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ORIGINAL ARTICLE

The effect of mental fitness on reducing persecutory thinking among athletes in selected track events

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ABSTRACT

The present study aimed to examine the effect of mental fitness on reducing persecutory thinking among athletes in selected track events, as well as to develop and validate measurement scales for both variables within a sport-specific context. A descriptive correlational research design was adopted. The research population consisted of male track and field athletes aged 15–17 years from sports clubs in Baghdad during the 2024–2025 competitive season, with a main application sample of 95 athletes. Two scales were constructed for the purposes of the study: a Mental Fitness Scale and a Persecutory Thinking Scale, each comprising 20 items and demonstrating satisfactory validity and reliability indices. Descriptive findings indicated that the athletes exhibited a high level of mental fitness and a low level of persecutory thinking. Inferential analyses revealed a strong, statistically significant inverse relationship between mental fitness and persecutory thinking. Simple linear regression analysis confirmed that mental fitness was a significant negative predictor of persecutory thinking, accounting for a substantial proportion of variance in maladaptive cognitive perceptions related to mistrust and perceived injustice. These results suggest that athletes with higher levels of cognitive regulation, attentional control, and adaptive thinking are less likely to develop negative interpretations of social interactions within the sports club environment. The study underscores the importance of mental fitness as a protective psychological factor in competitive sport and highlights the value of incorporating structured psychological skills training programs to enhance athletes' mental fitness and psychological well-being.

Keywords: Physical activity psychology, Mental fitness, Persecutory thinking, Track and field athletes, Sport psychology, Cognitive regulation.

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INTRODUCTION

Psychological dimensions like these have been drawn increasing attention in sports sciences because, as they play a stabilizing role of athletes' performance, their resilience and psychological health. In addition to physical and technical-tactical readiness, athletes' cognitive dimension, in the way that athletes deal with competitive stress or how they successfully relate to others in sport scenarios, also greatly affects (Currie et al., 2021; Rice et al., 2016). In this regard, mental fitness has been considered more and more as a central construct including athletes' abilities to control their thoughts and themselves under pressure (stress) and to stay cognitively flexible in stressful situations; hence, during such conditions they would also easily take good decisions under stress (Gucciardi et al., 2017; Hackfort & Klöppel, 2020).

Psychological functioning including attentional/cognitive control, emotion regulation, reflection and problem-solving is related to mental well-being. Higher mental fitness of athletes is related to higher levels of resilience, increased capability to focus and better coping abilities for evaluation feedback and competition-induced stressors (Siekańska et al., 2021; Bicalho et al., 2020). These cues in both the training and competitive settings, not only make it easier to perform on an athletic arena but also enable better psychological adaptation and social integration. The empirical evidence in applied sport psychology suggests that structured activities based on mental imagery and cognitive training may improve specific motor performance such as the accuracy of decisions made by young athletes (Abdulkareem & Ali Hassan, 2025). This is consistent with the findings of previous study showing that formalized mental training exercises can promote psychological hardiness and adaptive personality traits, such as those used in coping with competitive pressure and psychological demands, among adolescent athletes (Hassan & Abdulkareem, 2025).

On the other hand, dysfunctional cognitive patterns can harm athletes' psychological functioning. Persecutory ideation, an example of such a pattern, is characterized by longstanding beliefs that they are being unfairly victimized, singled out or deliberately injured by others. In current cognitive models, paranoid thinking is imagined as a continuum of thought from mild suspiciousness to chronic persecutory belief (Freeman, 2016; Horita, 2021). Persecutory thinking in sports may be strengthened by social comparison, unfairness perceptions, selection demands, and coach–athlete conflict emerging as negative affect or social withdrawal (Combs et al., 2013).

There is empirical evidence to suggest that cognitive vulnerabilities such as reduced cognitive flexibility and poor reappraisal are involved in the origin and maintenance of persecutory beliefs (Freeman, 2016). Sport psychological solutions to these vulnerabilities involve the enhancement of mental fitness such that improved cognitive control and adaptive thinking support balanced interpretations of social interactions and performance-related feedback (Gupta et al., 2022). Nonetheless, the research on such areas as mental fitness and maladaptive cognitive processes has been increasing, individual associations between these constructs have not been studied in-depth within sport populations.

This deficiency is even more evident when examining track and field athletes, who are subject to great competitive pressure, individual responsibility and performance control. These situational factors could contribute to enhanced vulnerability for maladaptive thinking patterns but may also emphasize the need of mental fitness for keeping psychological balance (Reardon et al., 2023). Furthermore, there is a marked dearth of reliable and valid psychometrics that are available specifically designed to assess mental fitness and persecutory thinking in the context of sport, particularly in athletes from non-Western contexts (Opree et al., 2018).

The construction of sound measurement instruments is a requirement for evidence-based testing and intervention in the field of sport psychology. Strong psychometrical tools allow for the detection of cognitive risk factors, psychological monitoring and personalized mental training programs specifically tailored to improve resilience and mitigate maladaptive thinking (Gupta et al., 2022; Siekańska et al., 2021).

Accordingly, the present study aimed to (1) develop and validate scales measuring mental fitness and persecutory thinking among athletes in selected track events, (2) determine the levels of these constructs within the study sample, and (3) examine the relationship and predictive effect of mental fitness on persecutory thinking. It was hypothesized that mental fitness would be significantly and negatively associated with persecutory thinking, such that higher levels of mental fitness would contribute to lower levels of persecutory cognitive tendencies among track athletes.

METHODS

Research design

The design used in the present research was descriptive research with correlational analysis aiming at explaining a relationship and predicting power between mental fitness and persecutory thinking among track and field athletes. When there was no physical modification, this design has been deemed suitable for the study of psychological variables in the absence of experimental manipulation.

Participants

The current study was conducted on all male track athletes participating in running events (100, 200, 400 and 800 m races) and from different sports clubs in Baghdad for the season of 2024–2025. The final sample comprised 206 athletes between ages 15 and 17 years who had trained for a period of time of between 5 and 6 years. A census sample design was used, with the entire available population.

The sample was divided into three sub-samples according to the objectives of the study:

- Pilot sample: 6 athletes (2.9%) selected randomly to test the clarity and feasibility of the measurement tools.
- Scale construction sample: 105 athletes (51.0%) selected randomly to establish the psychometric properties of the two scales.
- Main application sample: 95 athletes (46.1%) selected randomly for the final application and hypothesis testing.

Ethical approval

The study was conducted in compliance with the ethical guidelines of scientific research and received approval from the Scientific and Ethical Committee of the College of Physical Education and Sports Sciences, University of Baghdad. The involvement was voluntary and all athletes provided written consent before data collection. All respondents were guaranteed that their confidentiality was strictly protected and data were solely used for research purposes.

Instruments

Mental fitness scale

The development of the Mental Fitness Scale was needed because no scales for track and field were available. The questionnaire consisted of 20 items that were created to assess cognitive regulation, attentional control and decision-making as well as adaptive thinking in both training and competition situations. Responses were scored on a three-point scale (3 = Always, 2 = Sometimes, 1 = Does not apply),

and higher scores indicate greater mental fitness. The scores could range from 20-60, assuming a hypothetical Mean of 40, as shown in Table 1.

Table 1. Mental fitness scale for track and field athletes.

No.	Item statements
1	I avoid rushing to express my opinion in situations I encounter at the sports club.
2	I focus my thinking on factors that contribute to success in training and competition tasks at the sports club.
3	I am able to continuously train my mind to develop perception in response to various situations I face at the sports club.
4	I can train my mind to understand viewpoints that differ from my own at the sports club.
5	I am able to express my point of view with humility at the sports club.
6	I find it easy to recall thoughts that support coping with challenging situations at the sports club.
7	I direct my senses toward the most important stimuli related to situations I encounter at the sports club.
8	I show readiness to listen attentively to different opinions at the sports club.
9	I am aware of properly performing each task assigned to me at the sports club.
10	I find it easy to deal with solutions to my problems at the sports club.
11	I activate my thinking to compensate for forgetting the coach's instructions at the sports club.
12	I listen carefully to all instructions provided by the coach at the sports club.
13	I respect the opinions of my fellow athletes at the sports club and do not interrupt them.
14	I continuously develop my thinking to respond effectively to various situations at the sports club.
15	I am able to define my future goals within the Table 1 Table 1e sports club.
16	I make sure not to rush when making decisions at the sports club.
17	I mentally prepare myself to receive information related to various situations at the sports club.
18	I organize information about different situations in my memory at the sports club.
19	I remain alert to the tasks required by the current situation at the sports club.
20	I pay attention to evaluating my decisions at the sports club.

Persecutory thinking scale

The Persecutory Thinking Scale was also developed to measure sense of injustice, distrust and hostility in the sport club setting. A 20-item scale was used and rated according to the three-point Likert scale. Increasing scores indicated greater persecutory thinking, with a possible total score of 20–60 (hypothetical mean = 40) as shown in Table 2.

Table 2. Persecutory thinking scale for track and field athletes.

No.	Item statements
1	I constantly feel that coaches evaluate my training performance unfairly at the sports club.
2	I feel that fate alone is what brought me to this sports club.
3	I believe that everyone at the sports club is hypocritical.
4	I perceive sincerity as completely absent within the sports club.
5	I believe that noble values are gradually disappearing within the sports club.
6	I feel that my fellow athletes at the sports club were imposed on me by circumstances.
7	I believe that the sports club exploits me without justification.
8	I feel that my fellow athletes hold negative assumptions about me at the sports club.
9	I feel that my fellow athletes attempt to control my decisions at the sports club.
10	I feel that fairness is lacking among athletes at the sports club.
11	I feel that my fellow athletes mock or ridicule me at the sports club.
12	I believe that my fellow athletes seek to hinder my success at the sports club.
13	I feel rejected by my fellow athletes at the sports club.
14	I feel a lack of trust toward my fellow athletes at the sports club.
15	I feel that the smiles of my fellow athletes at the sports club are insincere.
16	I believe that the sports community within the club is entirely deceitful.
17	I believe that my coach deliberately undermines my value at the sports club.
18	I believe that the sanctions imposed on me by the club are unjust.
19	I believe that justice is merely a word with no real meaning at the sports club.
20	I feel that my achievements are not respected at the sports club.

Scale development and validation

Item discrimination was tested via the extreme group's strategy comparing upper and lower 27% of the scores in participants. Analysis revealed that for all items, of the strategy and the persecutory thinking scale, there was a significant difference between groups with t-values ranging from 2.82 to 15.10 (p <. 001). The internal consistency was checked using the item–total correlation and coefficients of ranging from .49 to .82 for the Mental Fitness Scale, .49 to .90 for the Persecutory Thinking Scale, which suggests adequate homogeneity of items for both of scales. Reliability The Cronbach's alpha coefficients of the reliability estimates were. 858 for the Mental Fitness Scale. Enclitic and 0.866 for the Persecutory Thinking Scale, with high internal reliability. Inspection of normality on the score distribution yielded satisfactory levels of skewness (0.10 for Mental Fitness and 0.27 for Persecutory Thinking), thus confirming that the data satisfied assumptions underlying subsequent parametric testing.

Data collection procedures

Upon completion of the validation, the final versions of both scales were administered to the main sample (n = 95) at their respective club centres between December 15 and January 9. In both groups, participation was voluntary and athletes were explained the purpose of the study before data collection. All participants were given an informed consent form before collecting the data.

Statistical analysis

Statistical calculations were performed by the use of Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics (means, SDs and percentages) were calculated. Inferential analyses comprised independent-sample t-tests, one-sample t-tests, Pearson correlation coefficients and simple linear regression analysis regarding the association and predictive role of mental fitness with persecutory thinking. The threshold level of significance was at $p \leq .05$.

RESULTS

As in Table 3, we can see that the athletes are highly mentally fit because their scores were higher than the hypothetical mean. In contrast, persecutory thinking was low, with scores below the sample mean. This trend seems to mean that the athletes have developed overall effective cognitive and adaptive mental regulations, having a little feeling of injustice, suspicion or hostility in sports club environment.

Table 3. Comparison of the observed mean with the hypothetical mean for the study variables.

Scale	Total Score	Hypothetical Mean	Mean	SD	Mean Difference	t	Sig.	Significance
Mental fitness	60	40	52.99	3.956	12.989	32.005	<.001	Significant
Persecutory thinking	60	40	33.79	1.637	−6.211	36.986	<.001	Significant

Note. Measurement unit = score. Differences were tested using a one-sample t-test (df = 94). Statistical significance was set at p ≤ .05.

Table 4. Simple linear regression results between mental fitness and persecutory thinking.

Predictor	Outcome	Sample Size (n)	Pearson's r (R)	R^2	Contribution (%)	Standard Error of Estimate
Mental fitness	Persecutory thinking	95	.901	.811	80.9	.715

Table 4 The relationship between mental fitness and persecutory thinking among the track and field athletes The Results showed that there was a significant correlation between those two. The sign of this relationship is such that greater mental fitness is related to lower levels of persecutory thinking. The present results

emphasize the role of state mental fitness as a fundamental psychological factor associated with healthier cognitive appraisals and less negative attributions to social interactions in sports.

As shown in Table 5, the result validates that the simple linear regression model developed in this study is suitable and statistically reasonable. The large goodness-of-fit statistics suggest that the model adequately fits the data on the mental fitness-persecutory thinking relations. This is supportive of the employment of mental fitness as a predictor variable for explaining mental health differences in persecutory thinking among athletes.

Table 5. Goodness-of-fit test for the simple linear regression model.

Predictor	Outcome	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.	Significance
Mental fitness	Persecutory thinking	Regression	204.308	1	204.308	400.169	<.001	Significant
		Error	47.482	93	0.511			

Note. The F-value was statistically significant at $p \leq .05$, indicating good model fit.

The regression calculated values in Table 6 suggest that mental fitness has a strong negative impact on persecutory thinking. This suggests that improvements in mental fitness play a meaningful role in the reductions of maladaptive cognitive processes that are associated with such perceived injustice and mistrust. The results highlight the fact that mental fitness plays a protective role in achieving psychological equilibrium and cognitive stability under competitive sports conditions.

Table 6. Regression coefficients for the effect of mental fitness on persecutory thinking.

Outcome variable	Predictors	β (Beta)	SE	t	Sig.	Significance
Persecutory thinking	Constant	53.538	.990	54.083	<.001	Significant
	Mental fitness	−0.373	.019	20.004	<.001	Significant

Note. Regression coefficients were tested at $p \leq .05$.

DISCUSSION

The current study showed that athletes who specialized in some track events had high mental fitness and low persecutory thinking, and the predictive power of mental fitness on persecutory thinking is significantly negative. These results suggest that high cognitive regulation, attentional control and positive thinking can serve a protective psychological factor against maladaptive social-cognitive interpretations in sport.

The athletes' superior mental fitness might be attributed to the nature of track and field training, which involves concentration, self-control, goal-directed thinking and constant monitoring of performance. Such cognitive demands are found to even promote executive functioning and cognitive flexibility, which are thought to lower the risk of experiencing distorted interpretations of interpersonal events (Klein et al., 2018). If an athlete can control his attention and assess situations without bias, then he is less likely to perceive ambiguous input from coaches or teammates as hostile or unfair.

Consistent with cognitive models, which predict that individual's ability to regulate and interpret emotion will lead to a reduction in paranoid thinking, the low level of persecutory thinking observed in this study resonates well with such models. Cognitive flexibility facilitates thinking about alternative causes to social events, thus reducing the tendency of assigning negative intentions to others (Bentall et al., 2012). This could account for the fact that athletes high on mental fitness experienced less perception of injustice, mistrust or hostility in their sport club.

The inverse association between mental fitness and paranoid thinking contributes to theoretical models in cognitive psychology and sport psychology which take a focus on the contribution of mental skills to social cognition. Social perceptual disorganization, excessive suspiciousness and thought disturbance have been related to cognitive dysfunction (Freeman et al., 2002). Therefore, the present results suggest that mental fitness is associated with not only performance but also social coping and adaptive response to a competitive environment.

Furthermore, with respect to persecutory ideation, mental fitness also showed substantial amount of variance; therefore, has predictive validity as well. This is also consistent with previous research that has shown psychological skills training involving changing one's cognitive bias (e.g., reappraisal), goal-setting, and attentional focus can reduce maladaptive cognitive biases and enhance emotional control (Gross, 2015; Nicholls et al., 2016). Athletes who are cognitively prepared for ambiguity and emergence will be better equipped to manage the requirements of performance pressure, social complexity in competitive sport.

From an environmental perspective, the club-level climate has a significant impact on athletes' cognitive evaluations. Research on the coach–athlete relationship indicates that perceived fairness, trust, and good communication result in less negative attributional style among athletes (Jowett & Shanmugam, 2016). As a consequence, the low level of persecutory thinking observed in the present sample could possibly be accounted for either by supportive club environments or/and by some kind of attenuation related to mental fitness on relational stressors.

This study's findings also have important practical implications. Considering that mental fitness is a modifiable psychological variable, interventions to improve attentional control, cognitive flexibility and emotion regulation could probably lead toward reduction of persecutory thinking among athletes. Cognitive-bias modification and mindfulness-based training have effectively decreased maladaptive interpretation biases and increased mental well-being (see Cristea et al., 2015). The inclusion of such methods in standard training regimes may benefit athletic performance, and mental health.

However, the study has certain restrictions. The correlational nature of the design means that causal inferences cannot be made, we require longitudinal or experimental research to establish whether increasing mental fitness indeed has a lasting impact on persecutory ideation. Moreover, the sample was limited to male adolescent athletes within a particular culture, which may limit the generalizability of results. Subsequent studies should be conducted in various age ranges, female athletes and sports components as well as with intervention designs.

Practical implications

Coaches and sport psychologists may benefit from implementing structured mental-skills training (attentional control, cognitive reappraisal, goal-directedness, and brief mindfulness) throughout regular training cycles while applying relationship-related practices that communicate a sense of justice and respect. Such systemic and individual -level approaches are likely to enhance not only performance-relevant cognitive processes, but also reduce maladaptive social-cognitive tendencies among athletes

CONCLUSIONS

The results of the current study suggest that the athletes in selected track events have a high mental fitness as well as low level of persecutory ideation. This finding is indicative of the capacity for efficient cognitive

processing and adopted skilful thinking habits among the athletes, which in turn seem to be associated with healthy psychological functioning within a sports club context.

Results also provide further evidence for a strong inverse association between mental fitness and persecutory ideation, indicating that the former could be a prominent predictor of reduction in maladaptive cognitive appraisals. Those athletes with greater levels of Mental Fitness reported that appraisals of their social accountant ability and of the evaluative situation were less likely to be perceived as threatening or unfair.
The present study generally reiterates the significance of mental fitness for prevention at highly competitive levels. Increased sports psychological fitness might then not only improve athletic mastery but contribute to good mental health and positive social cognition in the athletes.

Recommendations

From these results, coaches and sport psychologists should have an interest in the mental fitness of their athletes, imparting them formal psychological skills training programs. Such interventions should focus on improving attentional control, cognitive flexibility and adaptive decision making.

Taking method for the prevention of cognitive disfunctions in athletes by looking at psychological monitoring of mental and persecutory thinking also, intermittent periodic checking on mental health and persecutory thinking can be a significant tool to establish cognitive health as well as early detection of their maladaptive theories. Thus, establishing supportive and fair training environments could decrease negative appraisals along with foster of psychological need satisfaction in athletes.

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No potential conflict of interest was reported by the author.

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