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# Examining the effect of physical activity on life skills: The role of exercise on nutrition

Mehmet Ismail Tosun, Abdurrahim Kaplan, Mert Ayrancı, Mustafa Arıcı

*Faculty of Sports Sciences, Hitit University, Çorum, Türkiye.*

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**Abstract**

Understanding the effects of physical activity on the life skills of university students and how exercise shapes their eating habits is critical for the development of healthy lifestyles. This study aimed to examine the relationships between life skills, exercise habits, and nutritional behaviors of students enrolled in the Faculty of Sport Sciences, involving the participation of 222 male and 143 female students. This study utilized a correlational survey model to examine the relationships between life skills, exercise habits, and nutritional behaviors. The research data were collected with the Personal Information Form, the Life Skills Scale for Sport and the Healthy Lifestyle Behaviors Scale. The findings revealed that female students had higher scores in life skills areas such as communication, leadership and teamwork compared to male students, while male students had higher exercise scores. In addition, a moderate positive relationship was found between exercise and nutrition and exercise had a significant predictive power on dietary habits. These results emphasize the important role of exercise in supporting life skills and healthy lifestyles of university students.

## Introduction

Beyond improving individuals' physical health, exercise structured subsets of physical activity have a significant impact on life skills. Life skills are abilities that help individuals perform better in their daily lives and cope effectively with the challenges they face (Voelcker-Rehage et al., 2016; Fox, 1999). These skills include problem solving, decision making, stress management and time management (Stults-Kolehmainen & Sinha, 2014; Gomez-Pinilla & Hillman, 2013; Nguyen-Michel et al., 2006). Donnelly et al. (2016) examined the multidimensional effects of physical activity on children and young people to improve cognitive functions and academic performance, and found that physical activity improves brain function, which in turn improves people's problem-solving and decision-making abilities. Physical activity strengthens synaptic connections by increasing neuroplasticity in the brain, which has a positive effect on learning and memory processes (de Sousa Fernandes et al., 2020).

While physical activity encompasses any movement that results in individuals expending energy using their skeletal muscles, exercise is a planned, structured and repetitive sub-dimension of this broad concept (Caspersen et al., 1985; WHO, 2020). Exercise is usually performed for the purpose of improving or maintaining physical fitness and therefore has significant and measurable effects on health (Tipton & Wolfe, 2004). In addition to the effects of physical activity on general health, more specific effects of exercise have been frequently emphasized in the literature. For example, Hillman et al. (2008) showed that regular aerobic exercise positively affects cognitive functions and academic achievement. Similarly, Warburton & Bredin (2017) detailed the contributions of exercise not only on physical health but also on mental health and quality of life. However, this distinction between physical activity and exercise is often confusing in studies, which can lead to confusion in the interpretation of results (Bull et al., 2020). While this study addresses the overall effects of physical activity, it aims to examine the effects of these concepts on life skills and nutrition in more detail by focusing specifically on the exercise sub-dimension.

Nutrition plays a vital role in maximizing the benefits of exercise. Proper and balanced nutrition increases the effectiveness of exercise, improves physical performance and accelerates muscle recovery. Consuming the right

✉ M. Arıcı, e-mail: mustafaarici@hitit.edu.tr

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ratios of protein, carbohydrates and fats ensures optimal body functions (Tipton & Wolfe, 2004). However, vitamins and minerals, known as micronutrients, are also critical for exercise performance and overall health (Maughan, 1999). People with regular exercise habits require more energy than sedentary people (Westerterp, 2018). Regular exercise leads individuals to prefer foods with high nutritional value, such as whole grains, fresh fruits, and vegetables (Gillman et al., 2001). Nutritional profiles of individuals change according to the goals of exercise. In exercises performed at low intensity and intensity, there is no need to take extra calories for the energy needed, but more balanced foods in terms of protein are tried to be taken (Westerterp, 2013). Individuals who regularly participate in exercise load their muscles more because they perform more activity compared to sedentary individuals. Protein and carbohydrate intake is essential for the regeneration of loaded muscles and glycogen stores after exercise (Moradell et al., 2023; Phillips, 2014; Tipton & Wolfe, 2001).

In the light of this information, this study aims to examine the role of exercise in individuals' life skills and nutritional habits. In particular, this study, which was conducted on students studying at the Faculty of Sport Sciences, aims to reveal the potential effects of exercise not only on physical health, but also on nutritional habits and general life skills. The study aimed to provide important findings to better understand the contribution of these factors to quality of life by determining whether there was a relationship between exercise and nutrition. The hypothesis of this study is that there are significant and positive relationships between students' life skills, exercise habits, and nutritional behaviors, and that these relationships are influenced by variables such as gender and weekly physical activity duration.

## Methods

### Research Model

The study used a correlational survey model. In the correlational survey model, “research examines the relationship between two or more variables without an intervening variable” (Creswell & Creswell, 2017).

### Participants

The population of the study consists of the students of the faculty of sport sciences who are studying at universities between the years 2023-2024. Purposive sampling type was chosen in the selection of the sample group of the research. In this sampling type, the sampling group that the researcher can easily reach is used (Yıldırım & Şimşek, 2008). In order to determine the exact number of the population, the number of students of the faculties of sport sciences in the whole country was tried to be reached from the student statistics on the official pages of the universities, and G*power analysis was performed on the result obtained in order to predict the data set fit and statistically significant results. As a result of the G*power analysis with 0.95% reliability and 0.05% sampling error, a sample group of 357 people is sufficient to represent the students of the Faculty of Sport Sciences. In the light of this information, 365 students of the faculty of sport sciences, who were selected with the consent of voluntary participation by using the appropriate sampling method for the research, constitute the sample. Demographic information of the students is given in detail in Table 1.

**Table 1**
Demographic information of the participants.

| | | F | % |
|---|---|---|---|
| Gender | Male | 222 | 60.8 |
| | Female | 143 | 39.2 |
| | Total | 365 | 100.0 |
| Duration of weekly physical activity | Lowest | Highest | Mean |
| | 1 hour | 25 hours | 7 hours |

Descriptive statistics of the participants are presented in Table 1. As a result of the analysis, it is seen that 60.8% (222) of the participants were male and 39.2% (143) were female, the lowest weekly physical activity time was 1 hour, the highest was 25 hours, and the average weekly physical activity time was 7 hours.

### Procedure

Within the scope of the research, the “Personal Information Form”, which was developed and verified with expert opinions, was used to determine the descriptive statistics of the students. To assess students' life skills levels, the "Life Skills Scale for Sport," a 5-point Likert-type scale originally developed by Cronin and Allen (2017) and subsequently adapted into Turkish by Açak and Düz (2018), was employed. This scale comprises 31 items across seven sub-dimensions, with Cronbach's alpha values for each sub-dimension ranging from 0.85 to 0.95. Additionally, the "Healthy Lifestyle Behaviours Scale," developed by Walker et al. (1987) and adapted into Turkish by Esin (1999), was

used to evaluate students' exercise and nutrition habits. This scale consists of 48 items spanning six sub-dimensions, with Cronbach's alpha reliability coefficients of 0.87 for the exercise sub-dimension and 0.80 for the nutrition sub-dimension.

### Data Analyses

The data collected from the Life Skills Scale for Sport, the exercise sub-dimension of the Healthy Lifestyle Behaviors Scale, and the nutrition sub-dimension were coded and analyzed using the SPSS 25 software package. Normality analysis was performed on the life skills scores, exercise sub-dimension scores, and nutrition scores. The Shapiro-Wilk test was used to assess the normality of the data distribution, given its suitability for smaller sample sizes. Values within the range of -2 to +2 for skewness and kurtosis were considered indicative of normal distribution (Mallery & George, 2000). In the analysis of the data, descriptive statistics including frequency and percentage values, t-test in the comparison of students according to gender variable, Pearson correlation analysis and simple linear regression analysis were used to determine the level of relationship between the data.

## Results

Table 2 shows the results of the comparison of students' life skills scores and exercise and nutrition scores in terms of gender variable. As a result of the analysis, it was seen that there was a statistically significant difference in communication, leadership, teamwork, social skills, emotional skills and goal setting sub-dimensions ($p<0.05$). This significant difference could be explained by the higher mean scores of women compared to men. While the comparison of the exercise sub-dimension in terms of gender variable showed a significant difference ($p<0.05$), this significant difference could be explained by the fact that the average scores of male students were higher than those of female students. No statistically significant difference was observed in the nutrition sub-dimension ($p>0.05$).

**Table 2**
Comparison of students' life skills scores and exercise and nutrition scores in terms of gender variables.

| Variables | Gender | Mean | SD | t | p |
|---|---|---|---|---|---|
| Time Management | Male | 4.00 | .705 | -1.034 | .302 |
| | Female | 4.07 | .664 | | |
| Contact | Male | 4.03 | .685 | -2.184 | .030 |
| | Female | 4.19 | .664 | | |
| Leadership | Male | 4.05 | .662 | -2.466 | .014 |
| | Female | 4.21 | .574 | | |
| Teamwork | Male | 4.03 | .680 | -2.488 | .013 |
| | Female | 4.21 | .588 | | |
| Social Skills | Male | 4.01 | .733 | 1.996 | 0.11 |
| | Female | 4.17 | .674 | | |
| Emotional Skills | Male | 4.02 | .661 | -2.338 | .047 |
| | Female | 4.19 | .691 | | |
| Goal Setting | Male | 4.12 | .647 | -2.296 | .020 |
| | Female | 4.29 | .675 | | |
| Exercise | Male | 2.94 | .566 | 1.878 | .022 |
| | Female | 2.83 | .597 | | |
| Nutrition | Male | 2.95 | .744 | -1.378 | .169 |
| | Female | 3.06 | .709 | | |

**Table 3**
The relationship between students' exercise and nutrition scores and weekly physical activity duration.

| | | Duration of Physical Activity |
|---|---|---|
| Exercise | r | .127* |
| | p | .015 |
| Nutrition | r | -.023 |
| | p | .665 |

** There is a low level positive relationship.*

Table 3 shows the relationship between students' exercise and nutrition scores and weekly physical activity duration. According to the results of the analysis, there was a low level (r=.127) positive relationship between the exercise sub-dimension and physical activity duration ($p<0.05$). This indicates that physical activity duration would increase with the increase in exercise score. No significant relationship was observed in the nutrition scores of the students ($p>0.05$).

Table 4 shows the relationship between exercise and nutrition scores of the students. According to the results of the analysis, there was a moderate positive relationship between exercise and nutrition ($r = .535$; $p < 0.05$).

Table 5 shows the relationship between students' life skills scores and exercise and nutrition scores. According to the results of the analysis, it was determined that there was a statistically significant, low-level positive relationship (r=.158 - .306) between the scores of the students' life skills scores and the scores they received from the exercise and nutrition sub-dimensions.

**Table 4**
The relationship between exercise and nutrition scores of students.

| | | Nutrition |
|---|---|---|
| Exercise | r | .535* |
| | p | .000 |

** There was a moderate positive relationship.*

According to the results of simple linear regression analysis in Table 6, the regression model is statistically significant. When the t-test results regarding the significance of the regression coefficients were analyzed, it was determined that exercise ($\beta = .535$; $t = 12.061$; $p = .000$) had a significant predictive power on nutrition. It can be stated that 29% of the total variance of the nutrition sub-dimension is explained by exercise.

**Table 5**
The relationship between students' life skills scores and their exercise and nutrition scores.

| | | Time Management | Communication | Leadership | Teamwork | Social Skills | Emotional Skills | Goal Setting |
|---|---|---|---|---|---|---|---|---|
| Exercise | r | .253* | .201* | .263* | .238* | .279* | .297* | .281* |
| | p | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| Nutrition | r | .293* | .158* | .242* | .268* | .274* | .289* | .306* |
| | p | .000 | .003 | .000 | .000 | .000 | .000 | .000 |

** There is a low level positive relationship.*

**Table 6**
The results of the regression analysis regarding the prediction of students' nutrition scores.

| Model | B | Std. Err | β | *t* | p |
|---|---|---|---|---|---|
| Constant | 1.039 | .166 | --- | 6.276 | .000 |
| Exercise | .675 | .056 | .535 | 12.061 | .000 |
| R= .535 | | $R^2_{adj}$= .286 | | | |
| $F_{(1, 363)}$ = 145.466 | | p= .000 | | | |

*Dependent Variable = Nutrition* *Method: Enter*

## Discussion

In this part of the study, the relationships between life skills, exercise habits and nutritional behaviors of sport sciences faculty students were examined in the context of gender variable and physical activity duration. As a result of the analysis, it was concluded that female students had higher life skills scores than male students, while male students had higher exercise scores. In addition, there was a low level of positive correlation between exercise scores and physical activity duration and a moderate positive correlation between exercise and nutrition scores. There was a low-level positive relationship between students' life skills and exercise and nutrition scores. These results largely overlap with the hypotheses and can be evaluated as compatible with the existing literature.

Female students scored significantly higher than male students in communication, leadership, teamwork, social skills, emotional skills and goal setting sub-dimensions. This finding is consistent with some results in literature. Eagly & Krau (2002) stated that women tend to score higher in leadership and social skills, while Hyde (2005) emphasized that women are generally stronger in emotional intelligence and communication skills. Similarly, MacCann et al. (2012) found that women exhibit higher performance in emotional and social skills. These results can be interpreted as a reflection of gender roles and societal expectations that encourage women to develop stronger social skills. This can be attributed to women's higher competence in empathy, communication and social interactions as suggested by the findings.

The result that men had higher exercise scores than women was evaluated within the scope of the relevant literature. This finding is consistent with the studies in the literature indicating that men participate more in physical activity. Bull et al. (2020) highlighted that men have higher participation rates in physical activity compared to women, a trend observed globally across different demographic groups. Men have been observed to participate in physical activity more frequently than women, which may be influenced by differing levels of social support and motivational factors associated with physical activity (Scarapicchia et al., 2017). Westerterp (2013) also showed that men have higher physical activity levels than women. Ekblom-Bak et al. (2015) emphasized that men have higher rates of participation in physical activity and this creates positive differences in health indicators. The results obtained may be a reflection of the fact that men participate more in physical activities and society expects men to be physically active. However, Portela-Pino et al. (2020) found that women may have similar motivations to men to participate in exercise, so gender differences should be examined in a cultural and social context.

It was observed that there was a low-level positive relationship between students' exercise scores and physical activity duration. When the related literature is reviewed, it is seen that the relationship is weaker than expected, although the finding obtained is consistent with the studies. Trost et al. (2002) stated that regular physical activity strengthens individuals' attitudes towards exercise and self-efficacy beliefs. Rhodes & Dickau (2013) suggested that physical activity can have lasting effects on exercise habits. Dishman et al. (2021) found that physical activity positively affects individuals' exercise motivation and habits. However, the low level of the relationship obtained in this study indicates the existence of other factors affecting exercise behavior. One of these factors is that the sample group consists of students, and the reflections of academic life may influence individuals' exercise behaviors. Additionally, it can be interpreted that participation in physical activity does not solely depend on duration, but also on factors such as the quality of participation and the individual's motivationThe moderate positive correlation between exercise and nutrition consistent with the literature showing that physically active individuals tend to develop healthier eating habits. Recent studies indicate that physical activity/exercise plays a crucial role in enhancing nutrition awareness and promoting healthier dietary choices (Dominguez et al., 2021; Zhang et al., 2020). Warburton & Bredin (2017) found that increased physical activity/exercise levels lead to healthier choices in individuals' dietary preferences. Recent studies have highlighted that individuals engaging in regular exercise often pay more attention to their diets, indicating a strong relationship between these two behaviors (Lacombe et al., 2019). King et al. (1998) also supports the literature that physical activity/exercise increases individuals' general health awareness. This finding suggests that exercise is a factor that positively affects not only physical outcomes but also the overall lifestyle choices of individuals.

Another result obtained is that there is a low-level positive relationship between life skills scores and exercise and nutrition scores. This finding is consistent with research suggesting that exercise and healthy nutrition can improve individuals' general life skills. Deci & Ryan (2000) stated that physical activity and healthy nutrition improve individuals' life skills by

increasing their sense of self-efficacy. Nelson & Gordon-Larsen (2006) found that exercise strengthens individuals' life management skills. Steptoe et al. (2005) found that physical activity/exercise and healthy nutrition positively affect life skills by strengthening individuals' psychosocial health. However, within the scope of the study, the relationship obtained was at a moderate level and this situation shows that it may not be sufficient alone in the development of life skills. It can be interpreted that social, psychological and environmental factors also play a role in the development of life skills.

Exercise was found to have a significant predictive power on dietary habits. According to the regression model, 29% of the total variance in nutrition sub-dimension was explained by exercise. This result is in line with other studies in literature. Warburton & Bredin (2017) emphasize the determinant effect of physical activity/exercise on dietary habits. King et al. (2016) stated that physical activity/exercise can influence individuals' dietary preferences and encourage healthy eating habits. Loureiro & Nayga (2006) found that individuals who exercise generally tend to eat healthier and that there is a strong causal relationship between these two behaviors. This finding can be interpreted as that exercise increases individuals' general health awareness and this awareness is reflected in their dietary preferences. Exercise stands out as a factor that positively affects individuals' dietary habits by increasing their responsibility for their health. According to Cohen (1992; 2003) and Tabachnick & Fidell (2019), most regression analyses in the field of social sciences have variance explanation ratios between 10% and 20%, and values exceeding 25% are generally accepted as a significant and important finding. Therefore, having a variance of 29% within the scope of the study increases the strength of the study.

## Conclusion

As a result of the study, the relationships between life skills, exercise habits and nutritional behaviors of sport sciences faculty students were examined and the effects of variables such as gender and physical activity duration on these relationships were evaluated. The findings showed that female students had higher life skills scores than male students, while male students had higher exercise scores. In addition, a moderate positive correlation was found between exercise scores and nutrition scores and it was determined that exercise had a significant predictive power on eating habits. These findings are remarkable compared to the variance explanation ratios generally expected in social sciences and emphasize the importance of exercise on healthy eating and life skills.

It reveals that university students should be encouraged to lead healthy lifestyles and educational programs should be developed in this regard. However, the limitations of the study include that the sample was limited to only one faculty and the generalizability of the findings is limited due to the cross-sectional design. Future research should be conducted with larger and more diverse samples and longitudinal designs should be used to examine the long-term effects of exercise and dietary habits. In addition, the effects of cultural and social factors on these relationships should be explored in more depth. This study highlights the positive relationships between exercise, nutrition, and life skills among university students, emphasizing the importance of structured physical activities in promoting healthy lifestyles and personal development. Based on these findings, it is recommended that universities integrate regular exercise programs into their curricula to enhance students' life skills and promote healthy eating habits.

### Authors' Contribution

Study Design: MIT, MA; Data Collection: AK, MA, MA; Statistical Analysis: MA, MIT; Manuscript Preparation: MIT, MA, AK, MA.

### Ethical Approval

The study was approved by the Hitit University of Non-Interventional Research Ethical Committee (2024-11) and it was carried out in accordance with the Code of Ethics of the World Medical Association also known as a declaration of Helsinki.

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### Conflict of Interest

The authors hereby declare that there was no conflict of interest in conducting this research.

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