

Prevalence of Exercise Addiction and It's Correlation with Self-Esteem among Young Gym Goers: A Cross Sectional Study

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ABSTRACT

Background: Regular physical activity is widely recognized for its physical and psychological benefits. However, when exercise becomes excessive and uncontrollable it may lead to a behavioral condition known as exercise addiction. Exercise addiction is characterized by compulsive engagement in physical activity despite negative physical, psychological and social consequences. Young adults particularly gym goers may be at increased risk due to factors such as body image concerns, peer influence and social media exposure. Self-esteem, a key psychological construct reflecting an individual's sense of self-worth has been shown to influence health behaviors and may play a significant role in the development of maladaptive exercise patterns.

Objective: The primary objective of this study is to determine the prevalence of exercise addiction and to assess its correlation with self-esteem among young gym goers.

Methodology: An observational cross-sectional study included 109 young gym goers from various fitness centers across Karachi including Toro Fitness, BB Fitness and V-Fit, selected through non-probability convenience sampling technique. Data was collected using Exercise Addiction Inventory (EAI) and Rosenberg Self-Esteem Scale (RSES).

Result: Among the participants, 71.6% were symptomatic for exercise addiction, 23.9% were at risk and 4.6% were asymptomatic. High self-esteem was observed in 72.48% of respondents while 27.52% demonstrated moderate self-esteem. Correlation analysis revealed a weak negative relationship between exercise addiction and self-esteem ($r = -0.09$). Significant associations were found between exercise addiction and gender ($p = 0.01$), training period ($p = 0.00$) and Exercise duration ($p = 0.01$). Self-esteem showed significant associations with Age, gender, training period, exercise frequency and exercise duration ($p \leq 0.05$).

Conclusion: Exercise addiction symptoms were highly prevalent among young gym goers in Karachi whereas self-esteem levels were generally high. A weak negative Correlation between exercise addiction and self-esteem suggests that self-esteem may not be a major determinant of exercise addiction in this population. Routine Screening and awareness programs may help identify individuals at risk and promote healthier exercise behaviors.

Keywords: *Exercise, Physical Fitness, Health Behavior, Psychological Well-Being, Compulsive Exercise, Self-Concept, Fitness Centers*

INTRODUCTION

Physical activity is widely acknowledged as an essential component of overall health and well-being. Regular exercise is associated with numerous physiological benefits including improved cardiovascular function, enhanced muscular strength and a reduced risk of chronic diseases such as obesity, diabetes and hypertension.^[1] In addition to its physical advantages, exercise plays a crucial role in promoting psychological health, contributing to reductions in anxiety, depression and stress, while enhancing mood and overall quality of life.^[2]

Despite these well-established benefits there is growing recognition that excessive and uncontrolled engagement in physical activity may lead to adverse consequences. When exercise becomes compulsive and dominates an individual's daily life, it may develop into a behavioral condition referred to as exercise addiction (EA). This condition is characterized by an overwhelming urge to engage in physical activity, often accompanied by a loss of control over exercise behavior, despite the presence of negative physical, psychological, or social outcomes.^[3]

Exercise addiction shares several characteristics with other behavioral addictions. Core features include salience (where exercise becomes the most important activity in an individual's life), mood modification (using exercise to regulate emotional states), tolerance (increasing amounts of exercise required to achieve the desired effect), withdrawal symptoms (such as irritability or anxiety when unable to exercise), conflict (interpersonal or intrapersonal issues arising from excessive exercise), and relapse (returning to previous patterns after attempts to reduce activity).^[4] Individuals affected by exercise addiction often prioritize workouts over health, academic responsibilities and social relationships which may result in long term physical injury and psychological distress.^[5]

Neurobiological mechanisms also play a role in reinforcing addictive exercise behaviors. Physical activity stimulates the release of endorphins and neurotransmitters such as dopamine, which are associated with pleasure and reward pathways in the brain.^[6] Over time individuals may become dependent on these neurochemical responses leading to compulsive engagement in exercise as a means of achieving emotional regulation or psychological relief.^[5]

Previous research suggests that approximately 3% of the general population may be affected by exercise addiction.^[7] Although higher rates have been reported among individuals who regularly attend fitness centers or engage in competitive sports.^[8]

One of the most significant psychological factors linked to exercise behavior is self-esteem, defined as an individual's overall evaluation of their own worth.^[9] Self-esteem plays a central role in mental health and influences how individuals perceive themselves and interact with their environment.^[10] Research suggests that individuals with low self-esteem may be more likely to engage in excessive exercise as a means of improving body image or achieving a sense of control and self-worth.^[11]

In Pakistan, there has been a notable increase in gym participation and fitness awareness over the past decade. Urban centers, in particular, have witnessed a rapid expansion of fitness facilities and a growing emphasis on achieving an idealized physique. This cultural shift, influenced by global fitness trends and media exposure, may increase the susceptibility of young gym-goers to developing exercise addiction.^[5]

Certain populations such as young adults who regularly attend gyms may be more vulnerable to morbid exercise behaviors due to psychological, social and environmental factors.^[12]

Within this context, understanding the relationship between exercise addiction and self-esteem is of considerable importance. Early identification of maladaptive exercise behaviors may help in designing targeted interventions aimed at promoting balanced exercise habits and improving psychological well-being.

METHODOLOGY

Study Design: This study followed an observational cross-sectional study design.

Study Setting: The study was conducted in fitness centers including Toro Fitness, BB Fitness and V-Fit located across Karachi.

Sample Size: The minimum required sample size for this study was 109 young gym goers, calculated using OpenEpi sample size calculator.

Sampling Technique: A non-probability convenience sampling was employed to recruit eligible participants.

Inclusion Criteria: Participants were included in the study if they met the following criteria.

- Both Male and female gym goers aged 20-40 years.
- Individuals who have been regularly attending the gym for at least 3 months.
- Willingness to participate and provide informed consent.

Exclusion Criteria: Participants were excluded if they met any of the following criteria.

- Participants currently undergoing psychological or psychiatric treatment.
- Participants with diagnosed musculoskeletal disorders (e.g chronic back pain, arthritis, joint injuries).
- Participants with autoimmune diseases (e.g rheumatoid arthritis, SLE, multiple sclerosis).

Outcome Measure Tools: Data were collected using a structured, 6-item validated questionnaire, Exercise Addiction Inventory (EAI) assessing the risk of exercise addiction and Rosenberg Self-esteem Scale (RSE) a 10-item validated questionnaire assessing global self-esteem. The questionnaire also includes a demographic section capturing age, gender, training period, frequency and duration of exercise.

Reliability: The Exercise Addiction Inventory (EAI) demonstrated a Cronbach's alpha of 0.72, indicating good reliability. The Rosenberg Self-Esteem Scale (RSE) showed an alpha of 0.70, which is also acceptable.

Data Analysis: Data were entered and analyzed using SPSS version 29.

Ethical Considerations: Ethical approval for this study was obtained from the management of fitness centers involved. All participants were clearly informed about the purpose, procedures and nature of the research before data collection. Participation was completely voluntary and they were allowed to withdraw

at any time. Written consent form was obtained from each participant and data were collected in person during workout breaks.

Conflicts of interest: There were no conflicts of interest declared by the authors.

RESULTS

Table 1 highlights the demographic and behavioral profile of the participants. The majority of respondents were aged 20–25 years (62.4%), indicating a young gym-going population. Males dominated the sample (76.1%), while females represented 23.9%, showing a clear gender imbalance in gym participation. Most participants had 1–3 years of training experience (56.9%), reflecting moderate exposure to structured fitness routines. In terms of exercise behavior, the highest proportion exercised 6 days per week (40.4%), followed by 5 days per week (31.2%), indicating a highly active group. Regarding duration, most participants exercised for 1 hour (71.6%), suggesting standardized and moderate workout sessions. Overall, the sample represents young, predominantly male, and highly active gym-goers with consistent exercise habits.

Figure 1 illustrates that out of 109 participants, the majority were classified as symptomatic, comprising 78 respondents (71.6%), indicating the presence of exercise-related behavioral indicators but not necessarily full addiction. A total of 26 participants (23.9%) were identified as being at risk of exercise addiction, suggesting a substantial proportion with potentially maladaptive exercise patterns. Only 5 participants (4.6%) were asymptomatic, reflecting a very small group with no evident signs of exercise addiction. These findings highlight that most gym-goers exhibited at least some level of exercise-related psychological or behavioral concern.

Table 1: Frequency distribution of demographics Scale:

		Frequency	Percent	Cumulative Percent
Age bracket	20-25 years	68	62.4	62.4
	26-30 years	22	20.2	82.6
	36-40 years	6	5.5	88.1
	31-35 years	13	11.9	100.0
Gender	Male	83	76.1	76.1
	Female	26	23.9	100.0
Training Period Bracket	0-6 months	13	11.9	11.9
	7-12 months	7	6.4	18.3
	1-3 years	62	56.9	75.2
	4-10 years	22	20.2	95.4
	Above 10 years	5	4.6	100.0
Frequency of exercise	02 Days	8	7.3	7.3
	03 Days	8	7.3	14.7
	04 Days	11	10.1	24.8
	05 Days	34	31.2	56.0
	06 Days	44	40.4	96.3
	07 Days	4	3.7	100.0
Duration of Exercise (Per Session)	Less than 01 hour	11	10.1	10.1
	01 hour	78	71.6	81.7
	1-2 hours	18	16.5	98.2

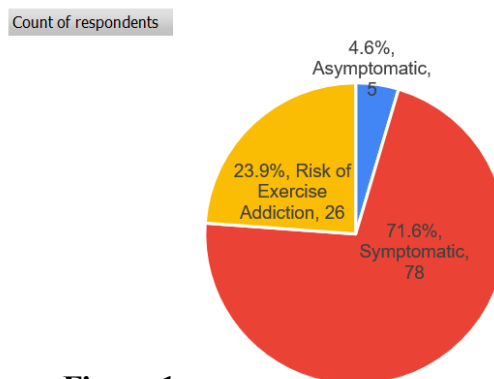


Figure 1

Figure 2 illustrates that among the 109 participants, a majority demonstrated high self-esteem, with 79 respondents (72.48%). This indicates that most gym-goers in the study perceived themselves positively and had a strong overall sense of self-worth. On the other hand, 30 participants (27.52%) exhibited moderate self-esteem, suggesting a considerable minority with comparatively lower self-evaluations. These findings reflect generally positive psychological well-being within the sample.

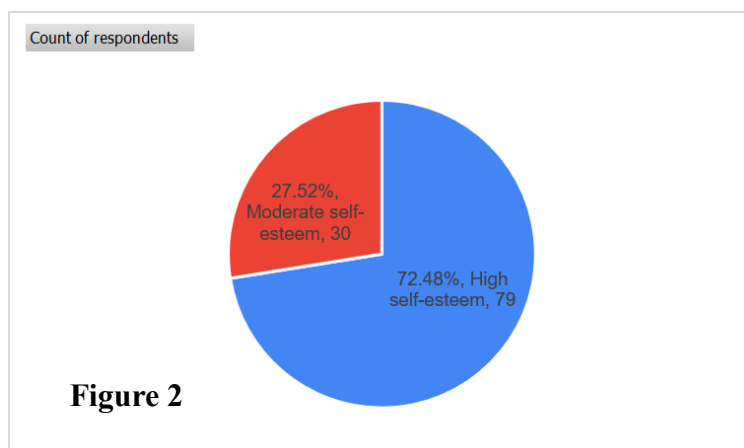


Figure 2

Table 2 shows a weak negative correlation between exercise addiction and self-esteem ($r = -0.09$). This indicates that higher levels of exercise addiction are slightly associated with lower self-esteem, but the relationship is extremely weak and not practically significant. Therefore, the findings suggest that exercise addiction and self-esteem operate largely as independent constructs in this population, with no strong linear dependency between them.

Table 2: Correlation Analysis

Variables	Pearson's coefficient r	Interpretation
Exercise addiction vs Self-esteem	-0.09	Weak negative correlation

Table 3 shows that Chi-square analysis examined associations between demographic/exercise variables and both exercise addiction and self-esteem. For exercise addiction, age showed an insignificant association ($\chi^2 = 1.75$, $p = 0.06$), indicating that addiction patterns do not significantly differ across age groups, although the borderline value suggests a weak trend. Gender showed a significant association ($\chi^2 = 4.01$, $p = 0.01$), indicating differences in exercise addiction patterns between males and females. Training period was also significantly associated ($\chi^2 = 5.47$, $p = 0.00$), suggesting that exercise experience plays an important role in addiction behavior. Frequency of exercise was not significant ($\chi^2 = 11.34$, $p = 0.07$), showing that number of workout days is not a strong predictor of addiction status. However, duration of exercise per session was significantly associated ($\chi^2 = 7.64$, $p = 0.01$), indicating that longer workout sessions are linked with higher addiction risk. For self-esteem, all variables showed significant associations: age ($\chi^2 = 1.39$, $p = 0.03$), gender ($\chi^2 = 0.34$, $p = 0.04$), training period ($\chi^2 = 3.53$, $p = 0.01$), frequency of exercise ($\chi^2 = 2.34$, $p = 0.02$), and duration of exercise ($\chi^2 = 3.09$, $p = 0.02$), suggesting that self-esteem is more broadly influenced by demographic and behavioral factors compared to exercise addiction. Overall, the results indicate that exercise addiction is mainly influenced by gender, training experience, and exercise duration, whereas self-esteem is significantly associated with all examined variables, highlighting its stronger sensitivity to lifestyle and behavioral patterns in young gym-goers.

Table 3: Chi-Square Tests:

Test Element	Pearson Chi-Square	p-value	Result
Age bracket * Exercise addiction	1.75	0.06	Accept Null Hypothesis (insignificant association)
Gender * Exercise addiction	4.01	0.01	Reject Null Hypothesis (significant association)
Training Period Bracket * Exercise addiction	5.47	0.00	Reject Null Hypothesis (significant association)
Frequency of exercise * Exercise addiction	11.34	0.07	Accept Null Hypothesis (insignificant association)
Duration of Exercise (Per Session) * Exercise addiction	7.64	0.01	Reject Null Hypothesis (significant association)
Age bracket * Level of Self-esteem	1.39	0.03	Reject Null Hypothesis (significant association)
Gender * Level of Self-esteem	0.34	0.04	Reject Null Hypothesis (significant association)
Training Period Bracket * Level of Self-esteem	3.53	0.01	Reject Null Hypothesis (significant association)
Frequency of exercise * Level of Self-esteem	2.34	0.02	Reject Null Hypothesis (significant association)
Duration of Exercise (Per Session) * Level of Self-esteem	3.09	0.02	Reject Null Hypothesis (significant association)

Overall, the findings demonstrate a high prevalence of exercise addiction symptoms alongside generally high self-esteem, with weak and non-significant direct association between the two constructs in this population.

DISCUSSION

This study investigated the prevalence of exercise addiction and its correlation with self-esteem among young gym goers in Karachi. The findings revealed a high prevalence of exercise addiction symptoms with the majority of participants classified as symptomatic or at risk. Exercise addiction was more common among younger participants, males, individuals with 1-3 years of training experience and those exercising more frequently and for longer duration. Despite the high prevalence of exercise addiction most participants reported high self-esteem. Furthermore, the correlation between exercise addiction and self-esteem was weak and negative ($r = -0.09$) indicating that self-esteem was not a significant predictor of exercise addiction in this population. Significant associations were observed between exercise addiction and gender, training period and exercise duration suggesting that demographic and exercise related factors may play a greater role than self-esteem in the development of compulsive exercise behaviors. These findings support the view that exercise addiction is a multifactorial condition influenced by behavioral and lifestyle factors rather than self-esteem alone.

Implications

The findings highlight the importance of early identification of individuals at risk of exercise addiction within fitness settings. Routine screening by physiotherapists, fitness trainers and mental health professionals may help prevent adverse physical and psychological consequences associated with excessive exercise. The study also contributes to the limited evidence on exercise addiction in Pakistan and

emphasizes the need to promote balanced exercise habits through educational and awareness programs targeting young adults.

Limitations

The cross-sectional design limits causal inference between exercise addiction and self-esteem. The use of convenience sampling from only three fitness centers in Karachi restricts the generalizability of the findings. Additionally, reliance on self-reported questionnaires may have introduced recall and social desirability bias.

Recommendations

Future research should employ longitudinal or prospective study designs to establish causal relationships between exercise addiction and psychological factors. Larger multicenter studies using probability sampling are recommended to improve representativeness and generalizability.

CONCLUSION

This cross-sectional study investigated the prevalence of exercise addiction and its relationship with global self-esteem among 109 young gym-goers in Karachi using the Exercise Addiction Inventory (EAI) and the Rosenberg Self-Esteem Scale (RSES). The findings showed a high prevalence of exercise addiction symptoms, with 71.6% of participants classified as symptomatic and 23.9% identified as being at risk of exercise addiction. These behaviors were more common among males, individuals aged 20–25 years, participants with 1–3 years of gym experience, those exercising for 1–2 hours per session, and those training 5–6 days per week, suggesting that greater exercise involvement may increase the likelihood of compulsive exercise patterns.

Despite the high prevalence of exercise addiction symptoms, 72.48% of participants reported high self-esteem, and only a very weak negative correlation was found between exercise addiction and self-esteem ($r = -0.09$), indicating that the two variables were largely independent. Exercise addiction was mainly associated with tolerance, withdrawal symptoms, gender, training experience, and workout duration, whereas self-esteem was influenced by a wider range of demographic and lifestyle factors. The study demonstrated acceptable reliability for both instruments (EAI $\alpha = 0.72$; RSES $\alpha = 0.70$) and found no evidence of multicollinearity. Overall, the findings suggest that young gym-goers may maintain healthy self-esteem despite exhibiting symptoms of exercise addiction, highlighting the need for early identification and further longitudinal research in larger and more diverse populations.

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