

MOTIVES FOR PHYSICAL ACTIVITY AMONG ADOLESCENTS IN THE CZECH AND SLOVAK REPUBLICS

Michal Kalman¹, Andrea Madarasová Gecková^{2,3}, Zdeněk Hamřík⁴, Jaroslava Kopčáková^{1,2}, Ronald J. Iannotti⁵, Zuzana Dankulincová Veselská²

¹Institute of Active Living, Faculty of Physical Culture, Palacký University Olomouc, Olomouc, Czech Republic

²Department of Health Psychology, Medical Faculty, P. J. Šafárik University in Košice, Košice, Slovak Republic

³Olomouc University Society Health Institute, Palacký University Olomouc, Olomouc, Czech Republic

⁴Department of Recreation and Leisure Studies, Faculty of Physical Culture, Palacký University Olomouc, Olomouc, Czech Republic

⁵College of Nursing and Health Sciences, Exercise and Health Sciences, University of Massachusetts Boston, Boston, USA

SUMMARY

Objectives: Physical activity significantly contributes to overall health and the level of activity during adolescence has been associated with physical activity in adulthood. The aim of this paper was to analyse motives for young people undertaking leisure time physical activity in the Czech and Slovak Republics.

Methods: Eleven to fifteen year old schoolchildren (N=9,014; mean age = 13.59) participating in the Health Behaviour in School-aged Children 2009/2010 study in the Czech and Slovak Republics completed 12 items measuring physical activity motivations. To analyse the factor structure of motives for physical activity, Confirmatory Factor Analysis (CFA) was conducted using Principal Component Analysis (PCA) with varimax rotation.

Results: Contrary to previous research that reported three main motives for physical activity (health, social, achievement), our study suggests four motives. The additional motive is a combination of internal and external motivations and was called the “Good Child Motive”.

Conclusions: Better understanding of motives behind physical activity or inactivity of young people could significantly contribute to evidence-based planning and development of national strategies for public health and active living.

Key words: motives, physical activity, adolescents

Address for correspondence: J. Kopčáková, Dept. of Health Psychology, Medical Faculty, Šafárik University in Košice, Tr. SNP 1, 040 11, Košice, Slovak Republic. E-mail: jaroslava.kopcakova@upjs.sk

INTRODUCTION

Levels of physical inactivity are rising in many countries with major implications for the general health of people worldwide and for the prevalence of non-communicable diseases such as cardiovascular disease, diabetes and cancer and their risk factors such as raised blood pressure, raised blood sugar, dislipidemia, and overweight (1). Despite all the psycho-social and health benefits of physical activity (PA), levels of physical activity are decreasing significantly among school-aged children (2, 3). Higher prevalence of psychological and physical complaints is associated with lower level of PA among adolescents (4). Four-fifths of adolescents do not meet public health guidelines for recommended levels of physical activity (5). The decline in physical activity is much greater for girls than for boys (6, 7). Czech and Slovak adolescents are facing the same problem (8), causing an economic burden on national healthcare and social systems.

Causes of physical inactivity are well-documented and effects of new technologies on physical activity are obvious (e.g. progress in transport, improvement of transport technology), whereas others are more subtle and complex (e.g. televisions,

computers, electronic entertainment, the internet, and wireless communication devices) (5).

At the same time, there are several motives and factors that influence whether or not adolescents participate in physical activity and exercise. To date, research has not explained why adolescent girls have higher physical activity attrition rates than boys (9). Friendship and competition are relatively important motives for boys, but they appear to be much less important for girls. In contrast, losing weight is a relatively common motive in girls but not in boys. Boys report intrinsic motives more often while girls report extrinsic motives. Health and enjoyment are frequently reported motives between both genders (10). Slater and Tiggemann (11) in their study questioned reasons for young people ceasing participation in sport and physical activity and generated a number of possibilities. The most common were: losing interest or becoming bored with a particular activity and lack of time. Other frequently given reasons included sports not being available, injury and practical issues (e.g. transport) (11). Kirshnit et al. (6) reported that young people quit sports because of conflict with other activities and because of negative and overly professionalized qualities of organized youth sports programmes.

Based on factor analysis, Wold and Kannas (12) suggested in their study three most appropriate motivational factors for sport – health, social and achievement. Motives are considerably different between boys and girls (10). In the Wold and Kannas (12) study, social motivation was more important for girls than for boys. Boys reported higher rates of achievement motivation (12). Another study showed that girls reported lower social and achievement motivation and higher health motivation than boys (13). Apart from gender and age there were also regional differences. Adolescents in the Eastern European countries reported lower health and social motivations and higher achievement motivation than adolescents in Western Europe or North America (13). Social motivation seems to be more important to girls and could be a mechanism for reducing differences in physical activity between boys and girls (14). Litt et al. (14) also suggest that increasing efforts to communicate the health benefits of physical activity may have positive effects on levels of physical activity in adolescents.

Contemporary Eastern European society is rapidly changing, especially in terms of physical activity and sedentary behaviour. The aim of this paper was to analyse motives for young people engaging in leisure time physical activity in the Czech and Slovak Republics. Based on previous research, it is hypothesized that there are three motivational factors (health, social and achievement) which vary by age and gender. One purpose of this study was to increase understanding of adolescents' motives and subsequently help policy makers to design more effective interventions promoting physical activity.

MATERIALS AND METHODS

Sample and Procedure

We used data from the Health Behaviour in School-aged Children (HBSC) study conducted from May to June 2010 in the Czech and Slovak Republics. Self-completion questionnaires were administered in school classrooms with requirements in terms of sampling, questionnaire items and survey administration established in a standardised research protocol. All of the questions used in the HBSC survey must have evidence of reliability and validity when used in multiple countries before they are considered for inclusion (15).

Czech Sample. From a list of schools based on information from the Institute for Information on Education, a contributory organization of the Ministry of Education, Youth and Sport, 91 schools from all 14 regions of the Czech Republic were randomly chosen to create a representative sample. We contacted 91 schools, and 86 schools took part in our survey, representing a 94.5% school response rate. According to the protocol of the HBSC study classes from the 5th to 9th grades were selected randomly, one from each grade per school. We obtained data from 5,284 adolescents from the 5th, 7th and 9th grade of elementary schools in the Czech Republic (response rate 87%). Non-response due to absence was 13% (786 pupils). The number of absences because of illness was not available. For the purpose of the paper, adolescents aged 11 years ($n=1,426$), 13 years ($n=1,456$) and 15 years ($n=1,522$) were analysed. The final sample consisted of 4,404 Czech pupils (48% boys).

Slovak Sample. From a list of schools based on information from the Slovak Institute of Information and Prognosis for Education, 134 larger and smaller schools located in rural as well as in urban areas from all regions of Slovakia were randomly chosen to create a representative sample. 108 schools were contacted, and 106 schools took part in our survey, representing a 98.1% school response rate. According to the protocol of the HBSC study classes from the 5th to 9th grades were selected randomly, one from each grade per school. We obtained data from 8,491 adolescents from the 5th to 9th grades of elementary schools in Slovakia (response rate 79.5%). Non-response was primarily due to illness (10.3%) and parental disapproval of the participation of their children (7.4%). For the purpose of this paper, adolescents aged 11 years ($n=1,256$), 13 years ($n=1,746$) and 15 years ($n=1,605$) were analysed. The final sample consisted of 4,614 Slovak pupils (48% boys).

The study was performed according to the ethical requirements formulated by the Agreement on Human Rights and Biomedicine (40/2000 Coll.). The study was approved by the Ethics Committee of the Faculty of Medicine at P. J. Šafárik University in Košice, Slovak Republic. Parents were informed about the study via school administration and could opt out if they wished. Participation in the study was fully voluntary and anonymous with no explicit incentives provided for participation. Questionnaires were administered by trained research assistants during regular class time with no teacher present.

Measures

Motives for physical activity were assessed using 13 items in the HBSC study examining why young people undertake leisure time physical activity (12). "Here is a list of reasons that some young people give for taking part in physical activity in their free time. For each reason please tick how important it is for you." with possible answers: very important; fairly important; or not important for the following reasons: 1 – to have fun; 2 – to be good at sport; 3 – to win; 4 – to make new friends; 5 – to improve my health; 6 – to see my friends; 7 – to get in good shape; 8 – to look good; 9 – I enjoy the feeling of using my body; 10 – to please my parents; 11 – to be cool; 12 – to control my weight; and 13 – it is exciting.

Demographic data (age, gender) were collected using single items validated in the Health Behaviour in School-aged Children (HBSC) surveys (16, 17).

Statistical Analysis

To analyse the factor structure of motives for physical activity, Confirmatory Factor Analysis (CFA) was conducted using Principal Component Analysis (PCA) with varimax rotation. Following identification of the final factor model, latent variables were created and used in the remaining analyses. To compare latent variables by age groups, one-way analysis of variance (ANOVA) and Scheffé post hoc tests were used to explore the differences between 11, 13 and 15 year old boys and girls in their motives for physical activity. To compare latent variables by gender, t-tests were used to explore the differences between boys and girls stratified by age groups in their motives for physical activity. All analyses were performed using SPSS version 18.0. The level for statistical significance was set at p less than 0.05 for all analyses.

RESULTS

Principal Component Analysis

Suitability of data for structure detection was determined using Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of sphericity. KMO value was 0.89 and Bartlett's test was statistically significant ($p < 0.001$), confirming suitability of data for Confirmatory Factor Analysis. Principal Component Analysis (PCA) with varimax rotation was used to examine the factor structure of Czech and Slovak versions of motives for physical activity. Table 1 presents loadings (item-component correlations) higher than 0.5 of motives for physical activity in the Czech and Slovak sample. Four significant factors with eigenvalues above 1 were identified and accounted for 55.94% of the total variance. Items 1, 6, 4, 11, and 13 loaded on component 1 which can be labelled as Social Motives. Items 7, 8 and 12 loaded on component 2 labelled as Health Motives. Component 3, labelled as Good Child Motives was loaded with items 5, 9 and 10. The final component 4 was loaded with items 2 and 3 and was labelled as Performance Motives. Items 2, 4, 5, 7, 8, 9 and 13 loaded also on other components but with the loadings not higher than 0.4.

Comparison of Motives for PA by Gender

Table 2 presents findings from t-tests separately for 11, 13 and 15 year olds. Among 11 year olds, significant differences were found between boys and girls only in Performance Motives. Performance Motives were more important among boys compared to girls among 11 year olds. Among 13 year olds, significant differences were found between boys and girls in Social Motives, Health Motives and Performance Motives. Social Motives and Health Motives were more important among girls in comparison to boys and Performance Motives were more important among boys in comparison to girls among 13 year olds. Among 15 year olds, significant differences were found between boys and girls in Social Motives, Health Motives and Performance Motives. Social Motives and Health Motives were more important among girls in comparison to boys and Performance Motives were more important among boys in comparison to girls among 15 year olds.

Comparison of Motives for PA by Age Groups

Table 3 presents findings from one-way analysis of variance (ANOVA) and Scheffé post hoc tests separately for boys and girls. Among boys significant differences were found between

Table 1. Principal component analysis with varimax rotation of motives for PA in Czech and Slovak sample ($N = 9,018$)

No. of items	Item	Component 1 Social motive	Component 2 Health motive	Component 3 Good child motive	Component 4 Performance motive
1	to have fun	0.73			
6	to see my friends	0.71			
11	to be cool	0.65			
4	to make new friends	0.59		0.40	
12	it is exciting	0.58			0.35
13	to control weight		0.75		
7	to get in a good shape		0.73		0.25
8	to look good	0.29	0.71		0.26
5	to improve my health		0.26	0.69	
10	to please my parents			0.67	
9	enjoy the feeling of using my body			0.59	0.29
3	to win				0.79
2	to be good at sport			0.31	0.73

Table 2. Differences between boys and girls in motives for physical activity for 11, 13 and 15 years old (Czech and Slovak Republics, 2010)

Motives	11 years					13 years					15 years				
	Boys (n = 1,206)		Girls (n = 1,255)		p*	Boys (n = 1,405)		Girls (n = 1,612)		P*	Boys (n = 1,492)		Girls (n = 1,526)		p*
	Mean	SD	Mean	SD		Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Social motive	4.90	1.05	4.85	1.09	0.23	4.92	0.99	5.13	0.96	0.001	5.00	0.99	5.14	0.94	0.001
Health motive	4.88	0.99	4.86	1.03	0.61	4.97	0.97	5.13	0.99	0.001	4.90	0.99	5.20	0.99	0.001
Good child motive	5.42	0.92	5.38	0.97	0.21	5.01	1.00	4.97	0.97	0.17	4.67	1.00	4.72	0.97	0.001
Performance motive	5.20	0.98	4.76	0.91	0.001	5.33	1.02	4.73	0.93	0.001	5.35	0.99	4.68	0.91	0.001

*p values for t-tests comparing boys and girls

Table 3. Difference between age groups within boys and girls in motives for physical activity with one-way analysis of variance (ANOVA), resulting p-values and Scheffé Post Hoc test (Czech and Slovak Republics, 2010)

Motives	Boys							p-value	Scheffé test
	11 years (n = 1,255)		13 years (n = 1,612)		15 years (n = 1,526)				
	Mean	SD	Mean	SD	Mean	SD			
Social motive	4.90	1.05	4.92	0.99	5.00	0.99	<0.05	1-3*	
Health motive	4.88	0.99	4.96	0.97	4.90	0.99	0.10	-	
Good child motive	5.42	0.92	5.01	1.00	4.66	1.00	<0.001	1-2, 1-3, 2-3***	
Performance motive	5.20	0.98	5.33	1.02	5.35	0.99	<0.001	1-2, 1-3***	
Motives	Girls							p-value	Scheffé test
	11 years (n = 1,206)		13 years (n = 1,405)		15 years (n = 1,492)				
	Mean	SD	Mean	SD	Mean	SD			
Social motive	4.85	1.09	5.13	0.93	5.13	0.94	<0.001	1-2, 1-3***	
Health motive	4.86	1.03	5.13	0.99	5.20	0.99	<0.001	1-2, 1-3***	
Good child motive	5.38	0.87	4.96	0.97	4.72	0.97	<0.001	1-2, 1-3, 2-3***	
Performance motives	4.76	0.91	4.73	0.93	4.68	0.91	<0.05	-	

***p<0.001, *p<0.05

age groups in Good Child Motives and Performance Motives. In Good Child Motives, significant differences were found between all three age groups with importance of Good Child Motives decreasing with higher age. In Performance Motives significant differences were found only between adolescent boys 11 and 13 year old and 11 and 15 year old, with importance of Performance Motives increasing with higher age. Among girls significant differences were found between age groups in Social Motives, Good Child Motives and Performance Motives. In Social Motives and Health Motives, significant differences were found only between adolescent girls 11 and 13 year old and 11 and 15 year old with importance of Social Motives and Health Motives increasing with higher age. In Good Child Motives, significant differences were found between all three age groups with importance of Good Child Motives decreasing with higher age.

DISCUSSION

The aim of this paper was to analyse motives for young people in the Czech and Slovak Republics engaging in leisure time physical activity. Based on results of factor analysis, a 4-factor model was determined as the most appropriate way of presenting data. In previous research using the same motivation questions, only a 3-factor model was reported (health factor, social factor and achievement factor) (12–14).

A fourth factor, in our case component 3, was loaded with items from health and achievement motives (“improve my health” 0.69, “please my parents” 0.67, “enjoy the feeling of using my body” 0.59), hence it was a combination of internal and external motivations. This factor was called “Good Child Motive” and its importance was significantly different across all three age groups and decreased with higher age.

In the study by Iannotti et al. (13), the item “I enjoy the feeling of using my body” was loaded equally on all motives with factor

loadings below 0.50 and was not used in subsequent analyses. In other research (12), this item loaded on Health Motive. As Table 1 illustrates, the item “I enjoy the feeling of using my body” loaded on Good Child Motive. Good Child Motive decreased with age, which is consistent with previous findings; therefore, family public health programmes should focus on younger school-aged children.

As the children age, peer pressure increases and the Social Motive is strengthened. Girls in particular appear to be more influenced by social motives. Making physical activity enjoyable for girls by increasing the choices and offering a wide range of non-competitive and innovative activities should be a high priority (18). Consistent with this recommendation, girls-only physical education class or after-school dance programme are suggested as an ineffective interventions in Camacho-Minano’s systematic review (18). Social motivation may be one way to reduce differences in the level of physical activity between girls and boys (14).

In line with other studies (12–14), we found that achievement is more important for boys and also increases with age. It is important to note that this study was conducted on samples from post-communist European countries where adolescents have reported lower Health and Social Motives and higher Achievement Motives than adolescents in Western Europe or North America (13). As the Czech and Slovak Republics adopt European strategies and laws, we expect that Achievement Motive will gradually lose its importance and Health Motives will strengthen.

Despite increasing recognition of the benefits of physical activity and despite awareness of global European strategies and guidelines, a large proportion of the world’s population remains physically inactive (19–24). However, better understanding of motives for being physically active or inactive could significantly contribute to evidence-based planning and development of national strategies for public health and active living.

Considering Self-determination Theory (25), it would be interesting to examine whether adolescents who reported that

external motivations for physical activity were important would have lower levels of physical activity and whether adolescents who reported that internal motivations for physical activity were important would have higher levels of physical activity.

It is important to consider the limitations and strengths of this study. An important strength is that we collected relevant data from nationally-representative samples of adolescents from two countries from age groups relevant for establishing health-related behaviour. A limitation of our study is that the results are based on self-reported data. However, self-reporting has been shown to offer satisfactory reliability in terms of health-related behaviour. Moreover, personal motivations are usually based on self-reporting and the items used to assess physical activity have been shown to have reasonable reliability and validity (26). The questionnaires were filled in anonymously and with assurances of confidentiality. The main limitation, however, is the cross-sectional design of our study, which makes impossible to formulate conclusive statements about causality in our findings. These findings therefore need to be confirmed in studies with a longitudinal design.

CONCLUSION

In contrast with previous research that has reported three main motives for physical activity (health, social, and achievement), our study suggests four motives. The new motive is called the Good Child Motive. As the Post-communist countries are quickly adopting American and Western European life styles we can expect that the importance of motives for physical activity could change in the future.

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Ethical Recommendations

Ethical recommendations regarding data protection were followed.

Conflict of Interest

None declared

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