Psychosocial Factors Associated With Lower Extremity Reinjury Risk in Soccer Players: Contribution of Self-Confidence and Reinjury Anxiety

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Context: Despite the availability of specialized assessment tools, psychological readiness is usually not considered when deciding to return to sport (RTS) after sport injury. Reinjury anxiety, self-confidence, and functional attention may be associated with sport reinjury, making it important to evaluate these factors before RTS.

Objective: To predict lower extremity reinjury in soccer players using self-confidence, functional attention, and reinjury anxiety as predictive variables.

Design: Prospective cohort study.

Setting: Laboratory.

Patients or Other Participants: Sixty-two male soccer players, who were older than 18 years of age, suffered from lower extremity injuries, had completed the rehabilitation program, and were ready to RTS.

Main Outcome Measure(s): Before returning to the sport, participants completed a preseason questionnaire on their previous injuries, self-confidence, reinjury anxiety, and level of functional attention. The primary outcome measured was the risk of reinjury during the upcoming competitive season, and logistic regression was used to calculate odds ratios (ORs)

with 95% confidence intervals (CIs) to determine the association between each risk factor and reinjury.

Results: The overall reinjury rate was 5.56 injuries per 1000 hours of play. Self-confidence scores of \leq 47 increased the risk of reinjury by 2.26 times (relative risk = 2.26; 95% CI, 1.31–3.91; OR = 5.00; 95% CI, 1.56–16.04), and each unit increase in self-confidence score reduced the risk of reinjury by 10% (OR = 0.90; CI, 0.82–0.99; *P* = .03). Regarding reinjury anxiety, a score of >22 was associated with 2.43 times the risk of reinjury (relative risk = 2.43; 95% CI, 1.44–4.13; OR = 6.46; 95% CI, 1.93–21.69), and each unit increase in reinjury anxiety score increased the risk of injury by 45% (OR = 1.45; CI, 1.13–0.87; *P* = .004).

Conclusions: Increased reinjury anxiety and decreased self-confidence are associated with higher odds of lower extremity reinjury in male soccer players. To reduce the risk of reinjury, athletic trainers and sport psychologists should take these psychological factors into account when evaluating the psychological readiness of soccer players with a history of lower extremity injury to RTS.

Key Words: psychological skills, fear of reinjury, return to sport, injury rehabilitation

Key Points

- Soccer players with a self-confidence score of 47 or lower have 2.26 times higher risk of lower extremity reinjury.
- For each unit increase in self-confidence score, the risk of lower extremity reinjury is reduced by 10%.
- Having a reinjury anxiety score greater than 22 corresponds to 2.43 times higher risk of lower extremity reinjury in soccer players.
- Each unit increase in the anxiety score is associated with a 45% increase in the risk of lower extremity reinjury.

S occer, a globally popular sport played in over 200 countries, faces a significant issue with lower extremity injuries, with estimated sport injury rates ranging from 2.3 to 29.9 per 1000 hours of activity and prevalence rates from 30.7% to 81.8%.¹⁻⁴ Around 60% to 85% of these lower extremity injuries are classified as time loss injuries, which occur when a player sustains a physical complaint during a

soccer match or training session, preventing them from fully participating in soccer activities at any time after the onset of sport injury.³ Previous studies have identified various risk factors for lower extremity injuries, leading to the implementation of biomechanical and neuromuscular-focused interventions.^{5,6} However, the success of these interventions may be inconsistent, potentially because psychological risk factors are not

adequately addressed, and they can amplify biomechanical risk factors and compensatory movement patterns, ultimately leading to reinjury after returning to sports.^{5–9} Therefore, giving equal consideration to both physical and psychological readiness during rehabilitation and return to sports (RTS) decisions can be crucial because they are separate constructs that may not align, and the latter can sometimes be a more potent predictor of reinjury.^{10–12} It is possible that a significant proportion of reinjuries could be linked to inadequate psychological readiness and premature RTS after the initial sport injury, which can be prevented by identifying and targeting these psychological factors.

Based on the integrated model of psychological response to injury, a sport injury is a stressor that initiates a process in which athletes appraise both the nature of the sport injury and their ability to cope with it.^{13,14} These appraisals can lead to different cognitive, emotional, and behavioral reactions that influence the risk of reinjury.¹⁴ However, despite the availability of specialized tools, psychological readiness to RTS is often not evaluated in practice, and physical parameters are given more attention.^{15–19} Although there is currently no fully accepted operational definition of psychological readiness to RTS, it is usually a psychological state associated with a low level or absence of potential barriers (eg, reinjury anxiety) and the presence of facilitating dimensions (eg, self-confidence, functional attention, and motivation).¹⁴

Reinjury anxiety, defined as concern about the possibility of the injury recurring after return to regular physical activity, is an emotionally challenging response that can negatively affect the process of returning to sport after injury.^{18,20} Reinjury anxiety, which is a major concern for injured athletes aiming to return to competitive sports, can manifest in cognitive symptoms like impaired concentration and negative thoughts as well as physical symptoms such as nausea and tension.^{8,12,20} This anxiety shifts the athlete's attention toward the injured area, hindering the processing of relevant cues that could prevent reinjury, including physical sensations, body movements, environmental factors, or specific actions, particularly in situations resembling the circum-stances of the initial sport injury.^{12,21} Moreover, reinjury anxiety interacts with physiological and attentional factors, resulting in heightened muscle tension, narrowed visual field, and increased distractibility, thereby influencing an individual's risk of sports reinjury. To the best of our knowledge, there is only 1 study that has explored the predictive potential of reinjury anxiety in sports-related injuries during a competitive season, but it had limitations such as including athletes from diverse sports disciplines and not tracking reinjuries throughout the entire season.²²

Self-confidence is a key component of psychological readiness to RTS after a sport injury.²³ Research indicates that self-confidence in the injured area tends to increase during the rehabilitation process, and athletes with high self-confidence are more likely to return to the sport and achieve optimal performance levels quicker than those with low self-confidence.^{11,12,23} A lack of self-confidence may contribute to reinjury through tentative performance or hesitancy, resulting in poor performance, decreased coordination, increased muscle tension, and technical distractions.^{13,21} In addition, a previous study showed a negative association between the probability of sport injury and reinjury anxiety with self-confidence level.²⁴ Moreover, it appears that some researchers

argue that reinjury anxiety can reduce confidence in the injured area, resulting in overly cautious performance that in turn amplifies doubts, impairs coordination, increases muscle tension, and ultimately raises the risk of reinjury.^{21,25} Therefore, the assessment of self-confidence is necessary in all stages of rehabilitation, especially when returning to sport, and it can be considered an indicator of psychological readiness to RTS following a sport injury.²⁵

Attention is the cognitive process that enables us to direct our cognitive resources toward relevant stimuli and respond to them.²⁶ Evidence suggests that attention is a predictor of good performance, whereas decreased attention and increased distraction can lead to poor performance and an increased risk of reinjury.²⁷ When returning to play after a sports injury, the injury itself can act as a stressor, leading to a narrowing of peripheral vision and a delayed response to crucial cues in the central field of vision. This heightened stress response increases the risk of reinjury and adversely affects players' performance.^{27,28} Reinjury anxiety can also decrease attention to performance-related cues and increase distractibility, undermining athletic performance and increasing the risk of reinjury.¹⁸ Focusing attention on the sensations of the injured area can cause athletes to ignore external relevant cues, emphasizing the importance of evaluating the athlete's selective attention when returning to sports after an injury.¹⁵

Psychological factors are increasingly being recognized as critical determinants of an athlete's ability to RTS after an injury. As per the consensus statement on issues of RTS, psychological readiness has been identified as 1 of the 8 basic criteria for the clearance of injured athletes to RTS.²⁹ However, there is still a lack of strong scientific evidence on this issue.³⁰ Therefore, the objective of this prospective study was to investigate whether self-reported psychological variables, such as self-confidence, functional attention, and reinjury anxiety, can predict the occurrence of lower extremity time loss reinjury among soccer players after returning to sport in the next season. Identifying these potential risk factors for sport reinjuries is crucial for designing effective prevention programs, as they can be modified.³¹ The hypothesis is that the scores of these selfreported psychological variables at the time of returning to sport can significantly predict the risk of lower extremity time loss reinjury during the subsequent season.

METHODS

This study was designed as a prospective cohort study that examined psychological readiness as a predictor of lower extremity reinjury among soccer players after RTS. Data were collected through an online/electronic survey during 1 soccer season from November 2020 to August 2021. This prospective cohort study was approved by the Sports Science Department of Sport Science of Shahrood University of Technology (IR.SHAHROODUT.REC.1401.023). All participants signed an informed consent form, and all procedures were performed following the Declaration of Helsinki.

Participants

Our study participants consisted of 62 injured soccer players who were recruited through flyers and posters in the soccer clubs, physiotherapy clinics, and online advertisements placed on pages of soccer groups (eg, Telegram,

out a weekly registration form to record this information, which was then sent to the researcher through communication tools. Any sport injury that occurred after the index injury during the study period was recorded as a subsequent injury. A sports injury was defined as "any physical complaint arising during a soccer match or training, leading to the player's absence from the next training or match session."³ When an injury was reported, the researcher contacted the player or coach to confirm the reported details such as injury location, type, mechanism, and severity. The location of injuries was recorded using the 6 categories listed by Fuller et al,³ which include hip/groin, thigh, knee, lower leg, ankle, and foot/toe for the lower extremity. In addition, the injury severity was determined by calculating the number of days elapsed from the injury date to the date of the player's return to full participation in regular training

sessions or match play, and it was categorized as *minimal* (1 to 3 days), *mild* (4 to 7 days), *moderate* (8 to 28 days),

and severe (>28 days).³ Match exposure time was also cal-

culated by adding up the effective time played by each

player, whereas training exposure time was calculated by

the time each player spent training.³ Injury incidence was

calculated as the number of injuries per 1000 hours of soc-

cer (training + matches), injuries per 1000 hours of train-

ing, and injuries per 1000 hours of matches.³ If any

information was missing or unclear, coaches were con-

tacted to rectify the data during the season.

subsequent injuries. Coaches or players themselves filled

WhatsApp, and Instagram) of Shiraz and Bushehr province from August to December 2020. The sample size was calculated based on the need for a minimum of 10 injuries for logistic regression, a reinjury incidence of soccer players of 18.8%, and a minimum of 54 participants for a likelihood of 30% dropout, resulting in an initial recruitment of 70 soccer players.^{32,33}

To qualify for participation in this study, individuals had to be male soccer players aged 18 years or older, engaged at a competitive level, and had experienced a lower extremity injury, specified as "any physical complaint sustained by a player during a soccer match or training session, leading to the player receiving medical attention."³ Furthermore, participants were required to have completed medical care (surgical or conservative therapy) in a public or private clinic and had received approval from a sport medicine specialist, physiotherapist, or athletic trainer to RTS.

Study Procedure

Participants completed 3 online forms, designed using Google Form, which were sent to the participants using various communication tools such as WhatsApp, Telegram, Instagram, and email. The first electronic link provided information on the research criteria, instructions for completing questionnaires, and an informed consent form. Once consent was given, participants completed a questionnaire on personal characteristics, soccer profiles, and the characteristics of their index injury. The second form was sent when the attending physician had approved the participant to RTS and included 4 questionnaires: injury-psychological readiness to RTS (I-PRRS), reinjury anxiety inventory (RIAI), and attention questionnaire of rehabilitated athletes returning to competition.^{15,16,18}

The I-PRRS is a scale with 6 items that measure the selfconfidence of injured athletes to RTS. The items are scored on an 11-point Likert scale, ranging from 0 to 10, with a higher score indicating greater confidence to RTS. The Cronbach's α reliability coefficient was 0.93 after sport injury, 0.92 before training, 0.78 before the competition, and 0.80 after the competition.¹⁶ The RIAI is a scale consisting of 28 items with 2 subscales: reinjury anxiety regarding rehabilitation and reinjury anxiety regarding RTS. In this study, only the reinjury anxiety regarding the RTS subscale, which has 13 items, was used. The items are scored on a 4-point Likert scale, ranging from 0 to 3, with a higher score indicating higher reinjury anxiety. The Cronbach's α reliability coefficient for reinjury anxiety regarding returning to sport was 0.96.18 The attention questionnaire of rehabilitated athletes returning to competition is a scale consisting of 10 items with 2 subscales: functional attention and distraction attention. The functional attention subscale has 7 items, whereas the distraction attention subscale has 3 items. The items are scored on a 7-point Likert scale, ranging from 1 to 7, with a higher score indicating greater attention. The Cronbach's a reliability coefficients for the functional attention and distraction attention subscales were 0.95 and 0.84, respectively.¹⁵ The scales were administered to the injured athletes 1 day before returning to training.

Follow-Up Survey

Throughout 1 season, soccer players were monitored to record their exposure time (hours of participation) and

Statistical Analysis

The results of the study were presented as means \pm standard deviation. Univariate logistic regression analysis was initially performed to determine possible associations between each independent variable and soccer reinjury as the dependent variable. Variables with a P value of less than .20 in the univariate analysis were selected for inclusion in the multivariable logistic regression model with backward elimination. Multicollinearity was tested by examining the variance inflation factor (VIF) to establish the assumption of no multicollinearity among the independent variables. The VIF values for self-confidence, reinjury anxiety, functional attention, and distraction attention were 1.05, 1.01, 1.03, and 1.06, respectively. These values indicate the absence of multicollinearity effects, as a previous study suggests that multicollinearity is typically present when VIF values are higher than 5 to 10.³⁴ The odds ratio (OR) for each risk factor was calculated with 95% confidence intervals (CIs) in both univariate and multivariate analyses. The predictive validity of the I-PRRS and RIAI scales was assessed using receiver operating characteristic (ROC) curve statistics and the Youden index. All statistical analyses were performed using SPSS IBM version 26 with a significance level of .05.

RESULTS

Index Injury

The study initially involved 70 soccer players, but 8 were excluded due to incomplete data or withdrawal from the soccer team. Data from the remaining 62 soccer players were analyzed, and it was found that 32.2% had a history of an ankle injury, 27.3% had a thigh injury, 14.5% had a

Table 1. Comparing Personal Characteristics and Psychological Variables Between Injured and Reinjured Soccer Players

	Injured ($n = 43$)	Reinjured ($n = 19$)	t	<i>P</i> Value
Variables	Mean \pm SD	$Mean \pm SD$		
Age, y	25.8 ± 4.8	26.2 ± 5.2	0.23	.81
Weight, kg	70.7 ± 6.2	69.3 ± 4.3	0.93	.35
Height, m	1.79 ± 0.1	1.78 ± 0.1	1.11	.27
Body mass index, kg/m ²	21.9 ± 1.1	20.2 ± 1.0	0.24	.80
Number of training sessions per week	3.9 ± 0.6	4.0 ± 0.5	0.56	.60
Training time per week, h	7.0 ± 1.7	6.3 ± 1.2	1.6	.14
Self-confidence to return to sport (0–60 points)	49.1 ± 6.0	45.4 ± 5.9	2.3	.03ª
Functional attention (7–49 points)	37.3 ± 3.2	36.5 ± 3.0	1.0	.33
Distraction attention (3–21 points)	7.7 ± 2.1	8.7 ± 2.1	1.8	.08
Reinjury anxiety (0-39 points)	20.7 ± 2.2	22.8 ± 2.7	3.3	.002ª

Abbreviation: SD, standard deviation.

knee injury, 11.3% had a lower leg injury, 9.7% had a hip/ pelvic injury, and 4.8% had a foot and toe injury. The most common injury types were muscle strains, ligament sprains, overuse complaints, and tendon injuries, whereas fractures, dislocation/subluxations, nerve injuries, and hematoma/contusions were less common. The study also revealed that 35.5% of the participants had experienced a severe injury with a mean absence of 49.5 \pm 12.6 days, 46.8% had experienced a moderate injury with a mean absence of 16.2 \pm 4.6 days, and 17.7% had experienced a mild injury with a mean absence of 5.1 \pm 1.0 days. The characteristics of the soccer players, divided into injured and reinjured groups, are presented in Table 1.

Reinjury

During the follow-up period, 30.6% of the soccer players (19 players) reported a lower extremity reinjury, with 42% of the reinjuries occurring during training and 58% occurring during matches. The overall reinjury rate during 3416 hours of soccer participation was 5.56 injuries per 1000 hours of play, with a reinjury rate of 3.21 injuries per 1000 hours of training and 11.83 injuries per 1000 hours of matches. The most common injury locations were ankle (26.3%), thigh (21.0%), knee (21.0%), and hip/pelvic (15.8%), whereas the most common injury types were muscle strains (31.6%), ligament sprains (15.8%), overuse complaints (15.8%), tendon injuries (15.8%), and hematoma/contusions (5.2%). Fractures, dislocation/subluxations, and nerve injuries were less common. Severe injuries represented 21.0% of all reinjuries, moderate 31.6%, mild 21.0%, and slight 26.3%.

Table 1 compares personal characteristics and psychological variables between injured and reinjured soccer players. It was found that self-confidence and reinjury anxiety were significantly different between injured and reinjured players (P < .05). However, other variables such as age, weight, height, body mass index, number of training sessions per week, and training time per week were not significantly different between injured and reinjured soccer players (Table 1).

Table 2 presents the results of univariate logistic regression analysis for self-confidence, functional attention, distraction attention, and reinjury anxiety on the risk of lower extremity reinjury. It was found that increasing self-confidence was associated with a reduction in the odds of lower extremity reinjury (OR = 0.90; CI, 0.82–0.99, P = .03), whereas increasing reinjury anxiety was associated with an increase in the odds of lower extremity reinjury (OR = 1.45; CI, 1.13–0.87; P = .004). The analysis further revealed that for each unit increase in self-confidence, the risk of lower extremity reinjury decreased by 10% (from 1% to 18%), whereas for each unit increase in reinjury anxiety, the risk of lower extremity reinjury increased by 45% (from 13% to 87%).

A multivariable logistic regression model with backward selection was used to analyze the variables that had a *P* value of <.20. The results indicated that the model was statistically significant ($\chi^2(2) = 15.51$, *P* < .001). The model explained 31.2% (Nagelkerke *R*²) of the variance in lower extremity reinjury and correctly classified 74.2% of cases (Figure).

Receiver operating characteristic analysis was conducted for reinjury anxiety and self-confidence to determine optimal cutoff values for differentiating between injured and reinjured soccer players. The analysis found that a cutoff value of >22 for RIAI provided optimal differentiation

Table 2. Results of Univariate Logistic Regression Analysis for Injured and Reinjured Soccer Players

Variables	В	Wald	Odds Ratio (95% CI)	<i>P</i> Value		
Self-confidence to return to sport	-0.10	4.67	0.90 (0.82–0.99)	.03ª		
Functional attention	-0.09	0.96	0.92 (0.77-1.10)	.33		
Distraction attention	0.23	3.02	1.26 (0.97-1.63)	.08 ^a		
Reinjury anxiety	0.37	8.32	1.45 (1.13–1.87)	.004 ^a		

Abbreviation: CI, confidence interval.

^a *P* < .05.

^a P < .05.



Figure. Receiver operating characteristic (ROC) curve analysis for lower extremity reinjury risk scores. The ROC analysis was conducted to determine the predictive validity of the (A) Reinjury Anxiety Inventory and (B) Injury-Psychological Readiness to Return to Sport scales and the optimal cutoff reinjury risk score, assigning the risk of lower extremity reinjury as a state variable.

between injured and reinjured soccer players (73% sensitivity, 72% specificity, and area under the curve = 0.74). Athletes above this cut point had a 2.43 times higher risk for lower extremity reinjury (relative risk = 2.43; 95% CI, 1.44–4.13; OR = 6.46; 95% CI, 1.93–21.69). Similarly, for I-PRRS, the ROC analysis showed that a cutoff value of \leq 47 provided optimal differentiation between injured and reinjured soccer players (68.4% sensitivity, 67.4% specificity, and area under the curve = 0.68). Athletes above this cut point had a 2.26 times higher risk for lower extremity reinjury (relative risk = 2.26; 95% CI, 1.31–3.91; OR = 5.00; 95% CI, 1.56–16.04).

DISCUSSION

The purpose of the study was to investigate whether selfreported psychological variables such as self-confidence, functional attention, and reinjury anxiety can predict lower extremity reinjury in soccer players after RTS during the next soccer season. This study found that the overall reinjury rate was 5.56 injuries per 1000 hours of play, with muscle strains being the most common injury type and ankle, thigh, and knee being the most common locations of injuries. The study also revealed that self-confidence scores of <47 increased the risk of reinjury by 2.26 times, and each unit increase in self-confidence score reduced the risk of reinjury by 10%. Similarly, reinjury anxiety scores of >22 were associated with 2.43 times the risk of reinjury, and each unit increase in reinjury anxiety score increased the risk of injury by 45%. The study concluded that these 2 indicators of psychological readiness to RTS predict 34.7% of reinjuries in soccer players with a history of lower extremity injuries.

The reinjury rate in this study is similar to that observed in previous studies on elite and amateur soccer players.^{33,35} Consistent with the present study, Hägglund et al found that the reinjury rate for elite soccer players was 3.72 and for amateur players was 4.36.³³ However, the reinjury rate was higher in this study (30.6%) than in previous studies (10.5% to 18.8%).^{33,35} This difference may be attributed to the higher percentage of soccer players who had a history of moderate to severe injury in this study (82.3%) than in previous studies (41.8% to 54%), which increases the risk of lower extremity reinjury.^{33,35} Given that psychological rehabilitation, supervised by a psychologist or licensed athletic trainer, can effectively reduce the risk of reinjury by targeting psychological factors such as fear, anxiety, selfconfidence, and inadequate coping strategies, the absence of such rehabilitation in the present study may justify the increased risk of lower extremity reinjury.^{10,13,14,31} This study also found that ankle injuries were the most common among reinjured players, consistent with the findings of Welton et al.³⁵ Ankle injuries with ligament sprain often heal with residual laxity, making them more prone to reinjury. However, appropriate prevention strategies can help reduce ligamentous ankle injuries, and further optimization and utilization of these techniques are necessary.

This study's findings of associations between selfconfidence, reinjury anxiety, and reinjury are consistent with prior research demonstrating that fear of movement, self-confidence, and psychological readiness to RTS are predictors of reinjury after anterior cruciate ligament (ACL) reconstruction in young athletes.⁹ However, in contrast to the results of the present study, Piussi et al concluded that greater psychological readiness to RTS and knee-related self-efficacy may be associated with an ACL rerupture within 2 years of the primary reconstruction.³⁶ Nevertheless, the study's retrospective design hinders the establishment of a causal relationship because it is impossible to determine whether the actual RTS leads to higher scores on the ACL-RSI (a psychological readiness inventory specifically related to ACL reconstruction) or if patients with higher ACL-RSI scores are more inclined to RTS. Furthermore, it is still uncertain whether patients with higher psychological readiness to RTS had an increased risk exposure. Our study findings further support the idea that positive psychological responses, including motivation, self-confidence, and functional attention, are associated with greater success in returning to preinjury levels of participation and faster RTS in athletes who undergo ACL reconstruction, whereas negative psychological responses such as reinjury anxiety have a negative effect on returning to preinjury levels of performance.^{11,12} However, all of these studies solely included patients who had undergone ACL reconstruction, thereby not addressing the aspect of injury experience.^{11,12} Despite lower extremities accounting for more than 70% of soccer injuries, none of these studies were specifically designed to investigate whether self-

tailored to address these psychological factors. However, current rehabilitation programs primarily prioritize the restoration of physical function, often neglecting the essential aspect of psychological readiness for RTS.¹⁹ Thus, it is crucial to incorporate a specific psychological approach within physical rehabilitation programs to address reinjury anxiety and augment athletes' self-confidence. Using psychological strategies such as mindfulness, relaxation, positive self-talk, goal setting, and counseling can effectively enhance athletes' self-confidence and mitigate reinjury anxiety, consequently reducing the risk of reinjury among soccer players.^{30,37} However, further research is needed to develop successful strategies to address psychological factors as part of rehabilitation after lower extremity injuries in soccer players. This study also discovered that the I-PRRS and RIAI scales can effectively differentiate between individuals who experienced a lower extremity reinjury and those who did not. An I-PRRS score of <47 and an RIAI score of >22 were identified as the cutoff points that optimize both sensitivity and specificity. Previous studies have shown that the I-PRRS is a reliable and valid tool for evaluating an athlete's psychological readiness to RTS in both injured athletes and those undergoing ACL reconstruction.^{16,17} Regarding the RIAI scale, Walker et al reported a high internal consistency value ($\alpha = 0.96$) that accounted for 80.6% of the total variance of reinjury anxiety in injured

reported psychological variables, such as self-confidence,

functional attention, and reinjury anxiety, can predict lower

extremity reinjury in soccer players after returning to sport

in the next season.⁴ Therefore, this study's findings offer

initial evidence of the predictive capacity of psychological

indicators such as reinjury anxiety and self-confidence for

lower extremity reinjury in soccer players. This study's

findings suggest that high self-confidence and low reinjury

anxiety are necessary for athletes' psychological readiness

to resume competitive activities without the risk of reinjury

in the next season. Therefore, reinjury anxiety and self-

confidence should receive more attention in the clinical setting, and rehabilitation programs should be thoughtfully

athletes.¹⁸ Although these studies report the validity and reliability of these tools, no study has yet determined a cutoff point for using them to predict lower extremity reinjury in soccer players. As argued in a consensus statement by a panel of experts, these scales can help clinicians in evaluating athletes' psychological readiness to RTS.¹⁹ Therefore, by using quantitative indicators like these scales, data collection can be streamlined, empowering sports psychologists, athletic trainers, and sports medicine professionals to screen athletes at risk of injury, guide treatment plans, and track athletes' progress over time. Athletic trainers and other related professionals can use these cutoff scores as red flags to identify athletes who may be at risk of reinjury and subsequently provide strategies to target these unfavorable psychological responses. Hopefully, these strategies will contribute to improving patients' overall readiness to RTS, but more research is needed to clarify what the strategies should comprise. It should also be noted that presented cutoff points for male soccer players with lower extremity injuries may not be applicable to other samples with different characteristics, emphasizing the need for further research to gain a comprehensive understanding in various contexts.

The interpretation of the results of the present study can be limited by a small sample size and the study's sample consisting only of male soccer players. This limits the generalizability of the results to other demographics, including female soccer players and those not returning to soccer. Additionally, the participants underwent different rehabilitation programs and were not under the same supervision and rehabilitation procedures, which could affect the results. The current study did not measure established risk factors for lower extremity injury, such as biomechanical and neuromuscular factors, which could have mediated the relationship between psychological factors and lower extremity injury risk. Future research should consider testing various lower extremity injury risk factors in combination to identify which measures are most sensitive in predicting lower extremity reinjury risk.

CONCLUSIONS

This study revealed that male soccer players who had higher reinjury anxiety (measured using RIAI) and lower self-confidence (measured using I-PRRS) were more likely to experience lower extremity reinjury. Therefore, it is crucial for clinical settings to prioritize reinjury anxiety and self-confidence and design tailored rehabilitation programs that address these psychological factors. This study also determined that an I-PRRS score cutoff point of <47 and an RIAI score cutoff point of >22 accurately discriminated between male soccer players who experienced lower extremity reinjury and those who did not. As a result, athletic trainers and sport psychology practitioners can use these cutoff points as indicators to identify soccer players at risk of lower extremity reinjury and provide them with specific strategies to reduce reinjury anxiety and enhance self-confidence.

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