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University Students' Attitudes Toward Exercise: An Evaluation From The Perspective of The Health Beliefs Model

Üniversite Öğrencilerinin Egzersize Yönelik Tutumları: Sağlık İnanç Modeli Perspektifinden Bir Değerlendirme

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Abstract

Aims: The aim of this study is to evaluate university students' health belief attitudes toward exercise from the perspective of the Health Belief Model and to examine the psychosocial factors that influence participation in physical activity. **Methods:** The research was conducted using quantitative methods and a descriptive survey model. The sample consisted of 1,814 university students living in Kırıkkale (946 women, 868 men). Participants completed a demographic information form and the Exercise-Related Health Beliefs Attitude Scale (EHBAS). Data were analyzed using SPSS 28.0; independent samples t-tests were used for comparisons between two groups, ANOVA for comparisons between three or more groups, and Tukey post hoc tests for significant difference. **Results:** Women's "Health Development" and "Cognitive Health" scores were significantly higher than men's, while men's "Continuity" scores were higher than women's. As body mass index (BMI) increased, exercise-related health belief scores decreased significantly. Scores for those who smoked and drank alcohol were significantly lower than those who did not, while scores for those with chronic diseases were higher than those without. As perceived socioeconomic status increased, students' attitudes toward exercise-related health beliefs also increased ($p < 0.001$). **Conclusion:** University students' health beliefs toward exercise are influenced by factors such as gender, BMI, smoking and alcohol use, presence of chronic disease, and socioeconomic status. These findings may guide the development of health awareness and interventions to increase students' participation in physical activity.

Keywords Exercise, Health Belief Model, University Students, Physical Activity, Health Attitudes

Öz

Amaç: Bu çalışmanın amacı, üniversite öğrencilerinin egzersize yönelik sağlık inançlarına ilişkin tutumlarını Sağlık İnanç Modeli perspektifinden değerlendirmek ve fiziksel aktiviteye katılımı etkileyen psikososyal faktörleri incelemektir. **Yöntem:** Araştırma, nicel yöntemler kullanılarak betimsel tarama modeli ile gerçekleştirilmiştir. Araştırmanın örneklemini Kırıkkale'de yaşayan 1.814 üniversite öğrencisi (946 kadın, 868 erkek) oluşturmuştur. Katılımcılara demografik bilgi formu ve Egzersize İlişkin Sağlık İnançları Tutum Ölçeği (EHBAS) uygulanmıştır. Veriler SPSS 28.0 programı kullanılarak analiz edilmiştir. İki grup arasındaki karşılaştırmalar için bağımsız örneklem t-testi, üç veya daha fazla grup arasındaki karşılaştırmalar için ANOVA ve anlamlı farklılıkların belirlenmesi için Tukey post hoc testleri kullanılmıştır. **Bulgular:** Kadınların "Sağlık Gelişimi" ve "Bilişsel Sağlık" puanları erkeklerden anlamlı düzeyde yüksek bulunurken, erkeklerin "Süreklilik" puanlarının kadınlardan daha yüksek olduğu belirlenmiştir. Vücut kitle indeksi (VKİ) arttıkça egzersize ilişkin sağlık inancı puanlarının anlamlı şekilde azaldığı görülmüştür. Sigara ve alkol kullanan bireylerin puanları kullanmayanlara göre anlamlı derecede düşük bulunurken, kronik hastalığı olan bireylerin puanlarının kronik hastalığı olmayanlara göre daha yüksek olduğu tespit edilmiştir. Algılanan sosyoekonomik düzey arttıkça öğrencilerin egzersize ilişkin sağlık inancı tutumlarının da arttığı belirlenmiştir ($p < 0.001$). **Sonuç:** Üniversite öğrencilerinin egzersize yönelik sağlık inançları; cinsiyet, vücut kitle indeksi, sigara ve alkol kullanımı, kronik hastalık varlığı ve sosyoekonomik durum gibi faktörlerden etkilenmektedir. Bu bulgular, öğrencilerin fiziksel aktiviteye katılımını artırmaya yönelik sağlık farkındalığı ve müdahale programlarının geliştirilmesine rehberlik edebilir.

Anahtar Kelimeler Egzersiz, Sağlık İnanç Modeli, Üniversite Öğrencileri, Fiziksel Aktivite, Sağlık Tutumları

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Introduction

Regular physical activity plays a crucial role in maintaining and improving individuals' physical, mental, and social well-being (Ai et al., 2021; Emlek et al., 2023; Liu et al., 2024). Engaging in regular exercise has been associated with numerous health benefits, including improved cardiovascular fitness, enhanced metabolic functioning, reduced risk of chronic diseases, and improved psychological well-being. Moreover, physical activity contributes positively to stress management, cognitive functioning, and overall quality of life. Despite these well-documented benefits, insufficient physical activity remains a major public health concern worldwide.

The university period represents a critical developmental stage in which individuals transition from adolescence to adulthood and establish lifestyle habits that may persist throughout their lives (Agans & Lerner, 2024; Johansen et al., 2025). During this stage, students experience significant academic, social, and environmental changes that may influence their health behaviours. Universities provide an important setting for promoting healthy lifestyles; however, the demands of academic life, increased screen time, and changes in daily routines may lead to decreased levels of physical activity among students. Previous studies have consistently reported that physical activity levels among university students are generally low and that sedentary behaviours are increasingly common (Edelmann et al., 2022; Uğurlu et al., 2023; Magnon et al., 2021). Such lifestyle patterns may contribute to long-term health risks, including obesity, cardiovascular diseases, metabolic disorders, and various psychological health problems (Herbert, 2022; Dziewior et al., 2024).

Understanding the factors that influence individuals' participation in physical activity is therefore essential for developing effective health promotion strategies. In this regard, several theoretical models have been developed to explain health-related behaviours and identify the psychological and social determinants that influence their adoption (Hu et al., 2021; Shoesmith et al., 2021). These theoretical frameworks provide valuable insights into the cognitive processes underlying individuals' decisions to engage in or avoid health-related behaviours.

One of the most widely used theoretical frameworks in health behaviour research is the Health Belief Model (HBM). The HBM explains health behaviours through several key constructs, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Hareru et al., 2024; Rajapakshe et al., 2024). According to this model, individuals are more likely to adopt healthy behaviours when they perceive themselves as vulnerable to health problems, believe that the consequences of these problems are serious, recognise the benefits of preventive actions, and perceive fewer barriers to performing the behaviour. Additionally, cues to action and individuals' confidence in their ability to perform the behaviour (self-efficacy) play an important role in shaping health-related decision-making processes.

Applying the Health Belief Model to physical activity behaviours provides an important framework for understanding the psychological determinants of exercise participation. Evaluating university students' attitudes toward exercise within the HBM framework enables researchers to examine how students perceive the risks and benefits of physical activity and identify the cognitive and motivational factors that may facilitate or hinder their engagement in exercise (Albasheer et al., 2024; Espeño et al., 2024). This perspective is particularly valuable in the university context, where lifestyle habits and health behaviours are still developing.

Recent studies have shown that higher levels of perceived benefits and self-efficacy are positively associated with exercise participation, while perceived barriers significantly reduce individuals' likelihood of engaging in regular physical activity (Sheng

et al., 2025; Faghih et al., 2024; Peltonen et al., 2025). Barriers such as limited time, academic workload, limited access to sports facilities, and low motivation may discourage students from engaging in regular exercise. Conversely, individuals who perceive greater health benefits and feel confident in their ability to perform physical activity are more likely to adopt and maintain active lifestyles.

In addition, socio-demographic and psychosocial factors such as gender, socioeconomic status, health awareness, and lifestyle habits may influence students' health beliefs and exercise behaviours. Investigating these factors is important for understanding the complexity of exercise-related attitudes and for designing effective interventions to promote physical activity among university students.

Recent studies also suggest that physical activity should be evaluated not only as a health behaviour but also as part of a broader lifestyle pattern shaped by nutrition, sedentary habits, and psychosocial context. A recent review emphasized the complementary role of physical activity, nutrition, and healthy living in promoting quality of life and reducing lifestyle-related health risks (Yel et al., 2024). Similarly, technological developments and sedentary living have been discussed as important contributors to declining movement behaviours, with broader implications for health and development (Coşkuntürk et al., 2023). In addition, evidence from university-based and educational research indicates that physical activity is associated with psychosocial and attitudinal outcomes beyond physical health alone. For example, students who engaged in regular physical activity reported more positive attitudes in an educational context, and these attitudes also varied according to socio-demographic characteristics such as income level and place of upbringing (Çakır et al., 2025a). Likewise, post-disaster research has shown that psychological outcomes and coping processes are influenced by social and economic conditions, highlighting the broader contextual factors that may shape health-related beliefs and behaviours among university students (Çakır et al., 2025b). In addition, sedentary behaviour and physical inactivity have been discussed as multidimensional health risks that affect not only physical health but also broader developmental and psychosocial outcomes (Şakar & Güzel, 2025). Similarly, movement-related behaviours such as exercise, sleep, and well-being have been emphasized as interconnected dimensions of a healthy lifestyle, suggesting that exercise attitudes should be interpreted within a broader behavioural and psychosocial framework (Şakar & Yel, 2025).

In this context, examining university students' attitudes toward exercise through the lens of the Health Belief Model is essential not only for increasing individual awareness but also for informing the development of effective university-based health promotion policies and intervention programs (Huang et al., 2025; Zhang et al., 2024). Identifying the psychosocial determinants of exercise behaviour may help develop targeted strategies to encourage students to adopt healthier lifestyles.

Although previous studies have examined the relationship between physical activity and various psychological and demographic variables, research on university students' exercise attitudes within the Health Belief Model remains limited. In particular, there is a lack of comprehensive studies investigating how health belief components such as perceived benefits, perceived barriers, and cognitive health perceptions collectively shape students' attitudes toward exercise. Moreover, existing research has often focused primarily on general physical activity levels rather than examining exercise-related health beliefs as multidimensional constructs. Therefore, further research is needed to understand better the psychosocial determinants underlying university students' exercise attitudes from a Health Belief Model perspective.

In addition, limited empirical evidence exists regarding how demographic and lifestyle-related factors such as gender, body mass index, smoking and alcohol use,

chronic disease status, and perceived socioeconomic status influence exercise-related health beliefs among university students. Addressing these gaps is important for developing targeted interventions and health promotion strategies to increase physical activity among young adults in higher education settings.

Therefore, this study aims to evaluate university students' attitudes toward exercise from the perspective of the Health Belief Model and to identify the psychosocial factors influencing their participation in physical activity.

Materials and Methods

Research Model

This study aims to examine university students' attitudes toward exercise-related health beliefs in detail, controlling for demographic variables (gender, age, body mass index, smoking and alcohol use, chronic illness status, and perceived socioeconomic status). A quantitative research method was adopted in the study, and the descriptive survey model was used from general survey models. This model aims to reveal students' attitudes towards exercise and the psychosocial factors that shape them.

Research Group

The study sample consists of 1,814 university students in Kırıkkale, Türkiye. Of the participants, 946 are female (52.2%), and 868 are male (47.8%). Age groups ranged from 18 to 22+, and distributions were shown for variables such as body mass index, tobacco and alcohol use, chronic disease status, and socioeconomic status. The limitations of the study include a sample consisting only of university students and self-reported data.

Data Collection

The Exercise-Related Health Beliefs Attitude Scale was used to assess individuals' health beliefs regarding exercise. The scale consists of 20 items and has three subscales (Health Development, Cognitive Health, and Continuity); none of the items needs to be reverse-coded. As for the scale's reliability, the stability coefficient was 0.852, and the Cronbach's alpha internal consistency coefficient was 0.943. In addition, personal information was collected from participants, including gender, age, perceived socioeconomic status, height, weight, marital status, smoking and alcohol use, and chronic conditions.

Data Analysis

The data distribution was checked for normality, and the necessary conditions for parametric tests were met. The independent-samples t-test was used for comparisons between two groups, and the ANOVA was used for comparisons between three or more groups. If the ANOVA results showed a significant difference, the Tukey post hoc test was performed to determine which groups differed. The effect sizes were evaluated according to the following criteria: <0.1 insignificant; 0.1–0.3 small; >0.3–0.5 moderate; >0.5–0.7 large; >0.7–0.9 very large; >0.9 almost perfect level. Statistical analyses were performed using SPSS 28.0, and the results are presented in tables below and in the text as frequency distributions, means, and standard deviations.

Results

Statistical information about the demographic information of the participants in the groups is shown in Table 1.

Table 1. Frequency and percentage distributions of the demographic characteristics of the participants

Variables		n	Column %
Total number of participants		**1814**	**100**
Gender	Female	946	52.2
	Male	868	47.8
Age	18 years	354	19.5
	19 years	409	22.5
	20 years	408	22.5
	21 years	395	21,8
	22 years and above	248	13.7
BKI	Below 18.5: Underweight	393	21.7
	18.5 – 24.9: Normal weight	381	21.0
	25.0 – 29.9: Overweight	434	23.9
	30.0 – 34.9: Class 1 obesity	463	25.5
	35.0 – 39.9: Class 2 obesity	72	4.0
	40.0 and above: Morbidly obese	71	3.9
Smoking	Yes	1066	58.8
	No	748	41.2
Alcohol use	Yes	679	37.4
	No	1135	62.6
Chronic illness	Yes	773	42.6
	No	1041	57.4
Perceived economic status	Poor	680	37.5
	Moderate	704	38.8
	Good	430	23.7

Table 1 presents the demographic characteristics of the 1,814 university students included in the study. Of the participants, 52.2% were female, and 47.8% were male, and the age distribution was concentrated mainly between 18 and 21 years. In terms of body mass index, participants were distributed across underweight, normal weight, overweight, and obesity categories, with the highest proportions observed in the class I obesity (25.5%) and overweight (23.9%) groups. Regarding health-related behaviours, 58.8% of the participants reported smoking, whereas 37.4% reported alcohol consumption. In addition, 42.6% of the participants reported having a chronic illness. Regarding perceived economic status, the largest proportion of students reported moderate economic status (38.8%).

Table 2. Independent-Samples t-Test Results for Exercise-Related Health Beliefs Attitude Scale Scores by Gender

Dimension	Female (n=946) Mean ± MD	Male (n=868) Mean ± MD	t	Cohen's d	p
Health Development	5.35 ± 1.13	4.38 ± 1.21	17.61	0.83	0.001*
Cognitive Health	5.27± 1.75	4.43± 1.28	11.59	0.54	0.001*
Continuity	3.67± 1.16	4.41 ± 1.11	13.86	0.65	0.001*

*p< 0.001

According to the independent-samples t-test results presented in Table 2, female students scored significantly higher than male students in the "Health Development" and "Cognitive Health" subdimensions of the Exercise-Related Health Beliefs Attitude Scale

($p < 0.001$). In contrast, male students scored significantly higher than female students in the "Continuity" subdimension ($p < 0.001$). In terms of effect size, the difference was large for Health Development ($d = 0.83$), moderate for Cognitive Health ($d = 0.54$), and moderate to large for Continuity ($d = 0.65$). These findings indicate that exercise-related health belief attitudes differed significantly by gender.

Table 3. ANOVA Results for Exercise-Related Health Beliefs Attitude Scale Scores by BMI Category

Dimension	BMI	n	Mean	SS	F	p	Tukey
Health Development	18.5(1)	393	5.21	1.48	22.46	0.001*	1>2>3>4>5>6
	18.5 – 24.9(2)	381	5.10	1.33			
	25.0 – 29.9 (3)	434	4.93	1.45			
	30.0 – 34.9 (4)	463	4.57	1.30			
	35.0 – 39.9 (5)	72	4.16	1.21			
	40.0 ve üzeri(6)	71	3.89	1.23			
Cognitive Health	18.5(1)	393	5.27	1.22	57.32	0.001*	1>2>3>4>5>6
	18.5 – 24.9(2)	381	5.16	1.21			
	25.0 – 29.9 (3)	434	5.09	1.14			
	30.0 – 34.9 (4)	463	4.72	1.08			
	35.0 – 39.9 (5)	72	4.43	1.24			
	40.0 ve üzeri(6)	71	3.78	1.13			
Continuity	18.5(1)	393	5.46	1.27	157.88	0.001*	1>2>3>4>5>6
	18.5 – 24.9(2)	381	5.35	1.20			
	25.0 – 29.9 (3)	434	5.29	1.13			
	30.0 – 34.9 (4)	463	4.61	1.10			
	35.0 – 39.9 (5)	72	4.13	1.12			
	40.0 ve üzeri(6)	71	3.77	1.18			

*p< 0.001

As shown in Table 3, ANOVA results revealed significant differences in Exercise-Related Health Beliefs Attitude Scale scores across BMI categories for the "Health Development," "Cognitive Health," and "Continuity" subdimensions ($p < 0.001$). In all three subdimensions, scores declined progressively as BMI increased ($F = 22.46–157.88$). Tukey post hoc analyses confirmed the same ranking pattern across all subdimensions ($1 > 2 > 3 > 4 > 5 > 6$), indicating that students in lower BMI categories reported more positive exercise-related health beliefs than those in higher BMI categories.

Table 4. Independent-Samples t-Test Results for Exercise-Related Health Beliefs Attitude Scale Scores by Smoking Status

Dimension	Cigarette Use	n	Mean	SD	t	Cohen's d	p
Health Development	Yes	1066	4.21	1.10	-13.25	0.63	0.001*
	No	748	4.89	1.06			
Cognitive Health	Yes	1066	4.33	1.19	-17.30	0.82	0.001*
	No	748	5.28	1.12			
Continuity	Yes	1066	3.88	1.17	-16.09	0.78	0.001*
	No	748	4.82	1.26			

*p< 0.001

According to the independent-samples t-test results presented in Table 4, non-smoking students scored significantly higher than smoking students in the "Health Development," "Cognitive Health," and "Continuity" subdimensions of the Exercise-Related Health Beliefs Attitude Scale ($p < 0.001$). Furthermore, the effect sizes ranged from moderate to large (Cohen's $d = 0.63–0.82$), indicating that smoking status was meaningfully associated with differences in exercise-related health belief attitudes.

Table 5. Independent-Samples t-Test Results for Exercise-Related Health Beliefs Attitude Scale Scores by Alcohol Use Status

Dimension	Alcohol Use	n	Mean	SD	t	Cohen's d	p
Health Development	Yes	679	4.44	1.11	-14.07	0.69	0.001*
	No	1135	5.19	1.08			
Cognitive Health	Yes	679	4.31	1.13	-14.31	0.69	0.001*
	No	1135	5.11	1.19			
Continuity	Yes	679	3.93	1.17	-15.83	0.76	0.001*
	No	1135	4.84	1.21			

*p< 0.001

As shown in Table 5, non-drinking students obtained significantly higher scores than students who consumed alcohol across all three subdimensions of the Exercise-Related Health Beliefs Attitude Scale, namely "Health Development," "Cognitive Health," and "Continuity" ($p < 0.001$). The effect sizes ranged from moderate to large (Cohen's $d = 0.69–0.76$), suggesting a meaningful association between alcohol use and exercise-related health belief attitudes.

Table 6. Independent-Samples t-Test Results for Exercise-Related Health Belief Attitude Scale Scores by Chronic Illness Status

Dimension	Chronic Illness	n	Mean	SD	t	Cohen's d	p
Health Development	Yes	773	4.82	1.24	9.35	0.45	0.001*
	No	1041	4.29	1.13			
Cognitive Health	Yes	773	4.88	1.21	9.97	0.46	0.001*
	No	1041	4.27	1.39			
Continuity	Yes	773	4.63	1.48	21.23	1.05	0.001*
	No	1041	3.28	1.12			

*p< 0.001

According to the independent-samples t-test results presented in Table 6, students with chronic illnesses scored significantly higher than those without chronic illnesses in the "Health Development," "Cognitive Health," and "Continuity" subdimensions of the Exercise-Related Health Beliefs Attitude Scale ($p < 0.001$). In terms of effect size, the differences were moderate for the "Health Development" and "Cognitive Health" dimensions ($d = 0.45–0.46$) and very large for the "Continuity" dimension ($d = 1.05$). These findings indicate that chronic illness status was strongly associated with differences in exercise-related health belief attitudes.

Table 7. ANOVA Results for Exercise-Related Health Beliefs Attitude Scale Scores by Perceived Socioeconomic Status

Dimension	Economic situation	n	Mean	SD	p	Tukey
Health Development	Bad (1)	680	4.18	1.11	0.001*	1<2<3
	Middle (2)	704	4.68	1.08		
	Good (3)	430	5.29	1.13		
Cognitive Health	Bad (1)	680	4.22	1.12	0.001*	1<2<3
	Middle (2)	704	4.63	1.06		
	Good (3)	430	5.14	1.15		
Continuity	Bad (1)	680	3.53	1.25	0.001*	1<2<3
	Middle (2)	704	4.38	1.10		
	Good (3)	430	4.91	1.14		

*p< 0.001

As shown in Table 7, significant differences were observed across perceived socioeconomic status groups in all three subdimensions of the Exercise-Related Health Beliefs Attitude Scale: “Health Development,” “Cognitive Health,” and “Continuity” ($p < 0.001$). Tukey post hoc comparisons indicated a consistent pattern across all subdimensions ($1 < 2 < 3$), with students who perceived their socioeconomic status as good reporting the highest scores, followed by those with moderate and poor socioeconomic status. These findings suggest that exercise-related health belief attitudes increased progressively as perceived socioeconomic status improved.

Discussion and Conclusion

This study examined university students' attitudes toward exercise-related health beliefs within the Health Belief Model framework and investigated how demographic and lifestyle factors influence these attitudes. The findings revealed that variables such as gender, body mass index (BMI), smoking and alcohol consumption, chronic illness status, and perceived socioeconomic status play significant roles in shaping students' exercise-related health beliefs.

Regarding gender differences, female students scored significantly higher than male students in the "Health Development" and "Cognitive Health" dimensions of the Exercise-Related Health Beliefs Attitude Scale. These findings indicate that female students may be more aware of the health benefits of exercise and place greater emphasis on the cognitive and psychological outcomes of physical activity. Previous studies have reported similar findings. For example, Uğurlu and Yapıcı (2025) found that women scored higher than men in the "health development" and "cognitive health" dimensions, whereas men scored higher in the "continuity" subdimension. Therefore, the findings of the present study are consistent with this previous research. However, Caz and Yazıcı (2024) reported that there were no significant differences in the subdimensions of the exercise-related health belief attitude scale according to gender. These differences in findings may be attributed to variations in sample characteristics, lifestyle behaviours, or sociocultural contexts among the study populations.

The findings related to body mass index (BMI) also provide important insights. The results show that exercise-related health belief scores decrease significantly with increasing BMI. Students in lower BMI categories obtained higher scores in the "Health Development," "Cognitive Health," and "Continuity" subdimensions, whereas students in higher BMI categories reported lower scores. This indicates that individuals with lower BMI levels tend to have more positive beliefs and attitudes toward exercise and its health benefits. Similar findings were reported by Uğurlu and Yapıcı (2025), who indicated that individuals with lower BMI levels had higher exercise-related health belief scores. Furthermore, Yılmaz and Camcı (2024) emphasised that students with stronger exercise habits demonstrated more positive health attitudes and that regular exercise contributes significantly to overall health improvement. These findings collectively suggest that maintaining a healthy body weight may be associated with stronger health beliefs and greater motivation toward engaging in exercise.

Another important finding of this study concerns the relationship between lifestyle behaviours such as smoking and alcohol consumption and exercise-related health beliefs. The results demonstrate that students who smoke or consume alcohol have significantly lower scores across all subdimensions of the Exercise-Related Health Beliefs Attitude Scale compared to those who do not engage in these behaviours. These findings support the view that unhealthy lifestyle habits may weaken individuals' positive perceptions of exercise and reduce their motivation to engage in health-promoting behaviours. However, the literature presents mixed findings regarding these

relationships. For instance, Caz and Yazıcı (2024) and Çingöz et al. (2022) reported no significant differences in exercise-related health beliefs by smoking status. Similarly, Açıkgöz et al. (2020) found no significant differences in exercise-related health beliefs among alcohol consumers.

On the other hand, Çingöz et al. (2022) reported significant differences in the "physical benefit" and "self-efficacy" subdimensions among individuals who consume alcohol. Additionally, Uğurlu and Yapıcı (2025) found that individuals who did not smoke or consume alcohol had significantly higher exercise-related health belief scores than those who engaged in these behaviours. Therefore, the findings of the present study generally support the argument that unhealthy lifestyle behaviours such as smoking and alcohol consumption may negatively influence health beliefs and attitudes toward exercise.

The presence of chronic illness was also found to influence exercise-related health beliefs. Students with chronic illnesses obtained significantly higher scores across the "Health Development," "Cognitive Health," and "Continuity" subdimensions compared to students without chronic illnesses. This finding suggests that individuals who experience health-related conditions develop stronger health awareness and are more motivated to engage in behaviours that support disease management and health improvement. Similar results have been reported in previous studies. Koçak and Tümer (2022) found statistically significant differences in several subdimensions of the exercise-related health belief attitude scale among teachers with a family history of colorectal cancer. Furthermore, Sevinç et al. (2012) reported that individuals with diabetes had relatively high health belief scores, although those with better glycemic control sometimes demonstrated lower scores. These findings suggest that individuals who face health risks may become more aware of the importance of preventive health behaviours such as regular physical activity.

Perceived socioeconomic status also emerged as an important factor influencing exercise-related health beliefs. Students with higher socioeconomic status obtained significantly higher scores across all subdimensions of the scale than those with moderate or low socioeconomic status. This finding indicates that economic resources and favourable living conditions facilitate access to physical activity opportunities and support positive attitudes toward health-related behaviours. While some studies reported no significant relationship between socioeconomic variables and exercise-related health beliefs, others reported findings consistent with those of the present study. For example, Çingöz et al. (2022) and Koçak and Tümer (2022) found no significant differences in exercise-related health beliefs across income levels. In contrast, Uğurlu and Yapıcı (2025) concluded that individuals with lower socioeconomic status tended to have lower exercise-related health belief scores. Therefore, the results of the present study support the view that improved socioeconomic conditions may contribute to stronger health beliefs and more positive attitudes toward exercise.

Overall, this study's results demonstrate that multiple demographic and lifestyle factors influence university students' attitudes toward exercise-related health beliefs.

These findings are also compatible with the broader view that physical activity is embedded within a multidimensional lifestyle structure rather than representing an isolated health behaviour. Previous work has highlighted the complementary roles of physical activity, nutrition, and healthy living in supporting overall well-being and reducing lifestyle-related risks (Yel et al., 2024). In parallel, sedentary living associated with contemporary technological conditions has been described as an important challenge for health and movement behaviours (Coşkuntürk et al., 2023). The present findings further align with recent evidence indicating that physical activity is associated with psychosocial and attitudinal variables in educational settings. For example, regular

physical activity has been linked to more positive attitudes in teacher education contexts, with additional variation according to income and social environment (Çakır et al., 2025a). Moreover, studies conducted with university students have shown that psychological coping and adjustment are shaped by social and economic conditions, reinforcing the interpretation that exercise-related health beliefs are influenced by broader contextual and psychosocial factors (Çakır et al., 2025b)

Gender differences were observed across several subdimensions of the scale: female students scored higher on the "Health Development" and "Cognitive Health" dimensions. In contrast, male students scored higher on the "Continuity" dimension. Additionally, higher body mass index levels were associated with lower exercise-related health belief scores. Students who smoke or consume alcohol demonstrated weaker health beliefs toward exercise compared to those who do not engage in these behaviours. In contrast, students with chronic illnesses demonstrated stronger health beliefs about exercise, possibly due to greater awareness of the importance of maintaining health. Furthermore, students with higher perceived socioeconomic status demonstrated stronger exercise-related health beliefs across all subdimensions of the scale.

In conclusion, this study's findings highlight the importance of addressing demographic, socioeconomic, and lifestyle factors when developing strategies to promote physical activity among university students. Universities represent an important environment for encouraging healthy lifestyle behaviours, and targeted health promotion programs may strengthen students' awareness of the benefits of regular physical activity. Educational initiatives, awareness campaigns, and institutional support aimed at encouraging healthy behaviours—such as maintaining a healthy body weight, avoiding smoking and alcohol consumption, and increasing awareness of the benefits of exercise—may help strengthen students' exercise-related health beliefs and promote active lifestyles. Providing university students with adequate information, awareness, and support may play a critical role in increasing physical activity participation and improving long-term health outcomes. In this respect, the present findings support the growing literature suggesting that physical activity is linked not only to health promotion but also to broader psychosocial and lifestyle-related processes shaped by behavioural, social, and environmental conditions.

Study Limitations

Despite the valuable findings obtained in this study, several limitations should be acknowledged. First, the study sample consisted only of university students from Kırıkkale, Türkiye. Therefore, the results may not be fully generalizable to students from different universities, regions, or cultural contexts. Second, the data were collected via self-report questionnaires, which may introduce response bias and fail to reflect participants' actual health behaviours fully. Third, the cross-sectional design of the study limits the ability to establish causal relationships between exercise-related health beliefs and the examined demographic and lifestyle factors. Finally, although several important demographic variables were included in the analysis, other potential factors such as psychological well-being, academic stress, environmental factors, and access to physical activity facilities were not examined in this study. These limitations should be taken into consideration when interpreting the findings.

Implications for Future Research

Future studies could expand this research by including more diverse, representative samples from different universities and geographic regions to enhance the generalizability of the findings. Longitudinal research designs may also provide deeper insights into how exercise-related health beliefs develop and change over time among

university students. In addition, future studies may examine additional psychological and environmental variables, such as motivation, perceived social support, campus facilities, and academic workload, which may influence students' participation in physical activity. Investigating intervention programs designed to strengthen positive health beliefs and promote regular exercise behaviours among university students may also provide valuable contributions to both research and practice. Such studies could help develop more effective strategies to increase physical activity participation and promote healthier lifestyles among young adults.

Kısaltmalar / Abbreviations

ANOVA — Analysis of Variance

BMI — Body Mass Index

SD — Standard Deviation

$\bar{X}$ — Mean

SPSS — Statistical Package for the Social Sciences

t — t test value

F — F test statistic

p — Significance value

n — Sample size

N — Total number of participants

Min — Minimum value

Max — Maximum value

kg — Kilogram

SS — Standard deviation (or variability measure in tables)

d — Cohen's d effect size

Beyanlar / Declarations

Etik Onay ve Katılım Onayı / Ethics approval and consent to participate

Bu çalışmanın hazırlanma ve yazım sürecinde "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında bilimsel, etik ve alıntı kurallarına uyulmuş olup; toplanan veriler üzerinde herhangi bir tahrifat yapılmamış ve bu çalışma herhangi başka bir akademik yayın ortamına değerlendirme için gönderilmemiştir. Makale ile ilgili doğabilecek her türlü ihlallerde sorumluluk yazarlara aittir. Çalışma, Kırıkkale Üniversitesi Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu tarafından incelenmiş ve etik ilkelere uygun bulunmuştur (Karar No: 16, Oturum No: 05, Tarih: 17.05.2025).

During the preparation and writing of this study, scientific, ethical and citation rules were followed in accordance with the "Higher Education Institutions Scientific Research and Publication Ethics Guidelines"; no alterations were made to the collected data, and this study has not been submitted to any other academic publication platform for evaluation. Ethical approval for the study was obtained from the Kırıkkale University Social and Human Sciences Research Ethics Committee (Decision No: 16, Session No: 05, Date: 17 May 2025). The study was conducted in accordance with the principles of the Declaration of Helsinki.

Veri Ve Materyal Erişilebilirliği / Availability of data and material

Bu çalışmanın bulgularını destekleyen veriler, makul talepler üzerine sorumlu yazardan temin edilebilir. Veri seti yalnızca akademik amaçlar için erişilebilir olacak ve verilerin herhangi bir kullanımı, orijinal çalışmayı referans gösterecek ve katılımcıların gizliliğini koruyacaktır.

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset will be accessible only for academic purposes, and any use of the data will recognize the original study and maintain the confdentiality of the participants.

Çıkar Çatışması / Competing interests

Yazarlar, bu makalede sunulan çalışmayı etkileyebilecek herhangi bir çıkar çatışması veya kişisel ilişkiye sahip olmadıklarını beyan etmektedirler.

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Yazar Katkıları / Authors' Contribution Statement

Çalışmanın tasarımı ve planlanması: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Veri toplama, analizi veya yorumlanması: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Makalenin yazımı: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Veri düzenleme, yöntem belirleme, yazım – özgün taslak, yazım – gözden geçirme ve düzenleme: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K. Tüm yazarlar makalenin önemli noktalarını eleştirel bir şekilde gözden geçirmiş ve makalenin son halini onaylamıştır.

Design and planning of the study: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Data collection, analysis, or interpretation: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Manuscript preparation: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K.; Data organization, methodology development, writing – original draft, writing – review and editing: U.H.Y., D.U., Z.B., B.E., O.G., A.C.K. All authors critically reviewed the manuscript and approved the final version of the article.

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