The Impact of Body Awareness Exercises in the Development of Fundamental Motor Skills in Children with Developmental Disorders

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Abstract

Pre-teen years are a critical period for the development of fundamental motor skills for children, this period is more important for children with developmental disorders and early childhood intervention programs play a key and essential role in the creation of opportunity to practice a wide range of fundamental motor skills through structured activities and free games. However, a number of children have been impaired in motor development and they gain low levels of mobility experiences in their daily lives. Based on the theoretical framework, concepts of the body awareness are the formation and development of fundamental motor skills in children and in addition, it seems that educational success in school gains proficiency in fundamental skills. For this purpose, in the present study, 12 children aged 6 to 12 years were selected at a rehabilitation center in a sampling method and based on pre-test results in two experimental and control groups. The experimental group participated during sixteen sessions of exercise programs consisted of the eight-week program designed based on the knowledge of the body and inhibit the reflection with an emphasis on growth-related exercises in measures of body image, the concept of the body and the physical schema. At the end of the test, motor development Ulrich (TGMD-2) was used to assess the children's motor skill development and the results showed that the group with the variety of factors to consider pre-test average growth in motor skills children in the experimental group was significant, indicating the impact of the intervention program proposed in the development of motor skills of children with developmental disorders.

Keywords: Fundamental motor skills, Body awareness, Developmental disorders, Inhibition of reflection.
1. Introduction

One of the important indicators of growth in children is the growth of fundamental motor skills. Early childhood years are critical to the growth of this skill. Fundamental motor skills are divided into skills of transfer and manipulation and a combination of two or more parts of the body motor patterns are formed (Haywood, 2009). Running, jumping, bouncing, gliding, excoriating and hopping are examples of skills of transfer that involve moving the body from one position to another and object control skills include cutting the course of the object transferring or throwing the object such as throwing, catching, dribbling, kicks with hands and feet, rolling (Ulrich, 2000). Fundamental motor skills are the next building blocks of complex skills. These skills enable children to be prepared for participation in sports and games which need high motor competence during school years and throughout life (Logan, 2012). Although it is thought that fundamental components of motor skills naturally obtain through mature processes (Clark, 2007), the results of the studies showed that these skills required training, practicing and improving (Goodway, 2003) and affected complex internal and external factors (biological, psychological, social, motivational, cognitive, etc.) and processes of accessing are structured through experiences of active games and applications. These skills enable children to interact with their surroundings and explore to be dominated on their environment. Gallahue (1982) mentioned that fundamental motor development significantly was influenced by environmental factors that among these factors were training and exercising instructions given by a trainer. The quality of educational environment can play a role in the development of fundamental motor skills of children. Development of motor skills in children with developmental disorders requires the use of appropriate specialized and structured training programs along with the manipulation of environmental conditions due to the growth characteristics of this group of children.

A conceptual model by Student et al (2008) has explained the importance of fundamental motor skills in a lifelong activity. In this model, there is a dynamic and two-way relationship between dynamic sufficiency and physical activity (Bekouvic, 2012). The adequacy of motor skills is defined in terms common fundamental motor skills to manipulate specific movement patterns of transfer and manipulation. The assumption underlying this model is common misconception that children naturally learn basic skills. But this is an invalid illusion; many children have not mastered in the skills and they do not show necessary motor adequacy for sports and games for teens. One of the significant parts of the pattern is the relationship between motor adequacy and changes of the level of physical activity during the developmental period. It is suggested that in the early childhood years, probably the pattern of physical activity in young children guides the growth of their motor adequacy. The more children have physical activity, the greater chance will be for the growth of fundamental motor skills, while if children have little chance for physical activity, subsequently there will be less motor adequacy. In children with developmental disorders, learning and developing opportunities in motor skills have been very limited through motor experiences and virtually growth makes them different from other children. Apart from biological factors, environmental factors can play an effective role in the development of their motor skills and designing appropriate training programs in this group of children is of special importance and sensitivity. So far, many studies of different types of motor intervention in improving basic motor skills of children have been used and finally, they concluded that the use of physical interventions to improve children's motor skills was fundamental, but in this study, training program designed is based on the growth of the body ability to manage and control
physical and sensory perception and reflection exercises to strengthen the muscles of anti-gravity inhibition in children with growth disorders.

The results of the studies in children with developmental disorders show that the most important challenge in implementing their motor skills caused by the body inability to control. In this respect, given the growing awareness of body concepts and designing exercises which is effective to improve balance and stability of this group of children, it can provide an introduction of fundamental motor skills for them. On the other hand, the academic success of children in school is associated with the development of fundamental skills. Training centers are appropriate environments to facilitate the merit of fundamental motor skills through intervention programs with their energetic structures and however, in these places, often free games are the only opportunity that allows children to get involved in motor activity. Although all children may enjoy this type of sport participation, they don’t often lead to promoting learning their fundamental motor skills (Gallahue, 2006). However, the motor intervention at this age should be optimized so that an individual can benefit training and education opportunities in the sensitive period.

On the other hand, due to the particular problems of children with developmental disorder and lack of opportunity to practice, practice optimization is very important and this is the most important exercise increasing at each meeting. The better the quality of interventions used in these ages, the more its efficiency will be. While in previous research which different interventions are used, they are not appropriate theoretical backing and generally, the motor program used for other children to develop the skills of children with disorder also has been used. Robinson and Goodway, Martin et al stated that developmental and educational approaches in the development of fundamental motor skills had been useful and motor experiences planned in a learning environment were important and urgent. On the other hand, intervention programs must be designed according to children’s ages since in early childhood, using games to enjoy will be very useful, however, in previous studies, only a few studies have been used for intervention. It is obvious that the use of new approaches to learning in the design of interventions which are designed in the form of the game, can play an important role in optimizing circumstances of training children so that it can incorporate both the purpose of education and pleasure. The use of these types of interventions can help to enjoy children from programs without organized and improve trainer objectives of programs organized. In optimizing interventions, we can benefit proposals arising from the theoretical framework which considers basis of the development of motor skills in children based on the growth of the ability to manage and control in the body to inhibit reflections and stability and balance helping development of physical schema in children. For this purpose, in this study, the researcher approach in the design of training programs for children with developmental disorders is according to the type of interventions to be clear whether the implementation of the training program can help children develop fundamental motor skills?

2. Research Methodology

The present study is based on quasi-experimental research. The population of this study included children with developmental disorders who in this study, 12 children of girl and boy in the range of the year from 6 to 12 years were selected at a sampling method. Participants based on pre-test results were matched in two groups and were randomly selected in two experimental and control
groups. The experimental group participated during sixteen sessions of exercise programs that consisted of the eight-week program designed based on the knowledge of the body and inhibit the reflection. The approach of the researcher in designing a training program is based on the emphasis on growth-related training in measures of body image, the concept of the body and body schema. After ending the post-test period, a course was taken from two groups to examine the results of the proposed intervention in the development of fundamental motor skills of children with developmental disorders. To assess the subjects, motor development tests of Ulrich (TGMD-2) of second edition was used. This is validation of the test in 2009 in Iran and the method of grading is based on one and zero that just as the final scores in the implementation of skills will be gathered. To analyze the data, the statistical method of independent t was used in order to investigate the differences of scores of participants in pre-test and post-test and covariate statistical model was used to evaluate the effect of intervention program with controlling pre-test factor.

3. Results

The results of hypothesis tests to determine the distribution of each variable in the pretest and post-test in two experimental and control groups indicated the effect of exercise on the development of motor skills in children with developmental disorders. To determine the homogeneity of two groups of the analysis of variance (to compare means) in two experimental control groups was used. The results of ANOVA showed that the value of F obtained was not statistically significant and two groups were matched in terms of pre-test. Then, covariate statistical model was used to evaluate the effect of interventions to control the variety of pre-test on changing variables of the research that results were shown in the table.

<table>
<thead>
<tr>
<th>Source</th>
<th>Square root of the sum of squares</th>
<th>Degree of freedom</th>
<th>Mean of squares</th>
<th>Value of f</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction</td>
<td>111.77</td>
<td>1</td>
<td>111.77</td>
<td>17.20</td>
<td>0.01</td>
</tr>
<tr>
<td>Pre-test</td>
<td>15.68</td>
<td>1</td>
<td>15.68</td>
<td>2.41</td>
<td>0.15</td>
</tr>
<tr>
<td>Factor of group</td>
<td>1766.95</td>
<td>1</td>
<td>1766.95</td>
<td>271.90</td>
<td>0.01</td>
</tr>
<tr>
<td>Factor of error</td>
<td>58.48</td>
<td>9</td>
<td>6.49</td>
<td>----</td>
<td>---</td>
</tr>
</tbody>
</table>

According to the results shown in the table of scores in the table above, considering group factor with covariate of pre-test factor in the mean of the growth of motor skills of children in experimental group was significant and exercise intervention program suggested in the development of motor skills of children with disorder had been effective.

4. Discussion

The results of the implementation of intervention programs based on development of concepts of the body awareness in children with motor skill dysfunction represent the growth in this group of children. This training program was designed based on the body awareness activities in scale
with body image, physical concept body and schema and in sixteen sessions were run for eight weeks for children with developmental disorders. In the end, the results indicated the impact of exercises in the development of motor skills in children. With the transfer of the child to adolescence, the relationship between physical activity level and adequacy of motor skills become clearer. High levels of motor skills provide a great treasure that increases the chance to participate in a variety of physical and social activities. More skilled children choose higher levels of physical activity with more probability by itself, and they are satisfied to participate in physical activity. Therefore, higher levels of motor efficiency are perceived and real motor efficiency actually leads to an increase in physical activity and again leads to an increase of promotion in motor adequacy level for children. But undoubtedly children with developmental disorders in future life will face many challenges in motor skills development.

Children who are in middle childhood and in the motor skills are less competent, most likely in the circumstances which they have right to choose, they don’t choose the physical activity or they show very low levels of participation in physical education classes in schools. Therefore, low motor adequacy leads to low levels of physical activity which children’s chances for qualification may bring the movement to a minimum. In conjunction with this work, children of middle childhood have this cognitive ability which carefully compares their motor adequacy with their peers. They simply recognize that in comparison with others are good or bad. This knowledge along with experience of failure in the field of physical activity leads to low perception of motor adequacy. Thus, real motor adequacy and low perception with limited physical activity lead to their lack of participation in sports and games. Therefore, a child, who has a low motor competence, imagines that the sport is not very good and therefore, he chooses immobile factors. With the passage of children from middle childhood to adolescence, among those who have sufficient further movement, have been active and have more fun out of it compared to people who have developmental disorders, the differences become clear. As this pattern follows, the adequacy of movement, during the early childhood years, will be active lifestyle promotion in all stages of life. A review of studies for children with developmental disorders shows that intervention methods chosen by the researchers are generally based on skills while awareness of physical concepts is as a basis for the development of motor skills such as the research carried out by Keihani and Jokar (2013) of Spark motor program including transferring skills, jumping from the rope, hopping in the ring, throwing the ball and targeting was used to develop motor skills in children with developmental disorders. Also, in another research done by Rajabi (2015), intervention method including the implementation of basic exercises of gymnastics was used for children with autism, but the approach taken by the investigator in this study emphasizes the need to develop programs that are a prerequisite for developing motor skills. For this purpose, the concepts of body awareness exercises were used in this study.

Given that some of the problems for children with dysfunction including perceptual - motor infrastructure, and the growth of concepts of body awareness are the basis for implementation of motor skills, so, it seems that in the case of children with developmental disorders, attention to the understanding of body awareness before engaging them with exercises of skills is very important. Naturally in children without developmental disorders, understanding body awareness is obtained during their motor experiences of daily, but children with developmental disorders have not been exposed to these experiences, and this would cause more problems in the development of motor skills in the coming years. Therefore, considering the quality of motor
experiences of this group of children on improving concepts of body awareness before dealing with the activities, which are based on skills, can provide their success factor in the development of motor skills.
References


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