was set at 0.05. The strength training group pre test value is 7.27 and post test value is 8.13. The mean difference value is -0.87 and strength training group obtained 't' ratio is 1.57 and is lesser than the table value of 2.14. It shows that the strength training group had no significant improvement on the differentiation ability of upper limbs.

Pre test and post test results of strength training group on differentiation ability of upper limbs are presented in figure 1.

FIGURE 1
FIGURE SHOWING MEAN VALUES OF STRENGTH TRAINING ON
DIFFERENTIATION ABILITY OF UPPER LIMBS



STRENGTH TRAINING ON DYNAMIC BALANCING ABILITY

The data obtained on dynamic balancing ability were analyzed using the ‘t’ ratio and are presented in table – III.

TABLE III
TABLE SHOWING MEAN DIFFERENCE STANDARD DEVIATION AND ‘t’ VALUE OF STRENGTH
TRAINING GROUP ON DYNAMIC BALANCING ABILITY

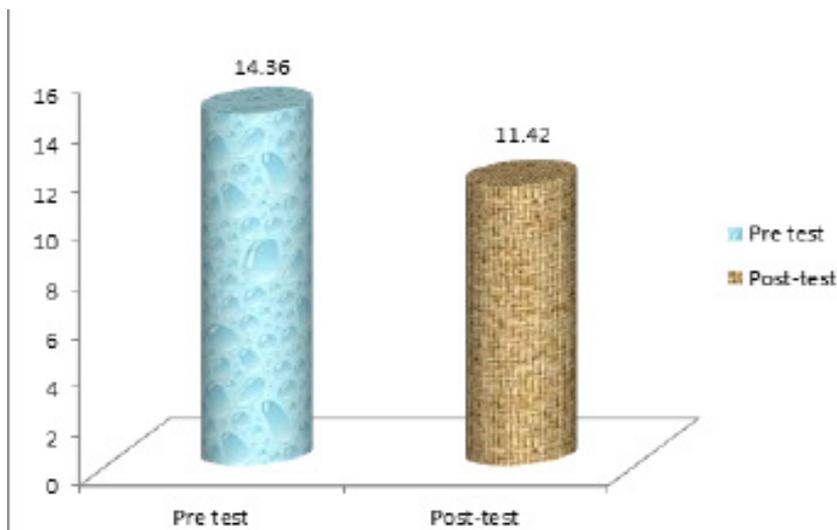
Group	Mean	MD	SD	Std. Error of the mean	DF	‘t’	Table value
Pre test	14.36	2.94	2.70	0.70	14	7.78	2.14
Post-test	11.42		3.10	0.80			

* Significant at 0.05 level of confidence

To find out the significant difference between pre test and post test on dynamic balancing ability, ‘t’ ratio was employed and the level of significance was set at 0.05. The strength training group pre test value is 14.36 and post test value is 11.42. The mean difference value is 2.94 and strength training group’s obtained ‘t’ ratio is 7.78 and is greater than the table value of 2.14. It shows that the strength training group showed a significant improvement on dynamic balancing ability.

Pre test and post test results of strength training group on dynamic balancing ability are presented in figure 2.

FIGURE 2
FIGURE SHOWING MEAN VALUES OF STRENGTH TRAINING GROUP
ON DYNAMIC BALANCING ABILITY



STRENGTH TRAINING ON COMPLEX REACTION ABILITY

The data obtained on Complex reaction ability were analyzed using the 't' ratio and are presented in table –IV

TABLE IV
TABLE SHOWING MEAN DIFFERENCE STANDARD DEVIATION AND 't' VALUE OF STRENGTH
TRAINING GROUP ON COMPLEX REACTION ABILITY

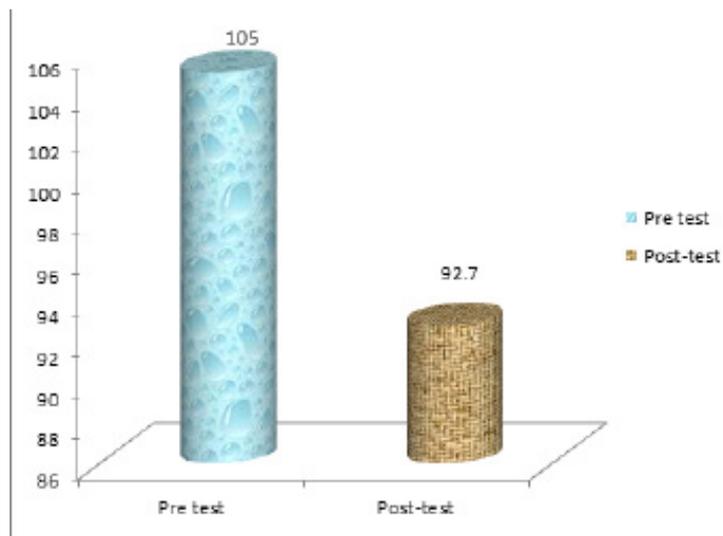
Group	Mean	MD	SD	Std. Error of the mean	DF	't'	Table value
Pre test	105	12.30	16.22	4.19	14	5.14	2.14
Post-test	92.70		15.21	3.93			

* Significant at 0.05 level of confidence

To find out the significant difference between the pre test and post test on complex reaction ability, 't' ratio was employed and the level of significance was set at 0.05. The strength training group's pre test value is 105 and post test value is 92.70 respectively. The mean difference value is 12.30 and strength training group's obtained 't' ratio is 5.14 and is greater than the table value of 2.14. It shows that the strength training group showed significant improvement on complex reaction ability.

Pre test and post test results on complex reaction ability are presented in figure 3.

FIGURE 3
FIGURE SHOWING MEAN VALUES OF STRENGTH TRAINING GROUP
ON COMPLEX REACTION ABILITY



CONCLUSIONS

- It was concluded that one of the selected coordinative abilities namely, differentiation ability of upper limbs did not significantly improve due to the strength training.
- It was also concluded that the other selected coordinative abilities namely, dynamic balancing ability and complex reaction ability significantly improved due to the strength training.

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