Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/21837
DOI URL: http://dx.doi.org/10.21474/IJAR01/21837

RESEARCH ARTICLE

THE EVALUATION OF THE RELATIONSHIP BETWEEN BODY DYSMORPHIC DISORDER, RUMINATION, SELF-ESTEEM, AND EXERCISE ADDICTION

Mona Rashidifar and Gloria Manyeruke

1. Near East University, Lefkosa, Cyprus.

Manuscript Info

Manuscript History
Received: 17 July 2025
Final Accepted: 19 August 2025
Published: September 2025

Key words:-
Body Dysmorphic Disorder (BDD), Exercise Addiction,Rumination, Social media use, Self-Esteem

Abstract

This study investigates the correlations between Body Dysmorphic Disorder (BDD), exercise addiction, self-esteem, and rumination among international students studying in North Cyprus. A total of 352 participants were selected using purposive sampling. The Rosenberg Self-esteem Scale (RSE), Yale-Brown Obsessive Compulsive Scale Modified for BDD (BDD-YBOCS), Exercise Addiction Inventory (EAI), and the Ruminative Response Scale (RRS) were employed to collect data. The results indicate that rumination is a key predictor of BDD, but self-esteem and exercise addiction have no predictive effect on BDD. On the other hand, self-esteem had a predictive relationship with exercise addiction. It was further revealed that depression has a predictive relationship with rumination. The outcomes show a strong relationship between rumination and BDD, suggesting underlying cognitive mechanisms involved in BDD. The study found that students who do not engage in social media use have significantly reduced levels of BDD and self-esteem compared to users, and that those who practice strength training have enhanced levels of self-esteem than individuals who perform aerobic exercise. This research highlights the need to address emotional, behavioral, and cognitive aspects to get a holistic understanding of body image disturbances among various populations of students. It also underlines the influence of exercise modalities employed by individuals on mental health outcomes.

Introduction:-

Nowadays, people idealize the pursuit of physical fitness;attaining a toned physique has become equated with success, though it remains difficult to achieve. Physical fitness is associated with higher self-control (Boat & Cooper, 2019) and self-esteem and improved body image (2016). This situation has led to the emergence of Exercise Addiction (EA) as well as conditions like Body Dysmorphic Disorder (BDD) (Corazz et al., 2019). BDD is a psychological illness marked by excessive worry about perceived or small physical imperfections, which can significantly impair daily functioning and social interactions (Phillips, 2005). People with BDD often spend extensive time pondering their appearance, checking mirrors, comparing themselves to others, and making frequent alterations to their looks (Veale et al., 2016). BDD is characterized by spending several hours daily fixated on

Corresponding Author:-Gloria Manyeruke
Address: Near East University, Lefkosa, Cyprus

appearance-related concerns, accompanied by significant life disruptions (Brennan et al., 2023). Rumination is a prevalent cognitive phenomenon among patients with Body Dysmorphic Disorder (BDD), exacerbating poor self-perception (Hashemi Salehi &Aleyasin, 2024). Rumination is characterized by the repetitive contemplation of negative thoughts and emotions without taking any action to address them (Nolen-Hoeksema, 1991). Rumination significantly contributes to worsening and prolonging BDD by heightening the emotional distress linked to perceived flaws (Phillips, 2014). Individuals constantly fixate on perceived flaws, often resorting to behaviors aimed at concealing or enhancing their appearance (Phillips., 2014). Rumination and other recurrent unpleasant thoughts are widespread in illnesses such BDD, anxiety, and depression. This emphasizes how crucial it is to treat rumination in a variety of mental health disorders (Arditte et al., 2016). Studies have shown that Individuals who engage in persistent rumination over their perceived flaws are more likely to develop BDD. This repetitive thinking might worsen their negative self-image and intensify BDD symptoms (Veale et al., 2014).

Individuals who suffer from BDD frequently exhibit low self-esteem, stemming from persistent self-criticism and ongoing dissatisfaction with their physical appearance. This creates a cyclical relationship where low self-esteem exacerbates BDD symptoms, and BDD symptoms further diminish self-esteem. (Kuck et al., 2020). Self-esteem refers to an individual's appraisal of their own self-worth, which can be either positive or negative (Hepper, 2023). Research by Kuck et al. (2021) highlights the critical role of self-esteem in the treatment BDD. Additionally, research by Dyl et al. (2006) indicates that teenagers experiencing body image issues and low self-esteem may have a heightened chance of developing BDD. Research demonstrates that adolescents diagnosed with body dysmorphic disorder (BDD) often experience heightened anxiety, substantial functional impairment, and markedly increased rates of suicidal ideation and attempts (Phillips et al., 2006). Early identification and management focused on enhancing self-esteem and fostering a positive body image are crucial for minimizing the emergence and persistence of BDD and its related consequences (Tros et al., 2023).

Exercise addiction can be considered a type of behavioral addiction marked by a depletion of behavioral regulation, leading to compulsive engagement in exercise (Weinstein et al., 2023). Exercise addiction involves an obsessive commitment to physical activity, often driven by the intention to acquire an idealized physical appearance (Graves et al., 2004; Morgan, 2020). For individuals with BDD, exercise can start as a coping mechanism to alleviate distress over their appearance. However, this can escalate into addictive behaviors, as temporary relief or perceived improvements fuel a cycle of increased exercise frequency and intensity (Corazza et al., 2019). The initial relief provided by exercise can lead to a dependency, where more exercise is required to achieve the same emotional relief, characteristic of addictive behaviors.

Research suggests a connection between reduced self-esteem, BDD and exercise addiction (Gori et al., 2021). Moreover, studies conducted in fitness settings have revealed a strong association between appearance-related anxiety, low self-esteem, and the risk of exercise addiction, emphasizing the role of self-esteem in increasing susceptibility to compulsive exercise behaviors (Corazza et al., 2019). Individuals with BDD may resort to excessive exercise as a strategy to manage their anxieties and insecurities (Graves & Welsh, 2004). Exercise addiction is a multifaceted condition linked to several psychological aspects. Research has identified associations between EA and issues such as BDD, eating disorders and body image concerns (Gori et al., 2021).The aim of this study is to examine the associations among BDD, rumination, self-esteem and exercise addiction.

Methodology:-

Research Design:

This study employed a correlational research design to examine the relationships among Body Dysmorphic Disorder (BDD), self-esteem, rumination, and exercise addiction in a sample of international students who engage in regular physical activity at a local gym.

Sample and data collection:

This study utilized purposive sampling to recruit 352 participants. Eligibility criteria included being an international student and a member of a gym in North Cyprus. Participants were specifically drawn from gyms located in the Nicosia area.

Research instruments:

Data collection was carried out through the administration of a structured questionnaire. The survey included a socio-demographic data form and four standardized measures, namely: the Yale-Brown Obsessive Compulsive

Scale Modified for BDD (BDD-YBOCS), Exercise Addiction Inventory (EAI), Ruminative Response Scale (RRS) and Rosenberg Self-esteem Scale (RSE).

Demographic Form:
This questionnaire collected data on participants' socio-demographic characteristics, including the amount of time they spend on social media and the types of physical exercise they engage in.

Yale-Brown Obsessive Compulsive Scale Modified for BDD (BDD-YBOCS):
The scale is comprised of items designed to assess obsessions, followed by five items evaluating compulsive behaviors related to Body Dysmorphic Disorder (BDD). The final two items quantify avoidance behaviors and insight. Each item is rated on a 5-point scale ranging from 0 (None) to 4 (Extreme), with higher scores reflecting greater severity of BDD symptoms. The instrument demonstrates high reliability, with a reported reliability coefficient of between 0.80 and 0.88. It has been validated as a standard measure for evaluating BDD severity(Phillips et al., 1997).

Ruminative Response Scale (RRS):
The RRS assesses levels of ruminative responses to depressive feelings and consists of 22 items categorized into 'Brooding' and 'Reflection' subscales. It was introduced by Nolen-Hoeksema and Morrow in 1991. Respondents rate each item on a 4-point scale ranging from 1 (almost never) to 4 (almost always), where higher scores indicate more intense rumination. This scale is widely utilized and demonstrates strong psychometric properties for evaluating rumination in mood disorders (Nolen-Hoeksema et al., 2008). It is recognized as a valid and reliable measure, capturing the multidimensional aspects of rumination (Schoofs et al., 2010). The RRS had a Cronbach's alpha reliability score of 0.94 for the full scale, while the reliability of the subscales was between 0.78 and 0.90.

Exercise Addiction Inventory (EAI):
The Exercise Addiction Inventory (EAI) was developed by Terry, Szabo, and Griffiths in 2004 as a self-report questionnaire to evaluate the likelihood of exercise addiction as evidenced by symptoms associated with exercise dependence. This concise scale consists of 6 items and assesses key aspects such as, mood modification, salience, conflict, tolerance, relapse and withdrawal symptoms. The scale uses a 5-point likert scale rating items from 0 (Strongly disagree) to 4 (Strongly agree), where high scores are indicative of increased susceptibility to exercise addiction. The EAI demonstrates goodpsychometric properties, establishing it as a reliable tool for screening exercise addiction. Scores from the questionnaire provide a total measure of exercise dependence, calculated by summing ratings across its seven components. Initial reports indicated internal consistencies (Cronbach's α) ranging from .78 to .95, internal reliability was notably high at .98 (Terry et al., 2004).

Rosenberg self-esteem scale (RSE):
The Rosenberg Self-Esteem Scale (RSES), developed by Rosenberg in 1965, is a 10-item instrument designed to assess global self-esteem by capturing both positive and negative self-perceptions. The scale is unidimensional, with respondents rating each item on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Total scores range from 10 to 40, high scores reflect greater self-esteem. The RSES has demonstrated strong psychometric properties, including a test-retest reliability of 0.85 over a two-week interval and a Cronbach's alpha of 0.90 (Rosenberg, 1965)

Data Collection Procedure:
The study commenced after obtaining ethical approval from the Near East University Social Science Ethics Committee (application number NEU/SS/2024/1782). Subsequently, the structured questionnaire was administered to participants either online or in paper-and-pen format. Data were collected at gyms, sports facilities, and other locations where individuals engage in exercise activities. Participants received an information sheet alongside the questionnaire and provided informed consent prior to participation. Completion of the questionnaire required approximately 15 to 20 minutes. Participants were informed about the study's objectives and assured that their responses would remain strictly confidential and anonymous. No financial incentives were provided, and participation was entirely voluntary.

Data Analysis Procedure:
Analyses were performed using IBM SPSS Statistics 27.0 (IBM Corp., 2011). Descriptive statistics summarized the sample characteristics, followed by Pearson correlations to examine relationships among variables. Two multiple

regression analyses were conducted: the first tested whether rumination, depression, self-esteem, and exercise addiction predicted body dysmorphic symptoms, and the second evaluated the same predictors in relation to exercise addiction.

Results and Analysis:-

This study aims to investigate the relationships between body dysmorphic disorder self-esteem, rumination, and exercise addiction among international students in North Cyprus.

Table1 :Pearson Correlations Between Study Variables

Variable	1	2	3	4	5
1. Body Dysmorphic	—				
2. Rumination	.15**	—			
3. Depression	.12*	.93***	—		
4. Self-Esteem	.07	–.13**	–.13**	—	
5. Exercise Addiction	.05	.10*	.08	–.31***	—

Note.n= 352.
**p < 0.05 * p < 0.01 **

Table 1 shows that BDD significant correlation between BDD and rumination(r = .152, p = .002), as well as depression but no soginficant correlation with depression, self-esteem and exercise addiction. Rumination was very strongly linked to depression (r = .932, p < .001) and begatively correlated to self-esteem. Depression was seen to be negatively correlated to self-esteem and self-esteem was found to be negatively correlated to exercise addiction (r = -.312, p < .001).

Table 2. Regression Analysis Predicting Body Dysmorphic disorder

Predictor	B	SE	Beta	t	p
(Constant)	7.052	3.104	—	2.272	.024
Rumination	.207	.095	.317	2.179	.030*
Depression	–.181	.156	–.169	–1.163	.245
Self-Esteem	.198	.105	.105	1.881	.061
Exercise Addiction	.089	.081	.061	1.103	.271

**p < 0.05 * p < 0.01 **

Table 2 shows the multiple regression analysis conducted to determine if rumination, depression, self-esteem, and exercise addiction predicted BDD. As shown in Table 2, the model was significant: $F(4,347) = 3.41$, $p = .009$, with $R^2 = .038$, indicating that about 3.8% of the variance in body dysmorphic disorder was explained by the predictors.Only rumination was a significant predictor ($\beta = .317$, $p = .030$). Depression, self-esteem, and exercise addiction were not statistically significant.

Table 3. Regression Analysis Predicting Exercise Addiction

Predictor	B	SE	Beta	t	p
(Constant)	22.266	1.688	—	13.189	.000
Rumination	.057	.063	.126	.893	.372
Depression	–.060	.103	–.082	–.586	.558
Self-Esteem	–.400	.067	–.309	–6.014	.000*
Body Dysmorphic	.039	.035	.057	1.103	.271

p < 0.05 * p < 0.01 **

As presented in Table 3, the multiple regression model examining the extent to which body dysmorphic symptoms, self-esteem, depression, and rumination predict exercise addiction was statistically significant, $F(4, 347) = 10.18$, $p < .001$, accounting for approximately 10.5% of the variance in exercise addiction scores ($R^2 = .105$). Among the predictors, only self-esteem emerged as a significant contributor ($\beta = –.309$, $p < .001$), indicating that reduced self-esteem is associated with an increased risk of exercise addiction.

Table 4. Regression Analysis Predicting Rumination

Predictor	B	SE	Beta	t	p
(Constant)	9.098	1.326	—	6.863	.000
Depression	1.525	.032	.930	47.621	.000*
Self-Esteem	–.045	.056	–.015	–.791	.430

p < 0.05 * p < 0.01 **

The Table 4shows a regression analysis of the predictive relationship between rumination, depression and self-esteem. Depression significant predicted rumination ($F (2,349) = 1157.56$, $p < .001$), with a large $R^2 = .869$. This indicates that depression and self-esteem together explain 86.9% of the variance in rumination.Only depression was a significant predictor ($\beta = .930$, $p < .001$).

Table5: Comparison of BDD, rumination, self-esteem, and exercise addiction according to time spent on social media

Variable	time spent with social medias	N	Mean Rank.	X^2	df	P
Body Dysmorphic	not at all	42	116.32	20.978	3	**0.001***
	less than 2 h	106	179.61			
	2 to 5 h	147	178.56			
	more than 5	57	209.75			
Rumination	not at all	42	187.08	1.667	3	0.642

	less than 2 h	106	170.73			
	2 to 5 h	147	173.19			
	more than 5	57	187.97			
Self Esteem	not at all	42	122.17	19.582	3	**0.001***
	less than 2 h	106	182.09			
	2 to 5 h	147	195.43			
	more than 5	57	157.32			
Exercise Addiction	not at all	42	188.49	0.836	3	0.841
	less than 2 h	106	176.39			
	2 to 5 h	147	172.46			
	more than 5	57	178.29			

p < 0.05 * p < 0.01 **

Table 5 presents the results of the Kruskal–Wallis test, which revealed a significant difference in mean scores of BDD and self-esteem across different durations of social media use ($p < 0.05$). In contrast, no significant differences were observed for rumination and exercise addiction across social media usage categories ($p > 0.05$). Pairwise comparisons for BDD indicated significant differences between the 'not at all' group and those using social media for less than 2 hours, 2–5 hours, and more than 5 hours, with non-users exhibiting significantly lower BDD scores. Similarly, pairwise comparisons for self-esteem showed significant differences between the 'not at all' group and both the less than 2 hours and 2–5 hours groups, with individuals who do not use social media demonstrating significantly lower self-esteem than these groups.

Table 6: **Comparison of BDD, rumination, self-esteem and exercise addiction across the kind of exercise**

Variable	Kind of exercise	N	Mean Rank	Sum of Ranks	U	P
Body Dysmorphic	Aerobic	113	177.29	20034.00	13414.00	0.920
	Strength	239	176.13	42094.00		
Rumination	Aerobic	113	177.12	20014.50	13433.500	0.937
	Strength	238	176.21	42113.50		
Self Esteem	Aerobic	112	159.74	18050.50	11609.500	**0.033***
	Strength	239	184.42	44077.50		
Exercise Addiction	Aerobic	113	184.26	20821.00	12627.000	0.324
	Strength	239	172.83	41307.00		

p < 0.05 * p < 0.01 **

Table 6 shows the results from the Mann-Whitney test. The analysis indicates that there are no significant differences in the mean scores of BDD, rumination and exercise addiction between participants in the aerobic exercise group and those in the strength training group ($p>0.05$). But there is a significant difference between the mean of the self-esteem across the 2 kinds of exercise ($p<0.05$). The results reflect that the mean self-esteem score for students in the strength training group was significantly greater than the one for the aerobic group.

Discussion:-

The study investigated the relationships between BDD, rumination, exercise addiction, and self-esteem. Findings indicated that BDD was significantly associated with rumination and depression, but showed no significant relationship with exercise addiction or self-esteem.The correlation between BDD and rumination is similarly seen in research by Veale (2001), who suggests that repetitive negative thinking significantly contributes to maintaining and intensifying BDD symptoms. Kollei and Martin (2014) suggest that a person suffering from BDD often engages in repetitive, negative thoughts that can worsen depressive symptoms. Mellman (2010) noted that people with BDD spend hours daily worrying about appearance, leading to distress and impairment. Veale et al. (1996) found that BDD sufferers often have intrusive, recurrent thoughts, increasing anxiety and depression. Persistent rumination about perceived flaws is a defining feature of BDD, negatively impacting mental health (APA, 2013).This aligns with the predictive relationship seen regarding the association between BDD and rumination in this study.

The results that BDD has no significant correlation with exercise addiction align with research by Hausenblas et al. (2002), which also asserted that no significant association exists between the variables. This may be due to the complex nature of both conditions; exercise addiction often stems from motives unrelated to BDD, such as fitness goals or stress relief. Thus, having BDD doesn't necessarily lead to exercise addiction. However, Gabriel et al. (2020) found that body dissatisfaction can increase the likelihood of exercise addiction and related risky behaviors, contrasting with this study's results.Weinstein and Szabo assert that exercise addiction is morbid with body-image disorders. The study also found no association between BDD and self-esteem, consistent with Ahmadpanah et al. (2019), indicating that while low self-esteem is common in BDD, it may not strongly predict the disorder. Biby (1998) suggested that while low self-esteem relates to obsessive-compulsive tendencies in BDD, self-esteem alone isn't a reliable BDD indicator. Phillips (2005) explained that self-esteem covers broader self-perception and personal value, while BDD focuses on physical appearance concerns.Exercise addiction was significantly associated with rumination and self-esteem, supporting the transdiagnostic view of rumination (Wong et al., 2023) and consistent with evidence of its bidirectional link with self-esteem (Li et al., 2024).

The study also reveals that rumination had a negative correlation with self-esteem, but a positive association with depression and exercise addiction. The relationship between self-esteem and rumination is similar to findings by Kolubinski et al. (2016) that rumination links to lower self-worth, worsening depressive symptoms. According to Li et al. (2024), daily changes in rumination predict subsequent self-esteem scores, while self-esteem also predicts rumination. The idea that self-esteem predicts rumination is also seen in the results of this study. Self-esteem was the only significant of exercise addiction in the current study. Furthermore, the relationship between rumination and depression is well-established literature; rumination is a common feature of depression where the individual has constant negative thoughts about the self (Alderman et al., 2015). Similarly, individuals with exercise addiction are more prone to brooding, a negative, passive form of rumination tied to maladaptive behaviors, as noted by Watkins (2008).

The results are congruent with the findings of Khan et al. (2022) that indicate a strong link between BDD symptoms and social media engagement. Regular use of image-focused platforms such as Instagram and Snapchat is associated with increased rates of BDD and greater acceptance of cosmetic surgery. Social media can exert pressure that influences individuals' perceptions of their bodies (Tiggemann and Zaccardo, 2015). The results of the current study also reflect differences in self-esteem between participants who do not use social media at all and individuals who use social media for less than 2 hours as well as the 2-5 hours group. Individuals who do not use social media have lower self-esteem than both groups. Research on the association of social media use, self-esteem, and well-being has produced contradicting data. Some studies indicate that active Instagram engagement can enhance self-esteem and psychological health, with this effect being influenced by the intensity of usage (Trifiro &Prena, 2021). The results are contrary to the research carried out by Midgley et al. (2021), which associated social media use with reduced self-esteem. Frequent and intense comparisons with others on social media quickly reduce self-evaluations, which over time harms self-esteem, mood, and life satisfaction. According to Colak et al. (2023), the mixed results of the correlation between self-esteem and social media suggest the presence of mediating factors in the relationship. Self-esteem also differed by exercise type, with strength training participants reporting higher self-esteem than those engaging in aerobic exercise, consistent with prior findings (Bhave et al., 2024; Seguin et al., 2015). Physical activity's positive effect on self-esteem is mediated by physical self-efficacy and self-worth (Batista et al., 2022), though some studies suggest aerobic exercise may also enhance body image (Ginis et al., 2014).

Conclusions:-

This study examined the relationships between body dysmorphic disorder (BDD), rumination, self-esteem and exercise addiction amongfrequent exercisers, providing insight into how these factors interact in a diverse young adult population. Results showed a strong association between BDD and rumination, supporting prior evidence that repetitive negative thoughts about appearance intensify BDD symptoms. No significant relationship was found between BDD and exercise addiction, suggesting that exercise behaviors may be motivated by factors unrelated to body image, such as fitness goals or social engagement. Although low self-esteem is commonly reported in individuals with BDD, no direct link emerged in this study, indicating that cognitive processes like rumination may play a more central role.

Excessive social media use was associated with higher BDD scores, highlighting its potential contribution to body dissatisfaction and suggesting that limiting exposure may be beneficial. Moreover, participants engaging in strength training reported greater self-esteem than those performing aerobic exercise, underscoring that different exercise

types may have distinct psychological benefits. Overall, these findings emphasize the importance of addressing cognitive patterns, social media habits, and exercise modalities in interventions targeting BDD and self-esteem.

Reference:-

1. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). https://doi.org/10.1176/appi.books.9780890425596
2. Ahmadpanah, M., Arji, M., Arji, J., Haghighi, M., Jahangard, L., Sadeghi Bahmani, D., & Brand, S. (2019). Sociocultural attitudes towards appearance, self-esteem and symptoms of body-dysmorphic disorders among young adults. International Journal of Environmental Research and Public Health, 16(21), 4236. https://doi.org/10.3390/ijerph16214236
3. Biby, E. L. (1998). The relationship between body dysmorphic disorder and depression, self-esteem, somatization, and obsessive-compulsive disorder. J Clin Psychol, 54(4), 489-499. https://doi.org/10.1002/(sici)1097-4679(199806)54:4
4. Alderman, B. L., Olson, R. L., Bates, M. E., Selby, E. A., Buckman, J. F., Brush, C. J.,
   a. Panza, E. A., Kranzler, A., Eddie, D., &Shors, T. J. (2015). Rumination in major depressive disorder is associated with impaired neural activation during conflict monitoring. Frontiers in Human Neuroscience, 9, 269. https://doi.org/10.3389/fnhum.2015.00269
5. Arditte, K. A., Shaw, A. M., & Timpano, K. R. (2016). Repetitive negative thinking: A
   a. transdiagnostic correlate of affective disorders. Journal of Social and Clinical Psychology, 35(3), 181–201. https://doi.org/10.1521/jscp.2016.35.3.181
6. Akinboro, A. O., Adelufosi, A. O., Onayemi, O., & Asaolu, S. O. (2019). Body dysmorphic disorder in patients attending a dermatology clinic in Nigeria: sociodemographic and clinical correlates. Anais brasileiros de dermatologia, 94, 422-428. https://doi.org/10.1590/abd1806-4841.20197919
7. Boat, R., & Cooper, S. B. (2019). Self-Control and Exercise: A Review of the Bi-Directional Relationship. Brain Plasticity, 5(1), 97. https://doi.org/10.3233/BPL-190082
8. Brennan, S. N., Rossell, S. L., Rehm, I., Thomas, N., & Castle, D. J. (2023). A qualitative exploration of the lived experiences of Body Dysmorphic Disorder. Frontiers in Psychiatry, 14, 1214803. https://doi.org/10.3389/fpsyt.2023.1214803
9. Batista, M., Ramos, L., Santos, J., Serrano, J., Petrica, J., & Honório, S. (2022). Exercise Influence on Self-Concept, Self-Esteem and Academic Performance in Middle-School Children. Revista Romaneasca pentru Educatie Multidimensionala, 14(4 Sup. 1), 369-398. https://doi.org/10.18662/rrem/14.4Sup1/678
10. Bhave, D., Pradeep, M., Mota, J., Mane, D., Bhalla, D., & Karia, D. (2024). Self-esteem: A study on the relationship between self-esteem and factors affecting student life. Journal of Pediatrics & Neonatal Care, 14, 21-27.
    a. https://doi.org/10.15406/jpnc.2024.14.00536
11. Corazza, O., Simonato, P., Demetrovics, Z., Mooney, R., Van De Ven, K., Roman-Urrestarazu, A., Rácmolnár, L., De Luca, I., Cinosi, E., & Santacroce, R. (2019). The emergence of Exercise Addiction, Body Dysmorphic Disorder, and other image-related psychopathological correlates in fitness settings: A cross sectional study. PloS one, 14(4), e0213060. https://doi.org/10.1371/journal.pone.0213060
12. Donaldson, C., Lam, D., & Mathews, A. (2007). Rumination and attention in major depression. Behaviour research and therapy, 45(11), 2664-2678.
    a. https://doi.org/10.1016/j.brat.2007.07.002
13. Dyl, J., Kittler, J., Phillips, K. A., & Hunt, J. I. (2006). Body dysmorphic disorder and other clinically significant body image concerns in adolescent psychiatric inpatients: prevalence and clinical characteristics. Child psychiatry and human development, 36, 369-382. https://doi.org/10.1007/s10578-006-0008-7
14. Hepper, E. G. (2022). Self-esteem. Encyclopedia of Mental Health (Third Edition), 125-139.
    a. https://doi.org/10.1016/B978-0-323-91497-0.00185-5
15. Graves, B. S., & Welsh, R. L. (2004). Recognizing the Signs of Body Dysmorphic Disorder and Muscle Dysmorphia. ACSM's Health & Fitness Journal, 8(1), 11-13. https://doi.org/10.1097/00135124-200401000-00007
16. Gori, A., Topino, E., Pucci, C., & Griffiths, M. D. (2021). The relationship between alexithymia, dysmorphic concern, and exercise addiction: The moderating effect of self-esteem. Journal of personalized medicine, 11(11), 1111. https://doi.org/10.3390/jpm11111111
17. Gabriel, G. L. M., Paulo, J. R. S., Silva, A. A., Batista, R. P. R., Alves, J. F. N., &
    a. Nascimento Junior, J. R. A. (2020). Body dissatisfaction, addiction to exercise and risk behaviour for eating disorders among exercise practitioners. Journal of Eating Disorders, 8, 23. https://doi.org/10.1186/s40337-020-00300-9

18. Gravetter, F. J., & Forzano, L. B. (2018). Research methods for the behavioral sciences (6th ed.). Cengage Learning
19. Hausenblas, H. A., & Fallon, E. A. (2002). Relationship among body image, exercise behavior, and exercise dependence symptoms. International Journal of Eating Disorders, 32(2), 179-185. https://doi.org/10.1002/eat.10071
20. Hausenblas, H. A., & Fallon, E. A. (2006). Exercise and body image: A meta-analysis. Psychology and health, 21(1), 33-47. https://doi.org/10.1080/14768320500105270
21. Hashemi Salehi, M. M. &Aleyasin, S. A. . (2024). The Effectiveness of Cognitive
    a. Behavioral Therapy on Rumination, and Quality of Life among Girls with Body Dysmorphic Symptoms. Health Nexus, 2(2), 95-102. https://doi.org/10.61838/kman.hn.2.2.11
22. Kuck, N., Cafitz, L., Bürkner, P.-C., Hoppen, L., Wilhelm, S., & Buhlmann, U. (2021). Body dysmorphic disorder and self-esteem: a meta-analysis. BMC psychiatry, 21(1), 310. https://doi.org/10.1186/s12888-021-03185-3
23. Khan, W., Zafar, Y., & Khalid, M. (2022). Social media and body dysmorphic disorder : Is there any link? J Pak Med Assoc, 72(2), 393. https://doi.org/10.47391/jpma.4145
24. Kirkby, R. J., & Adams, J. (1996). Exercise dependence: The relationship between two measures. Perceptual and motor skills, 82(2), 366-366. https://doi.org/10.1177/003151259608200201
25. Kollei, I., & Martin, A. (2014). Body-related cognitions, affect and post-event processing in body dysmorphic disorder. Journal of behavior therapy and experimental psychiatry, 45(1), 144-151. https://doi.org/10.1016/j.jbtep.2013.09.005
26. Kolubinski, D. C., Nikčević, A. V., Lawrence, J. A., & Spada, M. M. (2016). The role of metacognition in self-critical rumination: An investigation in individuals presenting with low self-esteem. Journal of Rational-Emotive & Cognitive-Behavior Therapy, 34, 73-85. https://doi.org/10.1007/s10942-015-0230-y
27. Lichtenstein, M., Christiansen, E., Bilenberg, N., & Støving, R. (2014). Validation of the exercise addiction inventory in a D anish sport context. Scandinavian Journal of Medicine & Science in Sports, 24(2), 447-453. https://doi.org/10.1111/j.1600-0838.2012.01515.x
28. Mellman, L. A. (2010). Understanding Body Dysmorphic Disorder: An Essential Guide. American Journal of Psychiatry, 167(5), 606.
29. https://doi.org/10.1176/appi.ajp.2009.09111701
30. Mayville, S., Katz, R. C., Gipson, M. T., & Cabral, K. (1999). Assessing the prevalence of body dysmorphic disorder in an ethnically diverse group of adolescents. Journal of child and family studies, 8, 357-362. https://doi.org/10.1023/A:1022023514730
31. Midgley, C., Thai, S., Lockwood, P., Kovacheff, C., & Page-Gould, E. (2021). When every
    a. day is a high school reunion: Social media comparisons and self-esteem. Journal of personality and social psychology, 121(2), 285–307. https://doi.org/10.1037/pspi0000336
32. Martin Ginis, K. A., Strong, H. A., Arent, S. M., Bray, S. R., & Bassett-Gunter, R. L. (2014). The effects of aerobic- versus strength-training on body image among young women with pre-existing body image concerns. Body Image, 11(3), 219-227. https://doi.org/10.1016/j.bodyim.2014.02.004
33. Morgan, S. (2020). Mental Disorders: Obsessive-Compulsive Disorder and Body Dysmorphic Disorder. FP essentials, 495, 17-22.
34. Nguyen, N. (2023). Exercise and Health: Examination of the Relationship between Gym Attendance, Mental Health, and Perceptions of Body Image. Psi Beta Research Journal - Brief Reports, 3, 44-49. https://doi.org/10.54581/IYOX4962
35. Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking Rumination. Perspectives on psychological science : a journal of the Association for Psychological Science, 3(5), 400–424. https://doi.org/10.1111/j.1745-6924.2008.00088.x
36. Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. Journal of abnormal psychology, 100(4), 569. https://doi.org/10.1037//0021-843x.100.4.569
37. Phillips, K. A. (2005). The broken mirror: understanding and treating body dysmorphic disorder. Oxford University Press.
38. Phillips K. A. (2014). Body dysmorphic disorder: common, severe and in need of treatment
    a. research. Psychotherapy and psychosomatics, 83(6), 325–329. https://doi.org/10.1159/000366035
39. Phillips, K. A., Hollander, E., Rasmussen, S. A., & Aronowitz, B. R. (1997). A severity rating scale for body dysmorphic disorder: development, reliability, and validity of a modified version of the Yale-Brown Obsessive Compulsive Scale. Psychopharmacology bulletin, 33(1), 17.
40. Phillips, K. A., Didie, E. R., Menard, W., Pagano, M. E., Fay, C., & Weisberg, R. B. (2006).
    a. Clinical features of body dysmorphic disorder in adolescents and adults. Psychiatry research, 141(3), 305–314. https://doi.org/10.1016/j.psychres.2005.09.014

41. Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: myths and strategies. International journal of nursing studies, 47(11), 1451–1458. https://doi.org/10.1016/j.ijnurstu.2010.06.004
42. Rosenberg, M. (1965). Rosenberg self-esteem scale(RSES) APA PsycTests. https://doi.org/10.1037/t01038-000
43. Saunders, M., Lewis, P., & Thornhill, A. (2009). Research methods for business students. Pearson education.
44. Schoofs, H., Hermans, D., & Raes, F. (2010). Brooding and reflection as subtypes of
    a. rumination: Evidence from confirmatory factor analysis in nonclinical samples using the Dutch Ruminative Response Scale. Journal of Psychopathology and Behavioral Assessment, 32, 609-617. https://doi.org/10.1007/s10862-010-9182-9
45. Simón Grima, J. S., Estrada-Marcén, N., & Montero-Marín, J. (2019). Exercise
    a. addiction measure through the Exercise Addiction Inventory (EAI) and health in habitual exercisers. A systematic review and meta-analysis. Adicción al ejerciciomedida a través del Exercise Addiction Inventory (EAI) y saludendeportistashabituales. Una revisiónsistemática y meta-análisis. Adicciones, 31(3), 233–249. https://doi.org/10.20882/adicciones.990
46. Seguin, R. A., Eldridge, G., Lynch, W., & Paul, L. C. (2013). Strength Training Improves
    a. Body Image and Physical Activity Behaviors Among Midlife and Older Rural Women. Journal of Extension, 51(4), 4FEA2. https://pmc.ncbi.nlm.nih.gov/articles/PMC4354895/
47. Terry, A., Szabo, A., & Griffiths, M. (2004). The exercise addiction inventory: A new brief screening tool. Addiction Research & Theory, 12(5), 489-499. https://doi.org/10.1080/16066350310001637363
48. Tiggemann, M., & Zaccardo, M. (2015). "Exercise to be fit, not skinny": The effect of
    a. fitspiration imagery on women's body image. Body image, 15, 61–67. https://doi.org/10.1016/j.bodyim.2015.06.003
49. Trifiro, B. M., & Prena, K. (2021). Active instagram use and its association with self-esteem and well-being. Technology, Mind, and Behavior, 2(3), 1–5. https://doi.org/10.1037/tmb0000043
50. Tros, B. G., Kemperman, P. M. J. H., Kuckulus, J., Hoekzema, R., &Vulink, N. C. C.
    a. (2023). Body Dysmorphic Disorder and Self-esteem in Adolescents and Young Adults with Acne Vulgaris. Acta dermato-venereologica, 103, adv6232. https://doi.org/10.2340/actadv.v103.6232
51. Tajikzadeh, F., Sadeghi, R., &Raiskariman, F. (2013). The relationship between body
    a. dysmorphic concern and rumination among the girl university students. Sadra Medical Journal, 1(3), 189-198.
52. Veale, D., Gledhill, L. J., Christodoulou, P., & Hodsoll, J. (2016). Body dysmorphic disorder in different settings: A systematic review and estimated weighted prevalence. Body image, 18, 168-186. https://doi.org/10.1016/j.bodyim.2016.07.003
53. Veale, D., Anson, M., Miles, S., Pieta, M., Costa, A., & Ellison, N. (2014). Efficacy of cognitive behaviour therapy versus anxiety management for body dysmorphic disorder: a randomised controlled trial. Psychotherapy and psychosomatics, 83(6), 341-353. https://doi.org/10.1159/000360740
54. Veale, D. (2001). Cognitive–behavioural therapy for body dysmorphic disorder. Advances in psychiatric treatment, 7(2), 125-132. https://doi.org/10.1192/apt.7.2.125
55. Veale, D., Gournay, K., Dryden, W., Boocock, A., Shah, F., Willson, R., & Walburn, J. (1996). Body dysmorphic disorder: a cognitive behavioural model and pilot randomised controlled trial. Behaviour research and therapy, 34(9), 717-729. https://doi.org/10.1016/0005-7967(96)00025-3
56. 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
57. Willow, J. P. (2022). Physical activity motives in the exercise and self-esteem relationship.
    a. Sports and Exercise Medicine, 8(1):10-14. DOI: 10.17140/SEMOJ-8-185
58. Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. Psychological bulletin, 134(2), 163. https://doi.org/10.1037/0033-2909.134.2.163
59. Wong, S. M., Chen, E. Y., Lee, M. C., Suen, Y. N., & Hui, C. L. (2023). Rumination as a
    a. Transdiagnostic Phenomenon in the 21st Century: The Flow Model of Rumination. Brain Sciences, 13(7), 1041. https://doi.org/10.3390/brainsci13071041
60. Weinstein, A., & Szabo, A. (2023). Exercise addiction: A narrative overview of research
    a. issues. Dialogues in Clinical Neuroscience, 25(1), 1. https://doi.org/10.1080/19585969.2023.2164841
61. Zamani Sani, S. H., Fathirezaie, Z., Brand, S., Pühse, U., Holsboer-Trachsler, E., Gerber, M.,
    a. &Talepasand, S. (2016). Physical activity and self-esteem: Testing direct and indirect relationships associated with psychological and physical mechanisms. Neuropsychiatric Disease and Treatment, 12, 2617. https://doi.org/10.2147/NDT.S116811