

Procrastinating Exercise Initiation: Exercise Procrastination Scale (EPS)

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ABSTRACT

Aim: Engaging in exercise is a multifaceted behavioral process shaped by individual social and environmental influences, yet delaying exercise remains a common occurrence. Developing a scale that elucidates the reasons underlying exercise procrastination is crucial for understanding, measuring, and devising intervention strategies to address individuals' tendencies to defer exercise. In this context, this study seeks to develop and evaluate a scale that facilitates the investigation and understanding of the factors contributing to exercise procrastination.

Material and Methods: The research, structured using a survey model, involves a participant group of 1,060 individuals aged 18 to 55 who do not regularly engage in exercise. The scale items were formulated based on a comprehensive literature review and expert consultations in the field.

Results: Following exploratory factor analysis, a measurement structure comprising three sub-dimensions, namely time, motivation, and anxiety, with a total of 10 items, was obtained. The scale's reliability was evaluated through various measures, including Cronbach's alpha for internal consistency, average variance extracted, composite reliability, and the reliability coefficient. The analyses revealed that the scale exhibited Cronbach's alpha coefficients, reliability coefficients, and composite reliability values above 0.70 for all sub-dimensions, as well as an average variance extracted above 0.50.

Conclusion: Consequently, the scale created in this research can be deemed a reliable and valid assessment tool. It can serve to explore the causes of exercise procrastination and to formulate intervention strategies.

Keywords: Exercise procrastination; motivation; sports.

Egzersize Başlamayı Ertelemek: Egzersiz Erteleme Ölçeği (EEÖ)

ÖZ

Amaç: Egzersize katılım, sosyal, kişisel ve çevresel faktörlerden etkilenen karmaşık bir davranışsal süreç olmakla birlikte egzersiz yapmayı ertelemek oldukça yaygın bir durumdur. Egzersize katılımı erteleme altında yatan sebepleri anlaşılır kılabacak bir ölçeğin geliştirilmesi, bireylerin egzersiz yapmaya karşı olan erteleme eğilimlerini anlamak, ölçmek ve müdahale stratejileri geliştirmek için oldukça önemlidir. Bu bağlamda bu çalışmada egzersizi erteleme nedenlerini incelemeyi ve anlamayı mümkün kılacak bir ölçeğin geliştirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Tarama modelinden faydalanan bu araştırmanın katılımcı grubu düzenli olarak egzersiz yapmayan 18-55 yaş aralığında toplam 1060 birey oluşturmaktadır. Ölçek maddeleri, literatür taraması ve alan uzmanları görüşleri alınarak hazırlanmıştır.

Bulgular: Yapılan açımlayıcı faktör analizi sonucunda, zaman, motivasyon ve kaygı olmak üzere üç alt boyuttan oluşan toplam 10 madde içeren bir yapı elde edilmiştir. Bu yapı, doğrulayıcı faktör analiziyle sınanmış ve geçerliliği doğrulanmıştır. Ölçek güvenirliği, iç tutarlık kat sayısı, açıklanan ortalama varyans, kompozit güvenirlik değerleri ve güvenirlik katsayısı kullanılarak değerlendirilmiştir. Yapılan analizler, ölçeğin tüm alt boyutlarında 0,70'in üzerinde Cronbach's Alpha iç tutarlılık katsayısına, güvenirlik katsayısına ve kompozit güvenirlik değerine sahip olduğunu ve 0,50'nin üzerinde açıklanan ortalama varyansa sahip olduğunu göstermektedir.

Sonuç: Bu araştırma sonucunda geliştirilen ölçeğin güvenilir ve geçerli bir ölçüm aracı olduğu sonucuna varılabilir. Bu ölçek, egzersizi ertelemeye ilişkin nedenleri anlamak ve müdahale stratejileri geliştirmek için kullanılabilir.

Anahtar Kelimeler: Egzersiz erteleme; motivasyon; spor.

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INTRODUCTION

Procrastination, commonly described as the failure to follow through with planned actions (1), is a prevalent issue that affects an estimated 20–25% of the general population (2). Moreover, it is regarded as a significant concern due to its far-reaching consequences (Klingsieck, 2013). As a result, procrastination frequently leads to adverse effects in various aspects of life, including education, work, and personal well-being (3,4). Given these detrimental outcomes, understanding the nature of procrastination and developing effective intervention strategies have become key areas of focus in contemporary research.

Existing literature suggests that procrastination is associated with several psychological and behavioral factors, including motivation (1,5,6), self-control (7–9), depression (10,11), anxiety (10,12), and stress levels (13). Within this framework, procrastination has been conceptualized both as a general personality trait and as a domain-specific behavior (6,14). Nonetheless, to achieve a more comprehensive understanding of the underlying mechanisms of procrastination, researchers increasingly highlight the importance of studies targeting specific domains (15). In recent years, particular attention has been given to procrastination in various contexts including academics (16,17), sleep (18), and exercise (19). Despite this growing interest, research on exercise procrastination remains limited, making it challenging to fully grasp the factors contributing to this behavior.

Engaging in exercise is a multifaceted behavioral process shaped by a combination of social, personal, and environmental influences (20). People are generally more likely to engage in physical activity when they find it enjoyable, have high motivation, or experience positive emotions. Conversely, barriers such as the perceived difficulty of exercise have been found to negatively impact participation (21) while simultaneously increasing procrastination tendencies (22). Nevertheless, additional research is needed to clarify the complex mechanisms that contribute to exercise procrastination. One of the major obstacles to advancing research in this area, particularly in Türkiye, is the absence of a psychometrically sound scale tailored to the cultural and social context.

The development of a reliable and valid measurement tool specifically designed to assess exercise procrastination could serve as a crucial step in understanding this phenomenon. Such a scale would not only facilitate the measurement of procrastination tendencies related to exercise but also provide a foundation for designing intervention strategies aimed at reducing this behavior. Additionally, it would enable researchers to collect reliable data to analyze exercise habits and evaluate the broader individual and societal implications of exercise procrastination. Furthermore, by identifying key determinants of this behavior, it could contribute to the development of targeted strategies to enhance exercise participation and promote healthier lifestyles. Given these factors, the main aim of this study is to create a scale that enables a thorough exploration of the reasons behind exercise procrastination.

MATERIAL AND METHODS

Research Design

This study was a scale development research conducted through a survey design. This model focuses on describing a current or past situation without altering its conditions (23). This study received ethical approval from the İnönü University Social and Humanities Research and Publication Ethics Committee on May 30, 2024, with the approval number/decision: 11/8. Accordingly, the research was conducted in full compliance with the principles of Research and Publication Ethics. Furthermore, all participants voluntarily agreed to participate in the study by signing the "Informed Consent" form prior to their involvement.

Development of the Measurement Instrument

Scale Design and Draft Form Development: Following an extensive literature review, previous studies relevant to the subject (19,21,22) were carefully analyzed to inform the development of an initial item pool. As a result of this examination, a total of 17 items were generated and structured within a 5-point Likert scale framework.

Content Validity Assessment: During the development of this scale, content validity was evaluated using the Content Validity Ratio (CVR), a widely recognized method that translates qualitative evaluations into quantifiable measures. This approach is particularly valuable in cases where pilot applications are impractical or not yet feasible (24).

To establish content validity, five experts specializing in exercise science, physical activity, sports psychology, and measurement and evaluation were consulted. These experts rigorously evaluated the scale items, and CVR values were computed accordingly. Only items that demonstrated a positive CVR value were retained for subsequent analysis (25). Based on expert feedback, four of the 17 items (items 2, 5, 12, and 17) were revised. Additionally, four experts indicated similarities between items 1 and 3, items 7 and 10, items 9 and 12, and items 15 and 17, suggesting that one item from each pair should be removed. Consequently, items 1, 7, 9, and 15 were removed from the scale, resulting in 13 items in the revised.

Pilot Study: A pilot study was conducted to evaluate the clarity, internal consistency, and technical functionality of the draft version of the Exercise Procrastination Scale (EPS). A heterogeneous group of 30 participants, aged between 18 and 55, was selected to represent varying attitudes and behaviors toward exercise initiation. The main objective was to assess the comprehensibility, clarity, and feasibility of responding to the EPS items within the target population. Based on the feedback gathered during this phase, minor linguistic and structural adjustments were made to improve clarity and ease of understanding. Following these refinements, the final version of the EPS comprised 17 items. This pilot study also served to validate the administration process and provided a methodological foundation for subsequent analyses of the scale's validity and reliability.

Study Groups

The study groups comprise a total of 1,060 individuals aged 18–55 who do not regularly exercise. Information about the study groups is provided below.

Study Group 1: The first study group, from which data were collected for Exploratory Factor Analysis (EFA), was selected using a random sampling method. This study group comprise a total of 720 individuals, including 276 women and 444 men. The participants' ages range from 18 to 55, with 118 married and 602 single. Additionally, 252 of these individuals were employed, while 468 were not regularly employed.

Study Group 2: The second study group, from which data were collected for Confirmatory Factor Analysis (CFA), was selected using a random sampling method. This study group comprises a total of 310 individuals, 123 women and 187 men. The participants' ages range from 18 to 55, with 48 married and 262 single. Additionally, 108 of these individuals are employed, while 112 are not regularly employed.

Study Group 3: The third study group, from which data were gathered for the test-retest reliability analysis, consists of 15 women and 15 men selected using a random sampling method. A total of 30 participants were included, in accordance with the literature, which commonly accepts 30 individuals as sufficient for evaluating test-retest reliability (26,27). This sample size is considered adequate for statistically assessing the temporal stability of a measurement tool. The time interval between the test and retest applications was set as two weeks, a period frequently recommended to minimize memory effects while ensuring that the measured trait remains stable (28,29).

Statistical Analysis

All statistical analyses in the study were conducted using IBM SPSS Statistics (Version 25, Armonk, NY, USA) and AMOS (Version 24, Chicago, IL, USA), both developed by IBM Corp. Prior to the main analyses, the dataset was examined for missing values, outliers, and assumptions of normality. The normality of the data distribution was assessed using the Kolmogorov-Smirnov testi, and skewness and kurtosis values (± 2) were also taken into consideration. To determine the factor structure of the scale, EFA was performed using data from the first study group. In the EFA, the principal component analysis method with varimax rotation was employed. The suitability of the data for factor analysis was evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. The factor structure obtained

from the EFA was subsequently tested through CFA using data collected from the second study group. The CFA was conducted using AMOS 24 software. Model fit was assessed using several fit indices, including the Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Root Mean Square Residual (RMR). Based on the confirmed factor structure, the internal consistency reliability of the scale's subdimensions was evaluated by calculating Cronbach's alpha coefficients. In addition, convergent validity was assessed by computing Composite Reliability (CR) and Average Variance Extracted (AVE) values. To examine the temporal stability of the scale, a test-retest procedure was conducted with a subsample of 30 participants from the third study group. The scale was administered twice with a two-week interval between the applications. Pearson correlation analyses were then performed for each subdimension based on the collected data. Through this analytical process, the scale was comprehensively evaluated in terms of its validity and reliability indicator

RESULTS

Examination of the Scale's Factor Structure

An EFA was conducted using data from participants in the first study group. The KMO test yielded a value of 0.778, demonstrating that the dataset was appropriate for factor analysis. Additionally, Bartlett's test of sphericity produced a statistically significant result of 1749.794 ($p < 0.001$), further confirming the suitability of the data for factor extraction.

During the item analysis process, three items (2, 8, and 14) were removed due to low factor loadings or inadequate contribution to the overall structure. The final 10 items were effectively categorized into three distinct factors (time, motivation, anxiety). Collectively, these factors explained 69.532% of the total variance, exceeding the commonly accepted threshold of 40–60% for multifactor scales, as suggested by Çokluk et al. (30). Given this, the EFA results were thoroughly examined through various statistical measures, and the derived factor structure demonstrated strong validity, effectively capturing a significant proportion of the variance and meeting established psychometric standards for multifactor scales. The total explained variance is presented in Table 1.

Table 1. Total variance explained

Factor	Eigenvalue			Total Variance Explained			Rotated Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3.795	37.949	37.949	2.354	23.537	23.537	3.795	37.949	37.949
2	1.752	17.520	55.469	2.352	23.522	47.059	1.752	17.520	55.469
3	1.406	14.064	69.532	2.247	22.473	69.532	1.406	14.064	69.532

As shown in Table 1, the 10 items are organized into three factors, each with an eigenvalue greater than 1. This aligns with Yaşlıoğlu's (31) recommendation that factors with eigenvalues greater than 1 are considered significant. Additionally, based on the Kaiser criterion (eigenvalue >

1), these factors account for 69.532% of the variance. The rotated factor loadings are 3.795 for the first factor, 1.752 for the second factor, and 1.406 for the third factor. Furthermore, the Scree Plot, which illustrates the factor loadings of the components for the exercise procrastination scale, is presented in Figure 1 below

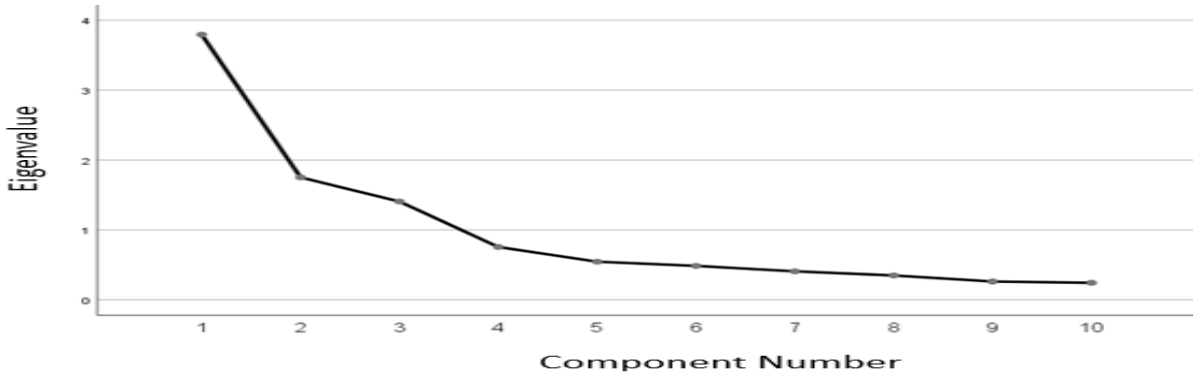


Figure 1. Scree plot graph

The results of the Rotated Component Matrix are presented in Table 2. During the rotation, Varimax and Principal Components analysis were conducted.

Table 2. Rotated component matrix

Item Number	Factor 1	Factor 2	Factor 3
1		0.713	
2		0.855	
3		0.806	
4			0.874
5			0.791
6			0.790
7	0.837		
8	0.809		
9	0.705		
10	0.615		

Upon reviewing Table 2, it is observed that the first factor includes items 7, 8, 9, and 10, the second factor comprises items 1, 2, and 3, and the third factor consists of items 4, 5, and 6. The 10 items derived from the EFA were then

administered to the second study group. In order to evaluate the underlying factor structure of the scale, a CFA was performed. The results of CFA are presented in Table 3.

Table 3. CFA results

Model Fit Index	First Order	Perfect Fit Criterion	Acceptable Fit Criterion
χ^2	83.068	$0 \leq \chi^2 \leq 2sd$	$2sd \leq \chi^2 \leq 3sd$
sd	29		
χ^2/sd	2.864	$0 \leq \chi^2/sd \leq 2$	$2 \leq \chi^2/sd \leq 3$
p	0.000	$0.05 \leq p \leq 1.00$	$0.01 \leq p \leq 0.05$
RMSEA	0.078	$0.00 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$
GFI	0.950	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$
AGFI	0.905	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$
NFI	0.940	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$
RMR	0.066	$0 \leq RMR \leq 0.05$	$0.05 \leq RMR \leq 0.08$
CFI	0.960	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI \leq 0.95$
IFI	0.960	$0.95 \leq IFI \leq 1.00$	$0.90 \leq IFI \leq 0.95$

As presented in Table 3, the results of the CFA indicate that the chi-square (X^2) value stands at 83.068, with a corresponding degree of freedom (df) of 29, yielding an X^2/df ratio of 2.864. The analysis further reveals a p-value of <0.001 while other fit indices are reported as follows: RMSEA = 0.078, GFI = 0.950, AGFI = 0.905, NFI = 0.940, RMR = 0.066, CFI = 0.960, and IFI = 0.960. These statistical indicators suggest that the X^2/df ratio, RMSEA, NFI, and RMR values fall within the acceptable fit range, whereas the GFI, AGFI, CFI, and IFI values demonstrate an excellent fit. Collectively, these findings confirm that the model meets the fit criteria as established by various researchers (32,33).

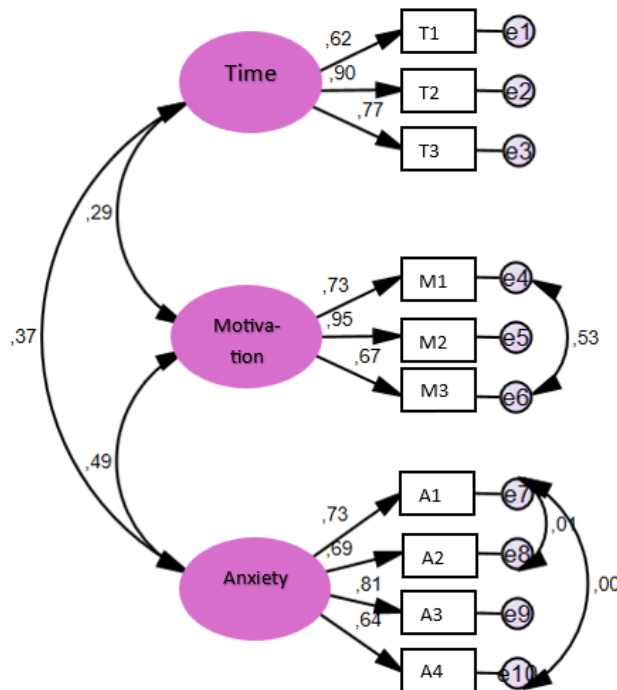


Figure 2. Standardized factor loadings of scale items resulting from CFA

Table 5. Item analysis results

Number of Items	Standardized Factor Loadings (β_1)	R ² (β_2)	Standard Error
1	0.618	0.93	0.085
2	0.903	0.26	0.079
3	0.766	0.56	0.070
4	0.732	0.85	0.121
5	0.951	0.14	0.135
6	0.674	0.84	0.100
7	0.732	0.71	0.095
8	0.689	0.81	0.088
9	0.814	0.47	0.074
10	0.637	0.95	0.094

An examination of Table 5 reveals that the β_1 values for the ten items fall within the range of 0.618 to 0.951, while β_2 values span from 0.14 to 0.95. Additionally, the standard error values fluctuate between 0.070 and 0.135. The findings derived from the factor analysis confirm that the exercise procrastination scale satisfies the established validity criteria, as outlined in previous research (32).

Scale Reliability

To assess the reliability of the scale, several statistical indicators were analyzed, including the internal consistency coefficient, average variance extracted (AVE), composite reliability (CR) values, and the overall reliability coefficient. Furthermore, to reinforce the reliability evaluation, the scale was administered to a subset of 30 participants from the third study group at 30-day intervals through the test-retest method.

The reliability analysis revealed that for the time sub-dimension, the Cronbach's alpha coefficient was calculated as $\alpha = 0.847$, with an AVE value of 0.59 and a CR value of 0.81. Similarly, in the motivation sub-dimension, the Cronbach's alpha coefficient reached $\alpha = 0.875$, while the AVE and CR values were determined as 0.63 and 0.83, respectively. In the case of the anxiety sub-dimension, the corresponding values were $\alpha = 0.809$ for Cronbach's alpha, 0.52 for AVE, and 0.81 for CR. Scholars highlight that for a reliable scale, CR values must consistently exceed AVE values (31). Additionally, internal consistency coefficients should be at least 0.70 to be deemed acceptable (23,32). The obtained results confirm that these benchmarks were met, affirming the reliability of the scale.

Moreover, the test-retest method was utilized to determine the stability of the scale over time by examining the reliability coefficients of the collected data. The analysis indicated that the reliability coefficient stood at 0.80 for the time sub-dimension, 0.76 for motivation, and 0.82 for anxiety. These findings strongly suggest that the scale exhibits a high level of reliability, demonstrating its consistency across different time points.

CONCLUSION

This study was carried out with the primary aim of developing a scale to enable a thorough investigation of the factors contributing to exercise procrastination. To achieve this, an initial draft was carefully created based on a comprehensive review of the relevant literature. The draft was then presented to a panel of five experts for evaluation, where they assessed its clarity and scope to ensure its completeness.

The results confirmed that the items demonstrated uniqueness while maintaining a homogeneous structure. Furthermore, an examination of the data's suitability for EFA indicated that the KMO measure and Bartlett's test values met the required adequacy thresholds. Item analysis subsequently revealed a three-factor structure, which together accounted for 69.532% of the total variance, with eigenvalues exceeding the 1.0 threshold.

The CFA results further substantiated the scale's robustness. Indicators such as the X^2/df ratio, RMSEA, NFI, and RMR were within acceptable limits. Moreover, GFI, AGFI, CFI, and IFI values reflected an excellent model fit. These findings collectively affirmed the validity of the 10-item exercise procrastination scale.

Regarding the scale's reliability, internal consistency was assessed through the examination of Cronbach's alpha, AVE, and CR values. Employing the test-retest method, the findings demonstrated that the Cronbach's alpha coefficients for the sub-dimensions of time, motivation, and anxiety were $\alpha = 0.847$, $\alpha = 0.875$, and $\alpha = 0.809$,

respectively. Similarly, the CR values for these dimensions were reported as 0.81, 0.83, and 0.81, respectively, while the AVE values stood at 0.59 for time, 0.63 for motivation, and 0.52 for anxiety. Collectively, these results provide strong evidence of the scale's internal consistency and reliability as a measurement instrument. The overall findings of the research confirm that the newly developed scale is both valid and reliable for evaluating the underlying factors related to exercise procrastination. Structurally, the scale comprises three distinct sub-dimensions: time, motivation, and anxiety. The finalized version consists of 10 items, none of which are reverse-coded. Specifically, the time and motivation sub-dimensions each include three items, while the anxiety sub-dimension comprises four items. The scale uses a 5-point Likert format, with scores ranging from a minimum of 10 to a maximum of 50. Higher scores suggest a stronger tendency toward exercise procrastination, while lower scores indicate a reduced likelihood of procrastination in this context.

The Turkish version of the scale can be found in Appendix 1, while the English version is provided in Appendix 2. Since the original scale was developed in Turkish, researchers intending to use the English version are advised to conduct construct validity and reliability analyses before implementation.

Authors's Contributions: Idea/Concept: İ.İ., A.Y.; Design: İ.İ., M.A.; Data Collection and/or Processing: Z.İ.K., S.D.; Analysis and/or Interpretation: M.A., S.S.; Literature Review: İ.İ., A.Y., S.S.; Writing the Article: İ.İ., M.A., A.Y.; Critical Review: Z.İ.K., S.D.

REFERENCES

1. Steel P. The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychol Bull.* 2007;133(1):65-94.
2. Ferrari JR, Díaz-Morales JF, O'Callaghan J, Díaz K, Argumedo D. Frequent behavioral delay tendencies by adults: international prevalence rates of chronic procrastination. *J Cross-Cult Psychol.* 2007;38(4):458-64.
3. Kim KR, Seo EH. The relationship between procrastination and academic performance: a meta-analysis. *Pers Individ Dif.* 2015;82:26-33.
4. Sanecka E. Psychopathy and procrastination: triarchic conceptualization of psychopathy and its relations to active and passive procrastination. *Curr Psychol.* 2022;41(2):863-76.
5. Brownlow S, Reasinger RD. Putting off until tomorrow what is better done today: academic procrastination as a function of motivation toward college work. *J Soc Behav Pers.* 2000;15(5):15-34.
6. Lay CH. At last, my research article on procrastination. *J Res Pers.* 1986;20(4):474-95.
7. Dietz F, Hofer M, Fries S. Individual values, learning routines and academic procrastination. *Br J Educ Psychol.* 2007;77(4):893-906.
8. Kühnel J, Bledow R, Kuonath A. Overcoming procrastination: time pressure and positive affect as compensatory routes to action. *J Bus Psychol.* 2023;38(4):803-19.
9. Wolters CA. Understanding procrastination from a self-regulated learning perspective. *J Educ Psychol.* 2003;95(1):179-87.
10. Flett GL, Blankstein KR, Martin TR. Procrastination, negative self-evaluation, and stress in depression and anxiety. In: Ferrari JR, Johnson JL, McCown WG, editors. *Procrastination and task avoidance: theory, research, and treatment.* Boston: Springer; 1995. p. 137-67.
11. Solomon LJ, Rothblum ED. Academic procrastination: frequency and cognitive-behavioral correlates. *J Couns Psychol.* 1984;31(4):503-9.
12. Spada MM, Hiou K, Nikcevic AV. Metacognitions, emotions, and procrastination. *J Cogn Psychother.* 2006;20(3):319-26.
13. Jackson T, Weiss KE, Lundquist JJ. Does procrastination mediate the relationship between optimism and subsequent stress? *J Soc Behav Pers.* 2000;15(5):203-12.
14. Milgram N, Mey-Tal G, Levison Y. Procrastination, generalized or specific, in college students and their parents. *Pers Individ Dif.* 1998;25(2):297-316.
15. Klingsieck KB. Procrastination in different life-domains: is procrastination domain specific? *Curr Psychol.* 2013;32(2):175-85.
16. Kim S, Fernandez S, Terrier L. Procrastination, personality traits, and academic performance: when active and passive procrastination tell a different story. *Pers Individ Dif.* 2017;108:154-7.
17. Zanjani S, Yunlu DG, Beigh JNS. Creative procrastinators: mapping a complex terrain. *Pers Individ Dif.* 2020;154:109640.
18. Kroese FM, Nauts S, Kamphorst BA, Anderson JH, de Ridder DTD. Bedtime procrastination: a behavioral perspective on sleep insufficiency. In: Sirois FM, Pychyl TA, editors. *Procrastination, health, and well-being.* San Diego: Elsevier Academic Press; 2016. p. 93-119.
19. Kelly SM, Walton HR. "I'll work out tomorrow": the procrastination in exercise scale. *J Health Psychol.* 2021;26(13):2613-25.
20. Pan Y, Lin M. Dynamic leakage aware power management with procrastination method. 2009 Canadian Conference on Electrical and Computer Engineering; 2009. St. John's. Piscataway (NJ): IEEE; 2009. p. 247-51.
21. Trost SG, Owen N, Bauman AE, Sallis JF, Brown W. Correlates of adults' participation in physical activity: review and update. *Med Sci Sports Exerc.* 2002;34(12):1996-2001.
22. Sirois FM. Out of sight, out of time? A meta-analytic investigation of procrastination and time perspective. *Eur J Pers.* 2014;28(5):511-20.
23. Büyükoztürk Ş. Sosyal bilimler için veri analizi el kitabı. 1st ed. Ankara: Pegem Akademi Yayıncılık; 2007.
24. Yurdugül H. Using content validity indexes for content validity in scale development studies. XIV. Ulusal Eğitim Bilimleri Kongresi; Denizli: Pamukkale Üniversitesi Eğitim Fakültesi; 2005. p. 1-6.

25. Veneziano L. A method for quantifying content validity of health-related questionnaires. *Am J Health Behav.* 1997;21(1):67-70.
26. Büyüköztürk Ş. Sosyal bilimler için veri analizi el kitabı. Ankara: Pegem Akademi Yayıncılık; 2018.
27. Tavşancıl E. Tutumların ölçülmesi ve SPSS ile veri analizi. Ankara: Nobel Akademik Yayıncılık; 2002.
28. Özdamar K. Paket programlar ile istatistiksel veri analizi: MINITAB 16 – IBM SPSS 21. Eskişehir: Nisan Kitabevi; 2013.
29. DeVellis RF, Thorpe CT. Scale development: theory and applications. 5th ed. Thousand Oaks (CA): SAGE Publications; 2021.
30. Çokluk Ö, Şekercioğlu G, Büyüköztürk Ş. Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları. 2nd ed. Ankara: Pegem Akademi Yayıncılık; 2014.
31. Yaşlıoğlu MM. Sosyal bilimlerde faktör analizi ve geçerlilik: keşfedici ve doğrulayıcı faktör analizlerinin kullanılması. *İstanbul Üniv İşletme Fak Derg.* 2017;46:74-85.
32. Bayram N. SPSS ile veri analizi. İstanbul: Ezgi Kitabevi; 2004.
33. Erkorkmaz U, Etikan I, Demir O, Özdamar K, Sanisoglu Y. Confirmatory factor analysis and fit indices: review. *Türkiye Klin J Med Sci.* 2013;33:210-23.

APPENDIX 1. Exercise Procrastination Scale Turkish Version

		Tanamam Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tanamam Katılıyorum
	Zaman					
1.	Egzersiz yapmak için uygun zaman bulamıyorum.	(1)	(2)	(3)	(4)	(5)
2.	Egzersiz yapmak için bir plan yapmakta zorlanıyorum.	(1)	(2)	(3)	(4)	(5)
3.	Egzersiz yaparak vaktimi boşa harcadığımı düşünüyorum.	(1)	(2)	(3)	(4)	(5)
	Motivasyon					
4.	Egzersiz yapmak bana keyif vermiyor.	(1)	(2)	(3)	(4)	(5)
5.	Egzersiz yapmak önceliklerim arasında değil.	(1)	(2)	(3)	(4)	(5)
6.	Egzersiz yapmanın gereksiz olduğunu düşünüyorum.	(1)	(2)	(3)	(4)	(5)
	Kaygı					
7.	Egzersiz esnasında yaralanmaktan çekiniyorum.	(1)	(2)	(3)	(4)	(5)
8.	Egzersiz esnasında başkalarının bana bakmasından çekiniyorum.	(1)	(2)	(3)	(4)	(5)
9.	Egzersiz programındaki hareketleri doğru formda uygulayamamaktan çekiniyorum.	(1)	(2)	(3)	(4)	(5)
10.	Egzersiz yaptıktan sonra oluşan yorgunluğun günlük işlerimi aksatmasından çekiniyorum.	(1)	(2)	(3)	(4)	(5)

Not: Geliştirilen bu ölçek, yalnızca bilimsel amaçlarla kullanılmak üzere tasarlanmıştır ve bu doğrultuda yazarlardan ayrıca izin alınmasına gerek olmadan kullanılabilir.

APPENDIX 2. Exercise Procrastination Scale English Version

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Time					
1.	I can't find the right time to exercise.	(1)	(2)	(3)	(4)	(5)
2.	I find it difficult to make a plan for exercising.	(1)	(2)	(3)	(4)	(5)
3.	I think exercising is a waste of my time.	(1)	(2)	(3)	(4)	(5)
	Motivation					
4.	Exercising does not bring me any pleasure.	(1)	(2)	(3)	(4)	(5)
5.	I think exercising is unnecessary.	(1)	(2)	(3)	(4)	(5)
6.	I don't have enough motivation to exercise.	(1)	(2)	(3)	(4)	(5)
	Anxiety					
7.	I am afraid of getting injured while exercising.	(1)	(2)	(3)	(4)	(5)
8.	I am afraid of others watching me while I exercise.	(1)	(2)	(3)	(4)	(5)
9.	I am afraid of not performing the exercises correctly in the workout program.	(1)	(2)	(3)	(4)	(5)
10.	I am afraid that the fatigue after exercising will disrupt my daily tasks.	(1)	(2)	(3)	(4)	(5)

Not: This scale has been developed for scientific purposes and can be used without obtaining permission from the author