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Dark Triad Personality Traits as Predictors of Athletes' Attitudes Toward Doping

Karanlık Üçlü Kişilik Özelliklerinin Sporcuların Dopinge Yönelik Tutumları Üzerindeki Yordayıcı Etkisi

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Abstract

The aim of this study was to examine the associations between Dark Triad personality traits (Machiavellianism, Narcissism, and Psychopathy) and athletes' attitudes toward doping, and to evaluate their predictive role through hierarchical regression analysis. The study was conducted with 286 active athletes (198 females, 88 males) aged between 18 and 27 years (M = 21.03, SD = 2.80). Data were collected using the Performance Enhancement Attitude Scale (PEAS) and the Short Dark Triad (SD3). Pearson correlation analyses indicated that attitudes toward doping were positively associated with Machiavellianism ($r = .330$, $p < .001$) and Psychopathy ($r = .392$, $p < .001$), whereas no significant association was found with Narcissism ($r = .037$, $p = .531$). In the hierarchical regression analysis, the first model including only the Dark Triad dimensions explained 19.9% of the variance ($R^2 = .199$). Within this model, Psychopathy ($\beta = .330$, $p < .001$) and Machiavellianism ($\beta = .228$, $p < .001$) emerged as significant positive predictors, whereas Narcissism was a significant negative predictor ($\beta = -.161$, $p = .007$). The inclusion of gender, age group, and prior ergogenic substance use did not result in a significant increase in explained variance. The findings suggest that attitudes toward doping are more strongly associated with personality traits than with demographic variables.

Keywords Dark Triad, Doping attitudes, Machiavellianism, Psychopathy, Athletes.

Öz

Bu çalışmanın amacı, Karanlık Üçlü kişilik özellikleri (Makyavelizm, Narsisizm ve Psikopati) ile sporcuların dopinge yönelik tutumları arasındaki ilişkileri incelemek ve bu özelliklerin yordayıcı rolünü hiyerarşik regresyon analizi ile değerlendirmektir. Araştırma, 18–27 yaş aralığında (Ort. = 21.03, SS = 2.80) 286 aktif sporcu (198 kadın, 88 erkek) ile yürütülmüştür. Veri toplama aracı olarak Performans Artırma Tutum Ölçeği (PEAS) ve Kısa Karanlık Üçlü Ölçeği (SD3) kullanılmıştır. Pearson korelasyon analizi sonuçlarına göre, dopinge yönelik tutumlar Makyavelizm ($r = .330$, $p < .001$) ve Psikopati ($r = .392$, $p < .001$) ile pozitif yönde ilişkili bulunurken, Narsisizm ile anlamlı bir ilişki saptanmamıştır ($r = .037$, $p = .531$). Hiyerarşik regresyon analizinde, yalnızca Karanlık Üçlü boyutlarının yer aldığı ilk model varyansın %19,9'unu açıklamıştır ($R^2 = .199$). Bu modelde Psikopati ($\beta = .330$, $p < .001$) ve Makyavelizm ($\beta = .228$, $p < .001$) pozitif yönde anlamlı yordayıcılar olarak belirlenirken, Narsisizm negatif yönde anlamlı bir yordayıcıdır ($\beta = -.161$, $p = .007$). Cinsiyet, yaş grubu ve daha önce ergojenik madde kullanımı değişkenlerinin eklenmesi açıklanan varyansta anlamlı bir artış sağlamamıştır. Bulgular, dopinge yönelik tutumların demografik değişkenlerden ziyade kişilik özellikleriyle daha güçlü ilişkili olduğunu göstermektedir.

Anahtar Kelimeler Karanlık Üçlü, Dopinge Yönelik Tutumlar, Makyavelizm, Psikopati, Sporcular

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Introduction

The competitive nature of modern sports imposes significant physical and psychological demands on athletes. In this high-pressure environment, the risk of engaging in unethical strategies such as the use of performance-enhancing substances and methods, also known as doping, increases. These practices constitute a complex issue, not only due to their physiological consequences but also because of the psychological tendencies that may underlie them. Personality traits are believed to play a critical role in shaping athletes' attitudes toward such behaviors. Therefore, it is essential to assess not only actual use but also the psychological predispositions and attitudes that may lead to these practices (Bloodworth et al., 2012; Petróczi & Aidman, 2008).

Building upon this psychological perspective, recent research has increasingly focused on personality traits known as the Dark Triad, including Machiavellianism, narcissism, and psychopathy, which have been linked to unethical tendencies, rule-breaking, and impulsive decision-making in sports (Blank et al., 2016; Nicholls et al., 2017, 2020). Machiavellianism is characterized by a cynical view of human nature, manipulativeness for personal gain, emotional detachment, and a strategic-calculative orientation (Jones & Paulhus, 2011a; Jones & Paulhus, 2014). In terms of doping attitudes, these traits may translate into a tendency to rationalize or endorse doping; Machiavellian individuals may perceive performance enhancement as a strategic means to achieve success, strive to minimize reputational risks, and display a greater ability to manage the process professionally.

In contrast to the strategic and calculated nature of Machiavellianism, psychopathy reflects its impulsive and emotionally detached counterpart. Psychopathy is defined by emotional coldness and impulsivity (Cleckley, 1941; Hare, 1970; Jones & Paulhus, 2011). This trait reflects a preference for short-term rewards over long-term consequences. From the perspective of doping attitudes, individuals high in psychopathic tendencies may disregard potential health risks or ethical implications of doping and instead favor immediate performance gains. Moreover, elements such as risk-taking, sensation-seeking, and lack of remorse may lead to a more permissive, indifferent, or even encouraging stance toward doping. Thus, psychopathy differs from the other personality dimensions by framing doping as an impulsive and short-term means of achievement.

Unlike the impulsivity and emotional detachment observed in psychopathy, narcissism centers on self-enhancement and social validation. Narcissism is defined by grandiosity, entitlement, and a persistent need for admiration (Jones & Paulhus, 2014). Regarding doping attitudes, narcissistic tendencies may foster image-focused behaviors; narcissistic individuals might avoid overt doping due to the risk of social stigma, yet rationalize strategies that preserve external approval. Crucially, a strong sense of entitlement may lead them to perceive doping not as a violation, but as a justified means to attain the success they believe they inherently deserve.

Beyond individual personality profiles, understanding athletes' attitudes and beliefs is crucial for identifying psychological factors that drive the desire for performance enhancement. Previous research has shown that male athletes, individuals with prior ergogenic use, and those participating in power or speed-based sports tend to exhibit more permissive attitudes toward such practices (Alaranta et al., 2006; Backhouse et al., 2013). The gateway hypothesis also suggests that supplement use may precede and facilitate engagement in doping, emphasizing the importance of understanding the behavioral and psychological precursors to such transitions (Backhouse et al., 2013). Such dispositions may further manifest in a broader disregard for ethical boundaries,

increasing the likelihood of engagement in performance-enhancing behaviors without considering long-term consequences (Blank et al., 2016).

However, despite these insights into behavior, less is known about how such traits are related to general attitudes toward performance-enhancing substances and methods. Understanding these attitudinal patterns is particularly relevant, as they may bridge the gap between underlying personality traits and actual engagement in doping behaviors. These attitudes are critical, as they may precede or predict future behavior (Bloodworth et al., 2012). Exploring these psychological correlates in broader and more diverse athletic populations remains an important step toward better understanding ethical risk factors in sport.

Therefore, the aim of the present study was to examine the associations between Dark Triad personality traits and athletes' attitudes toward doping, with particular emphasis on evaluating their predictive role through hierarchical multiple regression analysis.

Materials and Methods

Research Model

This study employed a cross-sectional correlational design to investigate whether Dark Triad personality traits (Machiavellianism, Narcissism, and Psychopathy) predict athletes' attitudes toward doping. Pearson correlations were first conducted to examine bivariate associations, followed by hierarchical multiple regression analyses to evaluate the predictive role of these traits.

Research Group

A total of 286 athletes (198 females, 88 males) voluntarily participated in this cross-sectional study. The participants were aged between 18 and 27 years (M = 21.03, SD = 2.80) and were actively engaged in either individual or team sports. The majority participated in fitness (31.1%), football (26.6%), swimming (14.3%), table tennis (12.9%), volleyball (5.2%), and handball (3.5%). A smaller proportion (6.4%) participated in other sports such as athletics, wrestling, archery, and tennis. Descriptive characteristics of the participants are presented in Table 1.

Study Sample and Power Analysis

The final sample comprised 286 participants. Prior to data collection, an a priori power analysis was conducted using G*Power 3.1 (Faul et al., 2009) to determine the minimum required sample size for multiple linear regression analysis. Assuming a medium effect size ($f^2 = 0.15$), an alpha level of .05, and a desired power of .95, the required sample size was calculated as 153 participants. A post hoc power analysis based on the actual sample size and seven predictors indicated an achieved power of $1-\beta = .996$, confirming that the study was adequately powered.

Data Collection Tools

Demographic Information Form

A demographic information form, developed by the researchers, was administered to gather background characteristics of the participants. The form included items on gender, age, specific sport branch, sport type (individual or team), years of experience, weekly training hours, and prior use of ergogenic aids. These variables were collected to provide descriptive information about the sample and to control for potential confounding factors in the analyses.

Performance-Enhancement Attitude Scale (PEAS)

To assess athletes' attitudes toward doping, the "Performance Enhancement Attitude Scale (PEAS)" developed by Petróczi (2002) was employed. The scale consists of 17 items rated on a 6-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree), with higher scores indicating a more permissive attitude toward doping. The Turkish adaptation and validation of the scale were conducted by Yıldız and Toros (2018), who reported that the scale had a one-factor structure and an internal consistency coefficient (Cronbach's α) of .87. In the present study, internal consistency was evaluated using McDonald's omega (ω), which demonstrated excellent reliability (ω = .910).

The Short Dark Triad (SD3)

The Short Dark Triad (SD3), developed by Jones & Paulhus (2014), was used to assess three socially aversive personality traits: Machiavellianism, Narcissism, and Psychopathy. It consists of 27 items, with 9 items per subscale, rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The Turkish adaptation was conducted by Özsoy et al. (2017), and the internal consistency values (Cronbach's α) reported in their study were α = .70 for Machiavellianism, α = .79 for Narcissism, and α = .79 for Psychopathy. In the current study, internal consistency was assessed using McDonald's omega (ω), with the following values: ω = .79 for Machiavellianism, ω = .63 for Narcissism, and ω = .71 for Psychopathy. McDonald's omega was preferred over Cronbach's α, as it does not assume equal item loadings and thus provides a more precise estimate of reliability (Dunn, Baguley, & Brunsden, 2014). The results indicated acceptable reliability for the Machiavellianism and Psychopathy subscales. Although the value for Narcissism was slightly lower, it is consistent with the range frequently reported for this specific subscale in the literature, thus supporting the measure's validity in the present sample.

Data Analysis

Statistical analyses were conducted using Jamovi (version 2.6). Participants' demographic characteristics were presented using frequencies (n) and percentages (%). Descriptive statistics for the scale scores, including means, standard deviations, skewness, and kurtosis values, were calculated. Skewness and kurtosis coefficients within ±2 were considered indicative of acceptable distributional properties for parametric analyses (George & Mallery, 2010). Pearson correlation coefficients were computed to examine the bivariate associations between Dark Triad personality traits and performance-enhancing attitudes. Hierarchical multiple regression analyses were performed to evaluate the predictive role of Dark Triad traits on athletes' attitudes toward doping. In Model 1, Machiavellianism, Narcissism, and Psychopathy were entered simultaneously. In Model 2, demographic variables (gender and age group) were added. In Model 3, prior ergogenic substance use was included as an additional covariate. Changes in explained variance (ΔR^2) were examined to assess the incremental contribution of each model. Gender, age group, and prior ergogenic substance use were treated as categorical variables and dummy-coded prior to the regression analyses. Females, the youngest age group (18–21 years), and non-users of ergogenic aids served as reference categories. Multicollinearity was evaluated using Variance Inflation Factor (VIF) values and tolerance statistics, which were within acceptable limits. Results were reported using unstandardized coefficients (B), standardized coefficients (β), 95% confidence intervals, and model fit indices (R^2 and adjusted R^2). Statistical significance was set at $p < .05$.

Results

The findings of the study are presented in this section.

Table 1: Participant characteristics

Variable	Group	n	%
Gender	Female	198	(69.2%)
	Male	88	(30.8%)
Type of Sports	Individual sports	183	(64.0%)
	Team sports	103	(36.0%)
Age Group	18-21 years	163	(57.0%)
	22-24 years	94	(32.9%)
	25-30 years	29	(10.1%)
Prior Ergogenic Aid Use	Yes	112	(39.2%)
	No	174	(60.8%)

As presented in Table 1, the study sample consisted of 286 young adult athletes, the majority of whom were female (69.2%). Most participants were engaged in individual sports (64.0%), while 36.0% competed in team sports. The largest proportion of athletes were between 18 and 21 years of age (57.0%), followed by those aged 22-24 years (32.9%) and 25-30 years (10.1%). Regarding prior use of ergogenic aids, 39.2% reported previous use, whereas 60.8% indicated no such experience.

Table 2: Descriptive statistics for the Short Dark Triad subscales and the Performance Enhancement Attitude Scale

Scales	n	$\bar{X}$	±	SD	Skewness	Kurtosis
SD3-Machiavellianism	286	28.15	±	6.75	-.261	.607
SD3-Narcissism	286	27.29	±	5.13	.519	1.195
SD3-Psychopathy	286	24.05	±	5.62	.173	-.141
PEAS	286	44.69	±	15.88	.661	.849

Note. SD3: Short Dark Triad; PEAS: Performance Enhancing Attitudes Scale

Table 2 presents the descriptive statistics for the SD3 subscales and PEAS scores. The skewness and kurtosis values were within ±2, indicating acceptable distributional characteristics for subsequent parametric analyses.

Table 3: Bivariate Correlations Among Dark Triad Traits and Performance-Enhancing Attitudes

Variable	1		2		3	
	r	p	r	p	r	p
1. PEAS	-	-	-	-	-	-
2. SD3- Machiavellianism	.330***	<.001	-	-	-	-
3. SD3- Narcissism	.037	.531	.393***	<.001		
4. SD3-Psychopathy	.392***	<.001	.498***	<.001	.327***	<.001

***p< .001; SD3: Short Dark Triad; PEAS: Performance Enhancing Attitudes Scale

Table 3 presents the bivariate correlations among the Dark Triad traits and performance-enhancing attitudes. Performance-enhancing attitudes were positively associated with Machiavellianism (r = .330, p < .001) and Psychopathy (r = .392, p < .001), both reflecting moderate effect sizes. The association with Narcissism was not statistically significant (r = .037, p = .531) and was negligible in magnitude. The intercorrelations among Machiavellianism, Narcissism, and Psychopathy ranged from moderate to moderately strong (r = .327 to r = .498).

Table 4. Hierarchical Multiple Regression Predicting Performance-Enhancing Attitudes

Predictor	B	SE	β	95% (CI, LL, UL)	t	p
Model 1						
Intercept	20.676	5.218		10.405, 30.947	3.962	< .001
SD3-Machiavellianism	0.538	0.151	.228	0.241, 0.834	3.567	< .001
SD3-Narcissism	-0.497	0.182	-.161	-0.854, -0.139	-2.733	.007
SD3-Psychopathy	0.933	0.176	.330	0.587, 1.279	5.302	< .001
Model R^2 / Adj. R^2 R^2 = .199 Adj. R^2 = .190						
Model 2						
Intercept	21.230	5.380		10.640, 31.821	3.946	< .001
SD3-Machiavellianism	0.536	0.152	.228	0.237, 0.834	3.531	< .001
SD3-Narcissism	-0.495	0.183	-.160	-0.854, -0.135	-2.710	.007
SD3-Psychopathy	0.915	0.179	.324	0.562, 1.268	5.105	< .001
Gender (1 = Male)	0.374	1.849	.024	-3.266, 4.015	0.202	.840
Age (2 = 22-24 vs. 18-21)	-0.252	1.874	-.016	-3.941, 3.437	-0.134	.893
Age (3 = 25-30 vs. 18-21)	-2.902	2.905	-.183	-8.621, 2.817	-0.999	.319
Model R^2 / Adj. R^2 R^2 = .202; Adjusted R^2 = .185						
Model 3						
Intercept	21.024	5.369		10.455, 31.593	3.916	< .001
SD3-Machiavellianism	0.523	0.152	.222	0.224, 0.821	3.449	< .001
SD3-Narcissism	-0.475	0.183	-.154	-0.834, -0.115	-2.598	.010
SD3-Psychopathy	0.885	0.180	.314	0.531, 1.239	4.922	< .001
Gender (1 = Male)	-0.070	1.868	.004	-3.747, 3.606	-0.038	.970
Age (2 = 22-24 vs. 18-21)	-0.324	1.870	-.020	-4.005, 3.357	-0.173	.862
Age (3 = 25-30 vs. 18-21)	-2.950	2.898	-.186	-8.655, 2.756	-1.018	.310
Prior Ergogenic Aid Use (1 = Yes)	2.726	1.780	.172	-0.777, 6.229	1.532	.127
Model R^2 / Adj. R^2 R^2 = .209; Adjusted R^2 = .189						

Note. B = unstandardized regression coefficient; β = standardized regression coefficient; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; SE = Standard Error; PEAS = Performance Enhancement Attitude Scale; R^2 = coefficient of determination; Adj. R^2 = adjusted coefficient of determination (corrected for the number of predictors in the model).

Table 4 presents the hierarchical regression analyses predicting performance-enhancing attitudes. In Model 1, the Dark Triad traits explained 19.9% of the variance in PEAS scores (R^2 = .199, Adj. R^2 = .190, $p < .001$). Psychopathy emerged as the strongest positive predictor (β = .330, $p < .001$), followed by Machiavellianism (β = .228, $p < .001$). In contrast, Narcissism was negatively associated with performance-enhancing attitudes (β = −.161, p = .007). The inclusion of demographic variables in Model 2 resulted in a negligible increase in explained variance (ΔR^2 = .003), and neither gender nor age group significantly predicted PEAS scores. In Model 3, prior ergogenic aid use was added, yielding a small and non-significant increase in explained variance (ΔR^2 = .007). Although prior ergogenic aid use showed a positive coefficient (β = .172), this effect did not reach statistical significance (p = .127). Across all models, Machiavellianism and Psychopathy remained positive and significant predictors, whereas Narcissism consistently demonstrated a negative association with performance-enhancing attitudes.

Discussion and Conclusion

The present study aimed to examine the associations between Dark Triad personality traits and athletes' attitudes toward doping, with particular emphasis on their predictive role assessed through hierarchical multiple regression analyses.

The correlation analyses revealed that Machiavellianism and psychopathy were positively associated with permissive doping attitudes, whereas narcissism demonstrated no significant association. This pattern aligns with previous findings by Nicholls et al. (2017, 2020), who consistently reported weaker associations for narcissism compared with the other two Dark Triad traits across various athletic populations. Similarly, the results of Bagheri Sheykhangafshe et al. (2021) partially supported this trend, showing the strongest correlation for Machiavellianism and the weakest for narcissism in a sample of bodybuilders. The non-significant role of narcissism at the bivariate level can be explained by both measurement and contextual factors. The Short Dark Triad primarily captures grandiose narcissism (Jones & Paulhus, 2014), which may account for the absence of a significant relationship in the present findings. Recent high-quality evidence supports this interpretation. A large-scale, multi-country, WADA-supported study by Zhang and Boardley (2025) found that vulnerable narcissism more strongly predicted moral disengagement and doping intentions, whereas grandiose narcissism showed weaker and, in some cases, even protective effects. Therefore, the non-significant effect of narcissism observed in the correlation analysis likely reflects the distinctive characteristics of grandiose narcissism, whose self-enhancement motives may not directly translate into the ethical disengagement mechanisms underlying doping attitudes. In line with this reasoning, Matosic et al. (2016) further suggested that narcissism might influence doping attitudes indirectly through social mechanisms such as controlling coaching behaviors rather than through direct personality effects.

The hierarchical regression analyses provided deeper insight into these relationships. In the first model, which included only the Dark Triad traits, psychopathy and Machiavellianism emerged as significant positive predictors of permissive attitudes, whereas narcissism showed a significant negative association when controlling for the other traits. This model accounted for 19.9% of the variance in doping attitudes, indicating a meaningful explanatory contribution of personality traits. The subsequent addition of demographic variables (gender, age) and prior ergogenic-aid use produced only negligible and non-significant increases in explained variance (ΔR^2 = .003 and .007, respectively). These minimal gains indicate that the predictive utility of the model was primarily driven by core personality factors rather than by demographic characteristics or behavioral history.

These findings are broadly consistent with previous regression-based research. Nicholls et al. (2017) reported that both psychopathy and Machiavellianism significantly predicted doping attitudes, jointly explaining approximately 29% of the variance, whereas narcissism showed no significant predictive value. In contrast, a follow-up study by Nicholls et al. (2020) found psychopathy to remain the strongest predictor, with Machiavellianism becoming nonsignificant and narcissism exerting only a minor positive effect. Collectively, these comparisons reinforce the robustness of psychopathy as a central predictor of permissive doping attitudes, while indicating that the influence of Machiavellianism may vary across athletic contexts.

Overall, the findings indicate that psychopathy and Machiavellianism are robust predictors of permissive doping attitudes among young athletes, whereas grandiose narcissism does not appear to directly promote such attitudes and may even demonstrate a negative association when considered alongside other Dark Triad traits. Personality traits explained a meaningful proportion of variance beyond demographic

characteristics and prior ergogenic aid use, underscoring the central role of dispositional factors in shaping ethical orientations in sport. These results highlight the importance of integrating personality-informed approaches into doping prevention frameworks and contribute to a more nuanced understanding of psychological risk factors underlying performance-enhancement attitudes. Future research should adopt longitudinal and multi-method designs to clarify how these traits translate into actual doping-related behaviors across different competitive contexts.

Kısaltmalar / Abbreviations

SD	Standard Deviation
$\bar{X}$	Mean
r value	Pearson Correlation Coefficient
p value	Significance Value / P-value
B	Unstandardized Regression Coefficient
β	Standardized Regression Coefficient
n	Number of Participants
PEAS	Performance Enhancement Attitude Scale
SD3	Short Dark Triad Scale
ω	McDonald's Omega Reliability Coefficient
Adj. R^2	Adjusted R-squared
ΔR^2	Change in Explained Variance

Beyanlar / Declarations

Etik Onay ve Katılım Onayı / Ethics approval and consent to participate

Bu çalışmanın hazırlanma ve yazım sürecinde "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında bilimsel, etik ve alıntı kurallarına uyulmuş olup; toplanan veriler üzerinde herhangi bir tahrifat yapılmamış ve bu çalışma herhangi başka bir akademik yayın ortamına değerlendirme için gönderilmemiştir. Makale ile ilgili doğabilecek her türlü ihlallerde sorumluluk yazara aittir. Çalışma için etik onay, Yozgat Bozok Üniversitesi Sosyal ve Beşerî Bilimler Etik Kurulu tarafından verilmiştir (Belge No. 26/09/2025 E-39243114-200-352895). Tüm katılımcılar bu çalışmaya gönüllü olarak katılmıştır. /
During the preparation and writing of this study, scientific, ethical and citation rules were followed in accordance with the 'Higher Education Institutions Scientific Research and Publication Ethics Guidelines'; no alterations were made to the collected data, and this study has not been submitted for evaluation to any other academic publication medium. The author is solely responsible for any violations that may arise in connection with this article. The ethical approval for the study was granted by the Scientific Research and Publication Ethics Committee of Yozgat Bozok University, Social and Human Sciences (Document no. 26/09/2025 E-39243114-200-352895). All participants voluntarily participated in this study.

Veri ve Materyal Erişilebilirliği / Availability of data and material

Bu çalışmanın bulgularını destekleyen veriler, makul talepler üzerine sorumlu yazardan temin edilebilir. Veri seti yalnızca akademik amaçlar için erişilebilir olacak ve verilerin herhangi bir kullanımı, orijinal çalışmayı referans gösterecek ve katılımcıların gizliliğini koruyacaktır.

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset will be accessible only for academic purposes, and any use of the data will recognize the original study and maintain the confidentiality of the participants.

Çıkar Çatışması / Competing interests

Yazarlar, bu makalede sunulan çalışmayı etkileyebilecek herhangi bir çıkar çatışması veya kişisel ilişkiye sahip olmadıklarını beyan etmektedirler.

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Yazar Katkıları / Authors' Contribution Statement

Çalışmanın tasarımı ve planlanması: H.A., D.Ç.S., Veri toplama, analizi veya yorumlanması: H.A., D.Ç.S.; Makalenin yazımı: H.A., D.Ç.S.; Veri düzenleme, yöntem belirleme, yazım – özgün taslak, yazım – gözden geçirme ve düzenleme: H.A., D.Ç.S.; Tüm yazarlar, makalenin önemli noktalarını eleştirel bir şekilde gözden geçirmiştir. Tüm yazarlar makalenin son halini onaylamıştır. /
Design and planning of the study: H.A., D.Ç.S.; Data collection, analysis or interpretation: H.A., D.Ç.S.; Manuscript preparation: H.A., D.Ç.S.; Data organization, methodology development, writing - original draft, writing – review and editing: H.A., D.Ç.S.; All authors critically reviewed the key points of the manuscript and approved the final version.

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