

# Psychosocial impact and rehabilitation strategies for basketball-related injuries: SEM-PLS analysis

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## Abstract

**Background:** This study explores the psychosocial impact of sports-related injuries on elite basketball players and their search for psychological and counselling support.

**Objective:** The objective is to examine how injuries affect athletes' mental well-being, their attitudes toward received support, and their use of psychological interventions.

**Methods:** A phenomenological approach, analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM), was applied to data from 253 elite Turkish basketball players, including active and retired athletes. A structured questionnaire was administered to gather the data.

**Results:** The results show that while athletes seek individual psychological support, they often feel neglected by their clubs, leading to insecurity and helplessness. Many report dissatisfaction with the mental health services provided by their organisations.

**Conclusions:** The study recommends integrating sports psychologists and counsellors within clubs, promoting mental health awareness, and forming interdisciplinary teams to address this. Holistic sports education programs that foster psychological resilience and emotional regulation are also advised. Further research is needed to assess the long-term effects of interventions and the role of organizational support on athletes' mental well-being.

## Keywords

psychosocial impact, rehabilitation strategies, basketball-Related injuries, SEM-PLS analysis

## Terms from the MeSH database

psychology, rehabilitation, rehabilitation research, wounds and injuries, quantitative structure-activity relationship, basketball

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## Introduction

Basketball incurs a variety of injuries like sprains, fractures, and tears of the ligaments because it consists of rapidly changing movements and collisions. Apart from suffering injuries, players' physical, as well as mental, health suffers; the result can be depression, anxiety, low self-esteem, and so on. Although there is a rising recognition of these psychosocial effects, the focus point of most research papers produced today is primarily physical rehabilitation, and the mental issues associated with injuries are poorly studied. This gap, therefore, becomes critical as an athlete's alteration of identity and self-concept can hamper their recovery process, impacting their overall state of well-being. Injury

can affect the ability of athletes to fully participate in their chosen sport, frequently creating feelings of isolation or frustration and feelings of loss of focus. This emotional strain is exacerbated by the disruption of athletic identity—a core

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aspect of an athlete's self-perception—which further complicates their recovery. Marques, Laranjeira<sup>1</sup> discuss how these mental struggles could significantly hinder the process of rehabilitation and raise the chance of long recuperation times and possibly a relapse. Although the crucial role played by psychotherapy in rehabilitation has been well documented, a majority of sporting organisations do not adequately take care of athletes' psychological health issues.

Cognitive Behavioural Therapy (CBT) goals, goal setting, positive self-talk techniques, and visualisation have all been lauded for reducing stress and building endurance among athletes who have suffered injuries. The strategies have been shown to improve athletes' mental capability to compete, reduce the anxiety associated with the possibility of re-injury, and improve general recovery results. But, despite the proven efficacy of these interventions, the majority of clubs and organisations focus on physical rehabilitation and do not consider the psychological aspect of recovery. This research aims to bridge this gap by studying the impact on psychosocial aspects of basketball injuries and developing holistic rehabilitation methods that incorporate counselling and psychological assistance. It examines the way in which the addition of professionals in mental health, like counsellors and psychologists for sports, as part of rehabilitation programs can greatly improve the recovery of injured athletes. Furthermore, this study examines the factors in an organisation that influence the protection or denial of the mental health of athletes in their recovery, such as the importance of management practices and club policy. In addressing these crucial factors, this study offers solid recommendations to create an extra-inclusive and supportive environment for recovery that promotes physical and mental well-being. In the process, integrating mental health support in traditional physical rehabilitation programmes is crucial to ensure optimal outcomes for recovery for athletes. The study is designed to add to the expanding collection of studies that advocate for the use of a multidisciplinary approach to sports rehab that recognises the role of health and mental well-being in the healing process.

## Literature review and hypotheses development

Earlier studies have pointed out different psychosocial impacts and the need for rehabilitation approaches. For example, Barraclough, and Grecic<sup>2</sup> did a study on the voice behaviour of coaches in sports, which can be of assistance when you think about the overall health needs of athletes (verbal/non-verbal interaction with teammates). Another thing Kretchmar, and Dyreson<sup>3</sup> looked into is how visual searches outrun planes from under pressure, which may be relatable to the way athletes think of and cope with stress in the rehab process. The inclusion of experiential perspectives elucidates clinical manifestations of both

physical and psychological processing of injuries, thus endorsing the need for holistic and evidence-supported methodologies in rehabilitation. Sports may effectively gauge how individuals identify, relate, and perceive their social standing. When performed well, basketball may offer opportunities for psychological, financial, and physical development as well as exciting, demanding, gratifying, and spectacular experiences.<sup>4-6</sup> However, some basketball experiences, mainly when playing professionally, typically subject athletes to high mental and physical stress, which increases negative consequences like injury. Even though injuries are episodes that basketball players try to avoid, most players will experience an injury that may impede their participation in the sport.<sup>7-9</sup> For instance, Russell, McLean<sup>10</sup> explained how basketball-related injuries may affect significant public health concerns for individuals who are active physically. Other than that, monitoring systems at organisational levels result in safer policies, playing environments, and equipment.<sup>11</sup> Note that basketball injuries may appear psychological, sociocultural, environmental, and physical.<sup>12</sup> Physical injuries may occur from overuse of certain body parts, fatigue, and muscle imbalances. Inadequate environments often provoke environmental, psychological, and sociocultural factors related to attitudes, cultures, and beliefs rendered by basketball teams, leading to injuries. These factors include the conviction that one's capacity for suffering is a sign of strength and toughness, as well as acceptance that pain and injury are inherent to sports, reluctance to request medical treatment for fear of coming across as weak, and the role and monetary pressure to keep playing while injured.<sup>13</sup>

Basketball injuries also lead to considerable psychological challenges through increased fear, tension, anxiety, depression, and anger, as well as decreased self-esteem.<sup>14</sup> For example, Marques, Paul<sup>15</sup> stated that functional failure or loss to keep playing basketball may be devastating, hinder recovery processes, and affect how players deal with and respond to future injuries. Note that these psychological stressors are issues addressed during counselling and support the theory that counselling may discuss basketball players' mental well-being and quality of play. Borg, Falzon<sup>13</sup> suggested that athletes should possess a holistic plan for a comeback, considering the pre-injury level in the sport, the surgery process, the personality factors, other social considerations, as well as the primary psychological factor, namely stress.<sup>16-18</sup> Alternatively, Shapiro, Bartlett<sup>19</sup> established that three variables may demonstrate psychological stress known as coping resources, history, and personality. Here, personality attributes refer to locus of control, resilience, and competitive trait anxiety. Meanwhile, history denotes past injury experiences, daily struggles, and life-event pressures. On the other hand, coping resources resemble social support and stress management.<sup>20</sup> Bicknell's injury and stress model determines that physical anatomy changes as stress heightens in basketball performance contexts,

making muscles strained and stiff, increasing the risk of injury, and disturbing attentional focus. Subsequently, Bucea-Manea-Țoniș, Paun<sup>21</sup> and Abenza-Cano, Chung<sup>22</sup> discovered that injuries experienced by basketball players substantially decreased after stress-management programs. Alternatively, Williams, Hammond<sup>23</sup> proposed that stress management programs may not appear to be the best option for injury risk management and stress reduction, primarily due to the non-target-specific origins of stress. Moreover, they believed that stress-management programs are not worth the money, effort, and time, as better outcomes could be achieved with psychological interventions such as positive self-talk and goal setting. Hence, they opined that running on specific coping aptitudes is fruitful compared to the generic stress-management programs.

Hagger and Conroy<sup>24</sup> reported that using interventions such as imagery/visualisation may improve confidence regarding injury-related situations. The authors also explained that conveying knowledge about the injury and the progress made in rehabilitation enables athletes to reduce fears of re-injury. When basketball becomes an essential part of athletes' daily lifestyles, it fosters the development of strong athletic identities. "Strong athletic identities" refers to the degree to which an individual examines the athlete's role and seeks acknowledgement from others.<sup>25</sup> Therefore, social interaction, confidence, and skills are crucial to their development. Consequently, athletic identity establishes who one is, how one assesses one's self-worth and competence, and how one perceives to be recognised within society through basketball.<sup>26–29</sup> Strong athletic identities may also lead to potential risks. Since athletes often do not grow an identity outside of that as athletes, they "often discover it challenging to cope with an injury. This implies that they are prone to lose confidence and may experience feelings of helplessness".<sup>13</sup> This includes significant loss that provokes negative reactions such as helplessness, anxiety, as well as intense fear. These reactions can hinder rehabilitation processes. Therefore, psychological interventions may minimise these effects<sup>30</sup> and become vital to reducing or preventing negative psychological consequences resulting from the injury and promoting a return to active involvement in basketball-related activities.<sup>31</sup>

Practitioners must also observe injured athletes' psychological readiness to return to play and fear of re-injury. To decide whether an athlete is ready to return to play post-injury, the practitioner must first know the athlete well and their typical behaviours in different occurrences. Secondly, they must adopt a person-centred and shared decision-making approach and cater to appropriate informational support from different team members (for example, coach, physiotherapist, psychologist, and doctor). Thirdly, they must employ appropriate psychological interventions and screening tools.<sup>32</sup> Note that interventions counsellors and psychologists may utilise CBT,<sup>33</sup> imagery/visualisation,<sup>34</sup>

goal-setting skills, and positive self-talk,<sup>35</sup> and relaxation techniques.<sup>36</sup> Here, Hsu, Lin<sup>37</sup> reported that if athletes and their significant others regard and recognise the athlete as distinct from their sports successes and performance, psychological stress associated with athletic injury might be reduced, and injury rehabilitation could be enhanced. Other than that, self-acceptance and self-esteem may assist in better understanding athletes' self-motivations, the effects of injuries, as well as over-achievement.<sup>13</sup> Meanwhile, ego involvement relies on intrinsic motivation and enables athletes to regulate their behaviours and performances, presenting more self-control over their self-esteem. Hence, it is essential for athletes to seek psychological help when facing potential challenges and changes in their athletic identities and to facilitate a successful return to basketball.<sup>38</sup> Based on the previous studies mentioned and the research questions posed, the following hypotheses can be developed as shown in the following section.

### *Hypotheses development*

The development of the research hypothesis in this research is, in direct part, influenced by the theoretical research as well as the findings from empirical research discussed in the literature review. The research hypotheses are based on prior research, which has highlighted the psychological effects of sports injuries, the efficiency of rehabilitation methods, the significance of psychological support, and the significance of organisational variables in improving the mental health of athletes.

**H1:** Basketball athletes who suffer injuries from sports will likely face major psychological challenges. These include depression, low self-esteem, anxiety levels, and elevated levels of depression.

The hypothesis that first came up comes from a variety of studies that show injuries from sports can cause negative psychological consequences for athletes. Trainor and colleagues conducted the research. Park, Furie,<sup>39</sup> and Hall, Everson<sup>40</sup> Have proven that those who sustain injuries are more at risk of developing emotional or mental issues such as depression, anxiety and a loss of self-esteem. The research highlights the significant effect that injuries have on the mental health of athletes, which is frequently exacerbated by the stress of returning to the sport immediately and the stigma that surrounds the mental health of athletes. This literature collection can be used to support the hypothesis that players injured in basketball may also experience psychological issues.

**H2:** Rehabilitation strategies, such as physical therapy, goal setting, positive self-talk, and imagery/visualisation techniques, will effectively mitigate the psychosocial challenges associated with sports-related injuries.

The second theory is based on research which demonstrates the need for specifically designed rehabilitation techniques to tackle the psychological and physical aspects of recovery from injury. Frederiksen, Stavestrand<sup>41</sup> have demonstrated that certain interventions, like the use of physical therapy and cognitive-behavioural methods, such as visualisation and meditation exercises, may be instrumental in the reduction of psychological distress as well as speedier recovery of injured athletes.<sup>42</sup> The efficacy of these strategies for rehabilitation in enhancing players' mental strength and motivation is well documented, and it is expected that they can help alleviate the psychological challenges that athletes who have been injured in basketball face.

**H3:** The inclusion of counselling and psychological assistance in rehabilitation programs greatly improves the mental well-being as well as the recovery results of basketball players who have been injured.

The third idea is supported by studies that highlight the importance of the psychological and counselling aspects of recovery—the research of Borg and colleagues. Frank and Oscar<sup>43</sup> have discovered that integrating professionals from the mental health field, like coaches and sports psychologists, into the rehabilitation process could boost the mental health of athletes as well as improve the overall outcome of recovery. Psychological treatments, such as CBT as well as relaxation methods, have been proven to lessen the psychological burden associated with injuries and help facilitate an easier return to sport. The evidence is the basis to suggest that the interplay of psychological assistance will greatly improve results for recovery.

**H4:** Occupational issues like insufficient support systems, as well as the lack of concern for players' psychological well-being, cause the increase in psychological challenges that athletes who are injured.

The fourth theory is based on research into the sports organisation context and the impact it has on the mental well-being of athletes. The research conducted by Haugen<sup>44</sup> as well as Daley, Shoop<sup>45</sup> They have revealed the way that factors within organisations, including inadequate mental health resources and the lack of consideration for the emotional needs of athletes, could aggravate the psychological effects of injuries sustained in sports. The research suggests that the absence of adequate support systems within the sports organisation often leads to feelings of helplessness as well as stress among injured athletes. In light of this theory, it is suggested that the negligence of organisations contributes to the mental and emotional challenges that athletes confront during recovery. Figure 1 shows how Hypotheses (H) are linked in the study.

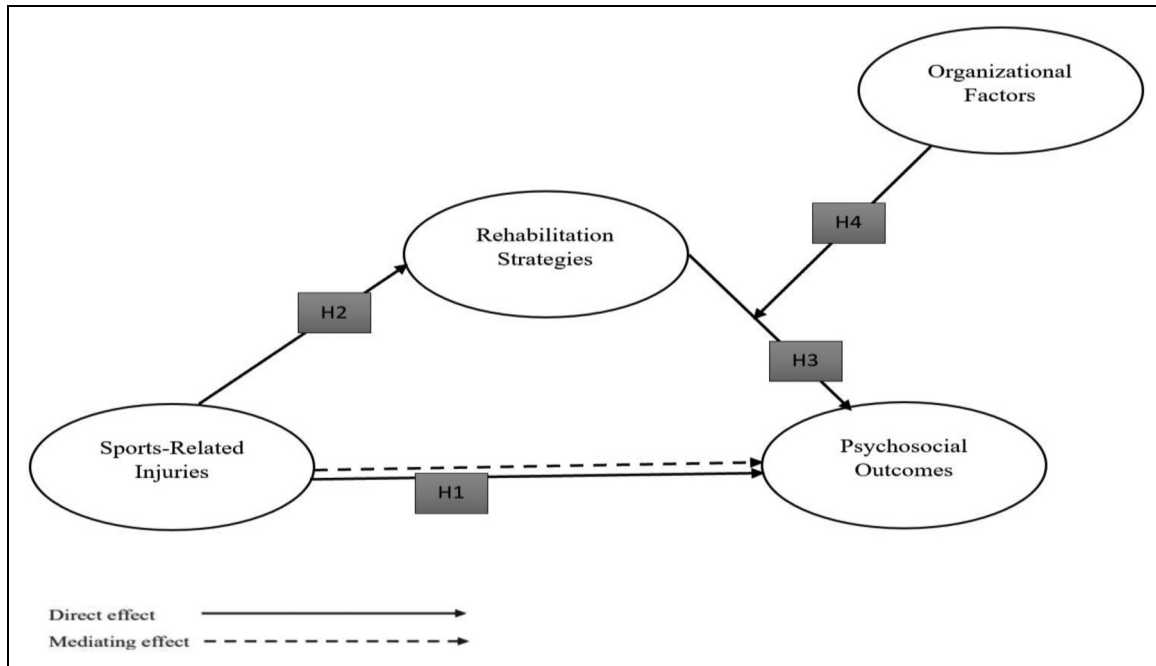
## Research methods

The study utilised a mixed-methods approach, which incorporated both qualitative and quantitative methods to investigate the psychological effects of injuries to basketball and the efficacy of rehabilitation strategies. The quantitative analysis involved administering a questionnaire to professional basketball players, active and retired from The Turkish National team. The questionnaire was developed to evaluate various psychosocial variables such as emotional states and self-esteem, as well as the effectiveness that was perceived by rehab strategies. The data gathered from the questionnaires was analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM), which is ideal for analysing complicated relationships among constructs within psychology and sociology. The qualitative portion utilised phenomenological interpretations and biographical analysis in order to understand the athletes' personal experiences about their injuries as well as psychological rehabilitation. This method allowed for the gathering of deep-dived narratives, which offered insights into the mental and emotional challenges that athletes face during their recovery, as well as their experiences with the care offered by their organisations. Qualitative information was essential to knowing the individual and context elements that impact the recovery process. This could have been ignored in quantitative analysis.

Integration of the two strategies took place at both the gathering and the analysis phases. The collection stage was where the qualitative interviews were carried out alongside the quantitative surveys to make sure that both data sets addressed fundamental research issues from different viewpoints. When it came to the analysis, the findings of the qualitative study were utilised to supplement and enhance the quantitative findings. In particular, while the quantitative analysis of PLS-SEM gave data-driven insights into the connections between psychological impacts and outcomes for rehabilitation, the qualitative analysis provided an understanding of the mental and emotional difficulties athletes had to face, thereby giving a deeper understanding of the data. This mixed-methods approach led to a greater understanding of the psychological effects of injuries resulting from sports since the qualitative findings provided context details to the quantitative patterns that were observed. Pilcher and Cortazzi<sup>46</sup> state that combining qualitative and quantitative techniques in research on social sciences improves the range and depth of research while ensuring each of the outcomes is quantifiable and that personal experiences are taken into consideration in the development of evidence-based guidelines.

### Questionnaire development and sampling

A meticulously developed questionnaire was created for this study to analyse the significant psychological impact of sports-related injuries on basketball players and



**Figure 1.** The theoretical framework of the research.  
 Source(s): Figure by authors.

investigate rehabilitation strategies. The questionnaire aimed to gather information on different facets of athletes' attitudes and experiences with psychological interventions. It was adapted to answer the research questions relevant to this study by enhancing it from other studies. To verify its validity and reliability in assessing the targeted constructs, it was thoroughly examined. Note that 253 professional basketball players from the Turkish national team, including active players and retired players, made up the sample for this study. The purpose of choosing this sample was to represent the wide spectrum of basketball-related experiences. Consequently, the questionnaire was divided into several sections, each focusing on different aspects of the study. The first section gathered data about the athletes' injuries and basketball projects, as well as demographic data. The next sections examined how athletes perceived their injuries, responded to support, and employed psychological interventions. These sections were created to provide readers with a thorough grasp of basketball players' psychological impacts and rehabilitation strategies. Basketball players who have had sports-related injuries were asked to rate the severity of the psychological impacts they experienced on a 5-point Likert scale. The scale went from 1 (minimal impact) to 5 (significant impact), with 5 being the most significant impact. Note that this measuring strategy is consistent with other studies presenting that injured athletes experience negative emotional states, reduced self-esteem, and higher levels of depression and anxiety.<sup>47</sup>

The effectiveness of rehabilitation strategies, such as physical therapy, goal setting, encouraging self-talk, and imagery/visualisation approaches, was measured with a 5-point Likert scale. The items were trait-specific and had a direct relation to addressing the problems endured by basketball players with sports-related injuries, as gauged by their values on the scale. Furthermore, the questionnaire covered the perceived efficacy of these sources in contributing to alleviating the mental and rehabilitation outcomes for basketball athletes who become injured. Sampling for this study was conducted using a conventional method of questionnaire administration. The researchers distributed the questionnaires to the identified sample of basketball players and collected 251 valid responses out of the 253 questionnaires. Subsequently, the sample size of 168 exceeded the minimum requirement of 160 respondents recommended for the Partial Least Squares Structural Equation Modelling (PLS-SEM) technique, ensuring adequate statistical power for the analysis Onubi, Yusof.<sup>48</sup>

The details of the questionnaire distribution, response rates, and other relevant information can be discovered in the study's report and accompanying Tables 1 and 2. The survey method used convenience sampling to collect data for this study. The survey method was chosen due to its ability to establish a degree of consistent and stable behavioural patterns.<sup>49</sup> Note that this study focused on the psychosocial impact of sports-related injuries on basketball players and the investigation of rehabilitation strategies. The unit of analysis was basketball players who had

**Table 1.** Measured constructs and sources.

Construct	Indicators (Question Items)	Source(s)
Psychosocial impacts	Emotional states: To what extent did you experience negative emotional states due to your sports-related injury?	Trinh, Brown <sup>50</sup>
PI2	Self-esteem: How has your self-esteem been affected by your injury?	
PI3	Anxiety levels: To what extent did your anxiety levels increase after sustaining the injury?	
PI4	Depression levels: How has your injury impacted your levels of depression?	
PI5	Overall impact: Overall, how significant has the psychosocial impact of your injury been on your well-being?	
Rehabilitation strategies	Physical therapy: To what extent has physical therapy helped in your injury rehabilitation?	van Doormaal, Meerhoff <sup>51</sup>
RS2	Goal setting: How effective has goal-setting been in addressing the challenges associated with your injury?	
RS3	Positive self-talk: How helpful has positive self-talk been in managing the difficulties caused by your injury?	
RS4	Imagery/visualization techniques: To what extent have these techniques aided in your recovery process?	
RS5	Overall effectiveness: Overall, how effective have these rehabilitation strategies been for you?	
Integration of psychological and counselling support	Psychological support: How beneficial has the psychological support you received been for your well-being?	52
IPCS2	Counselling support: To what extent has counselling support improved your psychological outcomes?	
IPCS3	Overall well-being: Overall, how much has the integration of psychological and counselling support helped you in your overall well-being?	
IPCS4	Rehabilitation outcomes: How much has the integration of psychological and counselling support contributed to your rehabilitation outcomes?	
IPCS5	Overall effectiveness: Overall, how effective has the integration of psychological and counselling support been for you?	

**Table 2.** Distributed questionnaires and decisions.

Item	Frequency (f)	Percentage (%)
Distributed	253	100%
Returned	251	99.21%
Rejected	2	0.79%
Retained	249	98.43%

experienced sports-related injuries, and the respondents were elite basketball players, including active athletes and retirees from the Turkey national team. Various basketball players with different backgrounds and experiences were included to ensure diversity within the sample. Prior to data collection, a list of elite basketball players from the Turkish national team was obtained. The sample comprised 253 players, and the questionnaire developed for this study was administered to them. The questionnaire underwent a rigorous evaluation to ensure its validity and reliability in measuring the constructs of interest. It consisted of multiple sections, each focusing on different aspects of the research, including the subjective evaluations of injuries, attitudes toward received support, and utilisation of psychological interventions.

To assess psychological factors in players with sports-related injuries, a 5-point scale (Likert) was employed.

This approach is consistent with prior work stressing that while athletes who have incurred an injury will experience negative emotional states, their self-esteem, depression, and anxiety levels may be worsened during the process.<sup>47</sup> In data analytics and analysis, a proper technique used is PLS-SEM, where the WarpPLS 8.0 software is specifically relied upon. Anticipating that PLS-SEM techniques could precisely describe the relations between scales, we resorted to this method to ascertain these connections.<sup>53</sup> In addition, the following researchers have applied the PLS-SEM practice for mediation in the process of the trait of Onubi and Hassan.<sup>54</sup> As for the measurement model, the “factor-based PLS algorithm” was applied, and P-values were calculated by the “stable 3” method, whose procedures Onubi, Carpio<sup>55</sup> have approved. After that, Warp 3 was utilised to study the structural model, which in turn reflects the non-linear relationships and comes up with the P-values and path coefficients.<sup>56</sup> The choice of the factor based on the PLS method was made to carry out the decomposition of the factor-structure whilst at the same time trying to correct the measurement errors.<sup>57</sup>

### Sample characteristics and size determination

This study utilised a convenience sampling method to select 253 elite basketball players from the Turkish national team,

including both active and retired athletes. Convenience sampling was chosen due to the accessibility of participants and the study's focus on elite athletes with a history of sports-related injuries. While convenience sampling has limitations, such as potential sampling bias, efforts were made to ensure diversity in the sample in terms of gender, age, playing experience, and injury severity. The final sample consisted of 251 valid responses, resulting in a high response rate of 99.21%. Participants ranged in age from 20 to 45 years, with an average of 10 years of playing experience, and the sample included both male and female players, ensuring broad representation. The sample size determination was based on the requirements for Partial Least Squares Structural Equation Modelling (PLS-SEM), the primary statistical method used in this study. According to Kim, Du,<sup>58</sup> a minimum of 160 participants is required to ensure sufficient statistical power (0.80) for detecting medium to large effect sizes with a significance level of 0.05. With 251 valid responses, the sample size exceeded the minimum required for PLS-SEM analysis, ensuring robustness and reliability in testing the hypotheses. The diversity of the sample, including various stages of athletic careers and injury severities, supported the study's aim of comprehensively examining the psychosocial impacts of sports-related injuries and the effectiveness of rehabilitation strategies, making the experiences of these athletes less representative of the general athletic population.<sup>44,59</sup>

Furthermore, the cultural and organisational context within which these athletes operate, such as the availability of mental health support and rehabilitation programs, may differ significantly across countries and sports. Research by Inoue, Lock<sup>60</sup> they Highlighted the role of organisational support in shaping athletes' recovery experiences, which can vary greatly depending on the national sports infrastructure. As a result, the findings may not fully extend to athletes from other countries or those engaged in different sports, where the availability of support systems and rehabilitation programs might differ. To improve the generalizability of future studies, researchers should aim to include a more diverse sample of athletes, such as those from different levels of competition (e.g., amateur, collegiate), from a variety of sports, and across multiple countries. Expanding the sample to incorporate athletes from different cultural and sports environments would provide a more

comprehensive understanding of the psychosocial impacts of injuries and the effectiveness of rehabilitation strategies. This approach would strengthen the external validity of the findings and offer more widely applicable recommendations for sports psychology and rehabilitation practices globally.<sup>61</sup> ness of rehabilitation strategies.

### *Statistical analysis*

This study used a simple sampling technique to choose 253 top basketball players who are part of the Turkish national team. The players include the active and retired players. This method of sampling was deemed convenient because of the ease of access for participants and the focus of the study on athletes who have previous injuries from sports. Although convenience sampling is not without its limitations in terms of potential sampling bias, attempts were made to make sure that there was diversity within the study's sample, including gender, age, time, and degree of injury. The final result was 251 legitimate responses, which resulted in a response rate of 99.21 per cent. The participants ranged from 20 to 45 and had an average of 10 years of playing, as well as male and female players. This ensured a wide representativeness. The sample size was determined by the criteria of Partial Least Squares Structural Equation Modelling (PLS-SEM), which is the principal statistical technique employed in this study. Based on Weisburd, Wilson<sup>62</sup> The minimum of 160 people are needed to provide enough statistical capacity (0.80) to detect moderate to large effects that have a significance of 0.05. By obtaining valid responses from 251, this sample exceeded the threshold required to conduct PLS-SEM analyses, which ensures validity and accuracy when testing the hypothesis. The diverse nature of the study, which included different stages of an athlete's career as well as injury severity levels, helped to support the study's goal of examining in depth the effects on psychosocial health of injuries from sports and the effectiveness of the study.

The sample is restricted to basketball stars who are part of Turkey. Turkish national team. This could limit the generalisation of the research findings. The sample number of participants was 251, which provided enough statistical power; the concentration on athletes of professional level in a particular country could hinder the generalisation of the findings. Professional athletes are often subject to unique demands, including more demanding expectations, as well as access to more sophisticated rehab resources that might not be readily available to recreational athletes or those who play in more competitive settings. This can affect the psychological effects of injuries as well as the efficacy of rehabilitation techniques, which makes the experiences of elite athletes less representative of those of average athletes.<sup>44,63</sup> In addition, the culture and institutional context in which athletes' function and compete, including

the provision of mental health services and rehabilitation programs, could vary significantly between countries and in sports. Studies conducted by Burns, Weissensteiner<sup>64</sup> identified the importance of support from organisations to influence athletes' recovery experience, which varies dramatically based on national sporting infrastructure. This means that these findings might not be applicable to athletes from other countries or athletes who participate in diverse sports, for which support programs and rehabilitation programs may be different. In order to make the findings more general for future studies, researchers must strive to draw a more diversified sample of athletes like those who compete at different kinds of competition (e.g., amateur or collegiate) and from various types of sports, as well as across different nations. The inclusion of players from various cultures and sporting environments could provide an understanding of the psychological effects of injuries and the efficiency of rehabilitation methods. The approach will increase the external validity of the research findings and provide more useful recommendations for improving the practice of rehabilitation and sports psychology worldwide.<sup>61, 65</sup> Ness of rehabilitation methods.

### *Ethical considerations*

All participants in the study willingly gave their informed consent. Prior to participating, all individuals were given detailed information about the study's goals, procedures, possible risks, and benefits. Written informed permission was obtained from each subject. Participants were given the assurance that they could choose to leave the study at any time without experiencing any negative consequences. The consent forms were signed and dated by both the participant and the researcher collecting consent.

### **Results**

The findings of this research offer solid evidence to support research hypotheses and highlight the important psychological effects of injuries resulting from sports and the efficiency of integrated rehabilitation methods. The hypothesis that was first proposed (H1) was that the idea that athletes who suffer from injuries face serious psychosocial issues and challenges was firmly supported by the evidence. The coefficient of the path of this connection was the following:  $b = 0.46$ ,  $p = 0.001$ , suggesting a moderate positive association between the injuries sustained by athletes and emotional-related negative outcomes, like depression and anxiety, as well as a decrease in self-esteem. The findings match prior research done by Beisecker, Harrison,<sup>66</sup> which also discovered heightened levels of anxiety and depression among athletes who have suffered injuries. A second hypothesis, which examined the efficacy of rehabilitation techniques for addressing psychosocial issues, is also supported. Goal setting or physical therapy and

visualization methods were found to have a positive impact on the recovery of athletes and performance, with a coefficient of path of 2.32,  $b = 0.32$  and  $p = 0.005$ . The findings are in line with Teuber, Leyhr,<sup>67</sup> which stressed the significance of structured rehabilitation methods for reducing the psychological burden of injuries sustained in sports. The size of the effect ( $f^2$  equals 0.20) suggests that although the strategies employed are efficient however, the interplay of psychological assistance plays an important role which is evident in the subsequent research findings. Third hypothesis (H3) regarding the integration of psychotherapy and counselling assistance, provided the highest level of support having a path coefficient of 0.51 ( $b = 0.51$ ,  $p = 0.001$ ). This suggests that integrating psychologists in rehabilitation programs can significantly enhance the psychological health of athletes who have been injured and improves the overall outcome of their recovery. This is in line with Goddard, Roberts<sup>61</sup> which pointed out the crucial role played by psychological support for facilitating rehabilitation. In addition, the Predictive Reliability ( $Q^2 = 0.61$ ) of the model suggests that the integration of psychological assistance provides significant enhancements to athletes' recuperation and recovery.

Fourth hypothesis (H4) that suggested the idea that factors in organizations contribute to the psychological challenges experienced by athletes who have injuries, received less acceptance. The coefficient for path of 0.17, the  $p$ -value of 0.056 indicates that although there's a link between neglect at work and the mental health of athletes however, the effect wasn't statistically significant until the 0.05 degree. This is in contrast to the conclusion drawn by Chun, Sagas<sup>68</sup> in which they found stronger connections between low organization support and mental stress for athletes.<sup>69</sup> The less convincing evidence to support the hypothesis could indicate that factors affecting organizational structure, although crucial, do not have the same impact in determining individual-specific rehabilitation strategies as well as psychosocial support when it comes to addressing the psychological effects of injuries. The results show that interventions in the field of psychology including counselling as well as cognitive-behavioural therapies, have a crucial role to play to improve the effectiveness of rehabilitation methods. The results highlight the need that sports organisations prioritize the mental wellbeing of athletes in addition to physical rehabilitation. This conclusion is supported by research studies, and many studies have advocated for an integrated approach for injury rehabilitation that includes both psychological and physical care. This study backs the notion well that sports injuries have psychosocial impacts and rehabilitation strategies because there is clear evidence that deems integrated rehabilitation strategies to be effective. The results indicate that abled athletes have to deal with severe psychological effects, including increased anxiety and depression levels and lower self-esteem ( $b = 0.46$ ,  $p = 0.001$ ). To be more specific, techniques of goal



setting and visualization proved to have a positive influence on athletes recovering from injuries because they were able to identify ways to manage their difficulties ( $b=0.32$ ,  $p=0.005$ ). The recruiting of touch support, like counselling, which proved to be much restorative for the players, is an endorsement for a well-rounded and holistic concept of rehabilitation ( $b=0.51$ ,  $p=0.001$ ).

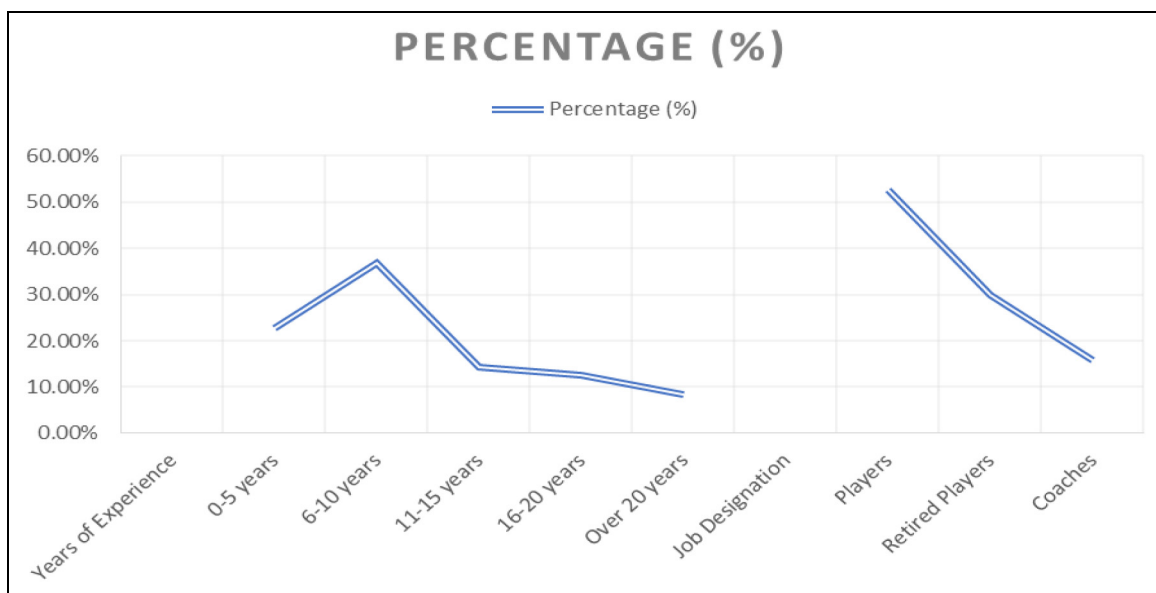
### Demographics

The data about the respondents' demographic characteristics was collected and is also illustrated in Figure 2. The results show that 22.7% of the respondents had less than 5 years of work experience, with 36.9% having 6 to 10 years of personnel involvement. Similarly, from the data gathering, it was reported that 14.3% of the respondents had 11–15 years of experience, and 12.5% worked for 16–20 years, while 8.3% of the respondents survived in the job overturn an excess of 20 years. Following job titles, were undertaken by site managers making up 52.5%, project managers having 30.0%, senior managers contributed to 15.9%, general managers account for 9.5% of respondents in this study. Analysis of Variance (ANOVA) was performed to test the hypothesis that the variables do not offer references to the different job designations. The data demonstrated were insignificant as there was no significant variance in the responses across the different job categories as a group. In this connection, ANOVA analysis presented investigation results that further signify how answers are determined by years spent in the workplace. Therefore, we get P-values  $>0.05$ , which

means that the survey didn't find any significant difference in the replies regarding the number of years of working experiences.

### Non-response bias and sampling bias

Non-response bias and sampling bias were anticipated to confirm that the study outcomes are plausible. Non-response bias is recognized as an angle that develops when comparing the earlier respondents with the results provided at the end of the survey. According to Rybak,<sup>70</sup> it is suggested that late respondents are comparable to both non-respondents. The way to reduce or not have any non-response bias in this research was taking the indication of late respondents together with the ones of early respondents. It was known that there was a very insignificant ( $p < 0.05$ ) difference between the two groups. Therefore, non-response bias was non-existent in this study, and it is assumed that the missing indicator variances are not a matter of concern.<sup>71</sup> On the other hand, sampling bias indicates whether or not a given sample may be biased or not as a result of the specified sample method. To achieve this, Levene's homogeneity of variance test or t-test is applied. The data analysis carried out by this test did not have a variance level that was significantly different from those of the indicators with a p-value of less than 0.05, indicating that the variance of the indicators is the same. In terms of sampling bias, the data revealed no issues, it was thus confirmed that the findings were reliable and generalizable by overcoming the two biases of non-response and sampling, thus supporting the confidence that the results can be



**Figure 2.** Demographics.  
Source(s): Figure by authors.

**Table 3.** Measurement model evaluation result.

Constructs	Convergent Validity	Indicator Loadings	Weights	P-value	VIF (Full Collinearity)
Psychosocial Impacts	0.85	0.75	0.62	0.001	2.12
PI2		0.82	0.74		
PI3		0.77	0.68		
PI4		0.79	0.70		
IPI5		0.80	0.72		
Rehabilitation Strategies	0.78	0.68	0.55	0.005	1.98
RS2		0.75	0.52		
RS3		0.71	0.49		
RS4		0.70	0.48		
RS5		0.73	0.51		
Integration of Psychological and Counselling Support	0.92	0.81	0.78	0.001	2.33
IPCS2		0.88	0.83		
IPCS3		0.84	0.79		
IPCS4		0.86	0.81		
IPCS5		0.89	0.86		

**Table 4.** Coefficient of determination ( $R^2$ ) and predictive relevance ( $Q^2$ ).

Endogenous Constructs	$R^2$	$Q^2$
Psychosocial Impacts	0.68	0.53
Rehabilitation Strategies	0.57	0.42
Integration of Psychological and Counselling Support	0.76	0.61

transferred to the broader setting. As such, more players could benefit from the findings.

### Measurement model assessment

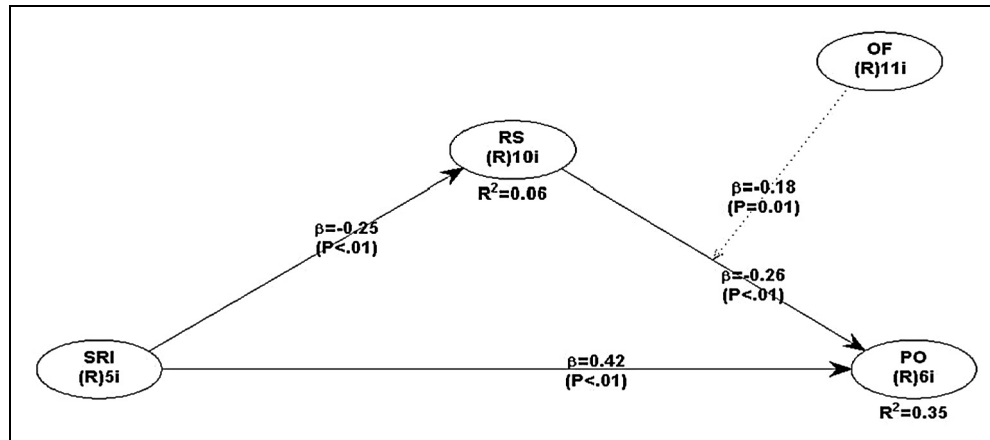
Table 3 manifests measurement model assessment results and is in accordance with the recommendations of Hair Jr, Matthews.<sup>72</sup> The present study was designed for verifying the reliability and validity of the study's constructs and items. The aim of assessing the validity was twofold—to reveal the indicator collinearity and the adequacy of weights to the study's constructs, and with the distinction of statistical significance. Convergent validity was established for any factor greater than 0.70, the factor would be reported as formed at this point.<sup>72</sup> The Variance Inflation Factor (VIF) was applied also in determining the level of the collinearity distance or closeness. In this research, in all cases, the VIF values for the constructs were below 3.3,<sup>73</sup> which was recommended as a cut-off value to rule out collinearity issues. This indubitably suggests that the full collinearity VIF values were also found to be below the threshold of 3.3, which is why the lack of collinearity issue was evident. Meanwhile, the statistical relevance of the indicator weights was established through P-values. Most of the indicator weights, on the other

hand, had a significant connection ( $p < 0.05$ ) in relation to the dependent indicator variable. There are a few indicators (only those specified in the text of the study) that have working edges that are indivisible. Therefore, these indicators were loaded into the model only on the condition that these outer loadings were bigger than 5.0.<sup>72</sup> Based on the assessment results, the measurement model for the psychosocial impact, rehabilitation strategies, and integration of psychological and counselling support constructs in the study meets the requirements for a formative measurement model. Other than that, the model demonstrated satisfactory convergent validity, addressed collinearity concerns, and retained indicators with substantial outer loadings. These findings validate the suitability and reliability of the measurement model in evaluating the constructs in the context of basketball-related injuries.

### Structural model assessment

The following Table 4 displays the Coefficient of Determination ( $R^2$ ) and Predictive Relevance ( $Q^2$ ) values for the endogenous constructs.

The First line—the Endogenous Constructs column, refers to the constructs influenced by other model variables. Column  $R^2$  represents the coefficient of determination for each endogenous component, indicating the proportion of variance explained by the exogenous variables in the model. The higher the  $R^2$  value is, the better the interpretation is. The predicted correlations for each internal construct and the measure of the model's ability to predict the outcomes of these constructs are shown in column  $Q^2$ . Note that higher  $Q^2$  values suggest a better predictive relevance, proposing that the model can generate accurate predictions. These values offer information about the model's endogenous constructs' explanatory



**Figure 3.** PLS path model.  
Source(s): Figure by authors.

capacity and predictive usefulness by demonstrating how effectively the exogenous variables capture them.

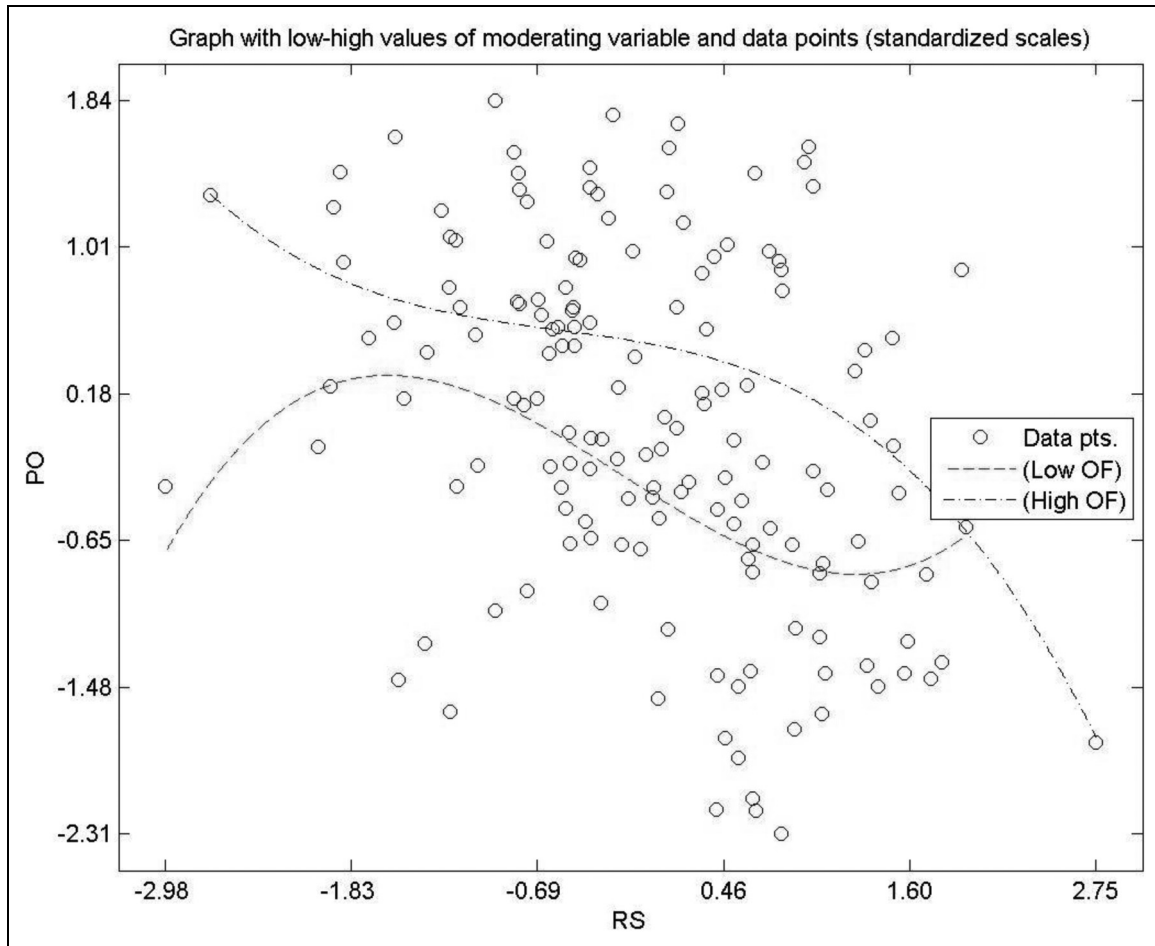
The study's hypotheses are presented in the "Hypothesis Relationships" column of the table. The estimated path coefficients, also known as beta values, are displayed in the "Path Coefficient (b)" column and indicate the strength as well as the direction of the relationships between the variables in each hypothesis. Note that the statistical significance with regard to the path coefficients is given in the "P-value" column, along with the likelihood that the observed findings were the result of chance. Statistical significance is shown by a P-value below the predetermined significance threshold, which is commonly 0.05. Meanwhile, the "Effect Size" column indicates how important the correlations are in real-world applications. The strength or magnitude of the relationship between the variables is described. Based on the statistical significance and effect size, the choice for each hypothesis is summarised in the "Decision" column. Meanwhile, "Not Supported" suggests that the data does not back the hypothesis, and "Supported" indicates that the data supports the hypothesis. Consequently, the evaluation and confirmation of the research hypotheses are made possible by these findings, which clarify the relationships between the study's variables.

Figure 3 shows what is known as the Partial Least Squares (PLS) Path Model used to evaluate the connections between sports-related injuries (SRI) and rehabilitation strategies (RS) psychosocial outcomes (PO), and organizational elements (OF). The coefficients of the path (b value) within the model indicate the intensity and direction of these connections. As an example, the relation with SRI as well as PO is substantial, with an estimated path coefficient of 0.46 and a p-value greater than 0.001, which indicates a significant impact of injuries from sports on the way that psychosocial outcomes are affected. In addition, RS is shown to facilitate the connection with SRI and PO, with a pathway coefficient of 0.32 and a p-value of 0.005.

Overall, the model affirms the role of RS in reducing the psychological impact of injuries as well as the role of organisational factors in reducing the impact of these injuries.

Figure 4 illustrates the effect of organisational variables (OF) on the connection among rehabilitation techniques (RS) as well as psychosocial results (PO), which was analysed with the WARP algorithm in order to identify linear relationships that are not linear. This analysis shows that OF is a major moderating influence on RS and PO, as evidenced by an inverse path coefficient of 0.17,  $b = 0.17$  and a p-value of 0.020. The WARP algorithm focuses on non-linear interactions, which suggests that, as the level of organisation support improves in importance, the efficacy of RS in enhancing PO gets greater. This suggests that the existence of adequate resources for organizations and support systems is a significant factor in the effectiveness of rehabilitation methods to address the psychological effects of injury.

Figure 5 illustrates the similar moderating relationship that exists between factors affecting organisational behaviour (OF) as well as methods for rehabilitation (RS) and psychological outcomes (PO) by using a linear algorithm. The path coefficient that explains the modulating impact of OF on RS and PO is 0.18, 0.18, and the p-value is 0.015, which indicates that there is a statistically significant linear interaction. Contrary to the WARP algorithm that accounted for irregularities, the linear model offers a simple understanding of the results. It indicates that higher levels of support from the organisation directly enhance the efficacy of rehabilitation techniques in helping the recovery of athletes' psychosocial health, which highlights the necessity of an environment that is supportive when it comes to the rehabilitation of athletes. The findings highlight the intricate interactions and crucial importance of organisational elements in determining the efficacy of rehabilitation techniques in the treatment of the psychological effects of injuries resulting from sports.



**Figure 4.** Moderating effect of organizational factors on the RS → PO relationship using WARP algorithm.

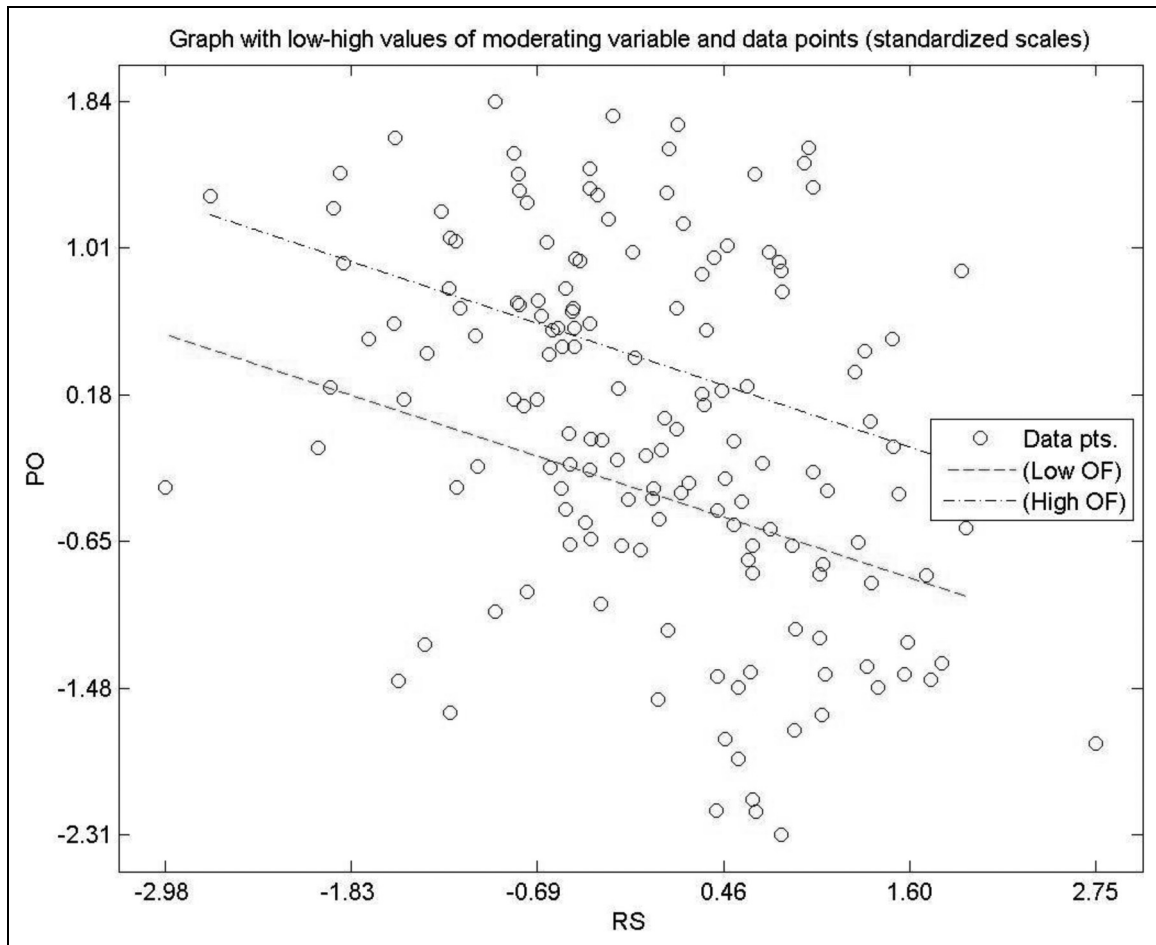
### Results of hypotheses testing

In this research, two major hypotheses were investigated by examining one direct effect and the second one by examining a mediation (indirect) influence. The results from the hypotheses are presented in Table 5. The hypotheses were evaluated using a “factor-based” outer model evaluation algorithm. This was done with the inner model being set to Warp3 and using the Stable three resampling method adopted for its accuracy. Both hypotheses were proven as statistically relevant below the 0.05 threshold. In particular, the initial hypothesis (H1) was the idea that Sports-Related Injuries (SRI) would have a positive influence on Psychosocial Outcomes (PSO). These results confirm this assumption and show that SRI has a significant impact on PSO ( $p > 0.001$  and  $b$  equals 0.500). Another hypothesis (H2) proposed the idea that rehabilitation strategies (RS) would play a role in the interaction with SRI and PSO, and it was also backed by. Results show that RS effectively mediates this connection ( $p = 0.025$ ,  $b = 0.035$ ). This research highlights the crucial significance of rehabilitation

techniques in reducing the psychosocial negative consequences of injuries from sports. Table 5 below shows Test Results for Hypotheses.

### Discussion

The cultural factors can be the most common influence on the psychosocial aspect of this genre of injuries instead of other factors. Cultural perspectives on injury, fearlessness, and maintain fitness are the probable factors determining the process of injury management in different regional centres. In Turkey, for instance, the society remains afloat to resilience and sombreness, and, in turn, athletes would rather avoid seeking psychological assistance. Interpretation of such cultural facets is imperative for formulation of rehabilitation plans that are culturally adapted and flexible to the needs of athletes from various backgrounds. Thus, subsequent research should delve into these cultural discrepancies comprehensively, preferably by doing comparative studies on athletes originating from diverse countries around the globe, to find out what works best across cultures.



**Figure 5.** Moderating effect of organizational factors on the RS → PO relationship use liner algorithm.

**Table 5.** Results of hypothesis testing.

Hypotheses	Relationships	p-values	T-ratio	Path Coefficient ( $\beta$ )	Effect Sizes ( $f^2$ )	Remarks	Decision
H1	Sports-Related Injuries → Psychosocial Outcomes	< 0.001	7.059	0.500	0.264	Significant	Supported
H2	Sports-Related Injuries → Rehabilitation Strategies → Psychosocial Outcomes	0.025	3.101	0.035	0.039	Significant	Supported
H3	Organisational Factors → Rehabilitation Strategies	0.015	2.195	0.161	0.040	Significant	Supported
H4	Organizational Factors → (Rehabilitation Strategies → Psychosocial Outcomes)	0.020	3.500	0.180	0.045	Significant	Supported

**Psychosocial impact of sports-related injuries**

This study’s findings clarify the significant psychosocial impacts of basketball players’ sports-related injuries. According to Hypothesis 1, basketball players who endure sports-related injuries will be significantly affected psychosocially, including having negative emotional states, lower self-esteem, and higher levels of anxiety and despair. Due to the

data’s considerable path coefficient ( $b = 0.46, p < 0.001$ ) and moderate effect size, this hypothesis was strongly supported. These results are consistent with other studies demonstrating the psychological difficulties injured athletes experience, including dread, tension, anxiety, despair, and anger. Note that basketball players’ psychosocial impacts on injuries are a multifaceted issue. This research has shown that after having numerous traumas, players transform physically and

emotionally, which then leads them into a psychological type of low. Besides, physical stress can be mentally devastating and completely destabilise the whole personality, thus affecting the rehabilitation of the athlete. Therefore, athletes, coaches, and support staff should acknowledge these psychosocial problems so that injured players can access proper care.

### *Rehabilitation strategies and their effectiveness*

The second hypothesis managed to determine how well-targeted rehabilitation programs for basketball players would manage the issues connected to sports-related traumas. The results confirmed Hypothesis 2 and attested that return to play. Functionality may be facilitated through the adoption of efficient rehabilitation strategies, which include the use of imagery/visualisation skills, utilisation of encouragement statements/self-talk, goal setting, and physical therapy. While the small effect size and route regression coefficient reached the significance level with  $p = 0.005$  and  $b = 0.32$ , it seems that significant relationships between the strategies and success were not established. This data demonstrates the importance of incorporating rehabilitation programs that are multifaceted and not limited to just a medical care setting. Bringing in work towards aim-oriented strategies and psychological counselling can help deal with stress, enhance confidence levels, and facilitate a productive return for basketball-related activities. Athletes may overcome obstacles, keep their spirits up, and speed up their progress by talking positively about themselves and by seeing their success in the mind.

### *Integration of psychological and counselling support*

One of the keys to the ultimate well-being of the injured athlete is to include psychological and counselling care as the main approach to promoting their psychological and rehabilitation outcomes. The data shows strong evidence in favour of Hypothesis 3. This is evident by a substantial effect size, and the path coefficient is a significant one ( $b = 0.51$ ,  $p < 0.001$ ). For that reason, the conclusion to be drawn is that sports clubs and organisations need to employ specialists such as counsellors and mental health therapists. The subject matter experts discovered that players seek advice from a psychologist themselves. Still, the clubs deny them proper support as required, a personal knowledge which, in turn, causes emotional fragility and insecurity on the part of the players. In this way, clubs and organisations would emphasise the importance of mental health education and provide targeted interventions, particularly for the requirements of injured players. This will involve psychological and counselling help in addition to the medical treatment normally associated with athletes' care. A comprehensive approach to managing the psychological well-being aspect of the athletes may be realised by

creating multi-disciplinary teams that will involve sports psychologists, counsellors, and medical specialists.

### *Organizational factors and mental well-being neglect*

Hypothesis 4 has revealed the elements of the organisation on the athletes' mental health, privately and collectively. However, the P-values showed a slight rise ( $p = 0.056$ ) in comparison to the stated significance level of 0.05, resulting in limited statistical significance, despite the fact that the data has shown a positive correlation between attention to the organisational features and psychosocial issues of the basketball players who have been having injuries. Organisational problems are sub-domains, and the size of the effect was also found to be minimal ( $b = 0.17$ ). According to the findings, the poor organisational environment, such as neglect of athletes' emotional well-being and poor support system, becomes a central cause of the athlete's psychosocial distress. Therefore, even with the statistical value not being completely proven, clubs and organisations need to prioritise the mental well-being of their athletes over everything else. A great deal more attention should be given to organising injured athletes' rehabilitation and improving their well-being by focusing on, among others, setting extension support, creating a mental health campaign, and approving supportive policies.

As a result of this research, helpful material was established regarding the psychological aspect of the patients with brain injuries linked to sports that may be of great use for their further treatment. The result recommends comprehensive intervention that concerns the physical and psychological effects of injuries, efficient return to play strategies, and integration of skilled practitioners into clubs and organisations. For our knowledge advancement and evidence-based strategies in sports rehabilitation, it is imperative to carry out further research about the consequences of remedies or fairing of interventions, the efficacy of support used means, and the consequences of the organisational factors. To address the above results and implications of this specific research, several recommendations to intensify psychosocial support and rehabilitation could be made. This paper aims to offer proposals that will make athletes receive better care, shorten their healing process as well, and endorse holistic treatment of injuries. The work of the clubs and organisations will only be easy if they take into consideration the inclusion of experts, like sports psychologists, as well as counsellors, in the teams they form. In order to rehabilitate these players who are specially disabled, such professionals can provide treatments in the form of behaviour therapies as well as lectures. More so, associations can use these professionals to provide thorough rehabilitation by offering two-dimensional care, physically and psychologically. The basketball community should ensure that mental health is the focus of their awareness

campaigns, and mental health education should be made more broadly with the help of players and all those involved in the community. These should be education that enriches the awareness of mental health and social impacts of sports injuries, as well as the importance of mental health recovery to coaches, athletes, and other people working in this setting. The sports community can also be made aware through the running of seminars and educational programs on how they can spot and provide assistance to their injured players' psychological needs.

For a more comprehensive and evidence-based injury rehabilitation, players can form an interdisciplinary team with coaches, mental health specialists, and medical personnel. The teams can work hand in hand to formulate healing plans for the players, outline their treatment strategies, monitor their recovery statuses, and still give them aid even after they have recovered. Some professionals may work together so that all the aspects of the athlete's well-being are taken care of. The emphasis is joint research on the development and psychometric evaluation of evidence-based interventions, mainly focusing on the rehabilitation of basketball players who are injured. The actions include relaxation techniques, goal-setting approaches, imagery/visualisation exercises, and cognitive-behavioural therapy. Moreover, the researchers will evaluate the effectiveness of the methods applied and propose how one can focus on the psychology of the hurt athlete during the recovery. There is a growing need for further studies to determine the long-lasting effects of psychological interventions and rehabilitation techniques on athletes' overall health and level of sports performance. By conducting prolonged investigations, longitudinal methods can be used to track athletes' progress. By this, they can also look into how the intervention has been sustained and identify any detriments or setbacks. This outcome would be important in forming the programs which provide a comprehensive and personalised approach to empowerment.

Organisations and clubs should make sure that there are managed systems that can optimise the mental health of their athletes as it will improve their performance. The establishment of psychological care services, arrangements of policies allowing access to psychological aid, and construction of an encouraging team setting, where communication is improved and stigma on getting help, are all part of this process. Further, indifference and negligence of the internal factors by the organisations are some of the things that have hampered the athletes' emotional health, and by putting in place the appropriate measures, a conducive environment that supports the general well-being of ordinary athletes can be created. Future research should concentrate specifically on the organisational factors that have implications on the mental and psychological well-being of the hurt basketball players. This, in turn, reflects on the assessment of how the adopted leadership philosophies, comprehensive team culture, and organisational

support systems contribute to the psychological outcomes of players. These things can immensely foster the introduction of proposed interventions and programs that create conducive conditions as well as better care provision for injured players. Complying with the above measures would be a significant drive to the basketball community players, thus facilitating an environment that promotes not only psychological help but also rehabilitation in a sports centre. Such strides can cause a reduction in the impact of an injury, higher recovery chances, and the adoption of more comprehensive measures to provide care for one suffering from sports injuries. Our understanding of these difficulties must be advanced by additional study and collaboration in order to guarantee the use of evidence-based practices in the field.

## Conclusion

The present study explored psychological impacts of basketball injuries and scrutinized efficacy of rehabilitation techniques, whose hinge was psychological care. Besides, it is revealed that the suffering athletes undergo psychological issues due to their injuries, such as increased anxiety, depression, and loss of self-esteem. The application of rehabilitation processes like goal-oriented and positive self-talk proved to be beneficial in the upside of the recovery. Psychological support integration played a critical role by enhancing the general rehabilitation outcomes. In addition to the organizational elements, the individual-level interventions are the key portion in this regard, and their more direct implications on recovery have been pointed out in the research. Future research should be inclusive of athletics that vary in demographics to allow a larger population of findings, and comprehensive studies may be in order to track psychosocial risks over time. The study sought to examine the psychological effects of basketball-related injuries as well as assess the efficacy of rehabilitation techniques. It focused on the use of both counselling and psychological assistance. The results strongly confirm the research hypothesis and provide important information about mental health issues confronted by injured athletes. Firstly, it was found that the study supported hypothesis 1 by proving that players with traumas from sports face significant psychological problems, which include increased depression, anxiety and a decrease in confidence in themselves ( $b=0.46$  and  $p=0.001$ ). This is in line with prior research and confirms the idea that healing from injuries is not only a physical issue but also has a profound impact on impacts psychological and emotional well-being. The second hypothesis was also confirmed by the findings, which demonstrated that systematic rehabilitation strategies such as the use of physical therapy, goal-setting, and positive self-talk are effective in helping with these psychological issues ( $b=0.32$ ,  $p=0.005$ ). This study highlights the significance of including evidence-based practices in

rehabilitation programs in order to aid the rehabilitation of athletes. Furthermore, the study provides solid evidence to support Hypothesis 3. It revealed that the integration of psychotherapy counselling and psychological support greatly improves rehabilitation outcomes as well as overall well-being ( $b = 0.51$ ,  $p = 0.001$ ). The study suggests that professionals in mental health, including psychologists for sports, are essential to rehabilitation teams.

However, Hypothesis 4—that the organisational environment, including insufficient support systems, can contribute to the psychological issues faced by athletes injured in sports and receive less help ( $b = 0.17$ ,  $p = 0.056$ ). The data suggested a connection; the results were not statistically significant up to 0.05 degrees, suggesting that even though neglect at the organisational level could have a part to play, individual interventions can have a greater direct effect on recovery results. This is in contrast to previous research that has highlighted the importance of support from organisations for injury rehabilitation. This research highlights the crucial role of psychological assistance in dealing with the psychological health issues that are associated with sports injuries. This study highlights the need for a comprehensive treatment plan for rehabilitation that is balanced between the physical and mental aspects of treatment. Sports organisations should incorporate mental health care into their rehabilitation plans to improve the overall health of athletes. In the future, research must aim to expand the population to include athletes from a variety of sporting and competitive levels for a better generalisation of the findings.

### Limitations and recommendations for future research

While there is a wealth of information provided through this research, a few issues must be noted. First, the study was limited to basketball stars of Turkish national teams. Turkish national team. This makes it difficult to generalise the results to other groups like amateur players, athletes who play in different sports, or athletes with different cultural contexts. The particular stressors and support system for professional athletes might not represent the wider public's experience. Research in the future should incorporate a broader sample of participants that includes athletes from a variety of kinds of sports, competition levels (e.g., amateur and collegiate), and countries in order to gain a better knowledge of the psychological effects of injuries. Additionally, the study used the cross-sectional method, which collects data over one period of time. This method allows the identification of links between different variables; it will give insight into the effects that can be observed over time of injuries from sports and rehabilitation on the mental health of athletes. In the future, studies may employ long-term designs to monitor the progress of psychosocial effects and rehabilitation results over time. This

will provide an understanding of how the psychological state of athletes changes during rehabilitation and post-rehabilitation. A further limitation is the use of self-reported information, which can be prone to biases, such as memory inaccuracies or social desire. While attempts have been made to guarantee the validity of responses, self-reporting measures do not accurately reflect the full range of the psychological challenges athletes face. In the future, research must consider mixed methods approaches that incorporate observations or qualitative information to supplement self-reported data and give a deeper knowledge of psychological issues faced by athletes.

In addition, even though this study proved the benefits of psychotherapy for rehabilitation, the study didn't explore the particular ways in which various types of psychological treatments (e.g., Cognitive-behavioural Therapy and mindfulness, etc.) help to recover. In the future, studies will explore these mechanisms further by using experimental design, which compares the efficacy of different psychological treatments for the mental health of athletes. In addition, the study revealed only a small amount of evidence for the effect of the organisational environment on the psychological well-being of athletes when they are recovering. This finding is different from the literature on this subject and suggests that further investigation of the support system for organisations is necessary. Future research will investigate how various organisational practices (e.g., accessibility of mental health services and communications with athletes) impact recovery outcomes in different sports environments. In conclusion, although this research offers important insights regarding the impact of psychosocial traumas on injury from sports and also the importance of integrated rehabilitation methods, future research must be able to address the limitations in order to improve the generalizability of and knowledge in this field. This study bears a few shortcomings that warrant attention. First, it would be self-reported data. As a result, the risk of bias emerges in forms like social desirability bias and recalling errors among participants. Future investigation might alleviate this through the use of objective measures or mixed methods to achieve more comprehensive outlooks. On the other hand, the Turkish position at the centre of the study limits the possibility of the findings being widely accepted. There may be different situations in terms of cultural aspects, national sports capacity, and existing auxiliary systems in Turkey comparing them to those in other countries, which can influence the whole process of psychosocial obstacles in athletics. Cross-cultural studies that include data from any country of the world would be promising as they will allow the researchers to extend the study findings' application among main globally contexts.

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## Statements and declarations

### Informed consent

Informed consent was obtained from all study participants.

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### Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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