

Quantitative Study of Health-Conscious Behaviour Among Hungarian University Students

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In recent years, the well-being of students in higher education has received increasing attention in international research, as it plays a key role in shaping future generations. The use of health-conscious practices contributes to both physical and mental well-being. This study explores different dimensions of health-conscious behaviour – well-being, life purpose, life satisfaction, stress, harmful addictions, physical activity and nutrition – among non-athletic university students. The cross-sectional study (n = 435) used validated measurement instruments such as the WHO Well-being Index, the Life Purpose Questionnaire, the Life Satisfaction Scale and the Perceived Stress Scale. In addition, a questionnaire designed by the research team was used to assess physical activity, harmful addictions and nutrition. The results of the survey showed that the majority of participants were generally satisfied with their quality of life, goal-oriented and perceived their daily life as generally happy and active. A positive correlation was found between physical activity and life satisfaction, with more physically active students reporting higher levels of satisfaction. Respondents tended to express their satisfaction with their body image, posture, and fitness level, although this did not show a proportional relationship with their level of physical activity. The students' perceptions of their physical and mental health are crucial for higher education institutions in promoting student well-being. Future research should involve multiple universities and adopt a broader methodological approach to more thoroughly examine the dimensions of health-conscious behavior.

Keywords: university students, WBI-5, PSS4, SWLS, PIL

Introduction

A significant proportion of the population leads sedentary lifestyles, influenced by modern tools such as computers and advanced communication technologies. These technological advancements have contributed to a decline in physical activity levels (Edwards & Loprinzi, 2016; Wu, Tao, Zhang, Zhang, Chen, Yang, Hao & Tao, 2016). Physical inactivity and mental health-related problems represent serious global public health challenges (Grasdalsmoen, Eriksen, Lønning & Sivertsen, 2020).

There is growing evidence that a significant proportion of university students have poor physical health, and the prevalence of psychological disorders is higher among them compared to their non-university-attending peers (Ströhle, 2009; Hussain, Guppy, Robertson & Temple, 2013; Martinez, Valencia & Trofimoff, 2020; Chaturvedi, Vishwakarma & Singh, 2021; Szlamka, Kiss, Bernáth, Kámán, Lubani, Kamer & Demetrovics, 2021). Based on a 2018 study conducted by the WHO on the mental health of university students in eight countries,

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it was found that one-third of the examined population had experienced some form of mental disorder (Auerbach, Mortier, Bruffaerts, Alonso, Benjet, Cuijpers, Demyttenaere, Ebert, Green, Hasking, Murray, Nock, Pinder-Amaker, Sampson, Stein, Vilagut, Zaslavsky, Kessler & WHO WMH-ICS, 2018). When discussing mental health, it is important to highlight stress as the most significant risk factor. Hans Selye, as early as the 1950s, distinguished between "good" and "bad" stress. The so-called "good" stress, known as eustress, fosters challenge, alertness, and creativity, while negative stress inhibits, drains energy, and leads to burnout (Bienertova-Vasku, Lenart & Scheringer, 2020).

In Norway, the SHoT (Students' Health and Well-being Study), a large-scale health survey conducted in 2010, 2014, and 2018, included 50,054 participants in its latest wave. Results showed that 66.6% of young people engaged in no physical activity (Grasdalsmoen et al., 2020). Similarly, data from the 2016 Hungarian Youth Survey revealed that 64% of Hungarian youth reported a lack of exercise despite strong evidence linking physical activity to mental health benefits, particularly in mitigating depression (Tsatsoulis & Fountoulakis, 2006; Kwan, Kleppe, Nordhus & Hovland, 2016; Gerber, Ludyga, Mucke, Colledge, Brand & Puhse, 2017; Gordon, McDowell, Hallgren, Meyer, Lyons & Herring, 2018). As noted, improving physical well-being may also enhance psychological well-being, with physical activity positively influencing mood and anxiety. Additionally, exercise supports cognitive, affective, and psychomotor development (Biddle & Asare, 2011). Studies suggest that physical activity can have therapeutic effects comparable to psychotherapy regarding mental well-being (Anderson & Shivakumar, 2013; Kwan et al., 2016).

Sedentary lifestyles are increasingly common in developed countries, with university students exhibiting higher inactivity rates compared to their peers (Castro, Bennie, Vergeer, Bosselut & Biddle, 2020). First-year university students represent a distinct group entering "emerging adulthood," a developmental phase characterized by heightened autonomy and independence (Arnett, 2015). This stage involves separation from parental control, new responsibilities, and lifestyle changes, including choices with long-term health implications (Stone, Becker, Huber & Catalano, 2012; Arnett, Žukauskienė & Sugimura, 2014). These changes impact mental, emotional, and physical health, requiring attention to factors such as healthy eating, regular exercise, quality rest, avoiding harmful addictions, and managing stress—the latter being a leading cause of disease (Alzheimer, van der Molen, Alaujan, Schmidt & Zamakhshary, 2011).

Mansoubi et al. conducted a literature review to examine the relationship between sedentary behaviour and physical activity. Based on the analysis of 26 scholarly articles, it can be concluded that sedentary behaviour displaces light-intensity physical activities (Mansoubi, Pearson, Biddle & Clemes, 2014).

Physical inactivity significantly contributes to "diseases of civilization" (Blair, 1999; Gaetano, 2016). Conversely, an active lifestyle reduces anxiety, depressive symptoms, and stress while enhancing psychosocial well-being (Ströhle, Höfler, Pfister, Müller, Hoyer & Wittchen, 2007; Ghorbani Heidarimoghadam, Karami, Fathi, Minasian & Bahram, 2014; Li, Fang, Li, Zheng, Tao & Yan, 2015; Luthar, Ebbert & Kumar, 2020). During emerging adulthood, decreased parental control and increased temptations, such as alternative recreational activities, can exacerbate inactivity. This period is also sensitive to the emergence of mental health problems (Martinez & Aguilo-Pons, 2020; Chaturvedi et al., 2021; Szlamka et al., 2021). A 2018 WHO study across eight countries found that approximately one-third of university students experienced a mental disorder (Auerbach et al., 2018). Epidemiological data suggest a high prevalence of depression and anxiety within this population, with 12-50% meeting the criteria for common psychological disorders (Uddin, Burton & Khan, 2019). Regular physical activity has demonstrated positive effects on both physical and mental health (Keresztes, Pikó, Gib-

bons & Spielberger, 2009; Theodoratou, Dritsas, Saltou, Dimas, Spyropoulos, Nikolopoulou, Bekos, Klioni, Psychogioy & Valsami, 2012).

The Purpose in Life Test, in conjunction with the Rosenberg Self-Esteem Scale, was used by two private universities in the United States to assess the life purpose and self-esteem of 497 students. A strong correlation between life purpose and self-esteem has been established and proved that having a purpose in life is an important factor for university students to fight against depression (Hodges & Denig, 2023). Xi et al. researched gender differences regarding the mediation effect of altruism (Xi, Lee, Carter & Delgado, 2022). There is an increasing number of international studies measuring student satisfaction (Rensburg & Mostert, 2023), and a survey by Tamannaifar and colleagues found a significant relationship between life satisfaction and academic performance among undergraduate students (Tamannaifar & Mansourinik, 2023). Miquel et al. examined the relationship between the PSS-4 and the depression scales of the Symptom Checklist-90-Revised (SCL 90-R), and the results showed that the PSS-4 scores exhibited a positive correlation with both the SCL 90-R anxiety and depression scales. With regard to having harmful addictions, 80% of university students who participated in an international study reported sporadic or regular alcohol consumption and 35.9% smoked (Moreno-Gómez, Romaguera-Bosch, Tauler-Riera, Bennasar-Veny, Pericas-Beltran, Martinez-Andreu & Aguilo-Pons, 2012). Vallejo and colleagues utilized the Perceived Stress Scale (PSS-4) to identify the factors influencing mental health in a Spanish sample, comparing the results with findings from English and French populations (Vallejo, Vallejo-Slocker, Fernández-Abascal & Mañanes, 2018).

This study examines the mental health, physical activity levels, sense of responsibility for personal health, and prevalence of harmful addictions among first-year university students.

Hypotheses:

1. Null Hypothesis: There is no correlation between life satisfaction and physical activity.
2. Alternative Hypothesis: Higher physical activity levels are associated with greater life satisfaction.

Method

Sample

The research involved first-year non-athletic students from Eszterházy Károly Catholic University. Of the 712 students, 435 participants completed the entire questionnaire as part of the cross-sectional survey, representing 61.1% of the population. Respondents ranged in age from 18 to 22 years, with 86% (313 participants) between the ages of 18 and 21 and an average age of 20.07 years (± 1.64). Regarding gender, 55.4% (241 respondents) were female, and 44.6% (194 respondents) were male. Most participants, 67.4% (293 respondents), lived with their parents. Among those separated from their parents, 12% had been living apart for less than a year, residing with flatmates, colleagues, or partners, while only 1.1% lived entirely alone. Another 13.4% had been living separately for more than a year, typically with a flatmate or partner.

Instruments

The survey utilized validated questionnaires and self-administered questions, which were completed in person, anonymously, and voluntarily. The 5-item World Health Organization Well-Being Index (WHO-5), employed in this study, is a brief, generic global rating scale designed to measure subjective well-being (Susánzky, Konkoly Thege, Stauder & Kopp, 2006; Downs, Boucher, Campbell & Polyakov 2017; Brittain, Shirley, DeClue, Shelby & Kolo, 2023). The WHO-5 consists exclusively of positively phrased items, including the fol-

lowing: (1) "I have felt cheerful and in good spirits," (2) "I have felt calm and relaxed," (3) "I have felt active and vigorous," (4) "I woke up feeling fresh and rested," and (5) "My daily life has been filled with things that interest me." Respondents were asked to reflect on their experiences over the past 14 days and rate them accordingly (Winther, Østergaard, Søndergaard & Bech, 2015).

Next, participants completed the Hungarian adaptation of the Crumbaugh and Maholick Purpose in Life Test (PIL) (Konkolý Thege & Martos, 2006). This test is based on the premise that having a purpose in life is essential for achieving meaningful goals and living a fulfilling and worthwhile life. Developed by Frankl, it aligns with his theory that "the primary aspiration of people is to develop a purpose in life" (Hodges & Denig, 2014).

The Satisfaction With Life Scale (SWLS) was also employed to assess well-being (Diener, Emmons, Larsen, & Griffin, 1985). This scale consists of five positively phrased items, and respondents indicate their level of agreement with the statements on a seven-point scale. It measures cognitive judgments of life satisfaction through summative scoring, where higher scores indicate greater life satisfaction (Chakrabartty, 2023). In this survey, the Hungarian adaptation of the SWLS was used (Martos, Sallay, Désfalvi, Szabó & Itzés, 2014).

Additionally, participants completed the Hungarian version of the Perceived Stress Scale (PSS-4), which consists of four items. Responses were scored using Cohen's original 5-point scale, where 0 indicated "never," 1 indicated "almost never," 2 indicated "sometimes," 3 indicated "fairly often," and 4 indicated "very often" (Cohen, Kamarck & Mermelstein, 1983). This scale assesses the individual's perception of stress, focusing on feelings, thoughts, and experiences related to stress over the past month. The measurement tool includes two reverse-scored items, necessitating the recoding of these items, thereby allowing the total score to be considered a global indicator of the scale (Stauder & Konkolý Thege, 2006).

In addition to these standardized measures, the survey also included a set of questions addressing participants' perceptions of their posture, body shape satisfaction, fitness and health status, and their sense of responsibility for maintaining them. Respondents were also asked about their engagement in physical activity, their daily sitting time (both in and outside of school), harmful addictions, dietary habits, adherence to specific diets or use of supplements, and their daily water intake, distinguishing between weekdays and weekends.

Procedure

The survey questionnaires were administered in-person during scheduled class times, allowing for consistent conditions. Participants completed the survey on paper, ensuring anonymity and minimizing distractions. Each session lasted approximately 20 minutes, with clear instructions provided by trained research assistants.

Statistical Analysis

The responses from the questionnaire were imported into Microsoft Excel. The coding and the descriptive and mathematical statistical analyses of the data were performed using IBM SPSS Statistics 21.0 software. Depending on data distribution, one-sample t-tests, two-sample t-tests, and correlation analyses were performed to examine differences and relationships between variables. Ethical considerations included obtaining informed consent from all participants, ensuring anonymity in data collection, and adhering to data protection guidelines throughout the research process.

Results

In the Well-Being Index, respondents achieved an average score of 16.99 points (standard deviation = 3.352) out of a maximum of 25 points. The findings indicate that 79% of students reported feeling happy and cheerful very often or always, while only 47% felt calm and relaxed. Furthermore, 53% of respondents reported feeling active, with "feeling lively" receiving the highest scores. However, 76% of students stated that they experienced feeling fresh and rested upon waking up less than half of the time, sometimes, or almost never. Additionally, 60% of respondents felt that their days were filled with enjoyable activities.

We identified (see. Table 1.) a clear, moderately strong positive correlation between well-being and physical activity ($p = 0.001$, $r = 0.242$). When analyzed by gender, women scored an average of 16.85, while men scored 17.17. However, the results of the independent samples t-test ($F = 0.017$, $p = 0.297$) indicate that the feeling of well-being is not significantly associated with gender.

Statistical Analysis	Measure	Value
Correlation between Well-Being and Physical Activity	Pearson's r	0.242
	p-value	0.001
Gender Comparison (Well-Being Scores)	Women (mean \pm SD)	16.85 \pm N/A
	Men (mean \pm SD)	17.17 \pm N/A
Independent Samples t-test (Gender)	F-statistic	0.017
	p-value	0.297

Table 1. Statistical Summary of the Relationship Between Well-Being, Physical Activity, and Gender

In the PIL Test, scores are categorized into three levels: scores above 113 indicate a high purpose in life, scores between 92 and 112 indicate a medium purpose in life, and scores below 91 indicate a low purpose in life. The results reveal that 90.8% of students (395 students: 221 women and 174 men) achieved a high score, reflecting strong life goals and a clear perception of the meaning of their existence. Additionally, 8.5% of students (37 students: 18 women and 19 men) scored in the medium range, while 0.7% of students (3 students: 2 women and 1 man) scored in the low range. The two-sample t-test revealed significant gender differences on several aspects of the PIL Test. For instance, women scored higher ($M = 85.3$, $SD = 12.4$) than men ($M = 79.6$, $SD = 13.7$) in their relationship with the world, with the difference being statistically significant ($t(433) = 3.42$, $p = 0.001$). Similarly, women demonstrated a stronger ability to find meaning and purpose in life ($M = 87.8$, $SD = 11.9$) compared to men ($M = 82.1$, $SD = 12.8$), with this difference also being significant ($t(433) = 2.97$, $p = 0.003$). These results underscore that women generally exhibit a stronger sense of purpose and a clearer perception of life's meaning, while men are more likely to perceive life as routine.

Regarding SWLS, 16.1% of the students felt that their life was not close to ideal, and 58.4% felt the opposite. The findings also show that 73.6% of respondents rated their living conditions as excellent, while 11.1% felt that they were poor. A majority—69.8% of students—expressed satisfaction with their lives, whereas 15.4% were not satisfied. 67% felt that they preferred to have everything in life, in contrast to 13.8% of their peers. 34.9% of the students thought that if they could start their life again, they would rather change things, while 49.6% agreed with the statement that they would change almost nothing.

The mean score on the PSS-4 was 5.93 ($SD: 4.87$). The percentage distribution of responses for each item is presented in Table 2.

	Never	Almost never	Sometimes	Fairly often	Very often
How often have you felt that you were unable to control the important things in your life?	8%	29%	38%	18%	7%
How often have you felt confident about your ability to handle your personal problems?	2%	4%	24%	42%	28%
How often have you felt that things were going your way?	3%	10%	32%	41%	14%
How often have you felt difficulties were piling up so high that you could not overcome them?	11%	31%	35%	16%	7%

Table 2. The result of PSS4

Regarding their physical activity, 47.1% of students did not do physical activity at all or preferred not doing any physical activity, while 23.5% preferred to do physical activity, even daily. The distribution of physical activity by gender is illustrated in Diagram 1.

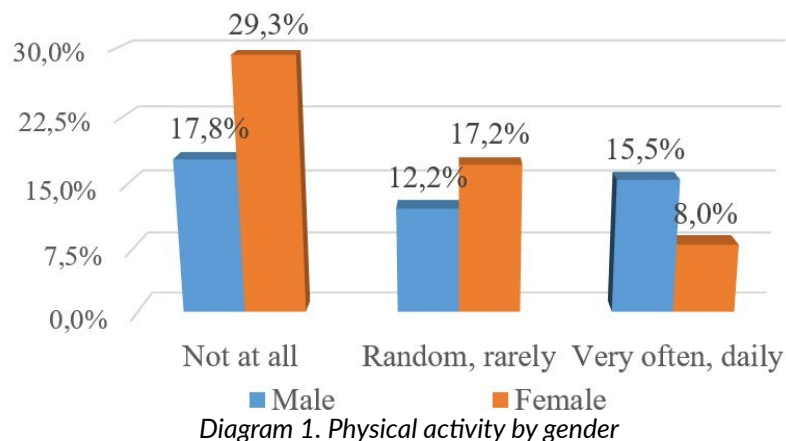


Diagram 1. Physical activity by gender

The statistical analysis indicates that the null hypothesis ($p > 0.05$) can be rejected, thereby supporting the alternative hypothesis that there is a significant relationship between life satisfaction and physical activity. Specifically, students who engage in regular physical activity report higher levels of life satisfaction ($F = 0.655$, $t = 0.974$, $p = 0.051$). Findings related to inactivity further reveal that 71% of students spent less than 5 hours sitting per day outside school days, while 33% sat for extended periods during school days. Moreover, 67% reported spending more than 6 hours sitting during school hours. As part of the study, participants were asked to evaluate themselves on a 7-point intensity scale to assess their posture, physical fitness, and overall body condition, with responses ranging from "1 = Not ideal at all" to "7 = Totally ideal/optimal." Results indicate that 73.8% of respondents perceived their body shape as not ideal or rather not ideal (1-3 on the scale), with only 23.4% rating it as rather ideal. No significant relationship was observed between physical fitness and posture. However, Pearson's correlation coefficient ($r = 0.576$, $p = 0.000$) demonstrated a moderately strong relationship between posture and fitness status (see Diagram 2.).

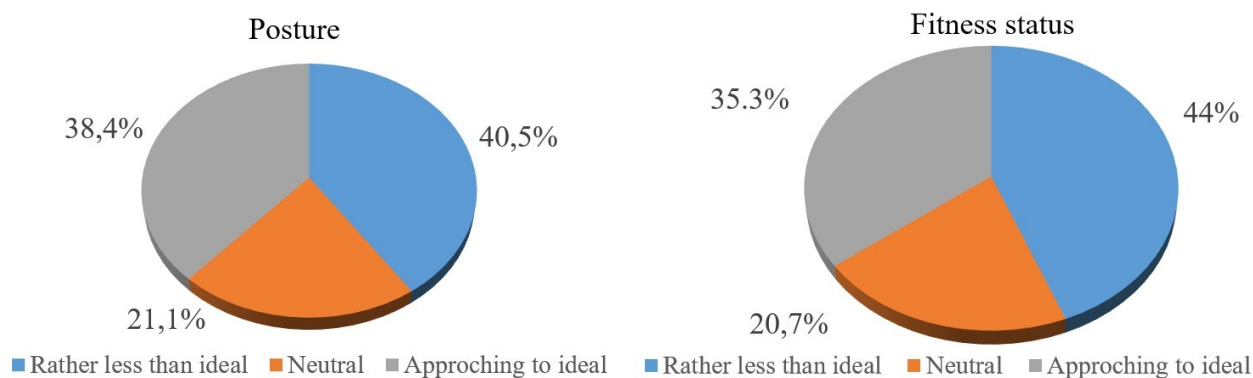


Diagram 2. Participants' own views on their posture and fitness status

When asked about their perceived ability to influence their own health, less than 1% of respondents reported feeling that they were unable to do anything to improve it. In contrast, the vast majority—87.3% ($n = 380$)—acknowledged taking personal responsibility for their health. Notably, only a negligible proportion of respondents (0.5%, $n = 2$) believed that they had no control over their health. Statistical analysis revealed a very weak positive correlation between physical activity and perceived self-efficacy regarding health management ($p = 0.01$, $r = 0.153$).

Subjective perceptions of posture, body awareness, and fitness did not show a significant correlation with the presence of life goals. However, a weak positive relationship was observed between these factors and life satisfaction ($r = 0.46$, $p = 0.003$). Regarding harmful addictions, nearly half of the respondents reported abstaining from alcohol, 61.8% indicated they did not smoke, 20.3% smoked occasionally, and 17.9% smoked daily. The examined harmful addictions showed a very weak correlation ($r \approx 0.1$ in all cases) with the extent to which students perceived themselves as responsible for shaping their own health.

Two-thirds of the students rated their health as "good," which shows a weak significant positive correlation with the extent to which they perceived themselves as responsible for their own health development ($r = 0.116$, $p = 0.002$). On weekdays, 20% of respondents reported not paying attention to healthy eating habits, a figure that nearly doubled on weekends, potentially due to the influence of parental care (this assumption requires further investigation). Additionally, 86.4% of the participants reported not following any specific diet, and 57.7% did not use dietary supplements.

No significant difference was observed in water consumption between weekends and weekdays, with an average of 2.34 litres of water consumed per person per day. Energy drinks were reported to be consumed by 54.5% of students, although not necessarily on a daily basis, while sugary drinks were consumed by nearly all students (94%), albeit occasionally.

Conclusion

The survey showed that the majority of the students examined are satisfied with their quality of life overall, have goals, and tend to consider their everyday lives to be happy and active. The results align with other research findings, highlighting gender differences, where female students demonstrated significantly higher well-being ratings compared to male students. No significant difference was found in life satisfaction and gender in this present study, in contrast to some findings from abroad (Zhang, Ewalds-Kvist & Li, 2019). Regarding the PSS-4, the obtained mean score of 5.93 is slightly higher compared to the findings of the Spanish survey,

where the mean was 5.6 for women and 5.2 for men (Vallejo et al., 2018). Time spent sedentary among students revealed distinct patterns: their time spent sedentary was 6.86 hours on school days and 6.15 hours on weekends, slightly different from the 7.29 hours published by Castro and his colleagues. A survey in the USA found that 16-19-year-olds spend more than 8 hours a day sedentary (Matthews, Chen, Freedson, Buchowski, Beech, Pate & Troiano, 2004). Eurobarometer 64.3 examined the amount of time spent with sedentary work in several countries using self-reported data and reported that adults aged 18-25 spent an average of 5.86 hours a day sitting (European Commission, 2012). In six further studies, Castro and colleagues found that many university students spent 9.82 hours per day sitting (Castro, Bennie, Vergeer, Bosselut & Biddle, 2018).

According to a Hungarian study, 71.1% of young adults do some regular leisure sport outside of PE lessons every week for at least half an hour. The results of the current survey indicate that 47.1% of young people do not engage in any form of physical activity, a finding that aligns closely with the European average (Eurobarometer, 2018). This is consistent with other research, which suggests an inverse relationship between sedentary behaviour and physical activity (Mansoubi et al., 2014; Castro et al., 2018).

Responders tended to express satisfaction with their body shape, posture, and fitness status, although this was not proportionally related to their physical activity levels. The majority of the sample take responsibility for their overall health.

Regarding harmful addictions, both smoking and regular alcohol consumption are lower among non-sports-related university students in Eger, according to their self-reports, compared to the Spanish survey (Moreno et al., 2012).

Conclusion, limitations and future implications

One limitation of the study is its cross-sectional design, which restricts the ability to establish causal relationships. Secondly, the reliance on self-reported data may introduce bias due to the subjective perceptions of the participants. Future research should involve multiple universities, examine academic disciplines separately, and incorporate additional research instruments and triangulated methods to gain deeper insights into first-year university students. It would also be beneficial to assess all dimensions of health-conscious behaviour. Based on the results, the development of a comprehensive health promotion program, which students could adopt during their university years, would be valuable.

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Magyar egyetemi hallgatók egészségtudatos viselkedésének kvantitatív vizsgálata

Az elmúlt években a felsőoktatásban tanuló hallgatók jólléte egyre nagyobb figyelmet kapott a nemzetközi kutatásokban, mivel kulcsfontosságú szerepet játszik a jövő generációinak formálásában. Az egészségtudatos gyakorlatok alkalmazása hozzájárul mind a testi, mind a lelki jólléthez. A tanulmány az egészségtudatos viselkedés különböző dimenzióit – jóllét, életcél, életelegedettség, stressz, függőségek, fizikai aktivitás és táplálkozás – vizsgálja nem sportszakon tanuló egyetemi hallgatók körében. A keresztmetszeti vizsgálat (n = 435) során validált mérőeszközöket alkalmaztunk, mint a WHO Jól-lét Index, az Életcél Kérdőív, az Élettel való Elégedettség Skála és az Észlelt Stressz Skála. Ezen kívül a kutatócsoport által készített kérdőívet használtuk a fizikai aktivitás, a káros szenvedélyek és a táplálkozás felmérésére. A felmérés eredményei szerint a résztvevők többsége összességében elégedett az életminőségével, célorientált, és a mindennapjait általában boldognak és aktívnak érzékeli. A fizikai aktivitás és az életelegedettség között pozitív összefüggést találtunk, mivel a fizikailag aktívabb hallgatók nagyobb mértékű elégedettségről számoltak be. A válaszadók hajlamosak voltak elégedettségüket kifejezni testalkatukkal, testtartásukkal és fittségi állapotukkal kapcsolatban, bár ez nem mutatott arányos összefüggést a fizikai aktivitás szintjével. A hallgatók testi és lelki egészségükről alkotott percepciója kulcsfontosságú a felsőoktatási intézmények számára a hallgatói jóllét előmozdításában. A jövőbeli kutatások során célszerű lenne bevonni több egyetemet, és szélesebb módszertani megközelítést alkalmazni az egészségtudatos magatartás dimenzióinak részletesebb vizsgálata érdekében.

Kulcsszavak: egyetemisták, jóllét, jól-lét kérdőívek, élettel való elégedettség