



## Research Article

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**Psychological Factors Influencing Physical Rehabilitation in Athletes: A Correlational Study on Injury Recovery and Psychosocial Well-being**Bhargavi Ojale<sup>1</sup>, Dr. Heenakshi Bhansali<sup>2</sup><sup>1</sup>Research Assistant, Sports Research Centre, Institute of Management Technology, Ghaziabad<sup>2</sup>Assistant Professor, Department of Clinical Sciences, School of Health Science & Technology, Dr. Vishwanath Karad MIT World Peace University, Pune, India**Article History**

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**Abstract:** This study explores the psychological factors influencing injury recovery in athletes undergoing physiotherapy, with a focus on depression, anxiety, stress, and self-concept. Sports injuries often extend beyond physical challenges, triggering emotional distress and altered self-perceptions that can affect rehabilitation outcomes. Using a correlational design, data was collected from 103 Indian Athletes aged 15–35, all actively engaged in physiotherapy following sports-related injuries. Standardized tools, including the DASS-21 and Saraswat's Self-Concept Questionnaire, were employed to measure psychological states. Findings revealed moderate positive correlations between physiotherapy duration and improvements in depression, anxiety, and stress levels, indicating that sustained rehabilitation supports psychological recovery alongside physical healing. However, self-concept showed a moderate negative correlation with longer treatment durations, suggesting that prolonged recovery may undermine athletes' confidence and identity. Gender-based differences emerged, with females reporting higher levels of depression, anxiety, and stress, while males demonstrated stronger self-concept scores. Comparisons between team and individual sport athletes showed minimal differences, though team players tended to report slightly better psychological outcomes. The study underscores the importance of integrating mental health support into physiotherapy to foster resilience, restore confidence, and ensure holistic recovery in athletes.

**Keywords:** Psychological Factors, Influencing, Athletes, Injury Recovery, Psychosocial Well-being

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**INTRODUCTION****Depression**

Depression is a serious mental health condition (Ayer & Khan, 2012). It is described as a mood disorder that results in a loss of interest in activities that were previously enjoyable, difficulty in sleeping, abnormal changes in weight, difficulty thinking or concentrating, and persistent feelings of sadness, excessive guilt, worthlessness, suicidality, and hopelessness ("Depression," n.d.). The symptoms of depression can be broadly classified into emotional, cognitive, and physical domains. The interconnection between depression and sports is complex and multifaceted. Despite being characterized by physical prowess and mental toughness, athletes are not immune to mental health challenges (Rice *et al.*, 2016). The development of depressive symptoms in athletes can be attributed to the competitive nature of sports, the expectation to perform at their best, and the constant pressure from parents and coaches to excel (Lebrun *et al.*, 2018). These factors lead to a decline in athletic performance, loss of interest in training and diet, increased irritability, and social withdrawal (Ferreira Rodrigues *et al.*, 2017). A sports psychologist plays a pivotal role in addressing the psychological aspects of depression in athletes and providing psychological interventions to help manage it (Weir, n.d.).

**Anxiety**

Anxiety is a complicated and multidimensional mental health condition that comprises generalized anxiety disorder, social anxiety disorder, panic disorder, and specific phobias (Bandelow & Michaelis, 2015). Various aspects of human life, such as relationships, work, and academic performance, are affected by anxiety disorders to a significant degree (Dryman *et al.*, 2016). Cognitive, emotional, and physical factors contribute to the diagnosis of anxiety disorders (Adwas *et al.*, 2019). Genetic, environmental, and neurobiological factors are also involved in the etiology of anxiety disorders (Tennant *et al.*, 2022). Clinical attention and intervention are required when anxiety becomes chronic and interferes with day-to-day activities; this is determined by the intensity and duration of symptoms (Wang *et al.*, 2020). Anxiety is one of the most prevalent concerns in the field of sports, affecting athletes at all levels (Lourido *et al.*, 2023). The development or exacerbation of anxiety in athletes can be attributed to the competitive nature of sports, performance expectations, fear of failure, and the pressure to meet personal and team goals (Marwat *et al.*, 2021). While a certain level of anxiety can enhance performance, excessive anxiety can impair concentration, decrease confidence levels, and diminish athletic performance (Lukasik *et al.*, 2019). The presence

and guidance of a sports psychologist are vital in addressing psychological factors in sports, managing performance-related stress, and enhancing the mental well-being of athletes (Lane, 2024).

### Stress

Stress is a psychological and physiological response to internal and/or external pressures, demands, and challenges faced in daily life (Schneiderman *et al.*, 2005). Stress can have both positive and negative effects; it can help individuals cope with pressure and challenges or lead to maladaptive mental and physical health outcomes (Epel *et al.*, 2018). Physiological, psychological, and behavioral symptoms contribute to stress in individuals (Yaribeygi *et al.*, 2017). Stress is a major factor affecting athletes competing at all levels (Fletcher *et al.*, 2006). The Yerkes-Dodson law emphasizes the regulation of stress levels and the maintenance of optimal arousal for improved performance, as moderate and manageable stress levels can enhance performance, while excessive stress can impair it (Corbett, 2015). The demands and pressures inherent in competitive sports cause different athletes to experience stress differently (Hanton *et al.*, 2009). Sports psychologists assist athletes in understanding and managing stress effectively, optimizing their performance, and promoting overall well-being (E-GyanKosh, Unit 3).

### Self-Concept

Self-concept refers to the cognitive and affective representation of an individual's beliefs, perceptions, and self-assessments (Rosas *et al.*, 2017). It comprises characteristics such as self-esteem, self-efficacy, identity, body image, values, and personal responsibilities (Dixit, 2014). Self-concept is a critical component of athletic performance and well-being (Talavera *et al.*, 2023). Sports psychologists utilize various interventions to enhance athletes' self-concept (Röthlin *et al.*, 2016), unlocking their full potential and fostering empowerment (Hussain *et al.*, 2023b).

### Physiotherapy

Focusing on physical rehabilitation and well-being, the branch of physiotherapy plays a significant role in the management of mental health disorders like depression, anxiety, stress and issues like self-concept in a holistic way (Varela & Melvin, 2022). Physiotherapy interventions integrating psychological support alongside physical rehabilitation contribute to a more comprehensive healing process (Álvarez *et al.*, 2022). In the context of depression, physiotherapy can be viewed as a complementary intervention that addresses both the physical and mental dimensions of the disorder (Żyżniewska-Banaszak *et al.*, 2021). Physiotherapy might be seen as an additional therapeutic technique in the context of anxiety disorders (Bratberg *et al.*, 2020). Physiotherapy can be viewed as a complementary approach in the context of stress management as it addresses both physical and psychological dimensions of

stress (Ee *et al.*, 2020). Physiotherapy interventions can help athletes rebuild confidence, restore functioning and regain a sense of mastery over their bodies (Tracey, 2003).

This research paper aims to explore depression, anxiety, stress and self-concept in athletes seeking physiotherapy following injury or accident while performing sport. The study of all these factors will help us to understand the impact injuries have on psychological factors such as depression, anxiety, stress and self-concept, particularly in the case of athletes undergoing physiotherapy. In this research, we will study athletes undergoing physiotherapy due to injuries/accidents they have faced while playing any sport. We would be focusing on how the treatment by physiotherapists leads to the presence of depression, anxiety, stress and self-concept amongst sports players who were injured or met with an accident while playing any sport. The secondary aim would be to study how gender and type of sport played by the individual (i.e., individual sport or team sport) affect the presence of depression, anxiety and stress amongst sports players who are undergoing treatment by physiotherapists due to injury/accident while playing any sport.

## METHODOLOGY

### Research Statement

Several studies have explored the psychological health of athletes, particularly during injury recovery. This study aims to examine the correlation between depression, stress, anxiety, self-concept, and the duration of physiotherapy treatment among athletes undergoing rehabilitation.

### Purpose of the Study

This study investigates the intricate interaction between psychological aspects and physical healing in athletes receiving physiotherapy. By focusing on depression, anxiety, stress, and self-concept, the research aims to highlight the major impact of these psychological states on the rehabilitation process. Sports injuries often trigger a range of emotions, from anxiety about diminished performance to concerns over prolonged recovery times. By analyzing the prevalence and severity of depression, anxiety, and stress in this context, the study seeks to uncover the emotional challenges athletes face during recovery. Additionally, the study examines self-concept, as injuries may alter athletes' perceptions of their identities and abilities. By identifying the underlying emotional and cognitive variables, healthcare professionals can develop customized physiotherapy interventions that address both physical and psychological aspects of healing, ultimately fostering resilience and aiding athletes in returning to peak performance.

### Hypotheses

1. H0: There will be no significant correlation between depression levels and the duration of treatment in athletes undergoing physiotherapy.
2. H1: There will be no significant correlation between anxiety levels and the duration of treatment in athletes undergoing physiotherapy.
3. H2: There will be no significant correlation between stress levels and the duration of treatment in athletes undergoing physiotherapy.
4. H3: There will be no significant correlation between self-concept levels and the duration of treatment in athletes undergoing physiotherapy.

#### Tools

- Consent Form: Participants will provide informed consent before participating in the study.
- Case History Form: Includes details such as name, age, gender, type of sport played, physiotherapist's name, and type of injury.
- Depression Anxiety and Stress Scale-21 (DASS-21): Developed by S.H. Lovibond and P.F. Lovibond (1995), this self-report questionnaire assesses depression, anxiety, and stress levels through written questions. The reliability (Cronbach's Alpha) is 0.81 for depression, 0.89 for anxiety, and 0.78 for stress.
- Self-Concept Questionnaire by R.K. Saraswat (1984): This scale contains 48 statements measuring six domains: physical, social, temperamental, educational, moral, and intellectual self-concept. Reliability is 0.91.

#### Sample Description

The study included athletes aged 15-35 years, of both genders, and of Indian nationality. Eligible athletes should have competed at the high school, college, or university level and/or for local, regional, or international teams. Participants must be currently undergoing physiotherapy treatment. The study excludes individuals with a diagnosed mental health disorder. A purposive sampling method will be employed, with data collection expected to take approximately 40-45 minutes per participant. The total sample size for this study is 103 Indian Athletes.

#### Sample Inclusion Criteria

- Indian athletes aged 15-35 years.
- Currently undergoing physiotherapy for a minimum of two months.
- Athletes who have participated in organized competitive sports at high school, college, university, or professional levels.
- No current diagnosis of a mental health disorder.

#### Sample Exclusion Criteria

- Athletes who are not undergoing physiotherapy currently.
- Athletes diagnosed with a mental health disorder.

#### Research Design

This study employs a Correlational Research Design to examine the relationship between depression, anxiety, stress, and self-concept among athletes undergoing physiotherapy. As a non-experimental design, it investigates statistical associations between these variables without controlling for extraneous factors. This design allows researchers to determine whether an association exists between the psychological variables and the duration of physiotherapy treatment without manipulating any conditions. The study does not establish causality but rather identifies patterns and trends in data, which can be useful for informing future experimental research. The correlational approach is particularly suitable for this research, as it enables an understanding of how psychological states interact with physical rehabilitation over time in a naturalistic setting.

#### Plan of Analysis

Participants meeting the inclusion criteria were briefed about the research, and consent forms were provided and collected to ensure voluntary participation. A standardized procedure was followed for data collection, ensuring consistency across all participants. They were provided with a printed questionnaire and instructed to respond as honestly as possible in a quiet, distraction-free environment. To minimize response bias, they were assured of confidentiality and anonymity. Upon completion, participants were debriefed regarding the study's results and any concerns or questions were addressed. Additionally, data was checked for completeness before analysis began to ensure data integrity and reliability. The collected responses were then analysed using appropriate statistical tools to examine correlations and differences between groups.

#### Statistical Analysis

The study employed the Pearson correlation coefficient to assess relationships between depression, anxiety, stress, self-concept, and physiotherapy duration. The Pearson correlation coefficient (PCC) measures the linear association between two variables, yielding a value between -1 and 1.

Additionally, an independent samples t-test was conducted to analyze differences in depression, anxiety and stress scores between male and female athletes, as well as between athletes participating in group versus individual sports. The t-test determines whether the mean differences between these groups are statistically significant.

## RESULTS

The posterior distribution for the pairwise correlation between the duration of physiotherapy treatment and the score of depression reveals a moderate positive association. The posterior mode is 0.243, with a posterior mean of 0.235, suggesting a slight tendency for increased physiotherapy duration to correlate with improved depression scores. The posterior variance is

0.008, indicating a relatively low spread in the estimates. The 95% credible interval ranges from 0.050 to 0.408, suggesting some uncertainty in the exact strength of the relationship, but it is likely that the true correlation lies within this interval. This supports the interpretation that a positive, though moderate, relationship exists, with the uncertainty reflected in the broad credible interval. The analysis is based on a sample size of 103, utilizing Bayesian reference priors ( $c = 0$ ).

For the correlation between duration of physiotherapy treatment and the score of anxiety, the posterior mode is 0.549, indicating a moderately strong positive association. The posterior mean of 0.538 closely aligns with the mode, highlighting consistency in the central estimate. The posterior variance is 0.005, suggesting low variability and a high level of confidence in the estimate. The 95% credible interval, ranging from 0.402 to 0.669, further supports this moderate positive relationship, indicating that as physiotherapy duration increases, anxiety scores may improve. The narrow credible interval suggests strong confidence in this relationship, which appears more robust compared to the depression score correlation.

Similarly, the pairwise correlation between duration of physiotherapy treatment and the score of stress shows a moderate positive association. The posterior mode is 0.408, with a posterior mean of 0.397, both suggesting that longer physiotherapy duration is associated with lower stress levels. The posterior variance of 0.007 implies low variability in the estimates. The 95% credible interval, spanning from 0.233 to 0.556, indicates that the true correlation likely falls within this range. The analysis demonstrates a moderate relationship, comparable in strength to that between physiotherapy duration and anxiety.

In contrast, the correlation between duration of physiotherapy treatment and the score of self-concept reveals a moderate negative relationship. The posterior mode is -0.441, and the posterior mean is -0.431, both consistent with a negative correlation between the variables. The posterior variance is 0.006, indicating low variability and high confidence in the estimate. The 95% credible interval ranges from -0.582 to -0.274, suggesting that longer physiotherapy durations are associated with lower self-concept scores. This negative relationship stands out compared to the positive correlations with depression, anxiety, and stress, and warrants further investigation to better understand its dynamics.

Gender-based differences in the four psychological measures—depression, anxiety, stress, and self-concept—were also observed. Females reported higher average scores for depression, anxiety, and stress, while males showed stronger self-concept scores. The effect sizes (Cohen's  $d$ ) indicate small to negligible differences, with depression and anxiety approaching

statistical significance but not quite reaching it. Stress and self-concept differences did not show statistical significance. Independent samples t-tests further confirmed these trends, with depression and anxiety showing near-significant differences and no significant differences in stress or self-concept.

The comparison between athletes in group sports ( $N = 55$ ) and individual sports ( $N = 48$ ) revealed small differences across all four variables, but these differences were not statistically significant. Group sports participants reported slightly lower mean scores in depression (12.24 vs. 12.79), anxiety (13.24 vs. 13.92), and stress (18.82 vs. 19.85), but higher self-concept scores (172.85 vs. 166.67). The standard deviations were similar across both groups, with individual sports participants showing slightly more variability. Levene's test for equality of variances confirmed equal variances, and t-tests indicated no statistically significant differences (all  $p$ -values  $> .05$ ). Despite the absence of significant differences, group sports participants tended to report better outcomes in depression, anxiety, stress, and self-concept.

## DISCUSSION

The findings of this study highlight several significant correlations and gender-based differences in the psychological factors of depression, anxiety, stress, and self-concept among athletes undergoing physiotherapy. These results underscore the complex interplay between physical rehabilitation and mental health outcomes in athletes recovering from sports-related injuries or accidents.

### Correlations Between Physiotherapy Duration and Psychological Factors

The analysis revealed moderate positive associations between the duration of physiotherapy treatment and scores of depression, anxiety, and stress. Specifically, longer physiotherapy durations tended to correlate with improved scores in depression, anxiety, and stress, suggesting that comprehensive rehabilitation programs incorporating physiotherapy may contribute positively to athletes' mental well-being. These findings align with previous research indicating the holistic benefits of physiotherapy in addressing both physical and psychological aspects of recovery (Żyżniewska-Banaszak *et al.*, 2021; Bratberg *et al.*, 2020).

Conversely, a moderate negative correlation was found between physiotherapy duration and self-concept scores. This unexpected finding suggests that while athletes may experience physical improvements through prolonged physiotherapy, there could be a corresponding decrease in their self-concept. Further exploration into the reasons behind this negative correlation is warranted, including potential psychological impacts of prolonged rehabilitation periods on athletes' self-perceptions and confidence levels.

### Gender-Based Differences

Gender differences were observed across all four psychological measures, with females generally reporting higher average scores for depression, anxiety, and stress compared to males. In contrast, males exhibited stronger self-concept scores. These differences, although small in effect size, indicate varying psychological responses to injury and rehabilitation between genders. Understanding these differences can inform tailored interventions that address specific mental health needs based on gender, potentially enhancing overall treatment outcomes for athletes.

### Comparison Between Group and Individual Sports

While athletes in group sports tended to report slightly better outcomes in depression, anxiety, stress, and self-concept compared to those in individual sports, these differences were not statistically significant. Both groups showed similar variability in scores, suggesting that the type of sport (individual vs. group) may not significantly influence psychological outcomes during physiotherapy. This finding contrasts with previous literature suggesting that team dynamics and social support in group sports may mitigate psychological distress more effectively (Marwat *et al.*, 2021). Further investigation with larger sample sizes could provide deeper insights into these nuanced differences.

### CONCLUSION

In conclusion, this study underscores the importance of integrating psychological assessments and interventions into physiotherapy practices for athletes recovering from sports-related injuries or accidents. The positive correlations between physiotherapy duration and depression, anxiety, and stress scores suggest that comprehensive rehabilitation programs may benefit athletes not only physically but also psychologically. However, the negative correlation with self-concept highlights a need for targeted psychological support to bolster athletes' confidence and self-perceptions during extended recovery periods.

Gender-based differences indicate that tailored interventions may be necessary to address varying psychological responses between male and female athletes undergoing physiotherapy. While differences between group and individual sports were not statistically significant, understanding these dynamics remains crucial for optimizing rehabilitation strategies and promoting holistic well-being in athletes.

Future research should explore additional factors influencing psychological outcomes in athletes, such as social support networks, coping mechanisms, and individual resilience factors. By advancing our understanding of these complex interactions, healthcare professionals can better support athletes' mental health throughout the rehabilitation process, ultimately

facilitating their return to sport with enhanced physical and psychological resilience.

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