

Health belief regarding leisure time physical activity and nutritional attitude: are they related in athletic and sedentary university students

Neslişah Aktas Üstün¹, Ümit Doğan Üstün¹, Utku Işık², Adem Yapıcı¹

¹School of Physical Education and Sports, Hatay Mustafa Kemal University, Hatay, Turkey - E-mail: aktas.neslisah@gmail.com;

²School of Physical Education and Sports, Recep Tayyip Erdoğan University, Rize, Turkey

Abstract. *Study Objectives:* The present study aimed to investigate the differences in the perception of health belief regarding leisure-time physical activity and nutritional attitudes of athletic and sedentary university students. Besides, analyzing the correlations between the phenomena was another aim. *Materials and Method:* The study was designed as a cross-sectional quantitative study, and 286 university students from Hatay Mustafa Kemal University participated in the study. In analyzes of the data independent samples t-test and Partial Correlation analyzes were used. *Results:* As a result, this study showed that only self-efficacy makes a difference in the health belief regarding leisure-time physical activity for the athletes. Besides, the health belief regarding leisure-time physical activity and nutritional attitude correlates in both athletic and sedentary samples. *Conclusion:* To achieve substantive health benefits, efforts to increase leisure time physical activity and healthy nutritional attitudes should be encouraged.

Key Words: Health Belief, Leisure-Time Physical Activity, Nutrition, Malnutrition, Sedentary

Introduction

A significant proportion of the studies in the literature show that regular physical activity has various health benefits in all age groups (1). For instance, physical activity is related to the enhancement of overall health among children and adolescents (2-3), it helps to reduce the prevalence of common chronic conditions, and to improve mental health among older adults (4). Besides, it is also well documented that physical activity reduces the risk of premature mortality and is an active primary and secondary preventive strategy for at least 25 chronic medical conditions (5).

Leisure-time physical activity (LTPA) is defined as the exercise performed during free time for at least 20 minutes without stopping. It is thought to be part of a healthy lifestyle and has positive health effects across various age cohorts, ethnic populations, and chronic diseases. Different types of leisure-time physical activity can be performed. These activities include walking,

jogging, running, bicycling, swimming, and aerobics (6). At that point, when one thinks about the benefits of leisure-time physical activity, it is thought that he/she would become more physically active. However, according to Grsitwood 2011 (7), an individual's value and belief system have shown to have a significant impact on the identification and evaluation of individual risk factors as well as the readiness to take action. In a study conducted by Cronbie et al. 2004 (8) showed that although the levels of knowledge about the specific health benefits of physical activity were high among the participants, the most potent deterrent was lack of interest. Besides, increasing leisure-time physical activities poses significant challenges. Similarly, Haase et al. 2004 (9) suggested that leisure-time physical activity was below recommended levels in a substantial proportion of the participants, and the knowledge about activity and health was disappointing, with only 40–60% being aware that physical activity was relevant to the risk of heart disease.

Different groups of people may not share the same physical activity beliefs (10), and thus this sometimes prevents our intention of physical activity from turning into action. This situation can be explained with the theory of the health belief model. The theory simply assumes that the likelihood of performing specific health behavior is related to people's conviction that they are threatened with certain diseases, their evaluation of the severity of these diseases, and to the conviction that the target health behavior allows averting the risk of developing the said diseases (11). When applied to physical activity engagement, this model can help explain the likelihood of an individual engaging in physical activity, based on the perceived threats brought about by inactivity and the individual's conclusion that the potential benefits could far outweigh the risks (7).

Health belief regarding leisure-time physical activity is associated with different kinds of nutritional habits (12). According to Pate et al. 1996 (13), both adolescents and adults who choose to be regular exercisers also tend to adopt other positive health habits, such as smoking less or consuming healthier diets. A study conducted on young adults in America showed that physical activity levels of the participants had a positive correlation with the consumption of fruit and 100% fruit juice (14). However, when considered jointly, there is a gap in the literature. Only a few studies examined the associations between the health belief regarding leisure-time physical activity and nutritional attitude in the athletic and sedentary sample. Given the information above, in the present study, we analyzed the associations between nutritional attitudes and health beliefs regarding leisure-time physical activity in an athletic and sedentary university sample.

Material and Methods

Participants

The study sample consisted of 286 university students from Hatay Mustafa Kemal University. The participants included in the athletic cluster ($N=52$; $=20.04\pm3.05$) were chosen according to the purposive sampling method. The inclusion criteria were the membership of the university gym at least three months and

doing regular exercise. The participants included in the sedentary cluster ($N=234$; $=23.92\pm3.25$) were chosen according to the random sampling method.

Data Collection

Health Belief Regarding Leisure Time Physical Activity Scale

Ertüzün, Bodur, and Karaküçük initially developed the scale in 2013. The scale has five factors compatible with the Theory of Health Belief as Perceived Seriousness (e.g., Participating in leisure-time physical activities is vital for all of my body functions), Perceived Barriers (e.g., I am afraid of being injured while participating in sportive recreational exercises), Physical Benefit (e.g., I believe that my excretory system works more regularly when I do sportive recreational exercises), Psycho-Social Benefit (e.g., I believe that recreational exercises have positive effects on my mental health), and Self-Efficacy (e.g., For participating in recreational exercises, I sacrifice from my economic condition). The scale has twenty-one items anchored with a 5-point Likert type scale (1 = strongly disagree ... 5 = strongly agree) (15).

Nutritional Attitude Scale

Tekkurşun Demir and Cicioğlu initially developed the scale in 2019. The scale has four factors and twenty-one items. Sample items include "I know which foods contain protein" (nutritional knowledge), "I enjoy eating fast-food products (feeling for nutrition)", "I drink at least 1.5 liters of water a day" (positive nutrition), "I eat different kinds of snack every day" (malnutrition). The answers given to the scale are evaluated with a 5-point Likert type scale (1 = strongly disagree ... 5 = strongly agree). The items 6., 7., 8., 9., 10., 11., 17., 18., 19., 20., and 21 are reversely coded (16).

Statistical Analysis

Descriptive statistics were presented as Mean \pm Standard Deviation (SD). Comparisons among the groups were performed using the independent sample t test. Partial correlation analyses were conducted between the sub-dimensions of scales. All correlation analyses were controlled for being athletic or sedentary. IBM SPSS 22.0 for windows was used for the statistical analysis.

Results

Descriptive data

The descriptive statistics are given in Table 1. Regarding group comparison, we found that athletes reported significantly higher scores on self-efficacy. Nevertheless, athletes and sedentary participants did not show any statistically significant differences in the other sub-scales.

Correlations

Table 2 shows the partial correlation analyses between health belief regarding LTPA sub-dimensions and nutritional attitude sub-dimensions. In the test being athletic/sedentary was the control parameter. Results showed that health belief regarding LTPA and

nutritional attitudes were positively correlated ranging from 0.287 (perceived severity-malnutrition) to 0.624 (perceived severity-positive nutrition). Besides, negative correlations were also found between some of the sub-dimensions ranging from -.181 (perceived barriers and malnutrition) to -.401 (perceived barriers and feeling of nutrition).

Discussion

In the present study, we aimed to analyze the associations between the health belief regarding LTPA and nutritional attitudes among athletic and sedentary university students. According to analyze results, participants' health beliefs regarding LTPA significantly differed in the self-efficacy sub-scale in favor of athletic university students. We can say that this result of the study is compatible with the literature. Because when we examine the literature, we see that self-efficacy is an essential factor for LTPA related behaviors. For instance, a study conducted by Stutts 2002 (17) showed that among other patterns such as perceived barriers and benefits, self-efficacy was the only variable to predict physical activity. A more recent study conducted by Beville et al. 2014 (18) reported that self-efficacy (= .166) significantly associated with LTPA for female university students. Similarly, in their study Orsega-Smith et al. 2007 (19) specified that the self-efficacy domain of perceived physical ability was significantly related to LTPA for older adults. According to Kayhan and Üstün 2019 (20), individuals who have the belief

Table 1. Descriptive statistics and comparison between athletes and sedentary subsamples

	Athletes (n=52)		Sedentary (n=234)		<i>p</i>
	Mean	SD	Mean	SD	
Perceived Severity	4,26	0,59	4,10	0,85	0,108
Perceived Barriers	3,78	0,72	3,86	0,78	0,501
Physical Benefit	4,07	0,74	4,05	0,85	0,903
Psycho-Social Benefit	3,97	0,69	3,89	0,68	0,439
Self-Efficacy	3,98	0,66	3,61	0,88	0,001*
Nutritional Knowledge	4,33	0,81	4,08	0,95	0,057
Feeling of nutrition	2,75	0,73	2,55	0,77	0,082
Positive nutrition	3,65	0,77	3,59	0,73	0,592
Malnutrition	3,08	0,81	3,03	0,78	0,706

Table 2. Correlations between the variables

	1	2	3	4	5	6	7	8	9
1. Perceived Severity	1	,540**	,781**	,591**	,498**	,529**	0,097	,624**	,287*
2. Perceived Barriers		1	,635**	,549**	,338**	,470**	-,401**	,318**	-,181**
3. Physical Benefit			1	,766**	,472**	,630**	-,357**	,512**	-0,018
4. Psycho-Social Benefit				1	,506**	,558**	-,218**	,483**	-0,031
5. Self-Efficacy					1	,362**	-,181**	,339**	-,192**
6. Nutritional Knowledge						1	-,305**	,534**	-0,006
7. Feeling of nutrition							1	-,250**	,467**
8. Positive nutrition								1	-0,046
9. Malnutrition									1

Partial correlation test controlling for being athletic/sedentary ** $p < 0.01$ * $p < 0.05$

that LTPA is useful for the treatment of chronic diseases show higher self-efficacy in health belief regarding LTPA.

According to analyze results, although both athletic and sedentary participants scored the highest in the nutritional knowledge subscale, there was not any significant difference in the nutritional attitudes of the participants. There are several possible explanations for this result of the study. First, we can consider that knowledge does not turn into practice. Second, individual differences (income-level, etc.) may affect the phenomenon. When we examine the literature, we can see studies with similar or different results. For instance, in their study Raymond-Barker et al. 2007 (21) reported that nutritional knowledge and eating attitude appeared to be independent for both athletes and controls. A study conducted with 100 athletes and 100 sedentary individuals reported that nutritional knowledge of the participants was good enough; however, it was not significant (22). On the other hand, in a more recent study, it was reported that only one of the participants (0.5%) had good nutritional knowledge, 9 (4.2%) had moderate nutritional knowledge. In contrast, most of the participants, 202 (95.3%), had poor nutritional knowledge with no statistically significant differences compared to whether they were professional athletes or not (23).

Analyze results also showed significant positive and negative correlations between health belief regarding LTPA and nutritional attitude. We think to some extent that these results are the consequences of that the students with physical activity levels need to adapt their nutritional knowledge and increase levels as their demands such as calorie needs will increase. Besides, participants who engage in LTPA should pay attention to their daily nutrition intake to show a performance. As stated before, health beliefs and leisure-time physical activity are associated with different kinds of nutritional attitudes. Previous studies showed that the nutritional attitude of university students was associated with physical activity prevalence. Students with a higher level of LTPA had a higher food addiction as well (24–26). Supporting our result, in a study conducted with lower-educated Dutch, Turkish, and Moroccan adults in the Netherlands showed that the essential attitude beliefs concerning healthy eating and

physical activity were taste and health benefits (27). However, according to Rosenberg et al. 2007 (28)'s longitudinal study results, there was not any significant primary evidence of multi-behavior co-variation between dietary, physical activity, and sedentary behavior.

Conclusion

This study showed that only self-efficacy made a difference in the perceived health belief regarding LTPA. Perceived severity, perceived barriers, physical benefit, psycho-social benefit, self-efficacy, nutritional knowledge, and positive nutrition were positively correlated. On the other hand, perceived barriers, physical benefit, psycho-social benefit, self-efficacy, the feeling of nutrition and malnutrition were negatively correlated.

Limitations and Future Studies

The present study demonstrated significant differences as well as correlations between health belief regarding LTPA and nutritional attitude in athletic and sedentary university students; however, it is not without limitations. The first limitation was that the data collection tools were self-report measures. The second limitation was that all the participants were university students. That may intervene in some of the results as young adults are still learning and adapting their lifestyles from adolescence to the developmental stage of risk-taking (29). So, future studies must focus on different age groups with a different type of instrumentation to have a better understanding of the phenomena.

Conflicts of interest

The authors declare that there is no conflict of interest in this manuscript.

References

1. Warburton DE, Nicol CW, Bredin SS. Health benefits of physical activity: the evidence. *CMAJ* 2006; 174(6): 801–9; doi: 10.1503/cmaj.051351
2. Sothorn MS, Loftin M, Suskind RM, et al. The health benefits of physical activity in children and adolescents: implica-

- tions for chronic disease prevention. *Eur J Pediatr* 1999; 158: 271-4.
3. Janssen I, LeBlanch AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity* 2010; 7: 40; doi: 10.1186/1479-5868-7-40
 4. Musich S, Wang SS, Hawkins K, et al. The frequency and health benefits of physical activity for older adults. *Population Health Management* 2017; 20(3): 199-7; doi: 10.1089/pop.2016.0071
 5. Warburton DE, Bredin SS. Health benefits of physical activity: a systematic review of current systematic reviews. *Current opinion in cardiology* 2017; 32(5): 541-556; doi: 10.1097/HCO.0000000000000437
 6. Dergance JM, Calmbach WL, Dhanda R, et al. Barriers to and benefits of Leisure time physical activity in the elderly: differences across cultures. *JAGS* 2003; 51(6): 863-8.
 7. Grsitwood J. Applying the health belief model to physical activity engagement among older adults. *Illuminare* 2011; 9(1): 59-71.
 8. Cronbie IK, Irvine L, Williams B, et al. Why older people do not participate in leisure time physical activity: a survey of activity levels, beliefs and deterrents. *Age and Ageing* 2004; 33(3): 287-2; doi: 10.1093/ageing/afh089
 9. Haase A, Steptoe A, Sallis JF, et al. Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Preventive Medicine* 2004; 39(1): 182-0; doi: 10.1016/j.ypmed.2004.01.028.
 10. Kosma M, Cardinal BJ. Theory-based physical activity beliefs by race and activity levels among older adults. *Ethnicity & Health* 2016; 21(2): 181-95; doi: 10.1080/13557858.2015.1047741
 11. Sas-Nowosielski K, Hadzik A, Górná J, et al. Applying the health belief model in explaining the stages of exercise change in older adults. *Pol. J. Sport Tourism* 2016; 23: 221-5; doi: 10.1515/pjst-2016-0029
 12. Pearson N, Atkin AJ, Biddle SJH, et al. Patterns of adolescent physical activity and dietary behaviours. *International Journal of Behavioural Nutrition and Physical Activity* 2009; 6(45): 1-7.
 13. Pate RR, Heath GW, Dowda M, et al. Associations between physical activity and other health behaviors in a representative sample of US adolescents. *American Journal of Public Health* 1996; 86(11): 1577-1; doi: 10.2105/AJPH.86.11.1577
 14. Jago R, Nicklas T, Yang S, et al. Physical activity and health enhancing dietary behaviours in young adults: bogalusa heart study. *Preventative Medicine* 2005; 41: 194-2.
 15. Ertüzün E, Bodur S, Karaküçük S. The development of health-belief scale on sportive recreational activities. *Procedia-Social and Behavioral Sciences* 2013; 89: 509-6; doi: 10.1016/j.sbspro.2013.08.884
 16. Tekkurşun Demir G, Cicioğlu Hİ. Sağlıkla beslenmeye ilişkin tutum ölçeği (sbitö): geçerlik ve güvenilirlik çalışması. *Gaziantep Üniversitesi Spor Bilimleri Dergisi* 2019; 4(2): 256-74.
 17. Stutts WC. Physical activity determinants in adults. *AAOHN Journal* 2002; 50(11): 499-7.
 18. Beville JM, Renée Umstatted Meyer M, Usdan SL, et al. Gender differences in college leisure time physical activity: application of the theory of planned behavior and integrated behavioral model. *Journal of American College Health* 2014; 62: 173-84; doi: 10.1080/07448481.2013.872648
 19. Orsega-Smith EM, Payne LL, Mowen AJ, et al. The role of social support and self-efficacy in shaping the leisure time physical activity of older adults. *Journal of Leisure Research* 2007; 39(4): 705-22.
 20. Kayhan RF, Üstün ÜD. Analysis of the health beliefs of physical education and sports teachers regarding sportive recreational activities. *Journal of Educational Issues* 2019; 5(2): 182-2; doi: 10.5296/jei.v5i2.15603
 21. Raymond-Barker P, Petroczi A, Qusted E. Assessment of nutritional knowledge in female athletes susceptible to the female athlete triad syndrome. *Journal of Occupational Medicine and Toxicology* 2007; 2(10); doi: 10.1186/1745-6673-2-10
 22. Sedek R, Yih TY. Dietary habits and nutrition knowledge among athletes and non-athletes in national university of Malaysia (UKM). *Pakistan Journal of Nutrition* 2014; 13(12); doi: 10.3923/pjn.2014.752.759
 23. Miškulin I, Šašvari A, Dumić A, et al. The general nutrition knowledge of professional athletes. *Food in Health and Disease* 2019; 8(1): 25-2.
 24. Kayhan M, Ünveren A. Beden eğitimi ve spor yüksekokulu öğrencilerinin fiziksel aktivite düzeyleri ile yeme bağımlılıklarının karşılaştırılması. *Sportif Bakış: Spor ve Eğitim Bilimleri Dergisi* 2017; SI(1): 98-8.
 25. Rouzitalab T, Gargari BP, İzadi A, et al. The prevalence of disordered eating attitude and its relation to exercise participation in a sample of physical education students. *Progress in Nutrition* 2019; 21(Supplement 1): 281-7; doi: 10.23751/pn.v21i1-S.6129
 26. Yıldırım İ, Yıldırım Y, Ersöz Y, et al. Egzersiz bağımlılığı, yeme tutum ve davranışları ilişkisi. *CBÜ Bed Eğt Spor Bil Dergisi* 2017; 12(1): 43-54.
 27. Romeike K, Abidi L, Lechner L, et al. Similarities and differences in underlying beliefs of socio-cognitive factors related to diet and physical activity in lower-educated Dutch, Turkish, and Moroccan adults in the Netherlands: a focus group study. *BMC Public Health* 2016; 16; doi: 10.1186/s12889-016-3480-4
 28. Rosenberg DE, Norman GJ, Sallis JF, et al. Covariation of adolescent physical activity and dietary behaviours over 12 months. *Journal of Adolescent Health* 2007; 41: 472-8.
 29. Dishman RK. Advances in exercise adherence. Champaign, IL, Human Kinetics, 1994.

Correspondence:
Neslişah Aktaş Üstün
Hatay Mustafa Kemal University, Hatay, Turkey
E-mail: aktas.neslisah@gmail.com