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AN INVESTIGATION ON THE EFFECT OF YOGIC EXERCISE ON PHYSICAL TRAITS OF MENTALLY RETARDED CHILDREN

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ABSTRACT

Background: Mental retardation is a construct with many interpretations. In some periods of history, mental retardation has been referred to as a disease. In other periods it has been thought of as a disability. Often mental retardation has been represented as social deviance. Most modern professionals in the United States adopt the definition published in 1992 by the American Association for Mental Retardation (AAMR). This definition describes mental retardation as neither a disease nor a disability but a functional state with limitations in both intelligence and adaptive skills.

Method: To conduct the study 25 mentally retarded boys (Ave. Age15-20) from raj kamal special school, Indore Madhya Pradesh was selected as sample. The selection of these subjects was based on Binet Stanford I.Q. test. All the selected subjects had IQ scores range between 70-79 which indicate borderline deficiency. 25 mentally retarded boys was serving as subject for this study.

Result: Results of the present study clearly indicate a positive effect of dynamic exercise program on balance, coordination and flexibility of mentally retarded children. The subjects were able to demonstrate improvement in balance, flexibility and coordination by performing dynamic exercises training program. As far as effect of dynamic exercise on reaction time of mentally retarded children is concerned, it was observed that dynamic exercise did not improve reaction time of selected mentally retarded children.

Conclusion: The study concludes that yogic exercise was effective in improving the selected physical traits i.e. balance, flexibility, coordination and reaction time in educable mentally retarded children.

KEYWORDS :*Dynamic Exercise, Mentally Retarded Children's, Balance, Flexibility, Coordination and Reaction time.*

INTRODUCTION

Mental retardation (MR) is a generalized disorder appearing before adulthood, characterized by significantly impaired cognitive functioning and deficits in two or more adaptive behaviors. It has historically been defined as an Intelligence Quotient score under 70. Children with mental retardation learn more slowly than a typical child. Children may take longer to learn language, develop social skills, and take care of their personal needs, such as dressing or eating. Learning will take them longer, require more repetition, and skills may need to be adapted to their learning level. Dynamic exercises are exercises that consist of continuous and sustained movements of the arms and legs. Example: - running, bicycling, aerobic training that improves cardio respiratory functions. Yogic or Isotonic exercise is a form of exercise which involves controlled contraction and extension of muscles and mobilization of the joints around those muscles. For exercise to be isotonic, the tension involved must remain constant throughout the exercise, rather than fluctuating. One of the most classic forms of isotonic exercise is weight lifting. This type of exercise tends to be inexpensive to perform, and it can be used to develop strength in both the muscles and the joints.

MATERIALS & METHODS:

PARTICIPANTS:

The subjects for this study were 25 mentally retarded boys (Ave. Age15-20) from Raj Kamal Special School, Indore Madhya Pradesh. All the selected subjects had IQ scores range between 70-79 which indicate borderline deficiency.

TOOLS:

1.Balance Beam Test

To assess balance of selected subjects, balance beam test was used. In this test the child walk the entire length of a standard balance beam steadily, without falling off, and within a six second time span. The child will start at one end, step up onto the beam, and walk the length to the other end. The test is repeated three times. The overall score for the individual is the three trial scores. The maximum Score is 5 (Walks the balance beam flawlessly) and Minimum score is 0 (Falls off the beam immediately).

2.Flexibility, Sit and Reach test

To assess flexibility of selected subjects, Sit and Reach Flexibility Test was used. This test involves sitting on the floor with legs stretched out straight ahead. Shoes were not allowed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down. With the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at one-two seconds while the distance is recorded. Make sure there are no jerky movements. Scoring: The score is recorded to the

nearest centimeter or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet.

3. Power Simple Co-ordination Test

To assess coordinated body movements in selected subjects, Power Simple Co-ordination Test was used. In this test the child was asked to raise his/her hand sideward and lift one leg up in the air upto the knee level. And in this condition he/she maintained the balance. Three trials were given for each subject. The scoring for this test is the time taken by the subjects for holding the said position. Average of all three was taken for final scoring.

4.Groningen Reaction Time Test

To evaluate reaction time of selected subjects, Groningen Reaction Time Test was preferred. In this test the child holds the module in the preferred hand and when the red light comes on must respond as quickly as possible by pushing the button. The reaction time (in milliseconds) is displayed on the timer. The time between the visual signals ranges between 4 and 9 seconds. After three practice trials, 15 trials are recorded. The score recorded is the median of the 15 trials.

PROCEDURES:

To collect the data, following procedural steps were taken

- Prior permission was obtained from school authorities to conduct the entire test mentioned under caption “tools”.
- Assurance was given to management and parents that the data will be strictly confidential and will only be used for research purpose.
- The entire selected test was performed by the subjects prior to commencement of study period.
- One year of dynamic exercise program was given to subjects.
- After completion of study period, test was performed by the subjects
- Pre-post test data for selected study variables were tabulated for each subject.

ANALYSIS:

In the present study pre-post research design was employed in which descriptive statistics of mean and standard deviation &‘t’ test and was used to analyse the data.

RESULT & FINDINGS OF THE STUDY:

After labelling all numerical data, scores related with balance, flexibility, reaction time and coordination, are presented in a table form with the help of mean, median, mode, S.D., skewness and kurtosis. The distribution of data in a symmetric manner and the normality of the curve or normal distribution of data have been observed through skewness and kurtosis.

To see the distribution of pre test & Post Test data of mentally retarded children belonging to dynamic exercise training. (Table 1 & 2).

Table - 1

Pre-test Statistics for Experimental Group B – Mentally Retarded Children Receiving Yoga Exercise Training (N=25)

Variables	Mean	S.D.	Skewness	Kurtosis
Balance (Balance Beam Test)	4.37	0.59	1.009	1.054
Flexibility (Sit and Reach Test)	7.85	2.74	0.418	-0.408
Reaction Time (Groningen Reaction Time Test)	17.25	3.62	0.291	-1.154
Coordination (Power Simple Coordination Test)	19.03	10.97	0.543	-0.829

A perusal of pre test statistics in a group of mentally retarded children belonging to experimental group 'B' reveals the following : Balance : Mean 4.37, S.D. 0.59, skewness 1.009 and kurtosis 1.054; Flexibility : Mean 7.85, S.D. 2.74, skewness 0.418 and kurtosis -0.408; Reaction time : Mean 17.25, S.D. 3.62, skewness 0.291, and kurtosis -1.154; Coordination : Mean 19.03, S.D. 10.97, skewness 0.543 and kurtosis -0.829 respectively.

Table - 2

Post-test Statistics for Experimental Group B – Mentally Retarded Children Receiving Yogic Exercises Training (N=25)

Variables	Mean	S.D.	Skewness	Kurtosis
Balance (Balance Beam Test)	4.56	0.35	0.267	-1.061
Flexibility (Sit and Reach Test)	8.54	3.01	0.448	-0.430
Reaction Time (Groningen Reaction Time Test)	16.96	3.54	0.339	-1.341
Coordination (Power Simple Coordination Test)	20.06	11.72	0.586	-0.656

A perusal of post test statistics in a group of mentally retarded children belonging to Yogic exercise reveals the following: Balance: Mean 4.46, S.D. 0.35, skewness -0.0267 and kurtosis -1.061; Flexibility: Mean 8.54, S.D. 3.01, skewness 0.448 and kurtosis -0.430; Reaction time: Mean 16.96, S.D. 3.84, skewness 0.339, and kurtosis -1.341; Coordination: Mean 20.06, S.D. 11.72, skewness 0.586 and kurtosis -0.656 respectively. Results are also depicted in figure 1.

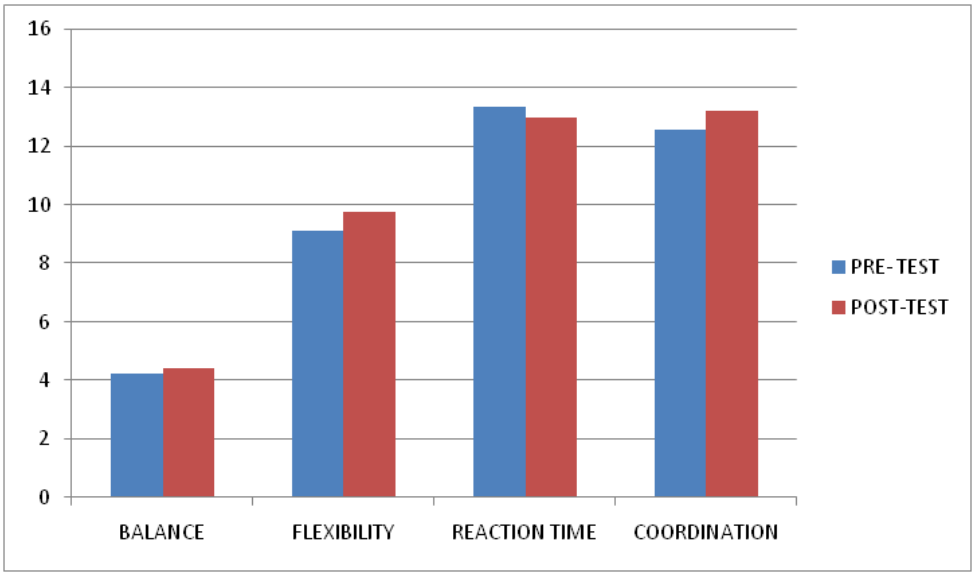

Figure 1
Bar Diagram Showing Pre & Post Mean Scores of all the four variables (Balance, Flexibility, Reaction time, Coordination)

DISCUSSION:-

Results of the present study clearly indicate a positive effect of dynamic exercise program on balance, coordination and flexibility of mentally retarded children. The subjects were able to demonstrate improvement in balance, flexibility and coordination by performing dynamic exercises training program. 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. They demonstrated significant increase in physical function and vocational tasks. Findings support the claim that the adoption of dynamic exercise program in relatively inactive people may be beneficial. The improvements in muscle endurance, muscle strength, coordination, functional mobility and balance may have additional positive benefits.

In dynamic exercise program jumping activity is also included. The results implicated that the jumping activity might effectively evoke the automatic and dynamic postural control. Moreover, the significant improvements of the beam walk performances might be due to the transferred effects via the practice of dynamic jumping activity. Similar results were obtained by Wang and Chang (1997) in their study.

As far as effect of dynamic exercise on reaction time of mentally retarded children is concerned, it was observed that dynamic exercise did not improve reaction time of selected mentally retarded children. In contrary to this Yildirim et al. (2010) reported significant impact of dynamic exercise on reaction time of intellectually disabled subjects. Hence the results of the present study need to be explored more in the light of other psychomotor aspects associated with mental retardation.

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