

## The Effect of Rhythmic Games on the Perceptual – Motor Growth of Educable Mentally Retarded Students (Boys and Girls)

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**ABSTRACT:** The present study aims at investigating the effect of rhythmic games on the perceptual-motor Development of educable mentally retarded students. The study's statistical sample included 80 persons (40 boys and 40 girls), which were organized randomly in two experiment groups and two control groups based on their gender. The research method was pretest-posttest with control group. Lincoln-oseretsky test was used for measuring the perceptual-motor development. Participants of experiment group played rhythmic and group games in 12 weeks which have been arranged in 2 sessions a week and the control group continued their daily activities. Shapiro-Wilk test and Mann-Whitney U test were used for analysing the data. Results showed that both girls and boys experienced a significant perceptual-motor development. But, perceptual-motor development in boys was significantly more than the girls'.

**Keywords:** rhythmic games, perceptual-motor development, mentally retarded

Received 15 Jan. 2014  
Accepted 8 Mar. 2014

ORIGINAL ARTICLE

### INTRODUCTION

Mental retardation syndrome is one of the perceptual-motor abnormalities in development period which emerges before adolescence and it specially refers to the children who are suffering failure in cognitive mechanisms and some adaptive behaviors. Traditionally, children with intelligence quotient (IQ) less than 70 are classified as the mentally retarded persons. Diagnostic and Statistical Manual of Mental Disorders and American Association on Mental Deficiency (Retardation) have classified this abnormality into 5 general classes. In this list, children with IQ 70-85 and 50-69 are classified as the borderline and mild mentally retarded people, respectively. These two classes of children are measured as the moderate educable mentally retarded, while children with IQ 20-24 are introduced and classified as the severe mentally retarded and finally children with IQ less than 20 as the profound mentally retarded [1].

The term perceptual-motor refers to the process of organizing the input information with the stored information which leads to the obvious action or function. One of the important psychological processes in which disability leads to the evolutionary learning disabilities is the perceptual disability. And the most emphasis in the field of learning disabilities is on the perceptual-motor processes and activities. Children with perceptual disability usually get in trouble for defining, interpreting and finding the meaning of their environment stimuli. Typically, children who are retarded in terms of perception have faced major problems in perceptual ability as well as defining and interpreting the data and stimuli and comparing them with the main data.

Basic skills are parts of the building of child development for learning and are necessary for daily life activities. Therefore, early years provide numerous opportunities for developing these skills. Children apply these learning prerequisite skills during the school life and bring up these skills with themselves through gaining great deal of experiences. For applying scissors to cut, for example, children need to develop the stability and physical balance, hand skill, visual motor integration, visual spatial relations, motor design and consolidating lateralization in them. Through observing the game, the child's intelligence can greatly found out and maybe clinical point of view it is the best method to diagnose the mental retardation [2].

The game affects the physical, emotional, intellectual, educational, moral, personality and social development and is of diagnostic and therapeutic values. On the basis of theories by Vygotsky and Piaget, game is the main factor in cognitive development of the child. Also, it is one of the purest accessible thinking ways for children. Children achieve the balance in the form game through understanding the realities and controlling the personal skills [3].

Numerous researches have dealt with investigating the effectiveness of different methods through efforts to find the most effective therapy techniques [3]. In the meantime, game was a method of which many psychologists and researchers benefited for treating a wide range of disorders and problems within several decades and they have approved its effectiveness [4]. Some researchers have studied the game in terms of the effect it has on various aspects of social life. Some have studied it in terms of affecting on the emotional development and another group

has explored the effect of game on the mental-motor development and cognitive development of children. Various studies consider the cognitive performance and brain flexibility related to sport and motor activities .

Rhythm, especially in the form of music and game is considered highly important as a part of human training and different cultures [5].

Researchers conducted in this field show that participating in sport activities lead to the promotion of social development. For example, researches by Dehghani et al. [6] have shown that rhythmic games affect the attention problems, memory and learning and sensory-motor function of boys with learning disability. Also Salehi et al. [7] investigated the effect of rhythmic movements on the perceptual-motor abilities among 24 educable mentally retarded girls with 9 years old. The results showed that perceptual-motor abilities of intervention group get improved after rhythmic movement program than the control group. In another research by Vasilius et al., the effect of dance training on the dynamic balance of 17 mentally retarded students and it had a desirable effect on the dynamic balance of these persons. With regard to the importance of this matter, efforts have been made in the research so that the effectiveness of rhythmic games on the rate of perceptual-motor development of educable mentally retarded students (boys and girls) is investigated [8].

## MATERIAL AND METHODS

Method used in the present study was the type of experimental and of pretest-posttest design with control group. Statistical population in this research was all schools of exceptional students (both girls and boys) who were studying at the primary level in Broujerd Town in the educational year 2011-2012. Out of these schools, two ones were selected randomly as the samples. 40 students were selected from each school, after their parents' consent was achieved. Participants were 80 students from 6 to 12 years old (40 boys and 40 girls) and they were divided into four groups: two experimental groups (20 boys and 20 girls) and two control groups (20 boys and 20 girls).

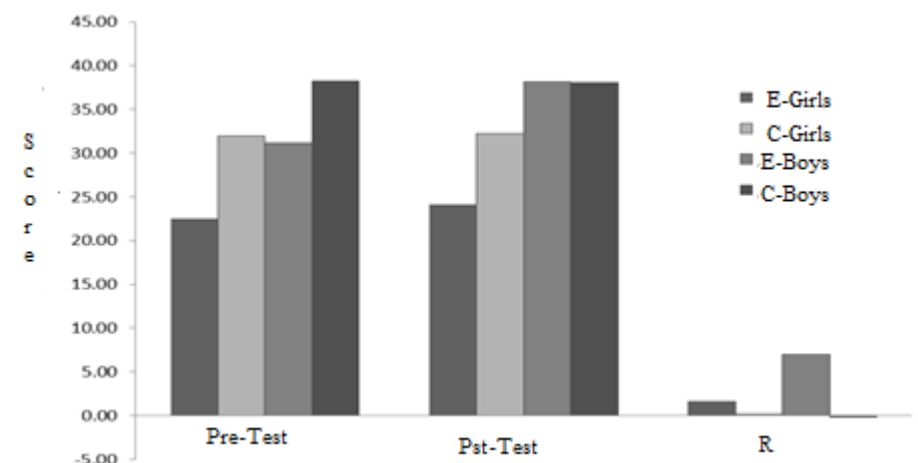
Before implementing the selected physical activity, all 80 students were taken Lincoln-Oseretsky test individually. Then, for 12 week and 2 sessions a week (45 min), the experimental group participated in rhythmic games from which the first 10 minutes were spent for jogging, exercise and warming up by simple and primary games such as jumping rope, chair game and train game. In the last 5 minutes, they performed the exercise and stretching so that they can cool their bodies and prevent physical injury. During this period of time, control group exempted from the game. After the experimental period, posttest was implemented for each of these four groups.

### Measurement Tools

Lincoln-Oseretsky motor development scale: this scale has been designed in order to evaluate the motor ability of children from 5 to 14 years old. This scale was implemented individually and examines and measures various motor skills such as fingers skill, coordination of eye, hand and large muscles activities of hand, arms, foot and body. All movements are scored based on the 3-score system. When both organs were engaged, the score is registered separately and in some cases, sum of scores for both organs is considered as the final score. The maximum score which can be achieved is 159. This scale has attracted the attention of many researchers and in 1964 Edgar Dale undertook its Portuguese version in English. At last, Slonder on 1948 developed and normalized it with regards to the American norms. On 1950, after a series of investigations and deleting 49 items of the primary scale, a scale composed of 36 items remained.

## RESULTS

Software SPSS version 19 and Excel version 2007 were used for examining the results of research. Shapiro-Wilk test was used for investigating the data normality and the results showed that data was not normal. Therefore, nonparametric Mann-Whitney U test was used for examining the significance.



**Fig 1.** Lincoln-Oseretsky test scores (social development) among mentally retarded boys and girls in pre- and post-test and their difference (rate of changes)

By using the difference between pretest and posttest for statistical comparison of the different groups, Mann-Whitney U test showed that the scores of perceptual-motor development in boys experimental group ( $P=0.001$  and  $U=64.5$ ) and girls experimental group ( $P=0.007$  and  $U=107$ ) is significantly more than the boys and girls control groups and range of changes of perceptual-motor abilities scores in boys experimental group is significantly more than the girls experimental group. In other words, mentally retarded boys have benefited highly from the physical activities for promoting the perceptual-motor abilities ( $U=116$  and  $P=0.019$ ). As a result, students who were participating in the physical activity had achieved significant achievements in perceptual-motor abilities and boys had more considerable achievement than the girls ( $P \geq 0.05$ ).

## DISCUSSION

Various studies consider the cognitive performance and brain flexibility related to sport and motor activities [4]. Up to now, several studies have dealt with investigating the relation between rhythmic sports and intelligence, cognition and educational achievement, emotional-behavioral skills of mentally retarded children, including studies by Brown [8]. The results show that participating in the rhythmic games has a significant effect on the perceptual-motor development of mentally retarded students (both girls and boys) and boys has achieved significantly more than the girls.

Kowsari et al. [9] considers an 18-session Spark motor program effective on the motor skills of hyperactive and autism children.

In explaining the effect of rhythmic motor movements on the perceptual-motor abilities can be stated that rhythmic exercises or game is one of the interesting exercise methods for children and especially the adolescences. These movements and activities are intrinsically coordinated and implementing them in a correct way needs

Since these movements are often performed together with the happy music and collectively, people are more motivated to participate in them. Due to these properties, children and adolescences show a great deal of interest to perform these types of physical movements. In this direction, due to less attention paid to this group of children (developing and providing the suitable creational and sport programs, their special conditions), they welcome these motor and group programs much more and training music has considerable effect on the formation of brain cortex and since there are different sensory ways part of which is resulted from the neurological limitations within the children with learning disabilities, using music and rhythm in the form of harmonic physical movements simultaneously increase the neural branches. In other words, long-term stimulation causes an increase in the brain synapses and finally it leads to the sensory perception in high levels.

One of the other probable explanations for this effect is that the musical aspect of rhythmic motor games builds and reinforces the interneuron relationships in brain cortex through a process which is similar to the completion process in brain. In other words, in the motor environment together with music, interneuron neural messaging cycles are established which stimulate the upper parts of neural system that are related to the memory and cognition. Additionally, in the rhythmic motor games, the child has to observe the predetermined patterns in the game and in case of repetition and exercise, space for improving the memory scales especially the active memory is provided. Repeating an order in the rhythmic movement enable the children to predict what would be happened and in other words through their memory predict the next components of a movement. Marinating the rhythm of a rhythmic motor game in mentally retarded children can strengthen the memory and reduce the problems with its function scales [6]. Based on the findings of present research, it is suggested that the rhythmic games should be included in the exceptional children educational program in order to improve the various aspects of perceptual-motor development.

## REFERENCES

1. Ahadi, H. & Banijamal, Sh. 1991. Mental health and mental retardation. Tehran: Frahang-e-eslami publications .
2. Mehrjou P. 2010. Games and its effect on children. Child magazine. 64: 48.
3. Farmer, E.M.Z., Compton, S.N., Burns, B.J. & Robertson, E. 2002. Review of the evidence base for treatment of childhood psychopathology: Externalizing disorders. J Consult Cline Psychol, 70(6): 1267-1302 .
4. Goldstrom, Y., and Korman, and D. & Bendavid, J. 2010. The effect of rhythmic exercise on cognition behavior of maltreated children: A pilot study 37, 50 Berdan Are. Fair Lawn. NJ, 07710USA .
5. Michalowski, M.P. & Kozima, H. 2007. Methodological issues in facilitating rhythmic play with. 16 IEEE international conference on Ronot & Human Interactive Communication .
6. Dehghani, M., Karimi, N., Taghipour javan, A., Hassan Nataj Jelodar, F. & Zeidabadi F. 2012. The effectiveness of rhythmic motor games on the rate of executive functions in children with evolutionary neuropsychological learning disabilities before the primary school. Learning Disabilities Journal; 2: 53-77
7. Salehi, H., Hidari, L., Ghasemi Kahrizsangi, GH. 2012. The effect of a rhythmic movements program on the perceptual-motor abilities of educable mentally retarded children. Motor-exercise development and learning; 9: 74-92 .
8. Brown, B.J. 1967. The effect of an isometric strength program on the intellectual and social developmental of trainable retarded masles. American Corrective Therapy Journal, 31: 44-43 .

9. Kowsari, S., Keihani, F., Hemayat-talab, R. & Arab Ameri, A. 2012. Investigating the Effect of a Selected Physical Activity Program on the Development of Motor Skills in Attention Deficit /Hyperactivity Disorder (ADHD) and Autism (HFA) Children. *Motor-exercise learning and development*; 10: 45-60 .