

PERCEIVED BARRIERS TO PHYSICAL ACTIVITY AMONG MACEDONIAN ADOLESCENTS

UDC: 796.012.6-053.6(497.7)

(Original scientific paper)

Ruzdija Kalac, Seryozha Gontarev, Lence A. Velickovska

Ss. Cyril and Methodius University, Faculty of Physical Education, Sport and Health, Skopje, Macedonia

Abstract

Many researches which were published in other countries identified certain benefits and barriers to physical activity among young people. But there is no data about the subject pertaining to Macedonian adolescents. This study tries to rectify this with a study of Macedonian adolescents. The research was realized on a sample of 847 adolescents of Macedonian nationality. Current exercise habits and perceived barriers to physical activity were assessed in the sample. Using a Likert Type scale, participants responded an instrument with 18 items representing barriers to physical activity. Adolescents who perceive less barriers have higher levels of physical activity. The most often reasons for their physical inactivity according to the respondents are: too many responsibilities at school, lack of time, too busy, parents who believe that learning is more important than exercising, lack of motivation and interest. The results should be taken into consideration when making strategies and educational programs to promote physical activity among young people.

Key Words: *Perceived barriers, exercise, Macedonian adolescents.*

Introduction

The world is facing a new epidemic - an epidemic of inactivity. Man was created for movement, walking and physical activity. Historically, physical abilities were a condition of surviving and the survival of the individual, family and society. Today we have a strong tendency in the opposite direction. Most men and women in industrialized countries lead a sedentary life or only occasionally are active. The technical innovations facilitated the life of man, lifting the living standards on a higher level, providing a fairly free time, but on the other hand pushed the rhythm of life and work too fast, loaded nerves and took the man away from the very important life activities and from the physical engaging of his body.

The health consequences from this development are enormous. Physical inactivity increases the risk of many diseases, such as coronary heart disease, strokes, high blood pressure, diabetes, colon cancer, and possibly breast cancer, osteoporosis and further the connected fractures of the disease (Jones et al, 1998; Vuori, 1995). Furthermore, physical inactivity contributes to reduce physical and functional abilities among young people and middle aged and increases the risk of diminishing independence later. Physical inactivity is one of the leading causes of illness and reduction of quality of life, and with the increase of inactivity the risks are continuing to grow.

The period of adolescence is defined as the period between childhood and adulthood, characterized by dynamic physical development and significant changes in the cognitive, emotional and social development. In this period are formed the lasting habits for occupation with physical exercise (Andersen and Haraldsdottir 1993; Engström, 1986). Unfortunately, recent researches indicate that the level of physical activity constantly decreases during the adolescent years (Kann et al., 2000; Trost et al., 2002). Physical activity is a complex behavior which affects on many internal and external factors, such as socio-cultural, psychological, cognitive, physical and social environment surrounding the individual. (Dishman, 1994).

There are two cognitive variables that can determine the level of physical activity: perceived barriers and perceived benefits. Perceived benefits have positive influence, while perceived barriers have negative influence on the level of physical activity (Buckworth and Dishman 1999). These barriers have been classified in different ways. In recent years, examination of perceived physical activity barriers was

considered important to contribute to physical inactivity in samples of adolescents. Many studies which were completed in some countries evaluated perceived benefits and barriers to physical activity among young people (Brown, 2005; Cheng et al., 2003; Grubbs and Carter, 2002; Gyurcsik et al., 2004; Kenneth et al., 1999; 2005; Winters et al., 2003). But there are no existing about the subject in Macedonian adolescents. The purpose of this study was to analyze perceived barriers to physical activity in the Macedonian adolescents.

Methods

The research is realized on a sample of 847 respondents. The population from which the sample is drawn is defined as high school population from Skopje. The sample is defined as a group sample. The sample is divided into two sub-samples, 407 male respondents (students) and 440 female respondents (students). The age of the sample is defined as chronological age from 15 to 18 years (students from first to fourth year in high school).

For assessing in which stage of motivational readiness for change of the physical activity habits is the respondent, it is applied the instrument constructed by Marcus and colleagues (Marcus et. al., 1992), under the name of Stages of Exercise Behavior Change (SEBC) scale. The instrument is based on Trans-theoretical model and it classifies the respondents into five (5) categories according to whether they practice, how long they practice or intend to practice physical activity. Reliability of the instrument checked with test-retest method in the previous studies was ranging .78-.85 ($K = .78-.85$). The validity of the instrument was determined in comparison of direct measurements of physical activity with an accelerometer, compared with other tools for assessment of physical activity on the basis of maximum oxygen consumption VO_2 and it was satisfying (Cardinal, 1995; Marcus, Simkin, 1994, 1997; Wyse 1995).

Perceived Barriers. Perceived barriers were measured using a 18-item scale which listed reasons why some people do not do physical activity. For example, 'I don't have enough time', 'I am not interested in physical activity' or 'I don't have the right equipment'. Adolescent were asked to say how true each reason was for them (very true/quite true/not very true/not at all true). A mean perceived barriers score, ranging from 1-5, was computed by averaging responses to the items (Sallis et. al. 1989; Cheng et. al. 2003; Kenneth et al. 2005).

Statistical analysis

The differences in the level of motivation readiness for change of the physical activity habits (classification according TTM) among respondents male and female is determined with Mann-Whitney U test. Gender differences in Perceived barriers scale were analyzed by one-way analysis of variance (ANOVA).

All the analyses were performed using the Statistical Package for Social Sciences software (SPSS, v. 20.0 for Windows; SPSS Inc., Chicago, IL, USA), and values of $p < 0.05$ were considered statistically significant.

Results

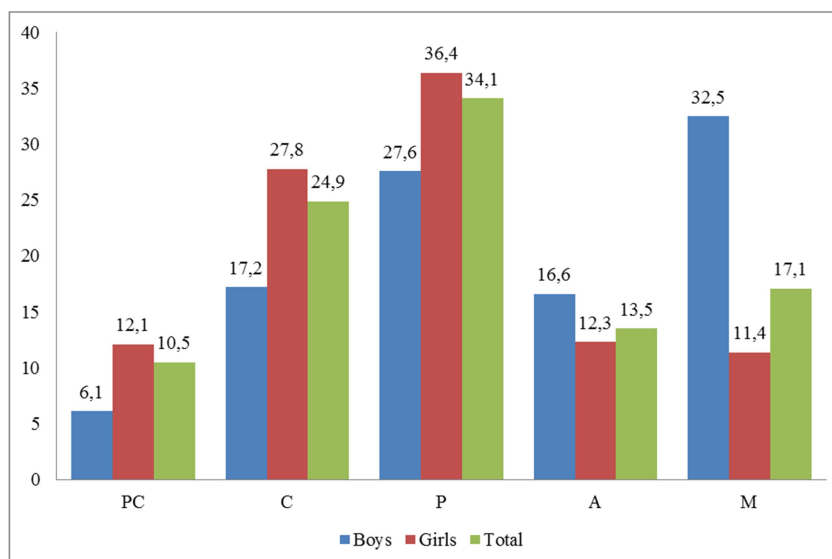
Graph 1 shows the classification of the respondents in five (5) categories according to their motivational readiness for change of the physical activity habits. From the review of the graph it can be seen that 10.5% of the respondents are in phase of contemplation (respondents who are not physically active and do not think about the need for physical activity), 24.9% of respondents are in phase of consideration (respondents who are not physically active but think about the need for physical activity), 34.1% of respondents who are in the phase of preparedness (respondents who are occasionally physically active or immediately ready to start regular physical activity), 13.5% of respondents who are in the phase of action (respondents who are physically active for less than 6 months), 17.1% of respondents who are in the phase of maintenance (respondents who are physically active for more than 6 months).

In order to determine whether there are differences in the level of the motivational readiness for habits change for physical activity (classification according TTM) among students it is applied the Mann-Whitney U test.

On the basis of the obtained results (Table 1) it can be seen that there are statistically significant differences in the level of the motivational readiness for change of physical activity habits among male

and female respondents. The average rank value indicates that male respondents have higher level of the physical activity (most of the students have regular physical activity), unlike the female respondents.

Table 2 shows the results of the applied univariant analysis of variance by which are determined intergroup differences in items of the scale for assessing perceived barriers. From the review of the table it can be seen that statistically significant univariant intergroup differences are determined in most items of the scale for assessing perceived barriers. The values of the arithmetic means and the level of statistical significance may be noted that male respondents show lower values in most items of the scale for assessing perceived barriers. Statistically significant differences were not determined in the items "Exercise is hard and tiresome" and "My parents, who believe that learning is more important than exercise."



Graph 1. Classification of the respondents into five (5) categories according to their motivational readiness for change of physical activity habits

Table 2. Exercise barriers items.

	Total		Boys		Girls		F	Sig.
	Mean	SD	Mean	SD	Mean	SD		
Lack of motivation and interest in physical activity	2,61	1,16	2,39	1,16	2,69	1,15	8,20	,00
Lack of energy	2,59	1,05	2,33	1,08	2,69	1,02	14,92	,00
I am not a sports type	2,21	1,34	1,73	1,15	2,39	1,36	29,70	,00
I have no company with whom to practice	2,25	1,17	2,01	1,14	2,33	1,17	9,04	,00
Too many responsibilities at school	3,20	1,29	2,74	1,37	3,38	1,22	29,90	,00
I do not enjoy doing exercise and sport	1,81	1,11	1,52	0,97	1,92	1,15	14,92	,00
I know I will not succeed in the workout, that is why I do not start	1,59	0,99	1,40	0,79	1,66	1,05	8,02	,01
Lack of knowledge of what and how to practice	1,75	1,01	1,59	0,91	1,80	1,04	5,35	,02
Exercising is hard and tiresome	2,03	1,09	1,94	1,11	2,07	1,09	1,73	,19
Lack of skills and abilities	1,86	0,99	1,71	1,01	1,92	0,98	5,26	,02
Physical activity is boring	1,59	0,93	1,43	0,84	1,64	0,95	6,10	,01
Lack of sports equipment	2,02	1,18	1,73	1,01	2,12	1,22	13,53	,00
My friends do not want to practice	2,20	1,15	1,81	0,95	2,34	1,19	26,06	,00
Too often I am tired to workout	2,53	1,21	2,14	1,12	2,68	1,20	25,60	,00
Lack of suitable place where I can practice	2,27	1,18	2,02	1,15	2,36	1,18	9,73	,00
My parents who believe that studying is more important than exercising	2,26	1,31	2,42	1,33	2,20	1,30	3,59	,06
Too often I am busy	3,03	1,22	2,66	1,26	3,17	1,18	21,21	,00
Health problems	2,91	1,23	2,55	1,26	3,05	1,19	19,74	,00
Internal barriers	2,09	0,74	1,84	0,69	2,18	0,74	26,16	,00
External barriers	2,43	0,71	2,17	0,69	2,52	0,69	30,54	,00

Table 2. Differences of the level of physical activity (classification TTM) among students

Grupa	Mean Rank	Mann-Whitney U	Wilcoxon W	Z	Q
Male	388,57	31967,00	128547,00	-6,29	0,00
Female	292,82				

Discussion

The research results provide preliminary information for the motivational readiness for the physical activity habits change and perceived barriers among adolescents of Macedonian nationality. Analyzing the received information and comparing them with similar international researches, it can be concluded that 30.6% of the respondents have regular physical activity (respondents in the action and maintenance phase), 33.7% of the respondents exercise periodically (respondents in the readiness phase) and 34.7% of the respondents do not exercise in their free time (respondents in contemplation and consideration phase). From the information analysis it can be seen that a large percentage (70%) of young people at the age of 15 to 18 years do not have regular (recommended) physical activity, and this is especially expressed among women. In a research of Kearny and the collaborators (Kearny et al. 1999), who researched on respondents at the age of 15 to 24 years in 15 member states of the European Union, found that around 30% of young people from EU countries do not have physical activity, 22% of the respondents have periodical physical activity and 46% of the respondents have regular physical activity (respondents in the action and maintenance phase). Ilse and the collaborators (De Bourdeaudhuij et al. 2005), researched the physical activity among adolescents in Belgium and found that 28% of the respondents do not have physical activity (respondents in the contemplation and consideration phase), 21% of the respondents have periodical physical activity and 51% of the adolescents in Belgium have regular physical activity (respondents in the action and maintenance phase). Gustavo and Maria (Gustavo de Sá e Souza, Maria de Fátima da Silva Duarte, 2005), researched the physical activity among Brazilian adolescents at the age of 14 to 19 years, respondents extracted from 29 private schools. The researched results showed that 26.2% of the respondents have no physical activity, 35.4% of the respondents have periodical physical activity and 38.3% of the respondents have regular physical activity. Nigg and Courneya (Nigg and Courneya, 1998) researched the physical activity among Canadian adolescents at the age of 13 to 19 years. The researched results showed that 6.2% of the respondents were in the contemplation and consideration phase, 28.7% of the respondents were in the readiness phase and 65% of the respondents had regular physical activity (respondents in the action and maintenance phase). Thrope and the collaborators (Thrope et al., 2006), have researched the level of the physical activity among Australian adolescents at the age of 11 to 18 years. The researched results showed that 30% of the respondents have no physical activity, 23% of the respondents were in the readiness phase and 46% of the respondents have regular physical activity (respondents in the action and maintenance phase). From the comparative analysis it can be seen that our young people have the lowest levels of physical activity (the lowest percentage of our young people have recommended physical activity) compared to the young people in other countries in which similar researches were realized.

The transition from 15 to 16 years among students of both genders have a major reduction in physical activity, which in female students continues to decrease slightly up to 18 years, while among students after 16 years it slightly increases. This is confirmed in research of Salis and the collaborators, Brodersen and the collaborators (Sallis et al., 2000; Brodersen et al., 2007), and as a reason they state the biological basis and possibly the mechanism of dopamine system that regulates the motion motive.

The degree of perceived barriers is in negative relation with physical activity among students of both genders. This is confirmed in researches of Stucky, DiLorenzo, Tappe, Duda, Menges, Zakarian (Stucky-Ropp and DiLorenzo 1993; Tappe, Duda, Menges-Ehrwald 1990; Zakarian et al. 1994). The dominant barrier among students of both genders is the lack of time which is confirmed in many previous researches (Allison et al. 1999; Grubbs, et al. 2002; Gyurcsik et al., 2004).

As the 5 most common reasons for physical inactivity, female respondents indicate: too many responsibilities at school, lack of time, too busy, lack of energy and lack of motivation and interest. Analyzing the individual subscales may be noted that the dominant barriers among female students are lack of time (external barrier), lack of energy and lack of social support. Male respondents as 5 most

common reasons of physical inactivity emphasize: too many responsibilities at school, lack of time, too busy, parents who believe that studying is more important than exercise, lack of motivation and interest. Analyzing the individual subscales it can be seen that the dominant barriers among male respondents are lack of time (external barrier), lack of energy and lack of social support. Among respondents who are in the contemplation phase dominate more internal barriers such as "I'm not sports type", "I'm tired too often", "lack of motivation and interest", while respondents who are in maintenance phase dominate more external barriers such as lack of time and parents support.

Considering the obtained results, current researches and expert literature analysis can give some recommendations in which directions should move the interventions, strategies and educational programs designed to increase physical activity among young people. As the most common barrier that respondents emphasize and can influence the physical activity is lack of time and energy. If the lack of time is a barrier, the respondents should be explained to divide the physical activity into several sessions of 10 minutes (example: respondent can exercise 10 minutes before going to school, 10 minutes after school and 10 minutes before bedtime). Also, the respondent should learn the skills for effective time management. Respondent may take the time that spends on the computer or watching TV instead of going to the coffee with friends, can go to a fitness center or gym and also have good time. Although it should be explained to the individual that exactly the physical activity will help to increase energy levels.

Problems at school, too many responsibilities at school (periods when there is too much for studying, writing, etc.) can be a factor that can lead to discontinuity in physical activity. Respondent should be educated when there is a lot to learn, to take some time for physical activity that will refresh and help later easily and successfully to study the material and do better the work tasks. Stressful life may contribute the decrease of physical activity and therefore it is very important to educate the students that physical activity is particularly important during stressful situations because it can help in relieving the stress and increase energy levels.

The researched results indicate that educational program and strategies should be aimed at increasing the self-efficacy, confidence in their abilities, increase the level of perceived benefits to physical activity, decrease the barriers, increase social support from loved ones in the environment (parents and peers) as well as to offer the young people the activities that will choose and enjoy themselves. It is also necessary to provide safe and attractive places, green spaces and sports facilities where they can play sports and recreate. Emphasis on educational programs to promote the physical activity should be put in early adolescence, before 15 years.

There are more ways (channels) that can carry out the strategies and educational programs to promote physical activity among young people. It can be carried out by the method „face to face“ (direct education), the use of printed material (manuals, brochures, flyers, billboards, etc.), multimedia material (CD or DVD), the use of means of mass media (TV, radio, newspapers), and the use of internet through which you can easily reach out to young people, because a large percentage of them use it.

They can use different approaches: individual work, group work, workshops, conferences and so on. Chief promoter of the educational programs and strategies should be the school, but also it should include more governmental organizations, family and local government and state wide media campaign. Changes in the school should be directed to changing the curriculum which should include contents for physical activity and its significance, including new forms of physical activity in the curriculum, improvement of material base (buildings, exercise equipment, etc.).

Although the trans-theoretical model has been addressed with some criticism, however, it represents one of the few most important attempts for operationalization of various strategies to change physical activity and other health behaviors. Those results indicate that the trans-theoretical model is applicable to different types of behavior and different populations that suggests the possibility of a high degree of generalization.

Conclusion

Most items of the scale for assessing the perceived barriers more or less affect the level of motivational readiness for physical activity habits change among adolescents. Adolescents who perceived less barriers have higher levels of physical activity. The most common reason for physical inactivity adolescents emphasize: too many responsibilities at school, lack of time, too busy, parents who believe that studying is more important than exercise, lack of motivation and interest.

The researched results indicate that the trans-theoretical model that unites many theories is applicable and can be used in prediction, control and behavior change (change of physical activity) among high school population. The results should be taken into account when developing strategies and educational programs to promote physical activity among young people.

Reference

- Jones, D.A., Ainsworth, B.E. and Croft, J.B. (1998) Moderate leisure-time activity: who is meeting the public health recommendations? A national crosssectional study. *Archives of Family Medicine* 7(May/ June), 285-289
- Vuori, I. (1995) Exercise and physical health: Musculoskeletal health and functional capabilities. *Research Quarterly for Exercise and Sport* 66, 276-285.
- Andersen, L. B., & Haraldsdóttir, J. (1993). Tracking of cardiovascular disease risk factors including maximal oxygen uptake and physical activity from late teenage to adulthood An 8-year follow-up study. *Journal of internal medicine*, 234(3), 309-315.
- Kann, L., Kinchen, S.A., Williams, B.I., Ross, J.G., Lowry, R., Grunbaum, J.A. and Kolbe, L.J. (2000) Youth risk behavior surveillance: United States, 1999. Morbidity and mortality weekly report. CDC surveillance summaries / Centers for Disease Control 49(5), 1-32.
- Trost, S.G., Pate, R.R., Sallis, J.F., Freedson, P.S., Taylor, W.C., Dowda, M. and S Irard, J. (2002) Age and gender differences in objectively measured physical activity in youth. *Medicine Science & Sports Exercise* 34, 350-5.
- Dishman, R.K. (1994) Advances in exercise adherence. Champaign, IL: Human Kinetics.
- Buckworth, J. and Dishman, R.K. (1999) Determinants of physical activity; research to application. In: Lifestyle medicine. Eds: Rippe, J. and Malden, M.A. Williston Blackwell Science. 1016-1027.
- Brown, S.A. (2005) Measuring perceived benefits and perceived barriers for physical activity. *American Journal of Health Behavior* 29(2), 107-116.
- Cheng, K.Y., Cheng, P.G., Mak, K.T., Wong, S.H., Wong, Y.K. and Yeung, E.W. (2003) Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. *Journal of Sports Medicine Physical Fitness* 43, 523-529
- Grubbs, L. and Carter, J. (2002) The relationship of perceived benefits and barriers to reported exercise behaviors. *Family & Community Health* 25(2), 76-84.
- Gyurcsik, N.C., Bray, S.R. and Brittain, D.R. (2004) Coping with barriers to vigorous physical activity during transition to university. *Family & Community Health* 27(2), 130-142.
- Kenneth, R.A., Dwyer, J.M. and Makin, S. (1999) Perceived barriers to physical activity among high school students. *Preventive Medicine* 28, 608-615.
- Winters, E.R., Petosa, R.L. and Charlton, T.E. (2003) Using cognitive theory to explain discretionary, "leisure time" physical exercise among high school students. *Journal of Adolescent Health* 32, 436-42
- Marcus, B.H., Selby, V.C., Niaura, R.S., & Rossi, J.S. (1992). Self-efficacy and the stages of exercise behavior change. *Research Quarterly for Exercise and Sport*, 63, 60-66
- Cardinal, B.J. (1995). Behavioral and biometric comparisons of the preparation, action, and maintenance stages for exercise. *Research, Theory, and Practice*, 11, 36-43.
- Marcus, B.H., & Simkin, L.R. (1994). The trans theoretical model: Applications to exercise behavior. *Medicine and Science in Sport and Exercise*, 26, 1400-1404.
- Wyse, J., Mercer, T., Ashford, B., Buxton, K., & Gleeson, N. (1995). Evidence for the validity and utility of the stages of exercise behavior change scale in young adults. *Health Education Research*, 10, 365-377
- Sallis, J.F., Hovell, M.F., Hofstetter, C.R., et al. (1989). A multivariate study of determinants of vigorous exercise in a community sample. *Preventive Medicine*, 18, 20-34
- Cheng, K.Y., Cheng, P.G., Mak, K.T., Wong, S.H., Wong, Y.K. and Yeung, E.W. (2003). Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. *Journal of Sports Medicine Physical Fitness*, 43, 523-529.
- Kenneth, R.A., Dwyer, J.M., Goldenberg, E., Fein, A., Yoshida, K.K. and Boutilier, M. (2005). Male adolescents' reasons for participating in physical activity, barriers to participation and suggestions for increasing participation. *Adolescence*, 40, 155-170.
- Kearney, J.M., Graaf, C., Damkjaer, S., Engstrom L.M. (1999). Stages of change towards physical activity in a nationally representative sample in the European Union. *Public Health Nutrition*, 2(1a), 115-124
- De Bourdeaudhuij, I.D., Teixeira, P.J., Cardon, G., Deforche, B. (2005). Environmental and psychosocial correlates of physical activity in Portuguese and Belgian adults. *Public Health Nut*, 8(7), 886-95.
- Gustavo de Sá e Souza; Maria de Fátima da Silva Duarte. (2005). Behavior change stages related to physical activity in adolescents. *Sociedade Brasileira de Medicina do Exercício e do Esporte* 11(2). 104-108.
- Nigg, C.R., & Courneya, K.S. (1998). Transtheoretical model: Examining adolescent exercise behavior. *Journal of Adolescent Health*, 22, 214-224.
- Thorpe, K., Dowson, M., Martin, A.J., Craven, R.G., Richards, G.E., Marsh, H.W., Williams, M.R., Parker, P.D. (2006). *Effects of Year of Schooling, Gender, and Self-efficacy on High School Students Participation in Physical Activity: Social and Educational Implications* SELF Research Centre, University of Western Sydney, Australia.
- Brodersen, N., Steptoe, A., Boniface, D., Wardle, J. (2007). Trends in physical activity and sedentary behaviour adolescence: ethnic and socioeconomic differences. *British Journal of Sports Medicine*, (41), 140-144.
- Sallis, J.F., Prochaska, J.J., & Taylor, W.C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports & Exercise*, (32), 963-975.
- Stucky - Ropp, R.C., Di Lorenzo, T.M. (1993). Determinants of exercise in children. *Preventive Medicine*, (22), 880-889.

- Tappe, M.K., Duda, J.L., Menges-Ehrnwald, P. (1990). Personal investment predictors of adolescent motivation orientation toward exercise. *Canadian Journal of Sport Sciences*, 15, 185–192.
- Zakarian, J.M., Hovell, M. F., Hofstetter, C.R., Sallis, J.F., & Keating, K.J. (1994). Correlates of vigorous exercise in a predominantly low socio-economic status and minority high school population. *Preventive Medicine*, 23(3), 31.
- Allison, K.R., Dwyer, J.M., & Makin, S. (1999). Self-efficacy and participation in vigorous physical activity by high school students. *Health Education & Behavior*, 26(1), 12-24.
- Gyurcsik, N.C., Bray, S.R. and Britain, D.R. (2004) Coping with barriers to vigorous physical activity during transition to university. *Family & Community Health* 27(2), 130-142
- Grubbs, L. and Carter, J. (2002) The relationship of perceived benefits and barriers to reported exercise behaviors. *Family & Community Health* 25(2), 76-84

Corresponding Author

Seryozha Gontarev

Faculty of Physical Education, Sport and Health

Skopje,

Macedonia,

E-mail: gontarevserjoza@gmail.com

Copyright of Research in Physical Education, Sport & Health is the property of Research in Physical Education, Sport & Health and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.