

PERCEIVED EXERCISE BENEFITS AND BARRIERS OF NON-EXERCISING IN ADOLESCENT FEMALE IN THE MACEDONIA

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(Original scientific paper)

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Abstract

We used the Exercise Benefits/Barriers Scale to assess perceived benefit and barrier intensities to exercise in 389 non-exercising adolescent female (mean age 16.5 years, SD = 1.1) in Macedonia. Although the sample of respondents consisted of adolescent females who have not been recommended physical activity, the results showed that there are more perceived benefits ($M = 4.01$, $SD = 0.41$) compared to barriers ($M = 2.35$, $SD = 0.61$) to exercise ($t(199) = 6.18$, $p 0,001$), and their ratio benefits / barrier was 1.71. The biggest perceived benefit from exercising that female respondents perceive is related to the appearance (body image), followed by benefits related to health, psychological and social benefits. The greatest perceived barrier to exercise was a lack of time, lack of energy and lack of social support. Lack of time was rated significantly higher than all other barriers. Statistically significant differences were found only between sub-scale for assessing the lack of self-confidence and lack of resources. The implications of this research for development of strategies and educational programs to promote physical activity indicate the importance for girls to increase the ratio of benefits / barriers. The applied interventions should help adolescents to relieve from or make out the discomfort felt from physical exertion during exercising (reducing the perceived barriers) continuing to emphasize health and other benefits from regular exercising (increasing the expected benefits).

Keywords: *physical activity, female students, benefits, barriers, non-exercising*

Introduction

The impact of physical activity on human health has been demonstrated in many studies so far, but unfortunately there is still a large part of the population that is not sufficiently physically active (WHO, 2010). Diseases caused by hypokinesia are a big problem of modern medicine. Sports and recreational physical activities are an indispensable tool in compensation of lack of movement. For these reasons, many developed countries have created a broad national strategy to promote physical activity among their citizens, which is a priority in the attempt of reducing the enormous costs in health care in a long run.

Adolescent health benefits of physical activity include: healthy growth and development of bones, muscle and cardio-respiratory system, maintaining energy balance, avoidance of risk factors for cardiovascular diseases, the opportunity for social interaction and positive mental well-being, including higher self-esteem, lower anxiety, and lower stress (British Heart Foundation, 2004; Ekeland, et al. 2004). Given the fact that with aging the physical activity is reduced, adolescence represents a critical period for intervention. If in early adolescence habits are formed for engaging in physical activity, adolescents are more likely to be physically active in adulthood (Telama and Yang, 2000). Physical activity is a complex behavior influenced by multiple internal and external factors, such as social-unique cultural, psychological, cognitive and physical and social environment of the individual. The explanation how the factors affect the behavioral change is crucial in preparation of interventions, strategies and educational programs that will contribute to increased levels of physical activity among young people (Sallis et al., 2000).

In the Republic of Macedonia there are no many studies that examined the factors that influence physical activity among adolescents (Gontarev 2008), and even fewer studies have been carried out about Macedonian adolescent females who have no recommended physical activity (Agim et al., 2014) and who have their own specifics. On the other side, this topic was subject of many researches in many countries in the world (different geographical areas), but the question is whether the results from these studies can be

generalized for the population of Macedonian adolescents as well (Gordon-Larsen, McMurray, & Popkin, 1999).

Due to the foregoing this research was realized to: (1) Describe the general level of perceived benefits and barriers to exercise in the sample of respondents; (2) Determine whether the adolescent females who have no recommended physical activity had greater total perceived benefits or barriers to exercise; (3) Identify what non-exercising adolescent female perceived to be the biggest benefits of exercise; (4) Assess what non-exercising adolescent female perceived to be the biggest barriers to exercise; (5) Determine the correlation between perceived benefits and barriers to exercise in adolescent females who have no recommended physical activity.

Methods

Sample and Participants

The research was conducted on a sample of 389 respondents selected by random choice from several secondary schools in the city of Skopje. The sample includes female respondents who have no recommended physical activity as recommended by the ACSM (30 minutes of moderate vigorous exercise on most days over a week (25-American College of Sports Medicine, 1998). The age of the sample is defined as a chronological age of 15 to 18 years (students from first to fourth year of secondary education).

The research was conducted from mid-April to mid-May 2013. Previously the principals of all secondary schools that were involved in the research had been sent a letter introducing the objectives of the research. The research was carried out in cooperation with professors of physical education and psychological-pedagogical offices, in schools where they existed. The surveying was carried out in classrooms at special classes using proper organization of work appropriate for such researches. The respondents were treated in accordance with the Helsinki Declaration.

Instruments and Procedure

Perceived Benefit. The scale has been constructed by Sallis and associates (Sallis et al. 1989), and it was modified by Rovniak and associates (Rovniak et al. 2002) and it is estimated to respondent perceives the benefits of physical activity. It consists of 22 items and is Likert type 5 degrees, ranked from 1 (completely disagree) to 5 (totally agree). The result is obtained by an average value of responses from all the particles. Higher scores indicate that the respondent has a higher degree of perceived benefits of physical activity. The benefits are divided into four sub-scales including: fitness, health, appearance (body image), psychological and socializing (social). The scale has been translated into Macedonian and proofread by experts and tailored to the needs of this research. Inter-consistency of scale in previous research is around .88 (Cronbach- α = .88), while reliability verified by the test - retest method is also quite high and ranges .85 (r = .85).

Perceived Barriers. The scale is constructed by Sallis and associates (Sallis et al. 1989) and modified by Cheng and Kent (Cheng et al. 2003; Kenneth et al. 2005) and it is estimated to respondent perceived barriers towards physical activity. It consists of 22-items are particles and is Likert type 5 degrees, ranked from 1 (never) to 5 (very often) ("how often this list of things you may have to be physically active"). The result is calculated as the average of the responses of all particles. The barriers are divided into two categories, internal and external barriers. Internal barriers are divided into three categories: lack of energy, lack of motivation and lack of self-confidence. Also external barriers are divided into three categories: lack of resources, lack of social support and lack of time. Titles barriers are taken on the basis of previous research on Sallis, Howell and Zibland (Sallis and Hovell, 1990; Sallis et al., 1992; Ziebland et al. 1998). The scale has been translated into Macedonian and proofread by experts and tailored to the needs of this research. Inter-consistency of scale in previous research is around .87 (Cronbach- α = .87), while reliability verified by the test-retest method of the student population moves .79 (r = .79).

Statistical analysis

Research objective one (to describe the sample's general levels of perceived benefits and barriers to exercise) was achieved by computing the means of the individual items. Research objective two (whether non-exercising female adolescent had greater total perceived benefits or barriers to exercise) was assessed by a single paired samples *t*-test. The third and fourth research objectives (what non-exercising female adolescent perceived to be the biggest benefits and barriers of exercise) were assessed by multiple paired sample *t*-tests to identify any significant differences between sub-scales (15 comparisons for the benefits scale; 6 comparisons for the barriers scale). The fifth and final research objective (how non-exercising

female adolescent perceptions of benefits from exercise related to their perceptions of barriers to exercise) was assessed by the calculation of correlations between each of the benefit sub-scales with each of the barrier sub-scales (24 correlations).

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

Table 1 shows the arithmetic means and standard deviations of the items of the sub-scale assessing perceived barriers. From the review of the table it can be seen that the five most common barriers to physical activity pupils perceive are: "Too many responsibilities at school" ($M = 3.43$), "Lack of time" ($M = 3.24$), "Too often I'm busy" ($M = 3.14$), "Too often I am tired to exercise" ($M = 2.79$), "Lack of motivation and interest in physical activity" ($M = 2.79$).

Table 1. The exercise benefits scale: mean and standard deviation of each questionnaire item

Perceived Benefit Items	Mean	SD
Preventative health		
I will improve my health and immunity;	4,44	0,67
I will firmly establish (toned) muscle and look better;	4,37	0,78
It will help me stayfit;	4,34	0,75
I will improve strength;	4,14	0,79
I will speed up the metabolism;	4,10	0,78
I will protect my heart and I will increase my endurance;	4,09	0,76
I will improve flexibility;	3,90	0,79
Social interaction		
I will meet new people;	3,84	1,00
I'll be in the company of people who are interested in the same activities;	3,79	1,03
I'll be in constant contact with my friends;	3,26	1,14
Body image		
It will help me to improve the shape of my body;	4,40	0,78
It will help me to keep my body weight;	4,31	0,77
I will lose weight and look more attractive;	4,30	0,90
It will help me to look more attractive;	4,23	0,90
Psychological outlook		
It will help me feel better;	4,26	0,75
I will raise level of energy;	4,26	0,77
I will knock anxiety and stress;	4,22	0,87
I will feel less depressed and less would be annoying;	4,01	1,00
I will have good fun and enjoyment;	3,86	0,94
I will raise my self-esteem;	3,66	0,88
I will improve my tasks;	3,49	0,97
I will have competitive challenge;	3,48	1,01

Table 2 shows how the respondents perceive the benefits of physical activity. Female respondents mostly believe that physical activity will help to improve health and immunity ($M = 4.44$), the shape and appearance of their body ($M = 4.40$), to strengthen muscles and look better ($M = 4.37$) will keep fitness ($M = 4.34$), will maintain their body weight ($M = 4.31$), while at least believe that physical activity will allow them to be in touch with their friends ($M = 3.26$), to have competitive challenge ($M = 3.48$), and that they will better perform their tasks ($M = 3.49$).

Findings from the second objective of the study show that this sample of girls who have no recommended physical activity perceived benefits ($M = 4.01$, $SD = 0.41$) much more compared to barriers ($M = 2.35$, $SD = 0.61$) to exercise ($t(199) = 6.18$, $p < 0.001$). This equated to a benefit / barrier ratio of 1.71; it indicates that respondents perceived greater benefits than barriers (Table 3). Analyzing the individual sub-scales (Table 3), one can see that the predominant benefit of physical activity that respondents females perceive is related to the appearance (picture of the body), followed by benefits related to health, psychological and social benefit. From review of table 3 one can see that the dominant barriers that

adolescent females perceive is the lack of time, lack of energy and lack of social support. Lack of time was rated significantly higher than all other barriers. Statistically significant differences were found only between sub-scale for assessing the lack of self-confidence and lack of resources. The average scores of all six sub-scales to assess barriers range from 2.93 to 2.06.

Table 2. The exercise barriers scale: mean and standard deviation of each questionnaire item.

Perceived Barriers Items	Mean	SD
Physical Exertion		
Too often I am tired to exercise;	2,79	1,19
Lack of energy;	2,75	1,01
Exercise is difficult and tiring;	2,13	1,09
Lack of self-confidence		
I'm not athletic;	2,50	1,38
Lack of skills and abilities;	1,98	0,99
I know that I would fail to exercise, so I don't start;	1,72	1,07
Lack of motivation		
Lack of motivation and interest in physical activity;	2,79	1,13
I don't enjoy exercise and sports;	1,99	1,16
Physical activity is boring;	1,69	0,98
Lack of Resources		
Lack of a proper place to exercise;	2,41	1,17
Lack of sports equipment;	2,20	1,24
Lack of knowledge what and how to exercise;	1,87	1,07
Lack of financial resources;	1,76	1,01
Social Discouragement		
I haven't anyone to exercise with;	2,41	1,18
My friends don't want to exercise	2,36	1,21
My parents, who believe that learning is more important than exercise;	2,21	1,31
Time Expenditure		
Too many obligations at school;	3,43	1,22
Lack of time;	3,24	1,16
Too often I'm busy;	3,14	1,18

Table 3. Standardized perceived benefit and barrier sub-scale means and standard deviations and *t*-test values for multiple comparisons.

	Mean	SD	Sub-scale					
			1	2	3	4	5	6
Barriers (M = 2,35 SD =0,61)								
Time Expenditure	2,93	0,84	--	8,69	13,89	15,95	18,00	22,21
Physical Exertion	2,55	0,82	--	--	5,02	11,22	12,38	10,28
Social Discouragement	2,33	0,82	--	--	--	3,51	5,66	6,20
Lack of motivation	2,16	0,85	--	--	--	--	2,59	2,01
Lack of self-confidence	2,07	0,86	--	--	--	--	--	0,16
Lack of Resources	2,06	0,79	--	--	--	--	--	--
Benefits (M = 4,01 SD = 0,44)								
Body image	4,31	0,66	--	4,40	11,91	13,93	--	--
Preventative health	4,20	0,48	--	--	12,77	13,86	--	--
Psychological outlook	3,90	0,52	--	--	--	7,56	--	--
Social interaction	3,63	0,78	--	--	--	--	--	--

For all subscales, possible scores range from 1 to 5, where 5 represents the highest perception of both benefits and barriers; †Values in the cells of these columns are actual *t*-test values; * Indicates that the means of the subscales that are being compared were significantly different, using Bonferroni corrected critical *p* values for benefits ($p < 0.005$) and for barriers ($p < 0.005$).

From the analysis of the matrix of cross-correlation between sub-scales for assessing the benefits and barriers to physical activity (Table 4) one can see low and statistically significant correlations between pairs of variables level $p < 0.05$. Based on the results it can be seen that the sub-scale psychological outlook is

negative low correlation with sub-scales, physical exertion ($r = -, 304$), lack of self-confidence ($r = -, 210$) and lack of motivation ($r = -, 268$). Among other sub-scales there is a very low, mainly negative correlation.

Table 4. Correlation coefficients between perceived barriers and benefits of exercise subscales.

Barrier Sub-scale	Benefit Sub-scale			
	Preventative health	Social interaction	Body image	Psychological outlook
Physical Exertion	-,134**	-,200**	-,102*	-,304**
Lack of self-confidence	-,191**	-,045	-,123*	-,210**
Lack of motivation	-,179**	-,161**	-,085	-,268**
Lack of Resources	,000	-,068	,027	,021
Social Discouragement	-,155**	-,020	-,129*	-,128*
Time Expenditure	-,087	-,180**	-,070	-,186**

* Significant correlations, using Bonferroni corrected critical p value ($p < 0.002$).

Discussion

The explanation how the factors influence the behavioral change is crucial in the preparation of interventions, strategies and educational programs that will contribute to increased levels of physical activity among high school population (Sallis et al., 2000; Trost et al., 1997). There are two cognitive variables that can determine the level of physical activity, perceived barriers and perceived benefits. Perceived benefit can impact positively while perceived barriers negatively 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 exists no data about the subject in Macedonian adolescents.

Regarding the first objective of the study, female adolescent who have no recommended physical activity, the results from our research indicate that respondents agree or fully agree with a number of items of sub-scales for assessing the benefits, while only being neutral or at best approaching agreement with many of the barriers items. Respondents at least agree that physical activity will allow them to be in touch with their friends, to have the competitive challenge that will improve their tasks. While most agree that physical activity will help them improve their health and immunity, shape and appearance of body, strengthen muscles and look better, stay fit and maintain body weight. As far as barriers to physical activity most adolescents agree with the following items: too many obligations at school, lack of time and too busy. While at least agree with the items: a shortage of funds; I know that I would fail to exercise, so I don't start; physical activity is boring.

As for the second objective of this study, although the female adolescent are classified as "respondents who have no recommended physical activity," according to ACSM recommendations (American College of Sports Medicine, 1998), their perceived benefits were greater than the perceived barriers to exercise, which shows the ratio barriers / benefits amounting to 1.71. This suggests that perceived barriers can no longer influence the behavior, in terms of perceived benefits (Nahas, M.V. & Goldfine, B., 2003).

Regarding the third objective, which analyzes summarized items for each sub-scale basis, the results from our research indicate that the dominant of benefits that female respondents perceive is related to the appearance (picture of the body), followed by benefits related to health. Respondents perceive much less benefit from physical activity associated with social interaction, which is contrary to the previous research. Previous research (e.g., Wankal, LM, 1980) and motivational theories (e.g., cognitive evaluation theory (Deci, EL; Ryan, RM, 1980) suggest that social issues are key reasons for the individual to continue to deal with the physical activity. However, our sample represents a specific population, which differs from populations that have been examined in previous studies. The adolescents of this age have a greater opportunity to socialize, make friends and realize communication - which is part of their school life. These abundant socialization opportunities could have perhaps 'undermined' the perceived importance of the social benefits that could accrue from the exercise.

Regarding the fourth objective, the research results suggest that the predominant barriers that adolescents perceive are lack of time, lack of energy and lack of social support. While respondents believe that at least preventing them from being physically active is lack of resources and lack of self-confidence. The research results suggest that the highest ranking, perceived barrier that prevents adolescents to be physically active is lack of time. To overcome this barrier, adolescents should be educated skills for effective time management. The respondents can allocate part of the time they spend on computer or watching TV or instead of going to a café with fiends they can go to a fitness center or gym and also get a good entertainment. Physical exertion is also highly ranked barrier that prevents adolescents to be physically active. As a result of long-lasting physical inactivity in adolescents the level of fitness reduces, therefore they feel uncomfortable when they engage in physical activity with high intensity and it creates an uncomfortable psychological feeling. These subjects should be educated that the research suggests that not only the physical activity of high intensity led to positive changes in humans. Research studies show that the popular phrase "No pain, no progress" is untrue. Respondent should be encouraged (motivated) to participate in any physical activity of moderate intensity in which he/she would enjoy. The respondent should be stimulated in various ways to increase the interest and intention to exercise, including the activities they enjoy activities with some important personalities (top athletes) or create a nice ambience and environment for exercise.

As for the fifth goal of the research the results show that more than sub-scales for assessing barriers are negatively correlated with the sub-scales for assessing the benefits. Sub-scale psychological outlook is negatively correlated with multiple sub-scales to assess barriers. Moreover, this relationship suggests that such intervention is focused on increasing the perceived benefits of physical activity can have a positive effect on changes of some barriers. These interconnections may also suggest indirect avenues to influence perceived barriers through a planned management of females' perceived benefits to PA.

The study has limitations. Findings of cross sectional studies are associations and do not infer causality. Another weakness is the sample of respondents which only applies to adolescents in Skopje and the surrounding area. In the future we should be implementing research, which would encompass the entire high school population in the Republic of Macedonia, where the emphasis would be treated as young people living in rural, sub-urban and rural regions, the sample would include participants from different ethnic communities, taking into account the socioeconomic status as well. It would also be desirable to conduct such research and other age groups, such as children at a younger age and adult citizens and special populations such as subjects with obesity, heartsick, etc. Further research would need to provide insights into how these different benefits/barriers factors function with respect to each other and/or as moderating variables. Longitudinal studies could also provide evidence on the directions of causality.

Conclusion

Based on the achieved results it can be concluded that the respondents mostly believe that physical activity will help to improve health and immunity, shape and appearance of body, strengthen muscles, will look better, stay fit and maintain body weight. As for the barriers to physical activity most ones stated by the adolescents are: too many obligations at school, lack of time and too busy. Female adolescents perceive more benefits in terms of barriers to physical activity, as confirmed by the ratio barriers / benefits amounting to 1.71. The analysis of the sub-scales individually indicate that the dominant of benefits that female respondents perceive is related to the appearance (body image), followed by benefits related to health. While the dominant barriers adolescents perceive a lack of time, lack of energy and lack of social support. More sub-scales assessing barriers are negatively correlated with sub-scales for assessing the benefits. This indicates that the intervention is focused on increasing the perceived benefits of physical activity can have a positive effect on changes of some barriers.

The results from this study indicate that strategies and interventions to promote physical activity among adolescents should have a two-pronged approach. Interventions could help decrease the perceived barriers by 'distracting' or 'disengaging' female students from any perceived 'unpleasantness' of physical exertion during PA (eg. Use of cognitive strategies or music to divert the attention of girls from internal physiological signs associated with physical head). In addition, interventions could also further highlight the benefits and emphasize the paybacks of regular exercising to such populations in order to attract females to the various advantages and returns of PA. The intervention maintains one or (preferably) or both directions can contribute to increasing physical activity in adolescents.

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