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Effect of physical exercises on flexibility and reaction time among special children

J Nareshkannan and Dr. PV Shelvam

Abstract

The purpose of the study was to investigate the changes on flexibility and reaction time after twelve weeks of physical exercises among special children. To achieve the purpose of the study, thirty special children from G.V. Special School, Chidambaram, Tamil Nadu, India were selected as subjects at random in the age group of 13 years to 19 years. The selected subjects were randomly assigned into two groups of 15 each, in which, group - I (n = 15) underwent physical exercises, group - II (n = 15) acted as control which did not participate in any special training. The training programme was carried out three days per week for twelve weeks. Prior to and after the training period the subjects were tested for flexibility and reaction time. Flexibility was assessed by sit and reach test and reaction time was measured by Groningen reaction time test. The statistical tool used for the present study was independent 'T' test. The result of the study reveals significant changes on flexibility and reaction time of the special children after twelve weeks of physical exercises special children.

Keywords: Physical exercises flexibility and reaction time special children

Introduction

According to Hartman *et al.*, (2010) [2] physical activity is "any bodily movement produced by skeletal muscles which results in energy expenditure and the energy expenditure is measured in kilocalories. In our daily life the physical activity can be classified into occupational, sports, conditioning, household, or other activities".

Physical fitness is established with distinctly characteristic strengths, which are correlated with the quality or competency involved with physical movements. Good physical fitness refers to a person whose heart, blood vessels, lungs and muscular tissues can exert tremendous functions, which makes the person not only do routine work efficiently but also enjoy the life leisurely and cope with unexpected conditions as well.

Physical activity and children with disability

Playing is an overriding aspect of the change and direction activities for children with intellectual disability. As a result, the play is prosperous in psychological and social values such as control and management, self-acceptance, self-confidence and emotional aspects of prosperity and social acceptance. People with intellectual disabilities are increasingly integrated into community-based employment, life forms and recreation/sports activities.

The standardization principle asserts that physical presence is essential to induce a positive perception and acceptance of the general society (Wolfensberger, 1972) [7]. It is to be understood beyond that various factors influence the perception to persons with mental retardation, including the type of activities in which these people interacting with society holds generally happier view towards participation in leisure/sport activities, since physical competence is a valued attribute (Goldberg & Chandler, 1989) [1].

Compared to children with normal developmental milestones, children who have mental retardation are more sedentary in daily life. Moreover they take part in fewer playing activities and leisure activity (Horvat, Malone, & Deener, 1993; Schleien, Ray, & Green, 1997) [3, 4]. However, training responses of children with MR are that of the children without MR when children are given systematic exercise programs (Croce & Horvat, 1992; Horvat, Croce, & McGhee, 1993) [3, 4].

But Lorenzi, Horvat, & Pellegrini, (2000) [5] has said, in a comprehensive recess setting, children who are mentally retarded showed playing behaviours similar to that of normal children.

Methodology

Subjects and Variables

To achieve the purpose of the study, thirty special children from G.V. Special School, Chidambaram, Tamil Nadu, India were selected as subjects at random in the age group of 13 years to 19 years. The selected subjects were randomly assigned into two groups of 15 each, in which, group - I (n = 15) underwent physical exercises, group - II (n = 15) acted as control which did not participate in any special training. The training programme was carried out three days per week for twelve weeks. Prior to and after the training period the subjects were tested for flexibility and reaction time. Flexibility was assessed by sit and reach test and reaction time was measured by Groningen reaction time test. The statistical tool used for the present study was independent 'T' test. The result of the study reveals significant changes on flexibility and reaction time of the special children after twelve weeks of

physical exercises.

Training program

During the training period, the experimental groups underwent physical exercise three days a week for twelve weeks. The physical exercise included in this training program were gross motor exercises, fine motor exercises and adoptable exercises respectively.

Statistical procedure

The data collected from the experimental and control groups on selected dependent variables was statistically analyzed to find out the significant difference by applying independent 'T' test. In all the cases the level of confidence was fixed at 0.05 level for significance.

Results

The pre and post test data collected from the experimental and control groups on flexibility and reaction time were statistically analyzed by dependent 'T' test and the results are presented in table-I.

Table 1: Analysis of 'T' test on flexibility and reaction time of experimental and control groups

Group	Test	N	Mean	SD	DM	't' - ratio
Flexibility						
Physical exercises	Pre Test	15	9.13	3.98	0.63	5.52*
	Post Test	15	9.76	4.36		
Control Group	Pre Test	15	8.83	3.72	0.13	1.12
	Post Test	15	8.96	3.79		
Reaction time						
Physical exercises	Pre Test	15	13.38	2.93	0.39	7.13*
	Post Test	15	12.99	2.84		
Control Group	Pre Test	15	13.42	2.59	0.01	0.17
	Post Test	15	13.41	2.74		

*Required table value for significance at 0.05 level of confidence for df of 14 is 2.15.

*Significant at .05 level of confidence

The obtained 't' ratio value is 5.52 of flexibility was greater than the required table value of 2.15 for the degrees of freedom 14 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of physical exercises on flexibility of the subjects was significantly improved.

The obtained 't' ratio value is 7.13 of reaction time was greater than the required table value of 2.15 for the degrees of

freedom 14 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of physical exercises reaction time of the subjects was significantly decreased.

The pre and post-test means on flexibility and reaction time of physical exercises and control groups are graphically presented in figure-1.

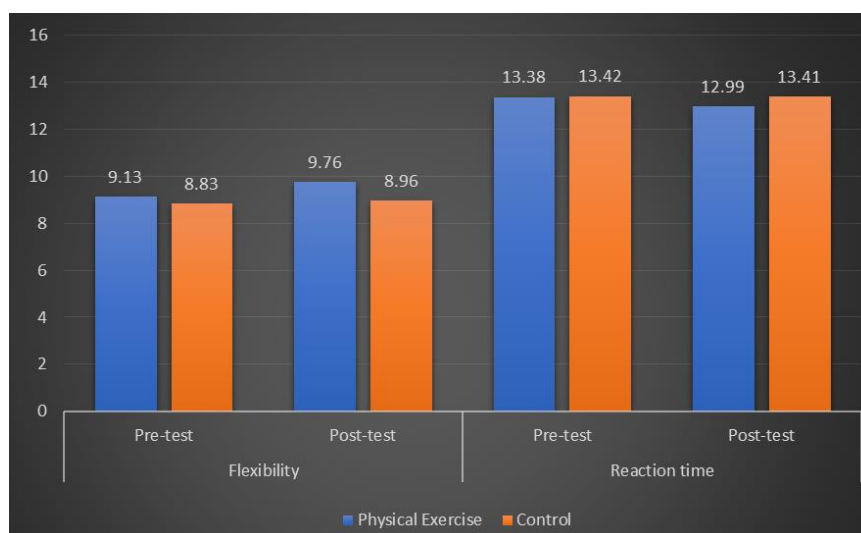


Fig 1: The pre and post-test means on flexibility and reaction time of physical exercise and control groups

Discussion

The result of the study shows that significantly altered in flexibility and reaction time by performing physical exercises training program. In the same lines In the same lines Seagraves *et al.*, (2004) investigated the effectiveness of a school-based physical education progressive resistance-training program on physical functioning and work productivity with 14 high school participants with mental retardation. Yilmaz *et al.*, (2009) studied 16 children with trainable and educable MR and demonstrated the efficacy of a 10 week water exercise and swimming program as an effective therapeutic tool in the management of mentally retarded children. A highly significant improvement was found in developing physical fitness of children with MR.

Conclusion

It was concluded that the selected dependent variables such as flexibility and reaction time were significantly altered due to physical exercises.

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