Physical Activities as a Treatment for Hyperkinetic Disorders in Prebubertal Children

by

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Physical activities as a treatment for hyperkinetic disorders in prepubertal children.

The monograph presents research findings on the correction of hyperkinetic disorders in prepubertal children. At present, the issue of "hyperactive" children is becoming a major concern due to the fact that statistics have shown increasing number of such children. We verified the adaptation of the Vanderbilt scale to be used at Slovak schools. The future standardization of the scale may assist both teachers and parents in objectifying their observations and its use may be beneficial when verifying the efficiency of educational methods aimed at correcting behavior of children diagnosed with ADHD. The difference in the rating of child's behavior assessed by NICHQ scale and its subscales before and after the experimental intervention may be interpreted as the degree of efficiency of the method applied. Standardized tests, i.e. "gross motor skills test and fine motor skills test" were administered to determine the state and changes in the motor skills level of children with ADHD. This enabled us to differentiate the effect of movement games and exercises on motor skills and correction of behavior disorders. Both gross and fine motor skills of prepubertal children improved, which is highly beneficial in practice. In children with ADHD, experts should seek innovative trends based on physical activities and sports.

Key words: *physical activities, hyperkinetic disorders, prepubertal children*

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PREFACE

ADHD develops in millions of children and adults and is generally diagnosed during early years at elementary school. At present, ADHD impacts approximately 3% to 7% of school age children. Without serious attention ADHD may persist into adolescence or even adulthood. Primary purpose of the educational process of students with ADHD is to place more emphasis on individual approach taking into consideration specific educational needs of such students and to induce positive emotional relationship and understanding among teachers and students.

One of complementary activities that may aid in reducing symptoms associated with this syndrome is movement or physical activity.

Movement is thus an integral part of healthy development, maturation and personality development, which is linked to not only physical development, but also children's mental and social development. Physical activities need to be selected carefully, because in case of ignoring children's developmental process inadequate physical activities may have harmful effect on children. At this age children should engage in all-round physical activities (Borová et al., 2000) and should enjoy movement based on game-like activities.

Among factors that may positively affect children's behavior in the educational process are physical activities, exercise reeducational procedures, adequately selected movement games and exercise designed to correct hyperkinetic disorders in school-aged children.

The analysis of studies by Kavale, Steven, and Hill (1999), McGraw, Burdette and Chadwick (2004), Chovanová (2014), Chovanová and Lenková (2013, 2014), Chovanová and Ružbarská (2014) has shown that accurate diagnosis and effective treatment which are most important in childhood may increase children's self-confidence, improve academic and social skills, solve behavior problems and reduce long-term consequences of ADHD in adulthood. This issue represents a challenge for experts, educators in terms of finding ways of increasing the quality of the educational process and its outcomes. In prepubertal children with ADHD, experts should seek innovative trends related to physical activities and sports. Therefore, we aim to extend knowledge about physical activities as one of the methods of physical treatment, which may be administered within the educational process and school physical education. We especially focus on the effect of various physical activities included in ISCED1, on the treatment of hyperkinetic disorders in children. This issue has been studied by several authors including Barkley (2006), Blahutová, Klenková, and Zichová (2005), Drtílková (2007), Payneová (1999), Wolraich, Bard, Neas, Doffing, and Beck (2013).

Our main contribution is the emphasis on the benefits of physical activities for children with ADHD in terms of reducing symptoms of behavioral disorders. Based on the acquired knowledge we have designed stimuli in the educational process and in the daily schedule as well. By increasing the attractiveness, ef-

fectiveness and esthetics of physical activities children's health improved and behavioral disorder symptoms reduced.

Treatment of behavioral disorders is currently the subject matter of extensive research. Teachers find diagnosing children with ADHD problematic. At present, teachers lack tools that would help them to make their observations more objective. Within the project *"Efficiency of specific exercise reeducational procedures designed to correct hyperkinetic disorders in prepubertal children"* (VEGA 1/0769/13) the screening tool for the behavior assessment of students with ADHD – Vanderbilt assessment scale (NICHQ) was adapted. This scale may be used for research purposes as well as for educational purposes by elementary school teachers.

Therefore, we confirmed the appropriateness of the diagnostic tool on a representative sample of prepubertal children living in eastern Slovakia. The psychometric parameters of the scale were found to be excellent as the reliability of particular subscales ranged from 0.808 to 0.917 (Dubayová & Chovanová, 2013).

Standardized tests that include gross motor skills test (Měkota & Blahuš, 1983) and fine motor skills test (Bakalář, 1976) were administered to determine the state and changes in motor skills of children with ADHD. This enabled us to differentiate the effect of physical activities on the motor skills level and on the treatment of behavioral disorders.

The effect of physical activities on hyperkinetic disorders in prepubertal children was determined by logical analysis and mathematical and statistical methods.

Research findings represent the outcome of the grant project VEGA 1/0769/13 *"Efficiency of specific exercise reeducational procedures designed to correct hyperkinetic disorders in prepubertal children"* supported by the Ministry of Education, Science, Research and Sports.

The monograph consists of 5 chapters. The theoretical part deals with prepubertal age, hyperkinetic disorder, and physical activity including the effect of physical activities on hyperkinetic disorders in prepubertal children. This part also deals with charateristics and diagnosis of hyperkinetic behavioral disorders, and the benefits of physical activities: movement games and exercises, tennis movement games, nontraditional sports games, Dance Dance Revolution – StepMania, in terms of making children more physically active during school breaks, yoga exercises, physical activities within interdisciplinary relations, seasonal activities as well as Olympic education and physical activities in sports clubs designed to correct behavioral disorders. These physical activities are presented as methods of correcting hyperkinetic disorders in prepubertal children.

The practical part presents knowledge about the effect of physical activities on the state and changes in behavioral disorders within educational process. The findings have shown that we have directed attention towards children with behavioral disorders and hyperactivity. What is very important for educators is to integrate children diagnosed with behavioral disorders into student groups, to

have positive emotional relationship with such children and to know about their needs and interests in physical activities in order to use these activities in favor of such children.

The monograph may be used by scientific workers and educators who deal with this issue and also by teachers, leisure-time animators, teacher assistants, who are interested in having positive emotional relationship and improving understading among teachers and their students. We also aim to provide advice on how to increase the quality and efficiency of children's education through engaging in physical activities also within leisure-time activities.

We express our gratitude to both bachelor degree and master's degree students who acquired theoretical and practical knowledge when writing their final theses. We also would like to express our thanks to all educators, who helped us to conduct the experiment and to all students who participated in the research.

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INTRODUCTION

Hyperactivity associated with inattention significantly hinders school work and thus adversely affects child's behavior which is assessed as problematic. These symptoms increase the risk of adopting a negative attitude towards such children due to their disrupting and unpleasant behavior (Dubayová & Chovanová, 2013). Therefore, hyperactive children are more criticized, which affects their self-esteem and increases the risk of forming a negative image of themselves as unwanted, unable and unsucessful people. Behavior representing a child's defensive mechanism in this situation, which the child is unable to cope with in another way, is often problematic and from the perspective of others is perceived as inadequate and thus may cause more difficulties.

Hyperactive children are restless, are on the move at all times, talk to themselves, and make various sounds. These children find it difficult to stay still and relaxed (Khýr, 2013). In relation to stimulus, motor responses of such children are inadequate in their amount, intensity and speed. These children exhibit clumsiness especially in the domain of fine motor skills used to perform visually spatial cognitive tasks. In addition to disrupted fine motor skills, hyperactive children may experience deterioration in gross motor skills. Body movements are frequently inaccurate, unorganized and irrelevant in relation to the assigned task or overall situation. As reported by several authors including Barkley (2006) and Drtílková (2007) symptoms of hyperactivity are highly visible.

Malá (2005) found that children diagnosed with behavioral disorders exhibit inadequate control, find it difficult to respect other people, and show age-inappropriate familyarity, which results in overall unacceptance of such children in both their homes and among their peers at schools. This necessarily leads to frustration which together with low level of stress tolerance results in fooling around, negativism and later to behavioral disorders. Such children fail to express empathy, altruism and are unable to control their responses towards their surroundings.

Behavioral disorders, which affect academic achievements, behaviors and social relationships of students, require a specific educational approach. The ADHD syndrome may be corrected. Borová et al. (2000) found that physical activities have positive effect on students diagnosed with ADHD (hyperkinetic children with behavioral disorders), as these activities develop self-control and reduce impulsivity and their state gradually and significantly improves.

Movement and physical activity is beneficial for children not only in terms of their normal physical development, but also their social development (Durkáč & Chovanová, 2013). Through movement children may handle difficulties associated with hyperkinetic disorders. The most appropriate type of physical activity for prepubertal children is play. Play helps to develop mental maturity of children through acquisition of new knowledge. Play helps children learn to

direct their emotions and not to depend on their surroundings (Lenková, 2013). Children also learn to make contact with people working at schools and learn to accept authority of teachers and to follow their instructions. At the same time, children learn to form both friendly and work relationships, to live in a group of children, to act honestly using great volitional effort, logic, fantasy and enthusiasm and to follow rules and to acquire movement habits, which may be useful in life (Rovný & Zdeněk, 1982).

The aim of the monograph is to extend knowledge about the effect of physical activities on the treatment of hyperkinetic disorders in prepubertal children and to determine the popularity of various forms of physical activities and popularity of physical activities as such. We have formulated the following hypotheses:

H1: We hypothesize that popular forms of physical activities and popular physical activities that caught interest of students with behavioral disorders will lead to treatment of behavioral disorders in integrated students with ADHD.

H2: We hypothesize that Vanderbilt assessment scale and NICHQ scale are appropriate to be administered in conditions of Slovak schools and may assist teachers and parents in making their observations more objective.

We describe and justify the applied methods. Vanderbilt ADHD Diagnostic Teacher Assessment Scale is an assessment tool used by teachers to identify children suspected to suffer with ADHD (Wolraich et al., 2013). The scale items are understandable and the scale may be easily administered and scored.

We present results of an educational experiment based on the inclusion of children diagnosed with behavioral disorders and with ADHD in the educational process at elementary schools. We describe the potential of the experimental factor to integrate children with ADHD. Various exercises selected from different thematic units and from swimming and skiing courses were the experimental factor. The results have shown improvement in all categories of behavior and motor ability tests. Students showed improvement in mental, social and emotional domains. Physical activities that included manipulative, movement and preparatory sports games are an appropriate means of emotional exercise. Therefore, we assume that movement games and exercise, tennis movement games, nontraditional sports games, Dance Dance Revolution – StepMania, within the physically-oriented school breaks, yoga exercises, physical activities within interdisciplinary relations, seasonal activities as well as Olympic education and school-club physical activities may be an appropriate means of handling difficulties associated with hyperkinetic disorders in integrated children within the educational process (Chovanová, 2013, 2014; Chovanová & Lenková, 2013, 2014; Chovanová & Nemec, 2014; Chovanová & Ružbarská, 2014).

This knowledge has become a challenge for experts, educators in terms of finding ways of increasing the quality of the educational process and its outcomes. There is room for creative teachers within the thematic unit “Manipulative, movement and preparatory sports games”. Creative teachers carry out educational activities and proportionally incorporate all types of movement

games (jumping, chasing, hitting, etc.) and also games designed to develop motor abilities. Such teachers have children play games that use various types of sports equipment and nontraditional equipment and way of manipulation with such equipment and apply these games in undemaning manipulative games. In groups of integrated children, physical activities that include manipulative, movement and preparatory sports games are used to exert effect on children's motor skills and to correct behavioral disorders. These games implemented into the organizational structure of the daily schedule in accordance with the State Educational Program ISCED 1 increased self-control and reduced impulsivity in integrated students with ADHD in the school setting. Based on above mentioned findings, we may conclude that this issue is a major concern and needs to be dealt with at schools as well. Teachers feel positive about good groups of students in their classes and integrate less skilled students into student groups, and implicitly speak highly of the most talented children in order to emphasize model behavior in all aspects of the game (Nemec, 2013).