

Personality, Mental Skills, and Aggression among Male Handball Players Competing at the 38th National Games: A Study of Their Interrelationships

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ABSTRACT

Athletes' ability to control their emotions, maintain focus, make decisions, and react to the pressures of competition is influenced by psychological traits. This study examined the psychological profile of 40 male handball players aged 18–29 years who participated in the 38th National Games of India, Uttarakhand, with emphasis on personality, mental skills and aggression. A descriptive cross-sectional design was employed using purposive sampling. Personality, aggression and sport-related mental skills were assessed using the Big Five Inventory, Sports Aggression Inventory and Ottawa Mental Skills Assessment Tool (OMSAT-3), respectively. The findings indicated relatively higher openness and agreeableness, moderate-to-high levels of several foundational mental skills, and comparatively stronger confidence and competition planning, while focusing and fear control were relatively lower. Aggression was moderate, with substantial individual variability across psychological characteristics. The findings support individualised psychological skills training rather than uniform interventions. Future research should examine larger and more diverse samples, longitudinal changes, playing-position differences, and associations between psychological characteristics, objective performance indicators and competitive outcomes.

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Keywords: Handball, personality, Big Five, mental skills, aggression, OMSAT-3, sport psychology, national-level athletes.

1. Introduction

Competitive handball is a fast-paced team sport marked by repeated high-intensity actions, rapid transitions between attack and defence tactical decision-making and uninterrupted interaction among players. (Differences in game-based performance by playing position in young elite male team handball players, 2025, pp. 45-56) Success requires not only physical fitness and

technical competence but also the psychological ability to maintain concentration, manage competitive pressure, regulate emotional responses and execute tactical decisions under time constraints(Costa & McCrea, 1992; York, 2012)(Psychological Factors in Elite Sports Performance, n.d.)

The psychological dimension of sport has therefore become an important area of sport

science. Athletes participating at higher competitive levels are exposed to performance standards, selection pressures, demanding training schedules and the psychological consequences of success and failure. Individual personality differences may sway how athletes respond to these situations, while psychological skills can ascertain how effectively athletes translate physical and technical capabilities into competitive performance ([Goldberg, 1993](#); [McCrae & Costa, 1997, 2003](#)).

Personality is commonly conceptualised through the Five-Factor Model, comprising extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. Recent research suggests that personality is meaningfully associated with performance; however, the strength and direction of these relationships vary according to the sport and performance context. A recent meta-analysis reported positive relationships between athletic performance and conscientiousness and extraversion, while emphasising heterogeneity across sports and performance measures

([Goldberg, 1993](#); [Graziano & Eisenberg, 1997](#)).

Mental skills constitute a significant aspect of competitive functioning. Skills such as goal setting, confidence, commitment, stress control, relaxation, fear control, focusing, imagery, competition planning, mental practice and refocusing can help athletes in preparing for and responding to competitive demands. The OMSAT-3* was developed specifically to evaluate a broad range of sport-related mental skills. Its 48 items are grouped into 12 scales within three broader components: foundation, psychosomatic and cognitive skills ([Costa & McCrae, 1992](#); [York, 2012](#)). The initial validation research demonstrated acceptable psychometric characteristics and evidence that the measure could distinguish competitive and elite athletes ([Lucas et al., 2018](#); [McCrae & Costa, 2003](#)).

Aggression is also significant to handball because the sport involves frequent physical contact, competition for possession and rapid interpersonal interactions. Importantly,

aggression in sport should not automatically be considered equivalent to violent or maladaptive behaviour. Competitive intensity may coexist with controlled and task-oriented responses, whereas poorly regulated aggression may negatively influence decision-making, sportsmanship and team functioning ([Goldberg, 1993](#); [John & Srivastava, 1999](#)).

Despite the growing body of research on psychological characteristics in sport, comparatively fewer studies have examined personality, mental skills and aggression simultaneously within a national-level Indian handball context. Examining these characteristics together can provide a more comprehensive psychological profile of players and may assist practitioners in designing individualised interventions.

2. Purpose of the Study

The purpose of the study was to develop a psychological profile of male handball players participating in the 38th National Games of India.

Specifically, the study sought to:

1. Examine the personality characteristics of male handball players;
2. Assess their sport-related mental skills
3. Examine their aggression profile.

3. Methodology

3.1 Research Design and Participants

A descriptive cross-sectional research design was employed to examine the psychological characteristics of male handball players during their participation in the 38th National Games of India, held in Uttarakhand. The sample comprised 40 male handball players aged 18–28 years, representing different states and actively participating in their respective teams. Participants were selected using purposive sampling. They were approached with the assistance of coaches and team managers during available practice or free periods. Participation was voluntary, and confidentiality of individual responses was maintained. Background

information, including age, state representation, playing experience, playing position, and participation- and achievement-related details, was also recorded.

3.2 Psychological Measures

Three standardised psychological measures were used to assess personality, aggression, and sport-related mental skills.

Big Five Inventory (BFI). The Big Five Inventory was used to assess five broad personality dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness. The instrument provided a structured assessment of individual differences across these major personality domains.

Sports Aggression Inventory (SAI). Aggression was assessed using the Sports Aggression Inventory, comprising 25 positively and negatively keyed items (John & Srivastava, 1999). The study reported reliability and validity evidence for the instrument, and the resulting scores were used to characterise participants' aggression profiles. This manuscript does not reproduce the questionnaire items to avoid reproducing copyrighted test content.

Ottawa Mental Skills Assessment Tool (OMSAT-3). We assessed sport-related mental skills using the Ottawa Mental Skills Assessment Tool (OMSAT-3). The instrument evaluates 12 mental skills across three broad domains: foundation skills, psychosomatic skills, and cognitive skills (Costa & McCrea, 1992; York, 2012). Foundation skills include goal setting, self-confidence, and commitment; psychosomatic

skills include stress control, relaxation, fear control, and energising; and cognitive skills Confidence include focusing, imagery, competition planning, mental practice, and refocusing

4. Data Collection Procedure

Data were collected from the participating players during the National Games Duration. The researchers approached players in coordination with team coaches. Participants were informed about the purpose of the study and the voluntary nature of participation.⁷

Questionnaires were administered under conditions intended to provide sufficient privacy for individual responses. The researcher maintained confidentiality of the responses and used the collected information for research purposes.

4.1 Data Collection and Analysis

Data were collected from the participating athletes during the period associated with the 38th National Games. The participants completed the psychological measures under appropriate conditions, following instructions provided for each instrument. Descriptive statistical procedures were employed to summarise the psychological characteristics of the sample, including measures of central tendency, dispersion, and standardised score ranges. The analysis focused on describing patterns across personality traits, mental skills, and aggression rather than establishing causal relationships (McCrae & Costa, 1997).

RAW SCORE

S.No.	AGGRES SION	EXTRA VERSION	AGREEA BLENES	CONSCIE NTIOUS NESS	NEUROTI CISM	OPENNE SS	GOAL SE TING	CONFIDE NCE	COMMIT MENT	STRESS_C ONTROL	RELAXAT ION	FEAR_C ONTROL	ENERGIZ ING	FOCUSIN G	IMAGERY	COMPETI TION PLAN NING	MENTAL PRACTICE	REFOCUS ING
1	25	23	29	27	24	29	16	16	18	16	18	13	16	16	21	16	16	15
2	9	26	40	36	17	38	19	24	21	11	21	11	23	12	23	21	13	18
3	13	32	43	41	8	38	28	25	25	13	16	7	28	7	16	28	10	10
4	17	30	25	35	18	30	23	25	27	9	14	6	25	15	21	26	2	2
5	13	29	32	37	38	38	25	26	27	6	18	8	22	5	19	21	17	18
6	11	33	22	28	25	6	13	4	5	5	5	5	5	5	5	5	5	5
7	12	21	27	22	21	34	13	13	13	12	15	13	11	14	17	13	14	14
8	14	23	28	30	24	34	16	12	17	12	16	15	11	18	17	18	15	15
9	20	28	29	29	23	22	28	28	28	28	28	26	28	28	28	28	28	28
10	19	24	26	24	21	22	12	14	19	10	19	17	16	18	11	10	11	11
11	16	37	34	39	13	17	25	26	27	10	23	10	25	10	20	24	23	23
12	15	32	35	34	20	44	22	24	22	17	22	18	20	22	21	24	24	24
13	12	23	27	24	30	16	16	16	16	15	16	15	16	16	16	16	16	16
14	9	20	31	39	34	17	21	23	20	14	14	10	10	10	10	10	10	10
15	12	35	38	38	21	36	25	23	22	18	19	13	24	7	17	23	16	16
16	16	27	43	41	9	41	17	23	20	14	20	13	22	19	20	19	19	19
17	23	24	32	25	20	34	20	21	19	19	20	14	14	17	22	17	14	14
18	24	24	32	30	26	33	19	21	15	18	16	21	16	17	18	16	18	18
19	12	27	32	25	25	38	19	19	16	13	11	16	15	15	18	21	17	17
20	9	18	37	30	31	32	20	19	12	19	10	18	10	12	15	19	15	17
21	11	24	40	27	30	36	20	18	15	19	17	23	16	20	24	22	24	24
22	11	29	42	44	13	45	26	27	24	6	22	4	25	6	27	24	25	4
23	11	30	39	33	19	36	24	23	24	21	23	20	21	18	19	23	21	21
24	14	28	36	24	23	34	18	19	19	23	22	13	23	19	23	13	17	18
25	15	28	27	30	26	12	20	16	20	10	13	13	17	23	19	21	18	18
26	14	29	40	41	13	47	25	28	27	12	24	11	28	6	25	28	28	18
27	13	25	37	35	31	37	22	22	23	16	21	13	24	15	22	19	20	20
28	14	27	25	24	22	34	9	14	17	13	17	12	15	14	15	13	19	19
29	8	25	33	35	21	36	14	11	16	13	17	15	19	19	17	15	15	15
30	16	29	35	35	16	30	22	24	23	12	18	11	19	10	17	21	24	24
31	11	29	34	31	29	40	19	15	19	20	17	15	19	17	16	19	19	19
32	14	24	41	22	35	24	25	26	16	17	23	16	27	6	23	24	17	17
33	13	22	29	27	12	30	16	16	16	16	16	15	16	16	16	16	16	16
34	13	25	30	26	24	33	17	19	18	20	18	20	18	19	18	17	20	20
35	13	29	39	38	19	36	25	26	28	16	17	9	25	10	23	27	12	12
36	15	27	27	24	10	16	16	16	16	16	16	16	16	16	16	16	16	16
37	15	23	33	29	25	36	16	16	16	16	16	16	16	16	16	16	16	16
38	12	26	42	35	18	38	24	26	25	21	23	24	24	24	24	24	24	24
39	9	22	28	26	10	26	14	15	15	17	14	14	12	15	16	15	15	15
40	9	22	34	25	25	34	15	18	15	15	18	14	17	17	18	18	17	17

5. Statistical Analysis

Descriptive statistical techniques were used to summarise the psychological profiles of the participants. Mean, standard deviation, minimum and maximum values were examined for the major variables (John & Srivastava, 1999).

Standardised scores were also considered to identify the extent of individual variation within the sample.

6. Results

6.1 Aggression Profile

The mean aggression score of the 40 players was 13.82 (SD = 4.06). Scores demonstrated substantial individual variation, with standardised scores ranging from -1.44 to 2.75 (John & Srivastava, 1999; McCrae & Costa, 1997).

Table 1. Descriptive statistics for aggression

Variable	N	Mean		SD	Standardized range
Aggression	40	13.82		4.06	-1.44 to 2.75

The overall mean suggests a moderate level of aggression, while the broad standardized range indicates meaningful differences among individual players.

The findings should therefore not be interpreted as evidence that all players displayed the same psychological response pattern.

6.2 Personality Profile

Descriptive results for the five personality dimensions are presented in Table 2.

Table 2. Big Five personality characteristics of male handball players

Personality Dimensions	Mean	SD	Minimum	Maximum
Extraversion	26.30	3.98	18	37
Agreeableness	33.63	5.44	25	43
Conscientiousness	31.50	6.05	22	44
Neuroticism	21.93	5.83	8	34
Openness	35.03	5.15	22	47

Among the five personality dimensions, openness recorded the highest mean score (35.03 ± 5.15), followed by agreeableness (33.63 ± 5.44) and conscientiousness (31.50 ± 6.05).

Extraversion had a mean score of 26.30 ± 3.98 , while neuroticism recorded a mean of 21.93 ± 5.83 (Roberts et al., 2005).

The findings indicate that the players did not present a uniform personality profile. Considerable dispersion was observed across the dimensions, particularly conscientiousness and neuroticism.

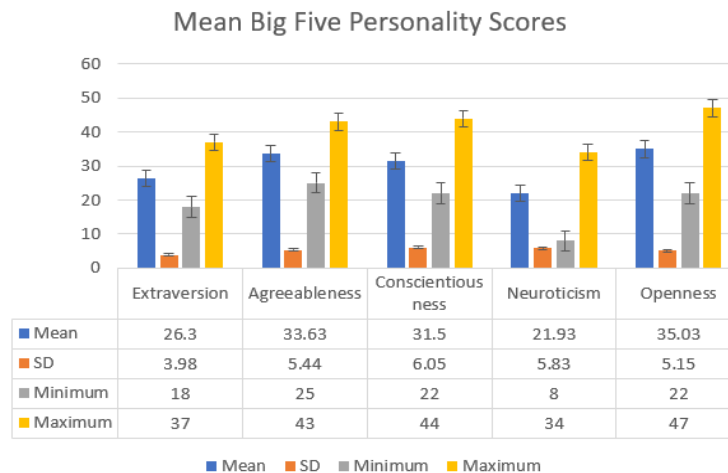


Fig. 1 Mean Big Five personality scores (n = 40).

Error bars represent standard deviations.

The pattern shown in Figure 1 indicates relatively higher mean scores for openness and agreeableness compared with the other measured personality dimensions.

6.3 Mental Skills Profile

The descriptive statistics for the 12 OMSAT-3 mental skills are presented in Table 3.

Table 3. Descriptive statistics for mental skills

Mental skill	Mean	SD	Minimum	Maximum
Goal setting	19.25	5.19	6	28
Confidence	20.48	4.68	12	28
Commitment	19.50	5.11	4	28
Stress Control	15.33	5.00	6	28
Relaxation	17.89	4.11	6	28
Fear Control	14.60	5.07	4	28
Energizing	18.65	5.62	6	28
Focusing	14.40	5.58	5	28
Imagery	18.93	4.45	4	28
Competition Planning	19.58	4.74	9	28
Mental Practice	18.90	4.92	6	28

Refocusing	16.80	4.82	4	28
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Confidence produced the highest mean score (20.48 ± 4.68), followed by competition planning (19.58 ± 4.74), commitment (19.50 ± 5.11) and goal setting (19.25 ± 5.19).

In contrast, focusing (14.40 ± 5.58) and fear control (14.60 ± 5.07) produced comparatively lower mean scores.

The results indicate that the sample possessed relatively stronger skills related to confidence, planning and commitment, while attentional control and fear regulation may represent areas where additional psychological preparation could be beneficial.

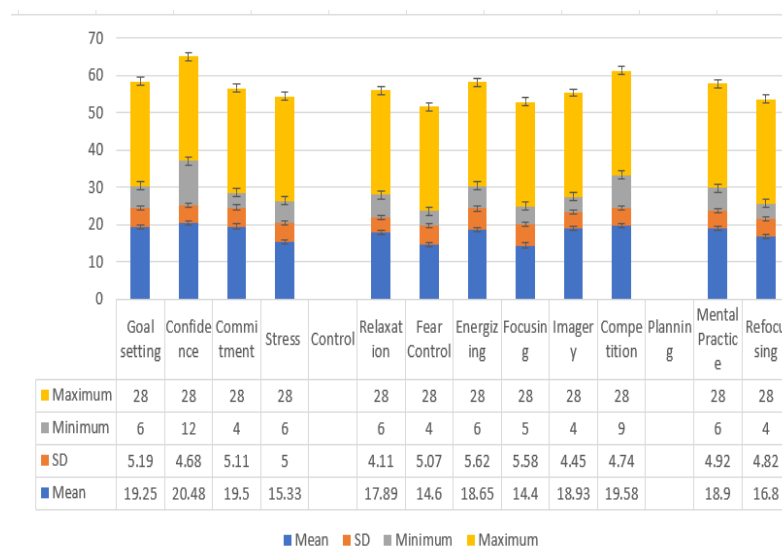


Fig. 2 Mean OMSAT-3 mental skill scores (n = 40).

Error bars represent standard deviations.

6.4 Standardized Score Variation

To further examine individual differences, standardised score ranges were reviewed across aggression, personality and mental-skill variables.

Table 4. Standardized score ranges

Variable	Maximum Z- Score	Minimum Z-Score
Aggression	2.75	-1.44
Extraversion	2.69	-2.09
Agreeableness	1.72	-1.58
Conscientiousness	2.07	-1.57
Neuroticism	2.07	-2.39

Openness	2.33	-2.53
Goal Setting	1.69	-2.55
Confidence	1.61	-1.81
Commitment	1.66	-3.03
Stress Control	2.53	-1.86
Relaxation	2.44	-2.91
Fear Control	2.25	-2.09
Energizing	1.66	-2.25
Focusing	2.44	-1.69
Imagery	2.04	-3.36
Competition Planning	1.78	-2.23
Mental Practice	1.85	-2.62
Refocusing	2.32	-3.36

The standardised scores reveal substantial individual differences. Particularly wide ranges were observed for imagery, commitment, relaxation, goal setting and mental practice.

The lowest standardized score was observed for imagery (-3.36), whereas the highest positive standardised score was observed for aggression (2.75) (John & Srivastava, 1999).

These values support the interpretation that psychological characteristics vary considerably between athletes even when they compete within the same sport and at the same competition level.

7. Discussion

The present study examined three interconnected psychological domains—personality, mental skills and aggression—among male handball players competing at the 38th National Games.

The findings provide evidence of considerable psychological heterogeneity within the sample. This is an important observation because athletes competing at the same national event cannot necessarily be assumed to possess similar psychological strengths and weaknesses.

7.1 Personality

The highest mean personality score was observed for openness, followed by agreeableness and conscientiousness. The relatively higher openness score may indicate a tendency toward receptiveness to new experiences, flexibility and exploration of different approaches. In a dynamic team sport such as handball, adaptability may have practical relevance because players frequently need to respond to changing tactical circumstances.

The comparatively high agreeableness score may also be relevant to interpersonal functioning.

Team sports require cooperation, communication and coordination among players, making interpersonal characteristics particularly important. (Goldberg, 1993; John & Srivastava, 1999).

The role of personality in sport performance has received considerable empirical attention. A recent meta-analysis found that conscientiousness and extraversion were positively associated with athletic performance,

Traits of Personality- Louis Goldberg

Openness

Conscientiousness

Extraversion

Agreeableness

Neuroticism

7.2 Mental Skills

Confidence emerged as the strongest mental-skill dimension in terms of mean score. Competition planning, commitment and goal setting also demonstrated comparatively higher scores (McCrae & Costa, 1997).

These characteristics are particularly relevant to competitive preparation. Athletes who can establish performance goals, commit themselves to training and competition demands, and prepare strategically may be better positioned to approach competition systematically.

The comparatively lower scores for focusing and fear control are noteworthy. Handball involves rapid changes in possession and frequent interruptions in attention. The ability to regain concentration following an error, referee decision or opponent action can therefore be particularly important.

The OMSAT-3 framework conceptualizes mental skills across foundation, psychosomatic and cognitive domains, making it useful for examining different aspects of athletes' psychological preparation.

The present findings therefore suggest that psychological preparation should not be restricted to general motivational enhancement. Instead, interventions could be tailored to

although the magnitude of associations varied across sports and other moderators.

The present findings should not, however, be interpreted as evidence that openness or agreeableness directly caused superior performance. The current study was descriptive and did not directly measure or model performance outcomes (Roberts et al., 2005).

specific psychological needs, particularly attentional regulation, fear control and emotional regulation. (McCrae & Costa, 1997).

7.3 Aggression

The mean aggression score of 13.82 indicates a moderate overall level within the sample. However, the standardized range demonstrates substantial variation between individual players. (Roberts et al., 2005).

Aggression in competitive sport needs to be interpreted within the context of the sport. Handball includes substantial physical interaction, competition for space and possession, and rapid transitions. Consequently, aggressive tendencies may not necessarily represent maladaptive behaviour.

The key issue is whether competitive intensity remains controlled and task-oriented. Excessive emotional arousal or poorly regulated aggression could interfere with decision-making and potentially increase the risk of penalties or interpersonal conflict.

Accordingly, psychological interventions for handball players should emphasise emotional regulation and controlled competitive intensity rather than simply attempting to eliminate aggression.

8. Practical Implications

The findings of the present study have practical implications for coaches, sport psychologists, players, and other athlete-support personnel. The results highlight the importance of individualized psychological assessment and targeted psychological skills training in supporting athletes' competitive functioning.

8.1 Individualised Psychological Profiling

Psychological assessment may be used to identify individual strengths and areas requiring further development. Such profiling can assist coaches and sport psychologists in designing individualized interventions based on the specific psychological needs of players rather than adopting a uniform approach for all athletes.

8.2 Attention and Concentration Training

The comparatively lower focusing scores indicate the potential value of interventions aimed at improving attentional control and concentration. Relevant strategies may include:

1. Pre-performance routines
2. Use of attentional cues
3. Concentration drills
4. Refocusing strategies following errors
5. Simulated competitive-pressure situations

These approaches may help players maintain task-focused attention and respond more effectively to distractions and performance-related errors.

8.3 Fear and Stress Regulation

Fear and stress control may be strengthened through structured psychological skills training. Appropriate techniques may include:

1. Controlled breathing
2. Relaxation techniques
3. Cognitive restructuring
4. Visualization
5. Exposure to simulated competitive pressure

Regular application of these techniques may support players in managing psychological responses associated with competitive demands.

8.4 Goal Setting and Competition Planning

The relatively stronger performance in goal setting and competition planning may be further reinforced through systematic psychological preparation. Individualized performance goals and structured pre-match planning can be incorporated into training routines to promote purposeful preparation and competition readiness.

8.5 Emotional Regulation and Aggression Management

Moderate levels of aggression should not necessarily be interpreted as maladaptive within a competitive sporting context. Instead, players may be guided to regulate and channel competitive intensity towards controlled, task-oriented behaviour. Psychological skills training focused on emotional regulation may further assist players in managing competitive intensity, particularly during high-pressure situations.

9. Theoretical Implications

The findings support a multidimensional view of athlete psychology. Personality provides relatively stable individual characteristics, whereas mental skills represent psychological competencies that may be developed through structured practice ([John & Srivastava, 1999](#); [McCrae & Costa, 1997](#)).

The coexistence of relatively strong confidence and comparatively weaker focusing or fear control demonstrates why a single psychological construct cannot adequately describe an athlete's competitive readiness.

The study therefore supports an integrated framework in which personality, psychological skills and behavioural tendencies are considered together.

10. Limitations

Several limitations should be considered when interpreting the findings.

First, the sample consisted of only 40 male handball players, which limits the generalizability of the findings to larger populations.

Second, purposive sampling was employed. Consequently, the sample may not represent all Indian handball players.

Third, psychological characteristics were assessed through self-report questionnaires. Responses may therefore have been influenced by social desirability, self-perception or temporary emotional states.

Fourth, data were collected during a competitive event. Players' responses may have been influenced by match schedules, recent results, expectations or competition-related anxiety.⁵

Fifth, the study was cross-sectional and therefore cannot establish causal relationships between psychological characteristics and athletic performance.

11. Ethical Considerations

Participation was voluntary, and informed consent was obtained from the participants as reported in the dissertation. Confidentiality of individual responses was maintained

12. Conclusion

The present study developed a psychological profile of 40 male handball players participating in the 38th National Games of India. The findings indicate considerable individual variability across personality, mental skills and aggression.

Openness and agreeableness recorded comparatively higher personality scores, while confidence, competition planning, commitment and goal setting emerged as relatively stronger mental-skill dimensions. Focusing and fear control recorded comparatively lower mean scores. Aggression demonstrated a moderate overall level but considerable individual variation.

The findings emphasize that national-level athletes should not be considered psychologically homogeneous. A structured psychological preparation programme that combines personality-informed understanding with targeted mental-skills training may provide a more individualized approach to athlete development.

However, the findings should be interpreted primarily as descriptive evidence. Future studies using larger samples, objective performance indicators and appropriate inferential analyses are required to establish how these psychological characteristics relate to competitive performance.

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