THE INTERACTION OF PHYSICAL ACTIVITY AND WELL-BEING OF CHILDREN IN THE EARLY SCHOOL AGE

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Abstract

The article highlights the interaction in areas of quality of life and different levels of physical activity in a week for children in early school age. Pupils who attended the survey were from primary schools in Slovak Republic with an average age of 10.04 years (n=494). They were divided into four groups according to the level of sport performance. Quality of life was observed through a modified questionnaire SQUALA and frequency of physical activity in a week in hours. Data are presented in descriptive characteristics (n, M, SD). Statistical significance of differences respectively relations are considered by nonparametric methods at level of significance (*p<0.05 **p<0.01 ***p<0.001). The frequency of physical activity in a week was observed in our sample of children in the early school age ranged depending on the level of sport performance. The results did not show significant differences in the level of quality of life between groups of children with various levels of sport performance. Differences are predominantly found in groups of occasional athletes. When comparing the quality of life in terms of importance and satisfaction we found in all groups of children in different level of sport performance some common features. Satisfaction predominate the importance in areas of psychosocial well-being, material well-being, leisure time, considering an appearance and property affairs. Higher importance than satisfaction is put by preschoolers in spiritual well-being and education. The number of interactions between quality of life and frequency of physical activity in a week is very low with mostly positive interactions. We found the highest number of positive interactions only for children who have a higher frequency of physical activity in a week.

Key Words: Physical activity, quality of life, early school age, level of sport performance, interaction

Introduction

Younger school age is relatively quiet period of life. The child grows slowly, the body proportions do not significantly change and increasing muscle strength. Children are relatively healthiest at this age. It highlights the individuality of each child and the diversity of children is increasingly evident. Child is able to abstract thinking, self-aware and original way to solve various tasks. At this age children are not negativistic, on the contrary, most want to work with adults. Younger school age is also a very large period of physical activity. The age period of 7-12 years (for some authors, age 6-10 y.) is considered by many experts as a period in which is created the reservoir of mental and physical strength of the individual. This period of younger school age can be described psychologically as the age of sober realism. Pupil wants to understand the outside world and the things in it. We can also influence by physical education positive but also negative on the mental and physical development of a person. Therefore it is important since the birth of the child purposefully support proper and timely physical and mental development of children. Also take care to have a good memory, to know the right to think and to be optimal physical fitness and enough power, backlash efforts to perform different tasks at work and in personal life during adolescence into adulthood (Thomas et al. 2005). The brain of child in preschool age is more than two times more active than the adult brain. There is a maturation of brain fibers, the changes in chemistry constitution and to develop the brain functions.

Physical and work activity as a result of improving brain functions becomes purposeful which is reflected also in the interests of children and their desire for sports activities. It becomes the greater importance from spontaneous playing to the games and activities with the rules and also mutual competition. It is working towards the achievement of a specific goal, to improve performance. Children in this period like natural activities, especially when they can run, jump and basis of their actions is a game. With respect to age children are physically and mentally prepared enough for the acquisition of physical, theoretical and practical skills of all kinds (Slížišťa, 2006). Increasing of body strength is reflected in the upward trend of the child to apply and improve their function. The younger student is characterized by extraordinarily physical activity, coupled with certain competitiveness. It cares about achieving the same performances - endurance, speed and precision of movements. His great physical activity is presented itself in a variety of physical games, exercise and sport performance. He locates in movement and it needs for its healthy development. If a child can not apply physical activities is usually undisciplined, restless, frolic and inattentive. We apply increasingly enforce collective games around the age of 10, which correspond not only to the relatively advanced motor skills of children of this age, but it is also the degree of their social and intellectual development. Psychologists have found that people dedicated to physical exercise regularly at least three times a week as compared to individuals who do not
perform any activities, are more satisfied with their lives. During physical activities certain substances such as endorphin (brings elation, a feeling of calm, pleasant feeling of relaxation, improves the quality of sleep and sexual desire and serotonin (fabric hormone affecting blood coagulation, which raises the temperature of the hypothalamus and stimulates the-bottom part of the midbrain) which act as desired "drug" enhancing a person's mood, are released in the body. Human body is shaped by regular physical activity physical fitness of a man improves, while creating the habit of correct body posture. Physical activity brings joy and enhances self-esteem of man. It is also an important means of disease prevention and stress relief. Especially air exercises work as active antidepressant because the body produces melatonin-an antidepressant hormone (Havranová, 2001). The school has since that time significant impact on the development of individual personality, self-esteem and childhood survival. Schoolchildren want to explore and understand the world as it really is. Physical education is a desirable supplement to the activities for which children in school accustomed. They are employing the muscle groups during mental work which remain in idle. Exercise has a positive influence not only for working muscles but also to neuro-psychological the activity. Systematic and adjusted gymnastic exercises to the age of children help to promote motor coordination, precision, ability to control unnecessary movements. This self-control is important not only for the intellectual development of children but also for development of its will and character. Healthy development of the school child is directly related to his lifestyle, which consists in an appropriate day schedule, in sufficient sleep and the average value of the food.

All this is important for the teaching activity that requires considerable mental strain, but also physical fitness. Researches which dealt with satisfaction and the quality of life of children in the early school years are in the last few years very extensive. A recent study Children's Worlds which were realized on more than 50,000 children aged 8-12 years from 15 countries all over the world. The study includes the views of children from rich countries such as Norway and the poor as Ethiopia. The survey was focused on finding out what experience and insight into their lives have children. The study interested in about key aspects of their daily lives such as family and family life, friendships, money, property, school life, the place where they live, spending of time, personal satisfaction, look on children's rights and their overall happiness. Countless outputs are summarized in documents Rees and Main (2015) and Dinisman & Rees (2014). A positive finding is that most of the surveyed children whether rich or poor was happy with their life. Children in northern European countries such as Great Britain, Germany, Norway, Poland and also South Korea are dissatisfied with their appearance and self-esteem. Between all countries were found significant differences how children spend their time.

E.g. children in Estonia spend much more time with homework than in South Korea and England. Children in Poland, Norway and Israel in turn most of his free time doing sports and exercise. We focus on children in early school age in our research. Similar research methods were applied to specific groups of adolescents, university students, adults and teachers. In the works by Brodáni (2012), Brodáni & Bradáčová (2012), Brodáni & Španíková (2013), Brodáni & Maťašová (2014), Brodáni & Žišková (2014), Gůlsah (2011), Dos Santos (2015), Pašková (2010) positive relationships between frequency of physical activity during the week and different spheres of quality of life were demonstrated in a group of adolescents, college students, kindergarten and primary schools teachers who realized physical activity 3-6 times a week. Physical activities with lower, respectively higher frequency in a week did not show significant relationships with different spheres of the quality of life. The aim of this paper was highlight the interaction between the individual quality of life and different levels of physical activity in a week at 4th grade students. As one of major factors that should affect the mentioned causality in relation to the results is also a level of sports performance. We dealt with questions: What is the level of physical activity in a week and the quality of life of children in the early school age? What are the differences between in individual areas of quality of life in terms of importance and satisfaction? What is the relationship between physical activity in a week and individual quality of life of children in the early school age?

Material & methods

A questionnaire survey was distributed among 494 respondents with different level of sport performance and quality of life to find out the frequency of physical activity in a week on different primary schools from Slovakia. The average age of the total group was 10,04 years with a standard deviation of 0,19. After the redistribution of the groups with level of sports performance were not found statistically significant differences in terms of age. (group A. M: 10,06, SD: 0,23; B. M: 10,02, SD: 0,13; C. M: 10,03, SD: 0,18). The research group was divided into three groups according to the subjective assessment of the level of sport performance: A) Occasional athletes-do not seek physical activity, attend mandatory sports activities, search for physical activity, unorganized physical activity; B) Active athletes-regularity in a week, no membership in sport organization; C) Registered athletes- the frequency of training, membership in sport organization, national and global level, top sportsmen. Modified questionnaire according to Dragomerická et al. (2006), Zannotti – Pringuey (1992) and Ocetková (2007) included selected parts from the SQUALA questionnaire. The parts of SQUALA questionnaire were evaluated from the point of view of different spheres as follows (Sýkorová & Blatný, 2008): 1st: sphere of physical well-being - health, sleep, solution of everyday activities, do not have problems;
2nd: sphere of psychosocial well-being - family, personal relationships, intimate relationships, hobbies, safety; 3rd: sphere of spiritual well-being - justice, freedom, beauty and art, truth; 4th: sphere of material well-being - money, good food; 5th: education - to be educated, to go to school; 6th: leisure time - possibility to spend your free time, have plenty of things for fun; 7th: appearance and ownership of things - look good, to dress nicely, have things that I like; 8th: orientation to the future - to have children and jobs in the future that will entertain me. The questionnaire is from 2 parts.

The first part defines spheres from objective aspect: "how it is important to you..." and the second from the subjective viewpoint: "how you are satisfied with...". Both items are assessed on a 5-point scale (1 very important; 2 important; 3 medium important; 4 unimportant; 5 completely unimportant) depending on the importance of each item for their life. In the second part concerning satisfaction the scales are: 1 very satisfied; 2 satisfied; 3 medium satisfied; 4 dissatisfied; 5 very dissatisfied. Satisfaction with the focus on the future of the monitored adolescents is not evaluated with respect to age. For the presentation of data, basic descriptive statistics (frequency N, arithmetical mean M, standard deviation SD) was used. Statistical significance of differences between importance and satisfaction in the quality of life of dependent groups we assessed by Wilcoxon test and differences of independent groups was assessed using Mann-Whitney U-test. For finding the interaction between criteria "frequency of physical activity in a week" and "areas of quality of life" Spearman’s correlation coefficient (r_s) was used. To assess the statistical significance of differences we used the level of significance p<0.05 and relations p<0.20. The data were processed in MS Excel and SPSS.

Results of Research and Discussion

Physical activity in a week is differentiated between the groups of adolescents with different level of sport performance (Table 1 and 2). The group of occasional athletes (A) have lower level of physical activity in a week than a group of active (B) and registered (C) athletes (p <0.01). The frequency of motor activity in the week in groups of registered athletes is the same (p> 0.05). Reported results are the same even after deduction of compulsory hours of physical education in a week. Children presenting occasional level of sport performance, participated in physical activities generally, on average, M: 5.125 SD: 3.132 hours in a week. Higher frequency of physical activity in a week, demonstrated the group of children who place a level of sport performance of activeathletes (M: 6,659 hours SD: 3.235) and registered athletes (M: 7,241 hours SD: 3.327). Quality of life in groups of children with different levels of sport performance is in terms of the majority of the quality of life largely unchanged. The differences found in the evaluation of importance and satisfaction of quality of life (Table 1 and 2).

| Table 1 | Statistical characteristic of physical activity in a week and the quality of life between groups of children with different level of sport performance. |
| Table 2 | Differences of physical activity in a week and the quality of life between groups of children with different levels of sport performance |

Occasional athletes (children) attach less importance to psychosocial area (p <0.05) and orientation for the future (p <0.01) than the group of active and registered athletes. Occasional athletes report lower satisfaction with psychosocial and spiritual well-being as a group of active and registered athletes. Group of occasional and active athletes present a higher satisfaction with the physical well-being as registered athletes (p <0.01). We find the same level of importance and satisfaction with quality of life in the remaining areas of the quality of life. Group of kids with different levels of sport performance attach equal importance to physical, spiritual and material well-being, level of education, leisure and appearance and property affairs. The same level of satisfaction is found in material well-being, education, leisure and appearance and property affairs. We do not evaluate satisfaction with a orientation on the future because of the low age of the children.
We can find common features among all groups with various levels of sport performance when comparing the individual areas of quality of life in terms of importance and satisfaction (Figure 1-3). Children in early school age report higher satisfaction than the importance in area of psychosocial well-being, physical well-being, leisure and appearance of the property and affairs ($p < 0.01$). Higher priority is attributed to the spiritual well-being ($p < 0.01$). Equanimity in evaluating the importance and satisfaction are in areas of physical well-being in occasional and active sportsmen. Registered athletes attach to a higher level of importance to physical well-being ($p < 0.05$).

The registered athletes is also found consensus on psychosocial well-being and education. Correlation analysis of physical activity in a week and subjective evaluation of satisfaction with individual quality of life highlighted the differentiated interactions in groups of children with different level of sport performance (tab. 3).

Figure 1 Occasional athletes: comparison of quality of life in terms of importance and satisfaction (d - diameter of averages; $p$ - value for the Wilcoxon test)

Figure 2 Active athletes: comparison of quality of life in terms of importance and satisfaction (d - diameter of averages; $p$ - value for the Wilcoxon test)

Figure 3 Registered athletes: comparison of quality of life in terms of importance and satisfaction (d - diameter of averages; $p$ - value for the Wilcoxon test)
Most relationships between the frequency of physical activity in a week and quality of life (in a positive or negative meaning) are found in children in groups of active and registered athletes. There were observed minimum significant relationships between physical activity and quality of life in a group of occasional athletes. Registered athletes demonstrate the positive interaction of physical activity with spiritual well-being (p < 0.01), leisure time (p < 0.01) and in occasional athletes in area of material well-being (p < 0.01). The negative interaction of physical activity in a week and spiritual well-being (justice, freedom, beauty, art, truth) was demonstrated in a group of active athletes. We have had no interactions between the physical activity with the field of physical well-being and area of education.

Table 3. Correlation of areas with quality of life in overall frequency of physical activity in a week in groups of children with different level of sport performance

<table>
<thead>
<tr>
<th>Sports performance</th>
<th>A Occasional</th>
<th>B Active</th>
<th>C Registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical well-being</td>
<td>-0.076</td>
<td>0.04</td>
<td>0.051</td>
</tr>
<tr>
<td>Psychosocial well-being</td>
<td>-0.106</td>
<td>0.222***</td>
<td>0.066</td>
</tr>
<tr>
<td>Spiritual well-being</td>
<td>0.051</td>
<td>-0.138***</td>
<td>0.262***</td>
</tr>
<tr>
<td>Material well-being</td>
<td>0.059</td>
<td>-0.156*</td>
<td>0.046</td>
</tr>
<tr>
<td>Education</td>
<td>0.029</td>
<td>0.004</td>
<td>0.049</td>
</tr>
<tr>
<td>Leisure time</td>
<td>0.077</td>
<td>0.163***</td>
<td>0.070</td>
</tr>
<tr>
<td>Appearance and Property affairs</td>
<td>0.041</td>
<td>0.061</td>
<td>0.014**</td>
</tr>
</tbody>
</table>

(ρ = Spearman correlation coefficient; p<0.10*; p<0.05**; p<0.01***)

Conclusions

We asked three research questions at the beginning of the study: What is the level of physical activity in a week and the quality of life of children in the early school age? What are the differences in individual quality of life in terms of importance and satisfaction? What is the relationship between physical activity in a week and individual quality of life of children in the early school age? The frequency of physical activity in a week was observed in group of children in a early school age ranged depending on the level of sport performance. Results did not show significant differences in the level of quality of life between groups of children with various levels of sport performance. Differences in physical activity and a certain quality of life is found only in a group of occasional athletes. When comparing importance and satisfaction we found in all children with various level of sport performance some common features. There prevails satisfaction with areas of psychosocial well-being, material well-being, leisure time, appearance a property affairs. Greater importance put preschoolers to spiritual well-being and education. The number of interactions between quality of life and frequency of physical activity in a week is very low mostly with positive interaction. The highest number of positive interactions was found only in children who are registered in sports federations (regularity, sports organization member or national level or top performance sport) and have a higher frequency of physical activity in a week. The study results have shown the importance of influencing the quality of life through increased physical activity in a week but mainly on the need for the creation of optimal conditions and possibilities for improving the quality of life in the social environment of preschool children.

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INTERAKCIJE TJELESNE AKTIVNOSTI I DOBROBITI DJECE U RANOJ ŠKOLSKOJ DOBI

Sažetak
U članku se naglašava interakcija u područjima kvalitete života i različitih razina tjelesne aktivnosti u jednu za djecu u ranoj školskoj dobi. Učenici koji su sudjelovali u anketi su iz osnovnih škola u Slovačkoj s prosječnom dobi od 10,04 godina (n = 494). Oni su bili podijeljeni u četiri skupine prema razini sportske angažiranosti. Kvaliteta života je promatrana kroz modificirani upitnik SQUALA i učestalosti tjelesne aktivnosti u satim u tjednu. Podaci su prikazani u opisima (n, m, SD). Statistička značajnost razlike neparametrijskim metodama, promatrani su na razini značajnosti (W, U: p <0,05, odnosno R p <0,10 * p <0,05 ** p <0,01 ***.). Učestalost tjelesne aktivnosti u tjedan dana zabilježena je u našem uzorku djece u ranoj školskoj dobi i kretala se ovisno o razini sportske performanse. Rezultati nisu pokazali značajne razlike u razini kvalitete života između skupine djece s različitim razinama sportske izvedbe. Razlike pretežno se nalaze u skupini povremenih sportaša. Uspoređujući kvalitetu života u smislu Važnost i zadovoljstvo u svim skupinama djece u različitoj razini sportske izvedbe pokazuju neke zajedničke značajke. Zadovoljstvo prevladava važnost u područjima psihosocijalne dobrobiti, materijalnog blagostanja, slobodnog vremena, s obzirom na izgled i imovinsko-pravne poslove. Ispred zadovoljstva Važnost se stavlja kod djece u duhovnom blagostanju i obrazovanju. Broj interakcija između kvalitete života i učestalosti tjelesne aktivnosti u tjedan dana je vrlo niska s uglavnom pozitivnim interakcijama. Pronašli smo najveći broj pozitivnih interakcija samo za djece koja imaju višu učestalost tjelesne aktivnosti u tjedan dana.