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Original Article

The Roles of the Coach and Athletic Identify in Mitigating Burnout: Evidence from Korean Male Wrestlers

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Abstract

Background: In elite Korean wrestling, a sport marked by cultural hierarchy and limited athlete participation, the coach–athlete relationship plays a critical role in shaping an athlete's development and wellbeing. However, the psychological mechanisms linking the coach–athlete relationship to burnout remain underexplored. This study investigated the mediating role of athletic identity in the relationship between the coach–athlete relationship and athlete burnout among Korean male wrestlers.

Methods: We conducted a cross-sectional survey with 369 officially registered Korean male wrestlers (20.37±4.01 years old) from high school, collegiate, and professional levels from whole Republic of Korea via online survey using Google Forms. Participants completed validated measures of the coach–athlete relationship, athletic identity, and athlete burnout. Structural equation modeling with bootstrapping procedures was used to assess direct and indirect effects.

Results: The coach–athlete relationship significantly predicted athletic identity (β=0.705, P<0.001) but did not directly affect athlete burnout (β=–0.101, P=0.212). Athletic identity negatively predicted burnout (β=–0.635, P<0.001) and fully mediated the relationship between the coach–athlete relationship and burnout (indirect effect: β=–0.448, P=0.010). These results suggest that athletic identity serves as a protective psychological factor, mitigating burnout even when relational quality is high.

Conclusion: While a positive coach–athlete relationship alone does not directly reduce burnout; it exerts an indirect protective effect by enhancing athletic identity. Strengthening athletic identity through supportive coaching may be key to reducing psychological exhaustion among male wrestlers in culturally hierarchical sports environments.

Keywords: Athletic identity; Burnout; Coach–athlete relationship; Mediation effect

Introduction

Wrestling is one of the most ancient Olympic sports, having been officially included in the inaugural modern Olympic Games in Athens in 1896. Today, it is governed by United World Wrestling, with 198 member nations across five continents (1). South Korea made its Olympic wrestling debut at the 1948 London Games and has since achieved remarkable international suc-

cess, accumulating 35 Olympic medals, including 11 gold medals, since Jung Mo Yang's historic victory in Montreal in 1976 (2). Despite this achievement, wrestling remains a relatively marginalized sport in South Korea. As of April 2024, there were only 1,339 registered wrestlers in South Korea—compared with 10,175 in Taekwondo and 5,999 in Judo—revealing a small yet disproportionately successful talent pool on the world stage (3). This uncommon result suggests the presence of distinctive cultural and psychological factors driving elite performance in Korean wrestling.

One such factor is the deeply rooted Korean tradition of mentorship, shaped by Confucian values emphasizing hierarchical respect, collective identity, and self-discipline. A pertinent cultural idiom is Cheongchuleoram (青出於藍), which translates to "blue comes from indigo, but is bluer than indigo itself." This phrase encapsulates the aspirational expectation that protégés will surpass their mentors through hard work and loyalty. In Korean sport culture, such values are embodied in coach–athlete relationships, which often extend beyond tactical instruction to encompass moral guidance and personal development. While positive mentorship can foster resilience, motivation, and achievement, overly controlling or authoritarian coaching styles can lead to maladaptive outcomes, such as chronic stress and psychological burnout (4).

Burnout, in an athletic context, is defined as a multidimensional syndrome characterized by emotional and physical exhaustion, reduced sense of accomplishment, and devaluation of the sport (5). Coaching behavior is a significant environmental predictor of burnout. Autonomy-supportive coaching enhances intrinsic motivation and psychological wellbeing, whereas controlling coaching behaviors are associated with elevated levels of burnout (4,6). These effects may be magnified in environments where cultural expectations of obedience and performance are strong, especially when such expectations are shaped by cultural particularity and hierarchical social norms (7).

Another pivotal construct in this dynamic is athletic identity—the extent to which individuals define themselves in terms of their athlete role (8). A strong athletic identity can increase goal commitment and motivation; however, it can also heighten vulnerability to burnout when identity threats arise, such as injury, role conflict, or performance failure (9). This issue is especially salient in wrestling, an individual sport characterized by high physical load, frequent weight-cutting practices, and injury risks—all of which can intensify both physiological strain and identity-related stress (10).

Taken together, these factors underscore the need to investigate how the quality of the coach–athlete relationship, athletic identity, and athlete burnout interact within the culturally specific and physically demanding context of elite Korean wrestling. These psychological constructs do not operate in isolation; rather, they dynamically intersect to shape athletes' mental health, motivation, and long-term performance. Therefore, our study examined the structural relationships among these three variables using a cross-sectional design, focusing on these elite Korean male wrestlers. Ultimately, we expect to provide culturally grounded and evidence-based insights that can inform targeted psychological interventions and support sustainable career development in high-performance sports environments. The findings can contribute to our theoretical understanding of athlete burnout in hierarchical sport cultures and provide practical interventions that promote mental health and career sustainability in high-performance settings. For that purpose, we investigate whether athletic identity mediates the relationship between the coach–athlete relationship and athlete burnout considering elite Korean male wrestlers as our subjects. By focusing on a mediation model, we hope to gain a better understanding of the psychological mechanism by which the quality of the coach–athlete relationship contributes to either resilience or vulnerability in athletes competing in hierarchical and culturally intense sports environments. Based on the above discussion and the literature, we formulated the following hypotheses:

H1: A positive coach–athlete relationship will be positively associated with athletic identity.

H2: Athletic identity will be negatively associated with athlete burnout.

H3: Athletic identity will mediate the relationship between the coach–athlete relationship and athlete burnout.

Materials and Methods

Participants and data collection

We targeted 897 male wrestling athletes who were officially registered with the Korean Sports and Olympic Committee (KSOC). The total sample (n=369) included 187 high school athletes, 96 university athletes, and 86 athletes affiliated with professional teams. Inclusion criteria required that participants be officially registered as male wrestlers with the KSOC and currently affiliated with either a high school, university, or professional team. There were no exclusion criteria apart from an inability to provide voluntary informed consent. Because of national public health restrictions during the COVID-19 pandemic, we collected our data through an online survey using Google Forms.

Before beginning the survey, the participants were told the intent and objectives of the study and gave voluntary informed written consent. All participants received the same survey in accordance with a cross-sectional study design. Three questionnaires were designed to collect data on the coach–athlete relationship, athletic identity, and burnout. These questionnaires were adapted and validated to suit the characteristics of Korean male wrestlers. Data were also collected on athletes' affiliations and their athletic experience (in years). Because the survey did not collect any personally identifiable information, such as home addresses, telephone numbers, or social security numbers, an institutional review board waived the need for ethical approval. Table 1 presents the demographic characteristics of the participants.

Table 1: General characteristics of Korean male wrestler participants (n=369)

Affiliation/Experience	Less than 3 years N(%)	3–6 years N(%)	6–9 years N(%)	9 years or more N(%)	Total (n) N(%)
High school	47 (12.7)	92 (24.9)	32 (8.7)	16 (4.3)	187 (50.7)
University	12 (3.3)	34 (9.2)	21 (5.7)	29 (7.9)	96 (26.0)
Professional team	5 (1.4)	20 (5.4)	17 (4.6)	44 (11.9)	86 (23.3)
Total (n)	64 (17.3)	146 (39.6)	70 (19.0)	89 (24.1)	369 (100)

Measurements

We assessed the coach–athlete relationship quality using the Korean version of the Coach–Athlete Relationship Questionnaire (KrCART-Q), originally developed by Jowett and Ntoumanis (11) and adapted and validated for Korean athletes by Kim and Park (12). The KrCART-Q comprises 10 items across three relational dimensions: complementarity, closeness, and commitment. These subscales capture the affective, cognitive, and behavioral interdependence between coaches and athletes within the Korean hierarchical sporting context. All items were rated on a five-point Likert scale ranging from one ("strongly disagree") to five ("strongly agree"), with higher scores reflecting stronger perceptions of the coach–athlete relationship quality. The initial confirmatory factor analysis (CFA) of the original 10-item model showed suboptimal fit (χ^2=254.250, df=32, P<0.001, and root mean

square error of approximation [RMSEA]=0.137). After removing one item each from the complementarity and closeness subscales owing to low squared multiple correlations, the revised eight-item model demonstrated improved fit (χ^2=88.655, df=17, *P*<0.001, RMSEA=0.107, comparative fit index [CFI]=0.975, Tucker–Lewis index [TLI]=0.960, goodness of fit index [GFI]=0.944, and root mean square residual [RMR]=0.021). Although the RMSEA remained slightly above the conventional cutoff of 0.08, the model demonstrated acceptable fit across most indices, and the low RMR value supported the adequacy of the revised structure. Cronbach's alpha coefficients indicated strong internal consistency -0.935 (complementarity), 0.932 (closeness), and 0.820 (commitment)—demonstrating that the KrCART-Q provided both valid and reliable measurement within the current sample (Table 2).

We assessed athletic identity using a Korean adapted Athletic Identity Measurement Scale (AIMS), originally developed by Martin et al. (13) and modified and validated by Kang (14) for Korean student-athletes. The 10-item version we used consists of four subscales: uniqueness, social identity, ego identity, and negative emotions. Items were rated on a five-point Likert scale (1="not at all true"; 5="very true"), with higher scores reflecting stronger identification with the athletic role. The CFA supported the four-factor structure with acceptable model fit: χ^2=131.218, df=48, *P*<0.001, RMR=0.038, GFI=0.956, TLI=0.961, CFI=0.973, RMSEA=0.065. Although the RMSEA was slightly above the conventional cutoff of.06, the other indices met the recommended thresholds, supporting the construct validity of the model. Cronbach's alpha coefficients demonstrated good internal consistency across the subscales: 0.843 (social identity), 0.812 (ego identity), 0.856 (uniqueness), and 0.798 (negative affectivity). These findings indicate that the AIMS provided a valid and reliable measurement of athletic identity within this sample of Korean male wrestlers (Table 2).

We assessed athlete burnout using the Korean version of the Athlete Burnout Questionnaire (ABQ), originally developed by Raedeke and Smith (15) and adapted and validated by Choi et al. (16) for Korean athletes. The ABQ comprises 15 items across three dimensions: decreased sense of accomplishment, emotional and physical exhaustion, and devaluation. Responses were recorded on a five-point Likert scale (1="strongly disagree"; 5="strongly agree"), with higher scores indicating greater burnout. The CFA of the initial model showed suboptimal fit (χ^2=359.156, df=87, *P*<0.001, RMSEA=0.092, CFI=0.916, TLI=0.899, GFI=0.875). To improve model fit, one item from the reduced accomplishment subscale and two items from the exhaustion subscale were removed, resulting in a revised model with acceptable fit indices (χ^2=119.962, df=51, *P*<0.001, RMSEA=0.061, CFI=0.971, TLI=0.962, GFI=0.949, RMR=0.042). Cronbach's alpha values for the final subscales were 0.884 (emotional and physical exhaustion), 0.867 (devaluation), and 0.814 (reduced accomplishment, after removing one item with poor reliability). These results supported the construct validity and internal consistency of the Korean ABQ within this sample of elite wrestlers (Table 2).

Data analysis

We conducted data analysis to evaluate the measurement scales and test our hypothesized structural relationships among the study variables. First, we performed CFA of our models for the coach–athlete relationship, athletic identity, and athlete burnout to assess construct validity. We evaluated model fit using the following indices: comparative fit index (CFI≥0.900), Tucker–Lewis index (TLI≥0.900), and root mean square error of approximation (RMSEA≤0.080), in accordance with the guidelines proposed by Hu and Bentler (17). Internal consistency reliability was assessed using Cronbach's alpha (α≥0.700) for each latent construct. Second, we used descriptive statistics (means, standard deviations, skewness, and kurtosis) to examine the distributional properties of the data. All the variables demonstrated acceptable univariate normality, with skewness and kurtosis values falling within the

conventional ±2.00 range (18). Therefore, we did not conduct a formal Shapiro–Wilk test, as normality was sufficiently supported by the distribution indices. Third, we computed Pearson's correlation coefficients to explore the bivariate relationships among the key study variables: coach–athlete relationship, athletic identity, and athlete burnout. Finally, we used structural equation modeling (SEM) using the maximum likelihood estimation to examine the hypothesized mediation model in which athletic identity mediates the relationship between coach–athlete relationship quality (independent variable) and athlete burnout (dependent variable). To assess the significance of indirect effects, we applied a bias-corrected bootstrapping procedure with 5,000 resamples and 95% confidence intervals. We evaluated model fit using several indices (CFI, TLI, RMSEA, RMR), following the guidelines suggested by Hu and Bentler (17) and Kline (19). All the statistical analyses were performed using IBM SPSS Statistics and AMOS (version 23.0; IBM Corp., Armonk, NY, USA). Statistical significance was determined at $P<0.05$.

Table 2: Confirmatory factor analysis of the coach–athlete relationship

Category	Variable	χ^2 df/p	Q	RMR	GFI	TLI	CFI	RMSEA	Factor	Cronbach α
Coach–athlete relationship	Initial model	254.250 32/<0.001	7.945	0.049	0.854	0.912	0.937	0.137	Complementarity	0.935
	Revised model	88.655 17/<0.001	5.215	0.021	0.944	0.960	0.975	0.107	Closeness	0.932
	Fit criteria	>0.05	≤2.00	<0.05	≥0.90	≥0.90	≥0.90	<0.10	Commitment	0.820
Athletic identity	Initial model	194.681	6.713	0.049	0.908	0.865	0.913	0.125	Social identity	0.811
	Revised model	70.407 11/<0.001	6.401	0.028	0.946	0.911	0.953	0.121	Negative emotions	0.729
	Fit criteria	>0.05	≤2.00	<0.05	≥0.90	≥0.90	≥0.90	<0.10	Uniqueness	0.773
Athlete burnout	Initial model	359.156 87/<0.001	4.128	0.063	0.875	0.899	0.916	0.092	Decreased sense of accomplishment	0.814
	Revised model	119.962 51/<0.001	2.352	0.042	0.949	0.962	0.971	0.061	Emotional and physical exhaustion	0.884
	Fit criteria	>0.05	≤2.00	<0.05	≥0.90	≥0.90	≥0.90	<0.10	Devaluation	0.867

RMR: root mean square residual; GFI: goodness of fit index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: root mean square error of approximation

Results

Descriptive statistics for the observed variables

We calculated the central tendency, variability, and distributional characteristics of the variables using descriptive statistics. As shown in Table 3, all the skewness and kurtosis values fell within the acceptable thresholds of ±2.00 for skewness and ±4.00 for kurtosis. Thus, the data for each observed variable met the assumptions of univariate normality. In terms of central tendency, the coach–athlete relationship subscales showed relatively high mean scores (mean=3.96–4.41), suggesting positive perceptions among the partic-

ipants. Athletic identity subscales also showed high means (mean=3.92–4.20), whereas the burnout subscales were relatively low (mean=2.09–2.78), indicating moderate-to-low levels of perceived burnout symptoms. These distributions confirm the suitability of the data for subsequent SEM analyses.

Table 3: Descriptive statistics for the observed variables

Variables		Mean	Standard deviation	Skewness	Kurtosis
Coach–athlete relationship	Complementarity	4.41	0.71	-1.19	1.31
	Closeness	4.37	0.76	-1.14	1.03
	Commitment	3.96	0.87	-0.35	-0.64
Athletic identity	Uniqueness	3.92	0.73	-0.02	-0.83
	Social identity	4.20	0.77	-0.77	0.07
	negative Emotions	4.14	0.80	-0.73	-0.15
Athlete burnout	Decreased sense of accomplishment	2.09	0.88	0.66	0.28
	Emotional and physical exhaustion	2.78	0.99	0.15	-0.43
	Devaluation	2.44	1.07	0.37	-0.46

Correlations among the observed variables

Table 4 presents the correlation coefficients among the observed variables. The coach–athlete relationship dimensions—complementarity, closeness, and commitment—were positively correlated with all subdomains of athletic identity, including uniqueness, social identity, and negative emotions. Conversely, all three dimensions of the coach–athlete relationship were negatively correlated with athlete burnout factors. Athletic identity was also negatively correlated with all components of burnout, suggesting that higher identification with the athlete role is associated with lower psychological burnout symptoms.

Table 4: Correlations among the observed variables

	COMP	IN	DED	UNI	SI	NEE	DSA	EPE	DEV
COMP	1.000								
IN	0.809***	1.000							
DED	0.596***	0.739***	1.000						
UNI	0.524***	0.526***	0.540***	1.000					
SI	0.554***	0.556***	0.469***	0.689***	1.000				
NEE	0.530***	0.497***	0.453***	0.672***	0.636***	1.000			
DSA	-0.422***	-0.420***	-0.361***	-0.435***	-0.484***	-0.426***	1.000		
EPE	-0.295***	-0.372***	-0.259***	-0.322***	-0.347***	-0.310***	0.452***	1.000	
DEV	-0.338***	-0.404**	-0.342***	-0.450***	-0.534***	-0.478***	0.544***	0.603***	1.000

***P<0.001; tested by Pearson's correlation coefficients

COMP=complementarity; CLO=closeness; COM=commitment; UNI=uniqueness; SI=social identity; NEE=negative emotions; DSA=decreased sense of accomplishment; EPE=emotional and physical exhaustion; DEV=devaluation

Structural model testing

Figure 1 and Table 4 present the results of testing the structural model to examine the hypothesized relationships among coach–athlete relationship quality, athletic identity, and athlete burnout among Korean male wrestlers. In the figure, ellipses represent latent variables (i.e., coach–athlete relationship, athletic identity, and athlete burnout), while rectangles represent observed variables used to measure each construct. Unidirectional arrows (→) indicate hypothesized causal paths, and the standardized path coefficients (β) are displayed along each arrow. No double-headed arrows are presented, as we did not estimate the correlations among the residuals.

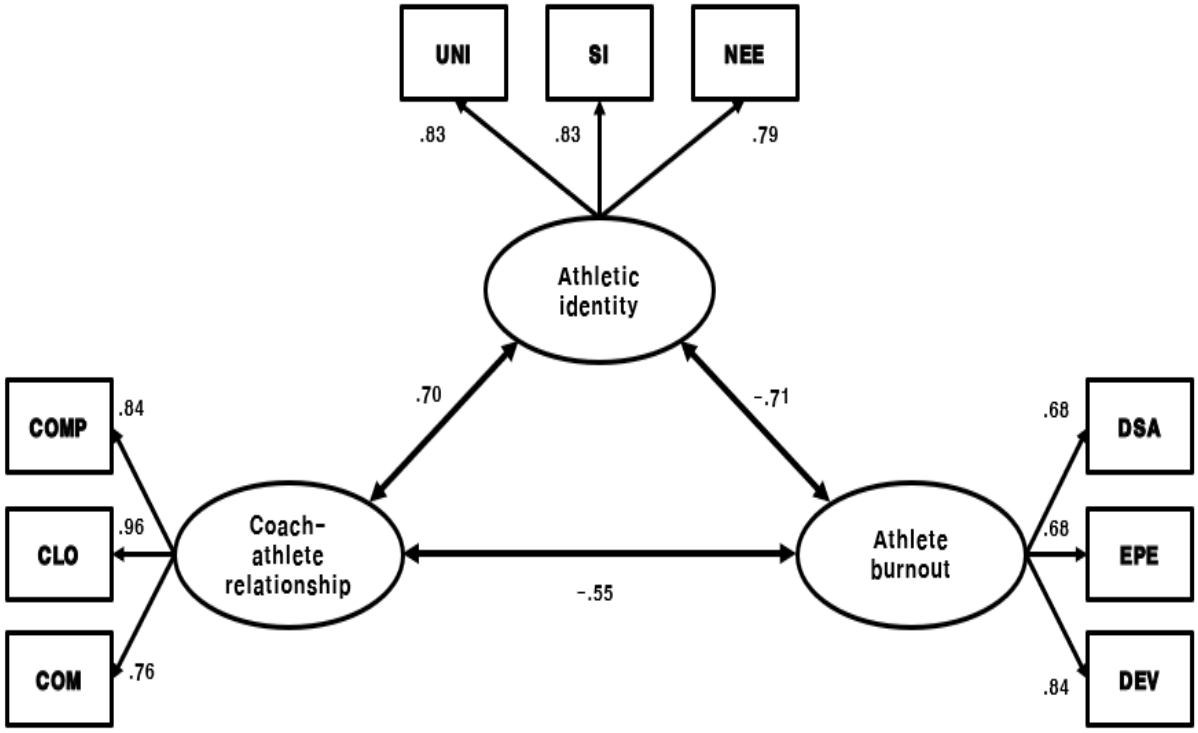

Fig. 1: Testing of the measurement model
COMP=complementarity; COM=commitment; CLO=closeness; UNI=uniqueness; SI=social identity; NEE=negative emotions; DSA=decreased sense of accomplishment; EPE=emotional and physical exhaustion; DEV=devaluation.

Table 5: Assessment of the measurement model fit

Variable	χ^2 df/p	Q	RMR	GFI	TLI	CFI	RMSEA
Initial model	91.035 24/<0.001	3.793	0.031	0.950	0.947	0.964	0.087
Fit criteria	>0.05	≤2.00	<0.05	≥0.90	≥0.90	≥0.90	<0.10

Note: RMR: root mean square residual; GFI: goodness of fit index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: root mean square error of approximation

Table 5 reports the model fit statistics. Despite the significant chi-square value (χ^2=91.035, df=24, *P*<0.001), which is common in large samples, the model demonstrated acceptable fit across other indices: RMR=0.031, GFI=0.950, TLI=0.947, CFI=0.964, and RMSEA=0.087. These values met or exceeded recommended thresholds, indicating a satisfactory model fit.

Table 6: Construct reliability, average variance extracted, and discriminant validity of measurement model

Concept	Construct reliability	Average variance extracted	Discriminant validity		
			1	2	3
1. Coach–athlete relationship	0.928	0.812	0.901		
2. Athletic identity	0.910	0.771	0.705	0.878	
3. Athlete burnout	0.790	0.559	-0.549	-0.707	0.748

Table 6 presents the results of the construct reliability (CR) values, which ranged from 0.790 to 0.928, exceeding the recommended threshold of 0.700, indicating satisfactory internal consistency. The average variance extracted (AVE) values ranged from 0.559 to 0.812, surpassing the 0.500 threshold, thereby confirming convergent validity. Discriminant validity was also supported, as the square root of each construct's AVE (diagonal values) exceeded the inter-construct correlations (off-diagonal values).

Testing structural relationships between the coach–athlete relationship, athletic identity, and athlete burnout

We conducted SEM using the maximum likelihood method for factor extraction. Figure 2 presents our hypothesized model, with the latent variables shown as ellipses, observed variables as rectangles, and single-headed arrows representing directional (causal) paths. The dashed arrows indicate non-significant relationships.

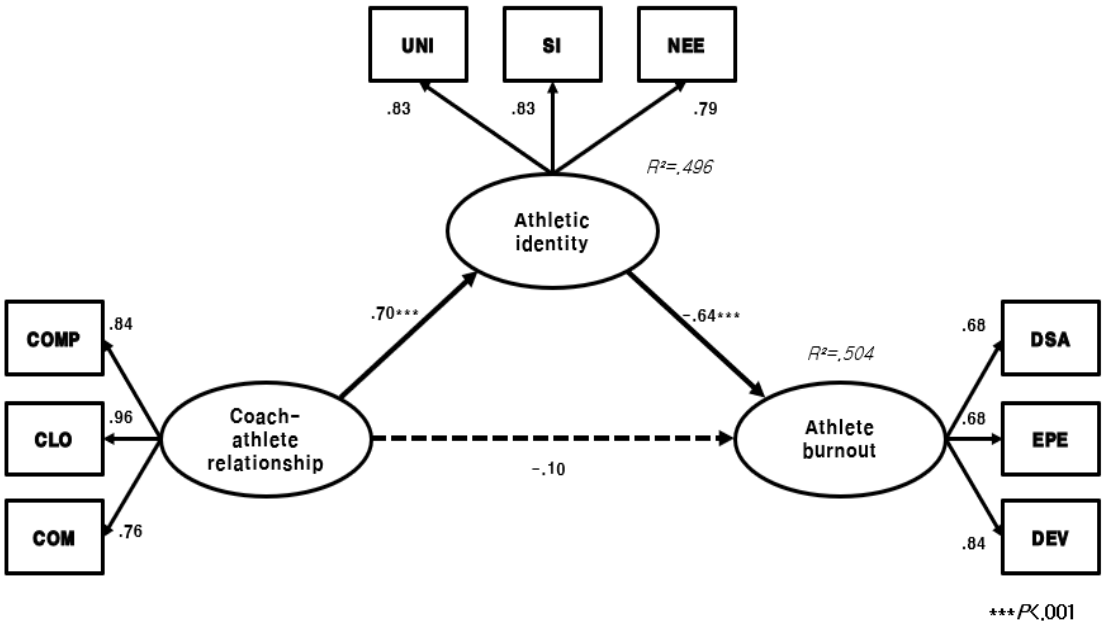

Fig. 2: Results of the structural equation analysis
COMP=complementarity; COM=commitment; CLO=closeness; UNI=uniqueness; SI=social identity; NEE=negative emotions; DSA=decreased sense of accomplishment; EPE=emotional and physical exhaustion; DEV=devaluation.

We found that the coach–athlete relationship had a significant positive effect on athletic identity (β=0.705, P<0.001), and athletic identity had a significant negative effect on athlete burnout (β=-0.635, P<0.001). However, the direct path from the coach–athlete relationship to athlete burnout was not statistically significant (β=-0.101, P=0.212), suggesting the possibility of a full mediation effect. To examine this mediating effect, we employed bootstrapping analysis with 5,000 resamples and bias-corrected 95% confidence intervals. As shown in Table 7, the indirect effect of the coach–athlete relationship on athlete burnout via athletic identity was statistically significant (β=-0.448, P=0.010), while the direct effect remained non-significant. These findings support a full mediating role of athletic identity in the relationship between the coach–athlete relationship and athlete burnout. The squared multiple correlation values indicated that the model explained 49.6% of the variance in athletic identity and 50.4% of the variance in athlete burnout. These findings underscore the central role of athletic identity as a psychological mechanism linking relational experiences with psychological outcomes. In the context of elite Korean wrestling, where identity is strongly shaped by hierarchical mentorship, these results provide critical insights into how interpersonal dynamics influence athlete wellbeing through self-concept formation.

Table 7: Testing indirect effects through bootstrapping

Path			Direct effect (β)	Indirect effect (β)	Total effect (β)
Coach–athlete relationship	→	Athletic identity	0.705*	-	0.705*
Coach–athlete relationship	→	Athlete burnout	-0.101	-0.448*	-0.549*
Athletic identity	→	Athlete burnout	-0.635*	-	-0.635*

***P<0.001; tested by path analysis

Discussion

Our study examined the structural relationships among coach–athlete relationship quality, athletic identity, and athlete burnout among elite Korean male wrestlers. The findings reveal that the coach–athlete relationship significantly predicts athletic identity, which, in turn, fully mediates its relationship with athlete burnout. These results underscore the critical role of athletic identity as a psychological mechanism through which relational dynamics influence mental health outcomes in high-performance sports settings.

The positive link between coach–athlete relationship quality and athletic identity aligns with prior research indicating that supportive, respectful, and motivational coaching fosters a stronger athletic self-concept and commitment to the athlete role (4,20-21). When athletes perceive their coach as trustworthy and invested in their personal growth, they are more likely to internalize the athletic role as central to their identity (8). Conversely, in environments where coaching relationships are hierarchical or authoritarian, athletes may experience increased psychological stress and a higher vulnerability to burnout (22).

Furthermore, the inverse relationship between athletic identity and athlete burnout supports previous findings that a well-integrated athletic identity can buffer athletes from emotional exhaustion and devaluation (9). However, this relationship is nuanced. While a strong athletic identity can enhance persistence and performance, it may also increase psychological vulnerability following performance failure or injury, particularly in culturally intensive, high-pressure sports such as wrestling (23). These dynamics may be intensified in Confucian-influenced sport cultures, such as Korea's, where athletes are expected to

demonstrate loyalty, discipline, and submission to authority (4).

Our findings offer key implications for coaching and athlete development. First, coaches play a pivotal role not only in athletes' technical development but also in shaping their psychological resilience. Interventions aimed at enhancing the coach–athlete relationship—such as communication training, empathy development, and autonomy-supportive leadership—may strengthen athletic identity while mitigating burnout. Second, sport organizations should prioritize culturally supportive coaching strategies that foster respect and individuality rather than rigid hierarchical control. In such strategies, sociocultural communication competence serves as a vital foundation. Male wrestlers, in particular, face unique psychosocial challenges, including high physical demands, aggressive training cycles, and performance expectations tied to masculine ideals (24).

Conclusion

Our findings demonstrated that while a positive coach–athlete relationship alone does not directly reduce athlete burnout, it plays a critical indirect role by enhancing athletic identity, which, in turn, significantly lowers burnout symptoms among Korean male wrestlers. This highlights the mediating function of athletic identity as a key psychological pathway linking interpersonal coaching dynamics with mental health outcomes in elite sport settings. Theoretically, our findings contribute to a culturally contextualized understanding of how relational and identity-based factors interact to shape athletes' wellbeing, particularly within hierarchical sport cultures, such as Korean sports. Practically, our results underscore the importance of strengthening athletic identity through coach–athlete relation quality. Interventions aimed at improving sociocultural communication competence, empathy, and autonomy-supportive coaching strategies may serve to prevent burnout and promote sustainable athlete development. Although the cross-sectional design limits causal interpretations, the significant mediating relationships observed suggest clear directions for future longitudinal research. Specifically, examining changes in athletic identity and burnout over time across sport types and levels could further inform effective mental health and coaching interventions in elite athletic contexts.

Journalism Ethics considerations

Ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy, have been completely observed by the authors.

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Conflict of Interest

The authors declare no conflicts of interest.

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