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Empowering self-efficacy of children with Down syndrome through physical activity

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Abstract

Research evidence has shown that physical fitness is critical for fitness promotion and maintenance, while very little attention has been paid to document its effectiveness in people with Down syndrome (Rimmer *et al.*, 2010). A review of the current paper would be both timely and important as it would serve as a starting point to explore new research avenues. It has been observed that a general trend toward lower values on physical activity parameters and worse body composition variables in children and adolescents with DS compared with the normal population. Persons with Down Syndrome (DS) are at risk for a life of inactivity that can result in a multitude of medical problems including heart and vascular diseases. Notably, children and adolescents with DS have been described as less active or overprotected; however, these factors may not be the cause of their poor physical fitness. Physical fitness suppresses the development of pathological processes, and creates life-long Physical Activity habits.

Keywords: Empowering self-efficacy, physical fitness, physical activity habits

1. Introduction

Development in human beings is important in all areas. Nevertheless, in the early months of life, physical development remains the underlying foundation for all future progress. The ability to explore one's surroundings, to reach and grasp toys, to turn one's head in order to follow a moving object visually, to roll over, to crawl in pursuit of a desired objective are all of these behaviors that are mainly dependent on gross as well as fine motor development. Such physical, interactive abilities foster understanding and mastery of the environment, and their importance to overall development stresses the implication of early intervention programs. Children and adolescents with Down syndrome are at risk from a wide range of physical problems and difficulties that may interfere with their attainment of motor milestones and subsequent motor skill development.

Down syndrome is a genetic condition that causes delays in physical and intellectual development. Research studies show that children with Down syndrome have lower muscle strength, levels of motor development, and cardiovascular fitness. Research also shows that these children experience growth delays, breathing, heart, vision, and thyroid problems, and other primary and secondary health conditions. According to the International Classification of Functioning, Disability and Health (Mahler, D.A., 1995) ^[1], Physical Activity may be influenced by a child's health status, functional profile, participation in life activities, and contextual factors—either within the person or in the environment.

Children, adolescents and youth with Down syndrome have the potential to participate in all types of culturally-relevant physical activities. Unfortunately, very little data exist on interventions to promote Physical Activity among them. A randomized-controlled study found that youth with DS who learned to ride a bicycle increased their Physical Activity levels about 1 year after the intervention (Prasher, V.P. (1995) ^[3] suggesting that motor skill development may improve long-term Physical Activity. Promoting physical activity in children and youth with down syndrome aimed at restructuring the age-associated decline, thereby suppressing the development of pathological processes, and creating life-long involvement of physical activity habits To achieve these goals, well-structured programs adapted to the abilities of the children should be considered to improve their physical, cognitive, and psycho-social health profiles and as well as to develop the need for enjoyment

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And participation. This would foster positive familial and social attitudes, which would help them to utilize their determination to succeed, and promote social interactions and enjoyment (Pitetti, K.H., *et al.*, 1992; Fujiura, G.T., *et al.*, (1997) ^[4,5].

Gignac (2003) ^[6] commented that if physical activity is substituted for relatively meaningless activities, then it will be effective in maintaining positive physical activity behavior and achieving changes. Fujiura *et al* (1997) ^[5] supported this argument and stressed the importance of including physical activity programs for individuals with Down syndrome in the community.

When initiating a physical activity to individuals with Down syndrome, as they have low levels of cardiovascular fitness, the recommended modalities include walking, jogging, stationary cycling, and low-impact aerobic dance. Due to poor levels of muscular strength several researchers emphasized that strength training to be a primary focus in training programs. The goal should be to maximize strength in the large muscle groups. Training intensity should be 70–80% MHR for three sets of 8–12 repetitions. A training effect is typically seen 10–12 weeks into the program. Circuit training is appropriate for individuals with DS.

Heller *et al.*(2004) ^[13] found that a group of adults with DS, who participated in a fitness and health education program for 12 weeks (three practice days per week), changed their attitudes towards exercise, showed more positive expected outcomes and fewer cognitive-emotional barriers, and improved life satisfaction. These findings were very promising since they imply that an appropriate educational-physical program will enhance the participation of individuals with DS in such programs.

Furthermore, the general fitness level of children, adolescents, and adults with Down Syndrome is even lower than other people with Intellectual Deficiency (Burns, Y. and Gunn, P. (1993) ^[8]; Block, M.E. (1991) ^[9] and this is believed to have both a motivational and physiological basis (Fernhall, B *et al.*, (1989) ^[10]; Pitetti, K.H., *et al.*, (1992) ^[11]. It is suggested that this poor state may be partly due to syndrome-specific conditions, such as heart problems, but it seems also that there is a lack of expectations in programming. Individuals with DS have a tendency to become obese in childhood (Cronk, C.E., 1985) which leads to an adolescent and adult who is less likely to participate in physical activity. Physical activity programs have challenged such a poor beginning for the young child with DS. It was believed that appropriate professional involvement can advance the child with DS, and that early intervention would prevent secondary complications beyond the primary limitations compelled by Down Syndrome itself (Cicchetti, D. and Beeghly, M. (1990). In light of such beliefs, several intervention programs have to be implemented for young children with Down syndrome. Connolly and Russell (1976) ^[12] concluded that an interdisciplinary, early intervention program was needed in order to help the participants in earlier attainment of many developmental tasks and enhanced functioning of the family unit. Based on re-evaluating the results (three long-term follow-ups), it was found that achievements of the early intervention program for children with Down syndrome had long-lasting results. Thus, it was concluded that participants in the early intervention program gained a foundation for subsequent learning and development

Physical activity should be introduced in the form of Physical education curriculum right at the early school level where it would endow with opportunities to learn to understand both

kinesthetically and cognitively movements within skills (quick/slow release the ball) and also the movement sequence or motor skill (throwing or kicking) within the game or activity context. The structured activities in the form of any games would have etiquette, strategies, tactics and rules, and provide new vistas to learn them would be part of this curriculum knowledge-based approach. An understanding of these will enable young people with Down syndrome not only to play, but to be more informed about their play and, as a spectator, to appreciate the skills of elite performers who may also be their 'heroes'.

The development of self-perception about their motor skill abilities and an understanding of the concepts within games such as winning and losing and 'doing your best' are related to this type of knowledge and a young persons' understanding of it. Therefore, these aspects should be an essential aspect of any physical education curriculum. Through this, the affective domain would also be tapped, thereby making them to learn to cherish activities, gain enjoyment from them and thus to remain active throughout their lives. In order to do this, young persons with Down syndrome need not only the skills to play but also the ability to be able to relate physical activity to other aspects of life. They need to feel good about themselves, to gain from their personal achievements and to have fun times with family and friends.

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