



# Understanding Exercise Addiction in Women: Exploring the Impact of Sociodemographic Variables

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## Abstract

The study provides a comprehensive analysis of exercise addiction among women, employing a descriptive survey model to elucidate how certain demographic variables influence this behavioural condition. An online survey was conducted with 429 women using a convenience sampling method. The survey was conducted in Türkiye, ensuring a culturally relevant examination of exercise addiction among Turkish women and providing insights into how local sociocultural factors influence addictive exercise behaviours. The study deployed the "Exercise Addiction Scale (EAS)" alongside a personal information form to gather age, marital status, education level, and sports licensing data. Demographic analysis shows that the highest level of education for 43.4% of participants is a high school diploma, 46.2% an undergraduate degree, and 10.5% a postgraduate degree; also, 36.1% have a sports license, and 61.1% are single. The study found a complex interplay of sociodemographic factors influencing exercise addiction. Findings underscore the significance of tailored prevention and treatment strategies that consider unique pressures and contexts faced by different groups. Findings suggest unmarried women are at higher risk, underscoring the need for interventions addressing social support deficits. Additionally, structured training environments and performance-driven pressures may contribute to compulsive exercise patterns in athletes, highlighting the necessity of routine psychological screenings. This research highlights the necessity for targeted psychological and social support interventions and calls for further studies to investigate causal relationships and the impact of interventions over time, aiming to mitigate risks associated with exercise addiction and promote healthier lifestyle choices throughout the various stages of a woman's life. Future studies should explore longitudinal designs to establish causality and conduct comparative gender analyses to examine broader patterns in exercise addiction.

**Keywords:** Exercise Addiction, Women's Health, Behavioural Addiction, Psychological Support



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## Introduction

Exercise addiction, characterized by a compulsive engagement in physical activity despite adverse consequences, has become a notable concern (Godoy-Izquierdo et al., 2021; Lichtenstein & Hinze, 2020). Although some studies suggest a higher prevalence in males, meta-analytical findings indicate that gender differences in exercise addiction are inconsistent, warranting further investigation (Bhargava et al., 2021; Otten et al., 2021; Wittekind et al., 2015). This condition is linked to adverse outcomes such as physical injuries, cardiovascular issues, and interpersonal conflicts. However, it becomes even more complicated when co-occurring with mental health issues like eating disorders and unhealthy body image concerns, often driven by extrinsic motivation factors such as societal pressure and self-worth contingencies (Deci & Ryan, 2000; Linardon et al., 2021). These patterns align with the Dual-Process Model of Addiction, where compulsive exercise behaviours emerge from an imbalance between impulsive reward-seeking and rational self-regulation mechanisms (Bechara, 2005; Wiers et al., 2013; Wittekind et al., 2015). Women with obsessive-compulsive traits, low self-efficacy, and high psychological distress are particularly vulnerable (Ahorsu et al., 2023; Weinstein & Szabo, 2023). The intersection of exercise addiction with other psychological disorders often leads to the use of exercise for non-fitness-related goals, reinforcing extrinsically motivated behaviours. Self-determination theory suggests that individuals driven by external rewards, such as appearance or societal approval, may develop maladaptive exercise patterns, further complicating addiction (Breviers et al., 2022; Deci & Ryan, 2000). These complexities call for the development of effective treatments that address the multifaceted psychological dimensions of exercise addiction.

The psychiatric elements of exercise addiction in women create complicated relationships between body shape concerns alongside obsessive habits and co-occurring mental wellness condition complexes. Research indicates that obsessive-compulsive personality features, together with low self-efficacy abilities, rank among the main contributing factors to exercise addiction. Risk levels escalate among women with self-efficacy levels that are high due to obsessive-compulsive traits (Tang, Gan, & Lui, 2023; Orhan et al., 2024). Research shows female addicts are more prone to exercise addiction when suffering from anxiety and depression because both exercise addiction and obsessive healthy eating share connections to anxiety, and orthorexic behaviours connect exclusively to depression (Lev Arey, Sagi, & Blatt, 2023; Strahler, Wachten, Stark, & Walter, 2021). Exercise serves as a method for reaching non-health-related objectives such as weight reduction and body enhancement, which leads to the secondary exercise addiction diagnosis as described by Weinstein & Szabo (2023). Recreational exercise addicts show higher rates of exercise addiction when they have insecure attachment patterns, including anxious or avoidant attachment (Meyers & Hong, 2020; Lev Arey, Sagi, & Blatt, 2023). The effective treatment and prevention of exercise addiction in women requires proper attention to psychological factors. Exercise addiction is substantially affected by social and cultural influences. Society together with media resources constantly promote unreachably thin body standards that people mainly seek from women. Women feel motivated to exercise intensively because societal pressures force them to meet artificially constructed body standards which often exist beyond their reach. The way society expects men and women to

view their body shapes heavily affects how exercise influences mental health outcomes (Naraindas et al., 2023; Rodgers et al., 2020). For women exercise motivation mainly stems from their desire to control their weight alongside wanting better physical appearance (Anić et al., 2021; Ley, 2020). The aforementioned motivations which drive women toward exercise serve as risk factors for the development of dysfunctional exercise patterns that evolve into exercise addiction (Godoy-Izquierdo et al., 2021; Castañeda et al., 2024).

Exercise stimulates multiple complicated neurological mechanisms, which collectively produce addiction effects in the body. Physical exercise activates the reward system in the brain, which enhances behaviour by releasing endorphins in a similar fashion to substance addiction (Piloizzi et al., 2020; Ni et al., 2022). A self-perpetuating neurobiological loop controls excessive exercise practice, thus making regulation and termination very difficult to achieve. The development of addictive pathways and physical stress responses in over-exercising occurs through the influence of stress-related hormones, as research indicates (Mohr et al., 2024; O'Rourke et al., 2023). The understanding of exercise's addictive properties requires knowledge about physiological mechanisms to identify both their addictive nature and wider health consequences for women. The considerable occurrence of exercise addiction among women playing recreational and competitive sports demands enhanced screening methods and increased social awareness as a preventive measure against adverse physical outcomes. Research needs to address the multi-dimensional challenges of exercise addiction that stem from psychological elements alongside sociocultural dynamics and physiological structures because exercise addiction creates severe health risks for women. This study will explore exercise addiction in women, focusing on how variables such as anxiety, depression, and body image influence this condition.

## Materials & Methods

This research aims to investigate exercise addiction in women along with possible correlations to specific demographic variables. It is a descriptive study utilizing a survey model. Survey models are research approaches that aim to describe a situation as it exists in the present or has existed in the past. The study's subject, individual, or object is described in its existing conditions (Fraenkel & Wallen, 2009).

### Study Group

The study group was formed using convenience sampling, prioritizing accessibility and feasibility. While convenience sampling allows for efficient data collection (Büyüköztürk, 2010), it inherently limits the generalizability of findings, as the sample may not accurately represent the broader population. The absence of a systematic selection process increases the risk of selection bias, potentially skewing the results. However, it is essential to acknowledge that convenience sampling may limit the generalizability of the findings, as the sample may not represent the broader population. 429 women, all residing in Türkiye, participated in the study. The study aimed to capture exercise addiction tendencies within this population, acknowledging the role of unique sociocultural influences. To minimize potential confounding effects, individuals with professional athletic backgrounds, diagnosed psychological disorders related to compulsive behaviours, or those undergoing medical treatment for exercise-related conditions were excluded. This

criterion aimed to ensure that the findings reflect exercise addiction patterns in a broader population rather than being disproportionately influenced by elite athletes or individuals with preexisting psychiatric conditions. Of these, 43.4% (n=186) held a high school diploma, 46.2% (n=198) had an undergraduate degree, and 10.5% (n=45) held a postgraduate degree.

Regarding sports licensure, 36.1% (n=155) of the participants held a sports license, and 63.9% (n=274) had no license. Regarding marital status, 38.9% of the women were married,

and 61.1% were single. The average age of the participants was 30.63 years. The measurement tool, the Exercise Addiction Scale (EAS), was administered to the women participants online to facilitate ease of access and efficient data collection.

Table 1 shows the demographic distribution of the women participating in the study, segmented by marital status, possession of a sports license, and education level. Each category is represented with its corresponding count and percentage of the total sample size of 429 women.

**Table 1.** Distribution of Women in the Research Sample According to Various Variables

Variable	Category	N	%
Marital Status	Married	167	38.9
	Single	262	61.1
	Total	429	100.0
Sports License	Yes	155	36.1
	No	274	63.9
	Total	429	100.0
Education Level	High School	186	43.4
	Undergraduate	198	46.2
	Postgraduate	45	10.5
	Total	429	100.0

#### Data Collection Tool

In the study, the “Exercise Addiction Scale (EAS)” developed by Demir, G. T., Hazar, Z., & Cicioğlu, H. İ. (2018) was utilized. A personal information form containing demographic details was created to identify participants' age, marital status, education level, and sports license status. However, key psychological and environmental confounders, such as social media exposure, body image perception, and accessibility to fitness resources, were not assessed. The Istanbul Aydın University Social Sciences Ethics Committee reviewed and approved this study. All participants provided informed consent before participating, ensuring adherence to ethical research practices.

#### Exercise Addiction Scale (EAS)

The Exercise Addiction Scale, developed by Demir, Hazar, and Cicioğlu (2018), consists of a three-factor structure that explains 54.61% of the total variance in exercise addiction. The first factor, “Excessive Focus and Emotional Change,” includes seven items (1–7), accounting for 34.89% of the variance. The second factor, “Postponement of Individual Social Needs and Conflict,” comprises six items (8–13), explaining 13.06% of the variance. The third factor, “Development of Tolerance and Passion,” consists of four items (14–17), accounting for 6.65% of the variance.

Scoring on the Exercise Addiction Scale categorizes individuals into five groups: 1–17 (normal), 18–34 (low risk), 35–51 (at risk), 52–69 (addicted), and 70–85 (highly addicted). The scale's psychometric properties indicate strong reliability, with a Kaiser-Meyer-Olkin (KMO) sample adequacy value of 0.89 and Bartlett's Test of Sphericity yielding a chi-square value of 1085.010. The Cronbach's Alpha reliability coefficients for each factor are 0.83 for “Excessive Focus and Emotional Change,” 0.79 for “Postponement of Individual Social Needs and Conflict,” and 0.77 for “Development of Tolerance and Passion,” with an overall Cronbach's Alpha

of 0.88. Confirmatory factor analysis (CFA) demonstrated good model fit, with fit indices of  $\chi^2/\text{sd} = 1.94$ , RMSEA = 0.43, PGFI = 0.63, PNFI = 0.70, GFI = 0.90, AGFI = 0.87, IFI = 0.96, NFI = 0.91, and CFI = 0.96. These results suggest that the scale is valid and reliable for assessing exercise addiction.

#### Analysis of Data

The dataset was first examined for errors, outliers, normality, and multicollinearity to ensure data integrity. No errors or outliers were found during this process. Data analysis was conducted using SPSS 25. The Shapiro-Wilk Test was applied to assess the normality of the data distribution, and it was determined that the data met the normality assumption ( $p > .05$ ). For comparisons between two groups, the t-test was employed. At the same time, one-way ANOVA was used for multiple group comparisons. When significant differences were found through ANOVA, the Least Significant Difference (LSD) post-hoc tests were conducted to identify specific group differences. The Pearson Product-Moment Correlation Coefficient was used to evaluate the relationships between variables. The significance level for all statistical tests was set at  $p < .05$ . While these tests were appropriate for the data collected, we acknowledge that more advanced statistical techniques, such as structural equation modelling, could provide deeper insights and capture more complex relationships in future studies.

#### Results

Single women had slightly higher exercise addiction scores ( $p = .02$ ,  $d = 0.3$ , small effect). While Table 2 shows this difference, the effect size remains small, suggesting that marital status alone is not a strong determinant of exercise addiction. Additional factors like social and psychological influences may contribute to this variation. This suggests that single women exercise to fulfil emotional or social

needs that would otherwise be met through relationships. However, no significant differences were found in Excessive Focus and Emotional Change or Development of Tolerance and Passion scores based on marital status ( $p > .05$ ),

indicating that marital status does not significantly impact these aspects of exercise addiction. Given the small effect size ( $d = 0.3$ ), the practical significance of this finding is limited.

**Table 2.** t-Test Results for the Levels of Exercise Addiction in Women According to Their Marital Status

Variables	Married (n = 167)	Single (n = 262)	t
EAS Total	48.81 ± 15.67	52.46 ± 16.42	-2.28*
Excessive Focus and Emotional Change	24.58 ± 7.49	25.88 ± 7.13	-1.80
Postponement of Individual Social Needs and Conflict	13.68 ± 5.97	15.14 ± 6.50	-2.32*
Development of Tolerance and Passion	10.53 ± 4.85	11.44 ± 4.94	-1.85

\* $p < .05$

Women with a sports license had significantly higher exercise addiction scores than those without a license ( $p < .001$ ,  $d = 0.8$ , large effect). These findings suggest that structured training environments may contribute to compulsive exercise behaviours, warranting further investigation. Table 3 shows significant differences in the EAS total, Excessive Focus, and Emotional Change Postponement of Individual Social Needs and Conflict, and Development of Tolerance and Passion

scores between women with and without a sports license, with higher scores among those who hold a license ( $p < .05$ ). These findings suggest that women with a sports license tend to have a higher focus on exercise and may develop greater tolerance and emotional involvement in exercise. However, this relationship is correlational, and further research is needed to determine whether having a sports license contributes to increased exercise addiction.

**Table 3.** t-Test Results for the Levels of Exercise Addiction in Women According to Whether They Have a Sports License

Variables	With License (n = 155)	Without License (n = 274)	t
EAS Total	57.87 ± 13.88	47.18 ± 16.18	6.91*
Excessive Focus and Emotional Change	28.05 ± 5.60	23.86 ± 7.70	5.94*
Postponement of Individual Social Needs and Conflict	16.96 ± 6.28	13.22 ± 5.96	6.10*
Development of Tolerance and Passion	12.85 ± 4.70	10.09 ± 4.77	5.79*

\* $p < .05$

The relationship between education and exercise addiction was statistically significant but weak ( $\eta^2 = 0.02-0.03$ ), suggesting minimal practical impact. While Table 4 indicates differences in EAS total scores and Postponement of Individual-Social Needs and Conflict scores based on educational status ( $p < .05$ ), these effects are small and should be interpreted cautiously. The LSD

test showed that undergraduate degree holders scored slightly higher than high school graduates, but this does not imply a strong or direct causal link between education and exercise addiction. However, no significant differences were found in the Excessive Focus and Emotional Change or Development of Tolerance and Passion scores across educational levels ( $p > .05$ ).

**Table 4.** ANOVA Results for the Levels of Exercise Addiction in Women According to Their Educational Status

Variables	Group	n	X	S	F	p	LSD
EAS Total	High School	186	48.92	16.81	3.57	.02*	2-1
	Undergraduate	198	53.26	16.10			
	Postgraduate	45	50.04	12.85			
	Total	429	51.04	16.21			
Excessive Focus and Emotional Change	High School	186	24.46	7.56	2.61	.07	
	Undergraduate	198	26.09	7.19			
	Postgraduate	45	26.04	6.12			
	Total	429	25.38	7.29			
Postponement of Individual-Social Needs and Conflict	High School	186	13.84	6.61	4.17	.01*	2-1; 2-3
	Undergraduate	198	15.51	6.24			
	Postgraduate	45	13.44	4.94			
	Total	429	14.57	6.33			
Development of Tolerance and Passion	High School	186	10.61	4.89	2.48	.08	
	Undergraduate	198	11.66	5.03			
	Postgraduate	45	10.55	4.40			
	Total	429	11.09	4.92			

\* $p < .05$



Table 5 shows no significant relationship between age and women's EAS total, Postponement of Individual-Social Needs and Conflict, or Development of Tolerance and Passion scores ( $p > .05$ ). These findings suggest that age does not strongly influence exercise addiction behaviours, except for a weak but significant correlation between Excessive Focus and Emotional Change ( $p < .05$ ,  $r = .12$ ). This

indicates that age does not significantly influence these aspects of exercise addiction in women. However, a positive and significant relationship was found between age and Excessive Focus and Emotional Change scores ( $p < .05$ ), suggesting that as women age, they may experience an increase in excessive focus and emotional changes related to exercise addiction.

**Table 5.** Relationship Between Women's Exercise Addiction Levels and Age

Variables	n	EAS Total	Excessive Focus and Emotional Change	Postponement of Individual-Social Needs and Conflict	Development of Tolerance and Passion
Age	429	.06	.12*	-.02	.04

\* $p < .05$

## Discussion

This research shed light on the connection between exercise addiction and different demographic traits within the female population. The observed higher exercise addiction scores among unmarried women may be linked to social support deficits, as prior studies suggest that single individuals may rely more on structured physical activity for social engagement and emotional regulation (Gryksa & Neumann, 2022; Hausenblas et al., 2017). Studies indicate unmarried females demonstrate high exercise addiction because they lack social networks and external responsibilities, making exercise their primary way for emotional control and social connections (Gryksa & Neumann, 2022; Uchino & Rook, 2020; Dean et al., 2021). More research needs to probe the hidden factors that create this link. The findings indicate an association between unmarried status and increased exercise addiction risk, which may be influenced by factors such as social support deficits and self-regulation challenges (Hsu et al., 2022; Merino et al., 2024). The emotional attachment to exercise for unmarried women might result from documented societal expectations about body image and self-esteem that such women need to navigate (Merino et al., 2024; Hardie et al., 2022). Exercise addiction develops as a result of combining psychological elements with societal and cultural aspects (Gori et al., 2021; Kotyuk et al., 2020).

The research shows that women who have participated in organized athletic activities display higher tendencies toward exercise addiction. Athletes participating in weight-monitored or aesthetic sports may face heightened exercise addiction risks due to external pressures and performance demands (Di Lodovico et al., 2019; Edwards & Aron, 2024). Athletes participating in sports which monitor body weight and physical appearance demonstrate elevated risks of experiencing exercise-related disorders such as exercise addiction, according to previous research (Griffiths et al., 2023; Edwards & Aron, 2024). Athletes often find themselves in a stressful performance and social dynamic leading to extended physical endurance without proper rest because of unrelenting pressure. Exercise addiction shows easier concealment and active promotion in sports since outstanding dedication and challenging training protocols are typically rewarded.

Unlike previous studies that reported no significant link between education level and exercise addiction, our findings indicate a moderate association between undergraduate education and addiction risk (Erdoğan & Bozkurt, 2022; Esmer, 2020; Godoy-Izquierdo et al., 2021). Research showed that exercise addiction demonstrated a modest connection with people who received advanced levels of education. Earlier

research findings demonstrated robust links between perfectionism and academic stress leading to addictive behaviours (Kun et al., 2020; Maftai & Opariuc-Dan, 2023). However, our analysis indicates that associations might not be as direct. Educational settings differ in terms of stress and coping mechanisms, which could explain why research results about exercise addiction show different outcomes. Highly educated women who use exercise as a stress relief method belong to a distinct category from those who have other sources of social and emotional support, which reduces their addiction risk. Research must develop an enhanced comprehension of how schoolwork-related pressures combine with individual personality characteristics and peer-based assistance structures to affect exercise patterns.

Psychological elements involving anxiety together with depression were discovered to have a strong correlation with exercise addiction based on the research data. The main study examined sociodemographic variables, but evidence shows mental health issues as key components in the development and sustainment of exercise addiction (Schuch & Vancampfort, 2021; Zeigler-Hill et al., 2021). Studies show that anxiety, along with depression and body image dissatisfaction, serve as the main contributors to compulsive exercise behaviours (Lev Arey et al., 2023; Edlund et al., 2022). This study confirms existing research showing that mental health assessment must become part of addiction intervention programs for women since their psychological patterns make them particularly susceptible to such issues.

The study presents critical insights about exercise addiction, yet researchers should acknowledge various restrictions. The cross-sectional research design makes it impossible to show that sociodemographic variables lead to exercise addiction. Research based on long-term observation will help understand the way these factors merge in time and will determine if marital status or educational background predicts exercise addiction or develops due to it. The use of self-reported information in this research introduces potential respondent errors through inaccurate reporting of their exercise activities. The participants' particular understanding of survey questions related to psychological elements of exercise addiction potentially introduced errors to their responses. Among the study's limitations is that all participants came from similar backgrounds. The research setting consisted of one geographic area and cultural environment, so it might fail to provide comprehensive insights into the exercise addiction experiences of women from varied backgrounds. The study results cannot be easily applied to different populations. Research should incorporate varied groups, including ethnic women from different

cultural backgrounds and socioeconomic and population groups, to represent the broader population group. Additional influencing variables were not considered during this study, including fitness resource availability, urban-rural differences, and digital media's role in spreading exercise-based content that might trigger exercise addiction symptoms.

The outcomes from this research provide essential practical value for health practitioners, trainers, and policymakers dealing with fitness. Intervention programs should create enhanced emotional and social support systems because exercise addiction occurs frequently among unmarried women. Programs that link exercise to community building instead of ranking performance achievement could potentially lower exercise addiction among people. Psychological counselling with mental health services must be accessible to women who show signs of exercise addiction, significantly if their stress and anxiety symptoms are elevated. Athletic and sports-trained women need periodic checks for exercise addiction symptoms to become part of their athlete development protocols. Athletic screenings detect athletes who may develop compulsive behaviours through exercise before they fully develop. Athletic training programs should incorporate mandatory psychological screenings and periodized rest plans to mitigate compulsive exercise behaviours, particularly among high-risk groups. Athletic programs should support athletes through a lifestyle balance that evaluates success from multiple perspectives, including physical endurance, mental welfare, and total health benefits. Universities should implement mandatory mental wellness workshops and integrate adaptive physical activity programs to promote balanced exercise behaviours among female students facing academic stress. The programs must emphasize mindfulness, balanced exercise routines, and healthy coping methods to stop the emergence of compulsive exercise behaviours. Academic organizations must build environments that separate success from physical appearance and perfection trends, which decrease the social drive to develop exercise addiction.

## Conclusions

Demographic characteristics, particularly marital status and sports licensing, play a significant role in the development of exercise addiction in women. Unmarried women are at higher risk of exercise addiction, likely due to limited social support and increased reliance on exercise for emotional regulation. Structured training environments and performance-driven pressures may increase the likelihood of compulsive exercise behaviors among female athletes. While academic qualifications show a weak correlation with exercise addiction, future research should explore the role of academic stress and perfectionism in developing compulsive exercise behaviors.

Future studies should employ longitudinal designs to determine whether marital status and academic pressures cause or simply correlate with exercise addiction. Research should also investigate how life transitions, such as marriage and divorce, influence compulsive exercise tendencies in women. Further studies should analyze the influence of social media on exercise motivation and its potential role in reinforcing addictive exercise behaviors. Additionally, researchers should examine how academic pressures and perfectionist tendencies interact with exercise addiction, particularly among university students.

Cross-cultural comparisons should be conducted to explore how cultural norms and societal expectations shape exercise addiction patterns in women. Future research should prioritize examining anxiety, depression, and perfectionism as key psychological drivers of exercise addiction to improve intervention strategies.

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## Conflict of Interest

The authors report no conflict of interest.

## References

- Ahorsu, D. K., Imani, V., Potenza, M. N., Chen, H.-P., Lin, C.-Y., & Pakpour, A. H. (2023). Mediating Roles of Psychological Distress, Insomnia, and Body Image Concerns in the Association Between Exercise Addiction and Eating Disorders. *Psychology Research and Behavior Management, Volume 16*, 2533–2542. <https://doi.org/10.2147/prbm.s414543>
- Anić, P., Pokrajac-Bulian, A., & Mohorić, T. (2021). Role of Sociocultural Pressures and Internalization of Appearance Ideals in the Motivation for Exercise. *Psychological Reports, 125*(3), 1628–1647. <https://doi.org/10.1177/00332941211000659>
- Bechara, A. (2005). Decision making, impulse control and loss of willpower to resist drugs: a neurocognitive perspective. *Nature Neuroscience, 8*(11), 1458–1463. <https://doi.org/10.1038/nn1584>
- Berengüi, R., López-Gullón, J. M., & Angosto, S. (2021). Physical Sports Activities and Exercise Addiction during Lockdown in the Spanish Population. *International Journal of Environmental Research and Public Health, 18*(6), 3119. <https://doi.org/10.3390/ijerph18063119>
- Bhargava, A., Arnold, A. P., Bangasser, D. A., Denton, K. M., Gupta, A., Hilliard Krause, L. M., Mayer, E. A., McCarthy, M., Miller, W. L., Raznahan, A., & Verma, R. (2021). Considering Sex as a Biological Variable in Basic and Clinical Studies: An Endocrine Society Scientific Statement. *Endocrine Reviews, 42*(3), 219–258. <https://doi.org/10.1210/endrev/bnaa034>
- Brevers, D., Maurage, P., Kohut, T., Perales, J., & Billieux, J. (2022). On the pitfalls of conceptualizing excessive physical exercise as an addictive disorder: Commentary on Dinardi et al. (2021). *Journal of Behavioral Addictions, 11*, 234 - 239. <https://doi.org/10.1556/2006.2022.00001>
- Büyükoztürk, Ş. (2010). Bilimsel araştırma yöntemleri (5. Baskı). Ankara: Pegem Akademi.
- Castañeda, T., Gaviria, A. M., Casadiego-Alzate, R., & Restrepo, J. E. (2024). Factors associated with eating disorders in Colombian gym-going women: A risk model for exercise dependence. *Revista de Psicopatología y Psicología Clínica, 29*(2), 99–112. <https://doi.org/10.5944/rppc.38491>
- Dean, L., Churchill, B., & Ruppanner, L. (2021). The mental load: building a deeper theoretical understanding of how cognitive and emotional labor over load women and mothers. *Community, Work & Family, 25*(1), 13–29. <https://doi.org/10.1080/13668803.2021.2002813>
- Di Lodovico, L., Poulmais, S., & Gorwood, P. (2019). Which

- sports are more at risk of physical exercise addiction: A systematic review. *Addictive behaviors*, 93, 257-262. <https://doi.org/10.1016/j.addbeh.2018.12.030>.
- Edlund, K., Johansson, F., Lindroth, R., Bergman, L., Sundberg, T., & Skillgate, E. (2022). Body image and compulsive exercise: are there associations with depression among university students? *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, 27(7), 2397-2405. <https://doi.org/10.1007/s40519-022-01374-x>
- Edwards, C. D., & Aron, C. M. (2024). A Perfect Storm for Athletes: Body Dysmorphia, Problematic Exercise, Eating Disorders, and Other Influences. *Advances in Psychiatry and Behavioral Health*.
- Erdoğan, R., & Bozkurt, T. (2022). The Effect of Exercise Addiction Levels of Physical Education and Sports School and Sports High School Students on Healthy Living Skills. *Journal of Educational Issues*. <https://doi.org/10.5296/jei.v8i1.19419>.
- Esmer, O. (2020). Examination of Exercise Addiction Levels of Physical Education Teacher Candidates According to Some Variables. *Asian Journal of Education and Training*. <https://doi.org/10.20448/journal.522.2020.62.274.277>.
- Fraenkel, J. R., & Wallen, N. E. (2009). How to design and evaluate research in education (7th ed.). New York: McGraw-Hill.
- Godoy-Izquierdo, D., Navarrón, E., López-Mora, C., & González-Hernández, J. (2021). Exercise Addiction in the Sports Context: What Is Known and What Is Yet to Be Known. *International Journal of Mental Health and Addiction*, 21(2), 1057-1074. <https://doi.org/10.1007/s11469-021-00641-9>
- Godoy-Izquierdo, D., Navarrón, E., López-Mora, C., & González-Hernández, J. (2021). Exercise Addiction in the Sports Context: What Is Known and What Is Yet to Be Known. *International Journal of Mental Health and Addiction*, 21(2), 1057-1074. <https://doi.org/10.1007/s11469-021-00641-9>
- Gori, A., Topino, E., & Griffiths, M. D. (2021). Protective and Risk Factors in Exercise Addiction: A Series of Moderated Mediation Analyses. *International Journal of Environmental Research and Public Health*, 18(18), 9706. <https://doi.org/10.3390/ijerph18189706>
- Griffiths, M. D., Landolfi, E., & Szabo, A. (2023). Does Exercise Addiction Exist Among Individuals Engaged in Team-Based Exercise? A Position Paper. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-023-01039-5>
- Gryksa, K., & Neumann, I. D. (2022). Consequences of pandemic-associated social restrictions: Role of social support and the oxytocin system. *Psychoneuroendocrinology*, 135, 105601. <https://doi.org/10.1016/j.psytneu.2021.105601>
- Hardie, A., Oshiro, K. F., & Dixon, M. A. (2022). Understanding body image perceptions of former female athletes: A qualitative analysis. *Body Image*, 43, 393-407. <https://doi.org/10.1016/j.bodyim.2022.10.001>
- Hausenblas, H., Schreiber, K., & Smoliga, J. (2017). Addiction to exercise. *British Medical Journal*, 357. <https://doi.org/10.1136/bmj.j1745>.
- Hsu, M., Huang, S., Liu, P., Yeung, K., Wang, Y., & Yang, H. (2022). The Interaction between Exercise and Marital Status on Depression: A Cross-Sectional Study of the Taiwan Biobank. *International Journal of Environmental Research and Public Health*, 19. <https://doi.org/10.3390/ijerph19031876>.
- Kotyuk, E., Magi, A., Eisinger, A., Király, O., Vereczkei, A., Barta, C., Griffiths, M. D., Székely, A., Kökönyi, G., Farkas, J., Kun, B., Badgaiyan, R. D., Urbán, R., Blum, K., & Demetrovics, Z. (2020). Co-occurrences of substance use and other potentially addictive behaviors: Epidemiological results from the Psychological and Genetic Factors of the Addictive Behaviors (PGA) Study. *Journal of Behavioral Addictions*, 9(2), 272-288. <https://doi.org/10.1556/2006.2020.00033>
- Kun, B., Urbán, R., Bőthe, B., Griffiths, M. D., Demetrovics, Z., & Kökönyi, G. (2020). Maladaptive Rumination Mediates the Relationship between Self-Esteem, Perfectionism, and Work Addiction: A Largescale Survey Study. *International Journal of Environmental Research and Public Health*, 17(19), 7332. <https://doi.org/10.3390/ijerph17197332>
- Lev Arey, D., Sagi, A., & Blatt, A. (2023). The relationship between exercise addiction, eating disorders, and insecure attachment styles among recreational exercisers. *Journal of Eating Disorders*, 11(1). <https://doi.org/10.1186/s40337-023-00855-3>
- Levalli, J., Monell, E., Birgegård, A., Clinton, D., & Forsén Mantilla, E. (2020). Binge Eating and Addictive-Like Behaviours in Males and Females. *Psychological Reports*, 125(1), 148-166. <https://doi.org/10.1177/0033294120971750>
- Ley, C. (2020). Participation Motives of Sport and Exercise Maintainers: Influences of Age and Gender. *International Journal of Environmental Research and Public Health*, 17(21), 7830. <https://doi.org/10.3390/ijerph17217830>
- Lichtenstein, M. B., & Hinze, C. J. (2020). Exercise addiction. In *Adolescent Addiction* (pp. 265-288). Elsevier. <https://doi.org/10.1016/b978-0-12-818626-8.00010-4>
- Linardon, J., Greenwood, C., Fuller-Tyszkiewicz, M., Macdonald, J., Spry, E., Hutchinson, D., Youssef, G., Sanson, A., Wertheim, E., McIntosh, J., Grange, L., Letcher, P., & Olsson, C. (2021). Young adult mental health sequelae of eating and body image disturbances in adolescence. *The International journal of eating disorders*. <https://doi.org/10.1002/eat.23575>.
- Maftai, A., & Opariuc-Dan, C. (2023). Perfect people, happier lives? When the quest for perfection compromises happiness: the roles played by substance use and internet addiction. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1234164>
- Merino, M., Tórnado-Aguilera, J. F., Rubio-Zarapuz, A., Villanueva-Tobal, C. V., Martín-Rodríguez, A., & Clemente-Suárez, V. J. (2024). Body Perceptions and Psychological Well-Being: A Review of the Impact of Social Media and Physical Measurements on Self-Esteem and Mental Health with a Focus on Body Image Satisfaction and Its Relationship with Cultural and Gender Factors. *Healthcare*, 12(14), 1396. <https://doi.org/10.3390/healthcare12141396>
- Meyers, K., & Hong, M. Y. (2020). The physical effects of exercise in lactating women: A review. *Journal of Human Sport and Exercise*, 16(4). <https://doi.org/10.14198/jhse.2021.164.01>
- Mohr, P., Hanna, C., Powell, A., Penman, S., Blum, K., Sharafshah, A., Lewandowski, K.-U., Badgaiyan, R.



- D., Bowirrat, A., Pinhasov, A., & Thanos, P. K. (2024). Selenoprotein P in a Rodent Model of Exercise; Theorizing Its Interaction with Brain Reward Dysregulation, Addictive Behavior, and Aging. *Journal of Personalized Medicine*, 14(5), 489. <https://doi.org/10.3390/jpm14050489>
- Naraindas, A. M., Moreno, M., & Cooney, S. M. (2023). Beyond Gender: Interoceptive Sensibility as a Key Predictor of Body Image Disturbances. *Behavioral Sciences*, 14(1), 25. <https://doi.org/10.3390/bs14010025>
- Ni, Y., Li, L., Qu, Y., Chen, S., Zhang, H., & Wang, H. (2022). Advances in the Study of Neural Mechanisms Associated with Exercise to Ameliorate Nicotine Addiction. *Advances in Physical Education*, 12(2), 126–141. <https://doi.org/10.4236/ape.2022.122010>
- O'Rourke, T., Humer, E., Plener, P. L., Pieh, C., & Probst, T. (2023). Moderation effects of health behaviors on stress and suicidal ideation in adolescents: a cross-sectional survey during COVID-19. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-48972-y>
- Orhan, B. E., Karaçam, A., Canli, U., Astuti, Y., Erianti, & Govindasamy, K. (2024). Exploring the relationship between exercise addiction and attitudes towards healthy nutrition. *Journal of Physical Education and Sport*, 24(7), 1590-1601. <https://doi.org/10.7752/jpes.2024.07179>
- Otten, D., Tibubos, A. N., Schomerus, G., Brähler, E., Binder, H., Kruse, J., Ladwig, K.-H., Wild, P. S., Grabe, H. J., & Beutel, M. E. (2021). Similarities and Differences of Mental Health in Women and Men: A Systematic Review of Findings in Three Large German Cohorts. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.553071>
- Pilozzi, A., Carro, C., & Huang, X. (2020). Roles of  $\beta$ -Endorphin in Stress, Behavior, Neuroinflammation, and Brain Energy Metabolism. *International Journal of Molecular Sciences*, 22(1), 338. <https://doi.org/10.3390/ijms22010338>
- Rodgers, R. F., Slater, A., Gordon, C. S., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A Biopsychosocial Model of Social Media Use and Body Image Concerns, Disordered Eating, and Muscle-Building Behaviors among Adolescent Girls and Boys. *Journal of Youth and Adolescence*, 49(2), 399–409. <https://doi.org/10.1007/s10964-019-01190-0>
- Schuch, F. B., & Vancampfort, D. (2021). Physical activity, exercise, and mental disorders: it is time to move on. *Trends in Psychiatry and Psychotherapy*. <https://doi.org/10.47626/2237-6089-2021-0237>
- Tang, C. S. K., Gan, K. Q., & Lui, W. K. (2023). The Associations between Obsessive Compulsive Personality Traits, Self-Efficacy, and Exercise Addiction. *Behavioral Sciences*, 13(10), 857. <https://doi.org/10.3390/bs13100857>
- Tekkurşun Demir, G., Hazar, Z., & Cicioğlu, H. İ. (2018). Egzersiz Bağımlılığı Ölçeği (EBO): Geçerlik ve Güvenirlik Çalışması. *Kastamonu Education Journal*, 26(3), 865-874. <https://doi.org/10.24106/kefdergi.413383>
- Uchino, B. N., & Rook, K. S. (2020). Emotions, relationships, health and illness into old age. *Maturitas*, 139, 42–48. <https://doi.org/10.1016/j.maturitas.2020.05.014>
- Weinstein, A., & Szabo, A. (2023). Exercise addiction: A narrative overview of research issues. *Dialogues in Clinical Neuroscience*, 25(1), 1–13. <https://doi.org/10.1080/19585969.2023.2164841>
- Wiers, R., Gladwin, T., Hofmann, W., Salemink, E., & Ridderinkhof, R. (2013). Cognitive Bias Modification and Cognitive Control Training in Addiction and Related Psychopathology. *Clinical Psychological Science*, 1, 192 - 212. <https://doi.org/10.1177/2167702612466547>
- Wittekind, C., Feist, A., Schneider, B., Moritz, S., & Fritzsche, A. (2015). The approach-avoidance task as an online intervention in cigarette smoking: a pilot study.. *Journal of behavior therapy and experimental psychiatry*, 46, 115-20 . <https://doi.org/10.1016/j.jbtep.2014.08.006>
- Zeigler-Hill, V., Besser, A., Gabay, M., & Young, G. (2021). Narcissism and Exercise Addiction: The Mediating Roles of Exercise-Related Motives. *International Journal of Environmental Research and Public Health*, 18(8), 4243. <https://doi.org/10.3390/ijerph18084243>