



PREDICTORS OF WELL-BEING IN UNIVERSITY STUDENTS: THE DOMINANT ROLE OF SOCIAL AND MENTAL BALANCE AND PHYSICAL EXERCISE OVER DIETARY HABITS AND DAILY ROUTINES

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Abstract/Izvleček

This study examines the relationship between well-being, social and mental balance, physical exercise, dietary habits, and daily routines among university students. Using standardised questionnaires, we obtained results showing that social and mental balance is the strongest predictor of well-being, followed by organised physical exercise. Although dietary habits and daily routines are correlated with well-being, their predictive influence remains limited. The results point to the importance of holistic interventions that integrate social support, structured physical activity, and healthy lifestyle choices in increasing overall well-being. Future research should investigate longitudinal effects and intervention-based approaches to develop sustainable well-being strategies tailored to students' needs.

Keywords:

university students, well-being, social and mental balance, physical exercise, dietary habits, daily routines.

Gljučne besede:

študenti, dobrobit, socialno in duševno ravnovesje, telesna vadba, prehranske navade, dnevna rutina.

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Napovedniki dobrobiti študentov: Prevladujoča vloga socialnega in duševnega ravnovesja ter telesne vadbe v primerjavi s prehranskimi navadami in dnevnimi rutinami

V članku analiziramo razmerje med dobrobitjo, socialnim in duševnim ravnovesjem, telesno vadbo, prehranskimi navadami in vsakodnevnimi rutinami pri študentih. Rezultati, pridobljeni s pomočjo standardiziranih vprašalnikov, kažejo, da sta socialno in duševno ravnovesje najmočnejša napovednika dobrobiti študentov, sledi pa jima organizirana telesna vadba. Čeprav so prehranske navade in dnevne rutine povezane z dobrobitjo, je ne napovedujeta statistično značilno. Rezultati poudarjajo pomen celostnih intervencij, ki vključujejo socialno podporo, strukturirano telesno aktivnost in zdrave življenjske navade za izboljšanje splošne dobrobiti. V prihodnjih raziskavah bi morali preučiti dolgoročne učinke in pristope, ki temeljijo na intervencijah, da bi razvili trajnostne strategije za krepitev dobrobiti, prilagojene potrebam študentov.

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Well-being as a multi-layered concept

In the past, there have been various perspectives on and attempts to define the concept of well-being. These range from the hedonic approach, which focuses on happiness and defines well-being in terms of pleasure attainment and pain avoidance, to the eudaimonic approach, which focuses on meaning and self-realization and defines well-being as the extent to which a person is fully functional (Ryan and Deci, 2001), to the definition of well-being as the balance point between an individual's resource pool and the challenges they face, where stable well-being means that individuals have the psychological, social and physical resources they need to cope with a particular psychological, social and/or physical challenge (Dodge et al., 2012). Most research focuses on psychological well-being, which broadly encompasses the entire mental health continuum (Ropret et al., 2023), and only a few focus on general well-being. Therefore, we address the well-being of higher education students, the factors that determine their well-being and ways to improve it.

Definitions of psychological well-being and the measures used to determine it vary widely in research, but the 5-item World Health Organization Well-Being Index (WHO-5) is among the most commonly used questionnaires to assess subjective psychological well-being in different domains (Topp et al., 2015) and reflects aspects other than just the absence of the symptoms of psychological distress (Bech et al., 2003). Higher levels of well-being are associated with a range of better outcomes in terms of physical health and longevity (Diener et al., 2017), as well as success at the professional, personal and interpersonal levels: individuals with high levels of well-being show higher productivity at work, more effective learning, and greater creativity, along with more prosocial behaviour and positive relationships (Ruggeri et al., 2020).

On the other hand, research has also shown that various aspects can support an individual's well-being, such as social support through close and caring relationships (Feeney and Collins, 2015), activities for one's mental balance (Lyubomirsky and Layous, 2013), physical activity, and especially regular outdoor physical activity (Lesser and Nienhuis, 2020), regular activities or routines (Avni-Babdad, 2011) and healthy dietary habits (Geraets and Heinz, 2023).

Mental balance can be defined as a sense of tranquillity that arises from inner peace and harmonious relationships with the external world (Joshanloo, 2022). This sense

of equilibrium contributes significantly to psychological well-being, particularly in stressful academic environments.

Social support, on the other hand, is the perception or experience of being cared for and valued and of being part of a mutually supportive social network (Taylor, 2011). Relatedly, social well-being refers to positive functioning and involves being able to contribute to society (social contribution), feeling part of a community (social integration), believing that society is becoming a better place for all people (social actualization), and feeling that the way society functions makes sense to them (social coherence) (Galderisi et al., 2015). Within this framework, social balance is also relevant. It is a classic psychological theory positing that a triad of individuals is balanced if all three are mutual friends, or if two are friends who share hostility towards a third (Nishi and Masuda, 2014). While originating from social psychology, this concept illustrates the importance of consistency and harmony in social relationships for an individual's sense of social stability and well-being.

Social interactions significantly affect health and longevity (Holt-Lunstad, 2018), and many of these interactions are interlinked with physical activity (Jennings and Bamkole, 2019), particularly in older populations (Shvedko et al., 2018). Physical activity networks can contribute to increased physical participation, which promotes human well-being, including physical and mental health (WHO, 2018). Physically active people experience less stress, depression, and anxiety, but certain types, duration and frequency of exercise may be more effective than others (Chekroud et al., 2018).

Regarding regular activities, Avni-Babdad (2011) found that greater feelings of safety, confidence and well-being were reported in routine situations. They claim that routine promotes feelings of safety, confidence, and well-being in many aspects of daily life.

Research also suggests that healthy dietary habits are associated with positive health, well-being, and behaviour, while unhealthy dietary habits are associated with health problems and risk behaviours, especially in adolescence (Geraets and Heinz, 2023). Among university students, a positive relationship has also been found between a healthful diet and greater life satisfaction (Schnettler et al., 2015), indicating the importance of incorporating physical, psychological, and cognitive resources to promote well-being. The relationships between these aspects are based on the biopsychosocial model (Engel, 1977), which emphasises that biological, psychological, and social factors jointly influence health and well-being.

In this context, recent research emphasises the importance of a multidisciplinary approach to analysing the related phenomena (Taukeni, 2019).

Building on the above-mentioned research findings on the vital role of various aspects of social, psychological, and biological factors in understanding the well-being of university students, the present study aims to investigate the role of social and psychological balance in predicting participants' well-being. In addition, we aim to assess whether reported physical activity, daily routines and healthy dietary habits explain an additional proportion of the variance in measures of well-being.

Method

Participants

The survey was conducted as part of the project “NOO: Healthy lifestyles for sustainable development and lifelong learning” and took place in 2024. Before completing the survey, respondents were informed about the objectives of the survey and the voluntary nature of participation, as well as the conditions of confidentiality and anonymity.

The questionnaire was completed in a classroom where a member of the research team was present to explain the instructions to the students and answer any questions about the study. The survey was voluntary and lasted approximately 15 minutes.

A non-randomised sample of university students, prospective primary school teachers, was used for the study. The sample comprised 55 students aged 21 to 25 years ($M = 22.3$, $SD = 1.045$), with the majority being female (47 participants, 85.5%) and the remainder male (8 participants, 14.5%).

Table 1

Demographics of the sample

	<i>N</i>	<i>%</i>
Gender		
Female	47	85.5
Male	8	14.5
Age		
21 - 22 years	39	70.9
23 - 24 years	14	25.5
25 - 26 years	2	3.6

N = Number of participants

Measures

During data collection, questionnaires were completed by participants in a physical format. Participants first completed the HLPCQ, IPAQ-SF and WHO-5 questionnaires.

Socio-demographic variables such as age, gender, current weight and height were recorded. In addition to this socio-demographic data, the data described below was also collected.

Well-being (World Health Organization Well-being Index (WHO-5; WHO, 2024a))

The World Health Organization-Five Well-Being Index (WHO-5; WHO, 2024a), using the Slovenian translation (2024b), was applied to assess subjective well-being. This brief, validated five-item scale uses a six-point response format (0–5) referring to the past 14 days. Raw scores (0–25) are converted to a percentage scale (0–100) by multiplying by four, with higher scores indicating greater well-being. In this study, Cronbach's alpha was 0.71. The WHO-5 has demonstrated strong reliability and validity across populations and is widely used both as a depression screening tool and as an outcome measure in clinical trials and population studies (Topp et al., 2015; WHO, 1998).

The Healthy Lifestyle and Personal Control Questionnaire (HLPCQ; Darviri et al., 2014)

The Healthy Lifestyle and Personal Control Questionnaire (HLPCQ) is a validated 26-item tool assessing the frequency of adopting positive lifestyle habits on a 4-point Likert scale (1 = Never to 4 = Always) (Darviri et al., 2014). It covers five domains: healthy dietary choices (7 items), dietary harm avoidance (4), daily routine (8), organised physical exercise (2), and social and mental balance (5). Total scores range from 26 to 104, with higher scores indicating greater lifestyle control. In our sample, the mean score was 61.64 (SD = 10.28; range = 40–87), suggesting limited control over health-related habits. The scale showed good reliability (Cronbach's $\alpha = 0.86$), consistent with previous findings (Babicki et al., 2024; Darviri et al., 2014).

Statistical analysis

The data were analysed using IBM SPSS STATISTICS 29 software for the Windows operating system. Statistical analysis was performed on complete data (N=55). To examine the associations among psychological well-being and healthy lifestyle and personal control subscales, Pearson correlation tests were performed. A hierarchical

regression analysis using the *enter* method was conducted to analyse the effects of a healthy lifestyle and personal control subscales on well-being.

Results

The proportion of missing values for each variable was low (less than 1% for all variables), and each participant had at least 95% of the data available for each scale. Missing values were replaced using the Expectation Maximization (EM) algorithm, which was applied separately for each dimension. The descriptive statistics for the included variables are presented in Table 2.

Table 2

Means, standard deviations and correlations

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.
1. Well-being	61.45	14.20					
2. Social and mental balance	14.24	2.49	.58**				
3. Organized Physical Exercise	5.09	1.86	.44**	.22			
4. Dietary Healthy Choices	15.87	3.49	.30*	.32*	.29*		
5. Dietary Harm Avoidance	9.49	1.82	.39**	.39**	.29*	.52**	
6. Daily Routine	16.95	4.57	.35**	.44**	.31*	.49**	.30*

Notes. * $p < .05$, ** $p < .001$.

Well-being had a mean score of 61.45 (SD = 14.20) out of a possible 100 percent, indicating a moderate average level of well-being among the participants. The standard deviation indicates moderate to high variability and reflects a wide range of reported well-being within the sample. Similarly, the social and mental balance index (HLPCQ subscale) had a mean score of 14.24 (SD = 2.49) out of a possible score of 20 points, indicating moderate levels of aspects of social and mental balance, with relatively consistent responses as indicated by the moderate standard deviation.

In terms of physical activity, the organised physical exercise index (HLPCQ subscale) yielded a mean score of 5.09 (SD = 1.86) out of a possible 10 points, indicating a moderate level of engagement in organised physical exercise. The high standard deviation indicates that some participants were very engaged in organized physical exercise, while others indicated a low level of engagement.

The healthy dietary choices index (HLPCQ subscale) had a mean score of 15.87 (SD = 3.49) out of a possible 28 points, indicating a moderate tendency towards healthy dietary choices, although the moderate to high standard deviation suggests greater

variability in this behaviour. The dietary harm avoidance index (HLPCQ subscale) had a mean score of 9.49 (SD = 1.82) out of a possible 16 points, indicating moderate avoidance of harmful dietary habits, with moderate variability in participants' responses.

Finally, the daily routine index (HLPCQ subscale) had a mean score of 16.95 (SD = 4.57) out of a possible 32 points, indicating a moderately structured and consistent approach to daily activities. The relatively high standard deviation also indicates notable variability, with some participants maintaining very regular routines, while others reported more irregular patterns.

Most of these factors thus showed moderate to high variability, which illustrates the distinct individual experiences and practices among the participants in our study.

Examination of the Pearson correlation coefficients shows that most variables correlate positively with each other as expected (moderate to high correlation).

Well-being (1) is positively and statistically significantly correlated with all other indexes (HLPCQ subscales), suggesting that social balance, physical exercise, dietary habits, and daily routine are key factors for general well-being. All correlations are above the 0.3 level, confirming that it makes sense to include all predictors in the hierarchical multiple regression model.

The strongest relationship is between well-being (1) and social and mental balance (2), suggesting that individuals with greater mental and social balance tend to report greater well-being, and demonstrating the importance of interpersonal relationships and mental health for overall well-being.

In addition, well-being (1) is strongly correlated with organised physical exercise (3), suggesting that individuals who participate more frequently in organised physical exercise tend to report greater well-being, highlighting the importance of regular physical exercise for mental health.

Dietary habits, such as avoiding harmful dietary practises (5) and making healthy dietary choices (4), are strongly correlated, suggesting that individuals who adopt healthy dietary habits often also avoid harmful dietary practises.

Daily routine (6) shows positive moderate associations with several factors, suggesting that consistency and structure in daily life relates to various aspects of lifestyle and overall well-being.

A hierarchical regression analysis was performed, using the *enter* method (Table 3) to analyse the effects of social and mental balance, organised physical exercise, perceived dietary habits and daily routines on well-being.

All predictors were centred around the mean to avoid multicollinearity (Aiken and West, 1991). Preliminary analyses showed that all assumptions for a hierarchical regression were met. Using the variance inflation factor (VIF) indicators, we can conclude that there are no multicollinearity problems in our data (VIF indicators between 1 and 2). We also checked for the existence of influence points that could distort the regression model. These were not detected in our analyses (Cook's distance values between 0.00 and 0.12). A further check of the assumptions showed that the assumptions of homoscedasticity, linearity and approximate normal distribution of the residuals were not significantly violated for the selected models (the standardised coefficients were between -2.28 and 1.76).

The first step in the regression consisted of the index of social and mental balance; in the second step, the index of organised physical activity was added, and in the third step the indices of healthy dietary choices, avoidance of harmful dietary practises and daily routine. The overall regression model predicted about 46% of the variance in well-being ($R^2 = 0.46$, $F(5,49) = 8.25$, $p < .001$).

Table 3

Hierarchical multiple regression analysis for variables predicting well-being.

	Well-being					
	Model 1		Model 2		Model 3	
	B	β	B	β	B	B
Step 1: Social and mental balance	3.31	.58*	2.90	.51*	2.64	.46*
ΔR^2		.34*				
Step 2:						
Organized Physical Exercise			2.55	.33*	2.35	.31*
ΔR^2				.11*		
Step 3:						
Dietary Healthy Choices					-0.07	-.02
Dietary Harm Avoidance					0.97	.12
Daily Routine					0.06	.02
ΔR^2						.01
Total R^2		.34*		.44*		.46*
F for ΔR^2		27.14*		9.99*		0.35

* $p < .01$.

As shown in Table 3, the social and mental balance index entered in the first step explains about 34% of the variance in well-being and is a significant predictor of

well-being. The direction of the correlation is positive, meaning that those who report higher values for the social and mental balance variables also report a higher level of well-being.

In the second step, we extended the model to include organised physical activity. After controlling for social and mental balance, step two additionally predicted about 11% of the variance in well-being, and the relationship was positive: i.e. higher scores on organised physical exercise were associated with higher well-being scores.

In step three, we added measures of diet and daily routine, which explained only an additional 1% of the variance in well-being, but this was not statistically significant. None of these individual measures had a statistically significant impact either.

Discussion

The aim of this study was to investigate the relationships between various lifestyle factors — social and mental balance, organised physical exercise, dietary habits, and daily routines — and their effects on general well-being.

Although the correlations observed in this study provide valuable insights, it is important to consider potential confounding variables that may influence these relationships. For this reason, a hierarchical regression analysis was also performed. The results suggest that social and mental balance and organised physical exercise are important predictors of well-being. Although dietary habits and daily routines relate to well-being, they do not contribute much to explaining the variance in well-being scores beyond the two factors mentioned above. Overall, all factors included explain 46% of the variance in well-being, highlighting the significant influence of healthy lifestyle choices and behaviours on participants' well-being. The results are consistent with previous studies showing that healthy lifestyle choices such as physical activity, spending time in nature, diet and nutrition, good relationships, enjoyable activities, religious and spiritual involvement, and relaxation and stress management are associated with better well-being and mental health (Walsh, 2011). The results emphasise the strong and positive relationship between social and mental balance and well-being, which explains about 34% of the variance in well-being. Around a third of the variance in well-being is linked to the fact that respondents are more likely to report sharing their personal problems or worries with others, meeting and conversing daily with their family, focusing on positive thoughts when faced with difficulties, balancing time between work, personal life and leisure, and clearing their brain of thoughts or the next day's programme before going to bed.

This finding is consistent with existing research emphasising the importance of social support in promoting psychological well-being, confirming that supportive social relationships are a strong predictor of subjective well-being (Diener et al., 2018). This finding also aligns with research confirming that simple positive activities (such as practising optimism, affirming one's core values, etc.) can increase well-being (Layous and Lyubomirsky, 2014). Since research also suggests that fluctuations in life balance predict fluctuations in well-being (Sheldon et al., 2010), it is even more important to identify distinct factors that could contribute to stabilising perceptions of well-being.

The vital role of social and mental balance in well-being suggests that interventions targeting mental health, such as stress management, emotion regulation and improving social relationships, can have a profound impact on enhancing overall well-being. In addition, future research could investigate the specific dimensions of social and mental balance that most strongly influence well-being.

The index of organised physical exercise also proves to be a significant predictor of well-being and explains an additional 11% of the variance in well-being after controlling for social and mental balance. This finding is consistent with a review study demonstrating the positive effects of exercise on mental health and well-being (Mahindru et al., 2023). Regular physical activity during leisure time also appears to reduce undergraduate students' susceptibility to potential mental health problems or poor well-being (Rodríguez-Romo et al., 2022). The strong correlation between well-being and physical exercise in the present study underlines the importance of organised physical activity not only for physical health but also for mental well-being. Given the size of the effect and the reported correlations, it is likely that the relationship between physical exercise and well-being is complex. This is also evident from recent research (Martín-Rodríguez et al., 2024) affirming that both physiological and psychological factors are influenced by exercise.

Interventions to promote regular structured exercise (e.g., fitness classes, team sports) can therefore be a valuable strategy to improve well-being, particularly for undergraduate students, especially when combined with mental health and social support programmes. The relevance of such initiatives becomes even clearer in light of the findings by Planinšec & Matejek (2020), which show that in-service teachers, after completing their undergraduate studies, report only moderate competence in knowledge and understanding of physical activity for shaping a healthy lifestyle and improving quality of life.

Interestingly, dietary healthy choices and dietary harm avoidance, as well as daily routines, do not contribute significantly to explaining the variance in well-being beyond social and mental balance and physical exercise. This finding is inconsistent with some previous research suggesting that diet and related daily routines are among the components of lifestyle that may support psychological well-being (Gheonea et al., 2023). Although there is a moderate correlation between these factors and well-being, their weak predictive power in the regression model suggests that their influence is less direct in our sample or possibly mediated by other factors. For example, dietary habits may be more important in certain populations or contexts (e.g., individuals with dietary restrictions or those with chronic health conditions), but in this study, the sample (undergraduate students) does not include a large proportion of individuals for whom diet is an important determinant of well-being. Daily routines, while important for structuring, may not have the same direct impact on well-being as the more dynamic factors, such as mental balance or exercise, as they are more associated with dietary habits and routines in this questionnaire. These findings suggest that future studies could benefit from investigating the moderating factors (e.g., individual health status, socio-economic background, or lifestyle) that might enhance or attenuate the effects of dietary habits and daily routines on well-being. In addition, it is worthwhile to consider longitudinal studies that can capture the longer-term effects of dietary changes or the restructuring of routines on well-being.

Study Strengths and Limitations

One of the strengths of this study is its comprehensive approach, which includes a range of (healthy) lifestyle factors in the analysis of well-being. By analysing the role of social, physical, and dietary factors in a single model, the study provides a nuanced understanding of the relative importance of these predictors.

However, there are several limitations that should be considered. First, the cross-sectional design of the study limits the ability to infer causality. Although correlations and regression analyses suggest associations, we cannot conclude that improving social balance or physical activity directly improves well-being. Future research using longitudinal or experimental designs would be valuable to establish causal relationships. Secondly, the use of self-report techniques may lead to bias, since subjects may over- or under-report certain behaviours, particularly in relation to physical activity or dietary habits. Third, although the study included several important lifestyle factors, other factors such as sleep quality, personality traits and

genetic predisposition may also play a significant role in determining well-being and were not analysed here. Fourth, the size and complexity of the sample should be considered in further research. The representation of the male gender in the sample was very low, which limits the generalizability of the findings. In the future, it would be advisable to include more gender-balanced samples.

Conclusion

Social and mental balance and organised physical exercise were found to be the most important predictors of well-being, explaining about 45% of the variance, while dietary habits and daily routines had little additional predictive power. This suggests that students who maintain strong interpersonal relationships, manage stress effectively and engage in physical activity tend to report higher levels of well-being, emphasising the importance of both social and physical aspects to mental health. While healthy dietary habits and structured daily routines correlated with well-being, their unique contribution to predicting well-being was minimal when controlling for social and physical factors.

The results of this study suggest that interventions to improve well-being should take a holistic approach. These interventions could include improving social support networks by promoting strong interpersonal relationships and community engagement. Programmes such as social skills workshops and mindfulness training could strengthen participants' social relationships and emotional resilience. Promoting organised physical activity is equally important. Structured exercise programmes, such as group fitness classes or sports teams, could provide both the physical benefits of exercise and the social benefits of group participation. Promoting healthy dietary habits and routines is another major area of intervention, although this was not found to be an important predictor of well-being in our sample.

The findings emphasise the importance of considering both the psychosocial and physical dimensions in interventions to improve well-being. Programmes that combine mental health support (e.g., counselling, mindfulness, social skills training) with physical activity (e.g., exercise programmes, fitness challenges) could be more effective than those that focus on a single area.

Promoting well-being requires an integrative approach that addresses multiple lifestyle factors simultaneously. Structured programmes and community initiatives that focus on social support, physical activity, dietary habits, and the formation of

routines can play a crucial role in improving well-being, as both the current study and previous research show. Future studies could further investigate the long-term effects of such interventions and their applicability in different populations.

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