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The Impact of Coach–Athlete Relationship Quality on Young Athletes' Performance: A Meta-Analysis

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Abstract

This meta-analysis examined the effect of the quality of the coach-athlete relationship on young athletes' performance. Data were synthesized from 38 quantitative and relational studies published in English over the last decade and retrieved from the Web of Science (WoS) database in 2025. The analysis, performed using a random-effects model via the Comprehensive Meta-Analysis (CMA) software, revealed a positive effect of the coach-athlete relationship quality on young athletes' performance. Effect sizes appear to have remained relatively stable in studies published over the last five years (2021-2025). This stability suggests that the impact of the coach-athlete relationship on performance is a fundamental phenomenon that does not change over time. No significant evidence of publication bias was found. Furthermore, several variables were identified as moderators of this relationship, including the year of publication, cultural context, participants' age group, the type of sport discipline, and the type of performance outcome. Future research should utilize longitudinal and experimental designs to clarify causality, increase studies in underrepresented cultures, and employ objective performance measures, multi-source data collection, and neuropsychological assessments to explore the effects of digital technologies and remote coaching.

Introduction

Sport plays a significant role in individuals' physical, psychological, and social development. For young athletes, in particular, the sporting environment is regarded not only as an arena for performance but also as a context where personality development, self-confidence gain, and social relationships are shaped (Wang & Tong, 2024). It is increasingly accepted that the factors determining young athletes' performance are not limited to physiological capacity; rather, psychosocial processes are crucial determinants (Davis & Jowett, 2014). In this context, the quality of the coach-athlete relationship is positioned as a central component influencing performance outcomes in young athletes. Therefore, it necessitates the systematic consideration of the relational climate as much as training planning and competition preparation (Jowett, 2017). A meta-analytic approach makes it possible to reliably estimate the magnitude and direction of the total effect by synthesizing effects generated across various measurement tools and contexts onto a common scale (Bektas et al., 2021). The primary objective of this study is to quantitatively determine the effect of coach-athlete relationship quality on young athletes' performance through

a meta-analysis and to examine the moderator variables that may explain this effect.

The Coach-Athlete Relationship

In team sports, the coach's leadership behaviors and the quality of the relationship strengthen athletes' competence perceptions, thereby supporting team processes. This plays a critical role in managing performance expectations for young athletes (Hampson & Jowett, 2014). The alignment between athletes' developmental needs during adolescence and the coach's supportive attitudes facilitates the satisfaction of psychological needs, fostering well-being and increasing long-term commitment to sport (Davis & Jowett, 2014).

Furthermore, relationship issues can trigger not only a negative emotional climate but also psycho-physiological burnout, which can adversely affect cognitive processes such as attention, decision-making, and executive functions (Davis et al., 2018). Relationship quality intersects with adolescent athletes' physical self-perception and evaluations of physical competence, directly impacting self-worth and motivational cycles (Jowett & Cramer, 2010). Quality of communication and empathic understanding form the cornerstone of the coach-athlete interaction, supporting closeness and complementarity, and facilitating the adoption of shared goals (Lorimer & Jowett, 2013).

Team success and positive developmental experiences are also strengthened by this relational structure. Specifically in adolescent football players, the alignment of leadership with the relational climate enhances social and psychological outcomes (Vella et al., 2013). However, the coach's stress level and coping mechanisms indirectly influence relationship dynamics, altering athletes' perceived sense of support and fairness, which can reshape team interactions (Thelwell et al., 2017). In environments with high relationship quality, the dimensions of trust, commitment, and complementarity are more balanced, a structure noted to act as a protective function in managing daily training demands (Jowett, 2025). Well-structured relational practices support self-regulation and task orientation in young athletes, improving the alignment of individual and team goals and strengthening the learning climate (Hampson & Jowett, 2014). Psychosocial interactions frame training load and recovery processes at a perceptual level, potentially mitigating the risk of burnout; the continuity and consistency of coach support play a critical role in this context (Hartanto et al., 2025). Uncertainties during adolescence transform the coach not only into a technical-tactical authority but also a custodian of relational trust, making the social-psychological dimensions of performance visible (Jowett, 2017). Thus, performance, well-being, and motivation in young athletes can be understood as a multi-dimensional structure interacting through the coach-athlete relationship (Vella et al., 2013).

The Effect of the Coach-Athlete Relationship on Performance

The Motivational Model is prominent in explaining the coach-athlete relationship, suggesting that the satisfaction of autonomy, competence, and relatedness needs positively reflects on motivation and performance (Kibici, 2021; Mageau & Vallerand, 2003). Similarly, conceptualizing relationship quality within the 3+1Cs model (Closeness, Commitment, Complementarity, and Co-orientation) contributes to a holistic evaluation of the relational structure

(Jowett, 2017). Communication strategies and empathic accuracy nurture these dimensions, providing a functional foundation for shared goals and coordinated tasks (Lorimer & Jowett, 2013). Secure and consistent communication practices facilitate the satisfaction of young athletes' basic psychological needs, supporting self-regulation and sustained effort (Davis et al., 2022; Kara, 2000).

Scales developed to measure the relationship's quality allow for the quantitative evaluation of different dimensions, creating a common language for both research and practice (Jowett & Ntoumanis, 2004). Increasing the cross-cultural validity and reliability studies of these measurements aims to reduce comparison problems in diverse contexts (Ahmad et al., 2021). The literature highlights findings that relationship quality, combined with leadership styles, communication, and emotional climate, supports motivational processes, increasing young athletes' participation and satisfaction (Jin et al., 2022). At the team level, higher-level constructs like collective efficacy and resilience, when integrated with the coach-athlete relationship, contribute to performance sustainability in competitive environments (Hampson & Jowett, 2014). Transformational leadership creates a strong impact, even at the elite level, by bridging relationship quality and team resilience (Karayel et al., 2024).

These theoretical and measurement advancements contribute to a more holistic understanding of motivational fluctuations, burnout risk, and emotional flexibility in adolescent athletes (Isoard-Gautheur et al., 2016). Furthermore, findings that well-being indicators such as life satisfaction and engagement are shaped through relationship quality offer critical clues for explaining young athletes' long-term commitment to sport (Wang & Tong, 2024). Comparative examination of different sport types and cultural settings strengthens the testability of theories and enriches practical recommendations (Washington et al., 2025). In sum, the integration formed by the theory–measurement–application triangle allows for the developmental processes of adolescent athletes to be explained through a relational foundation (Mageau & Vallerand, 2003; Jowett, 2017).

The concurrent consideration of performance and well-being in adolescent athletes becomes even more critical in the context of relationship quality and team climate (Jowett & Cramer, 2010). In well-structured relational environments, goal orientation and adherence to mastery goals increase, influencing future success profiles, especially in academy-level football players (Nicholls et al., 2017). Findings that burnout risk can be shaped through achievement goals and communication processes, with coach behaviors playing a mediating role, demonstrate the importance of protective factors in adolescent athletes (Choi et al., 2020; Isoard-Gautheur et al., 2016).

The joint evaluation of psychological safety, social support, and relationship quality plays a significant role in maintaining well-being, even in high-demand sports (Şenel et al., 2025). The link between resilience profiles and health-related behaviors and performance indicators strengthens the protective function of relationship quality in elite athletes (Chrétien et al., 2024). The combination of engagement and thriving indicators with relationship quality offers a functional mechanism for explaining task commitment in adolescent team sports (Gu et al., 2023). Relationships established through life satisfaction provide valuable clues for the design of the motivational climate (Wang & Tong, 2024). Sequential mediation effects of affective resources like gratitude and hope further detail the role of relationship quality in reducing burnout (Dong et al., 2024).

The connection between perceived coach support and self-confidence and psychological well-being suggests that emotional flexibility in adolescent athletes can be strengthened through relational channels (Coussens et al., 2025). Transformational leadership, combined with relationship quality, enhances team resilience, acting as a functional buffer under high-pressure conditions (Karayel et al., 2024). In disabled sports, the differentiation of relationship experiences, combined with the varying needs of adolescence, increases the requirement for customized communication and support strategies (Pomerleau-Fontaine et al., 2023). Generational differences shaping relational experiences underscore the importance of contextual sensitivity for coaches working with particularly Generation Z athletes (Landman et al., 2024). The unique experiences of female athletes and the dynamics of the school-level sports context bring differentiated application recommendations regarding relationship quality and coaching processes to the forefront (Snapp, 2025).

Statement of the Problem and Research Objective

The relevant literature contains broad-scoped studies on the effect of the coach-athlete relationship on performance. Studies have examined the effect of relationship maintenance strategies on the coach-athlete relationship and basic psychological need satisfaction (Fan et al., 2023), the mediating role of the coach-athlete relationship in the effect of coach leadership behavior on athlete performance (Liu et al., 2025), and the sequential mediation role of the coach-athlete relationship in the effect of athlete gratitude on burnout (Dong et al., 2024). Mixed-methods research has investigated the effects of goal orientation and coach-athlete relationships on burnout among Chinese college athletes (Wang & Lian, 2025). Recent research on adolescent basketball players has shown the predictive role of coach-athlete relationship quality on training engagement and skill development (Luo et al., 2025). Studies have also explored the effects of leadership style on the coach-athlete relationship, athlete motivation, and satisfaction (Jin et al., 2022), and confirmed the mediating effects of the coach-athlete relationship and team efficacy on the influence of coach autonomy support on athlete aggression and burnout (Kim & Choi, 2024; Cho & Baek, 2020). Other research has shown the mediating role of trust in satisfaction and the coach-athlete relationship (Li et al., 2021), and the mediating role of motivation in the relationship between the coach-athlete relationship and athlete life skills development (Freire et al., 2025). Research with badminton athletes demonstrated the role of coach leadership type and coach-athlete relationship on mental toughness (Hartanto et al., 2025). The common thread in these studies is the consistent finding that the coach-athlete relationship is continuously linked to various psychological and performance variables.

Measurement models and tool limitations weaken the comparability of findings and can broaden the confidence intervals of effect size estimates (Jowett & Ntoumanis, 2004). Issues of measurement invariance in adapting the CART-Q to different languages and cultures must be systematically addressed; otherwise, comparisons may yield biased results (Ahmad et al., 2021). The overlap of the 3+1Cs model's dimensions in some contexts, particularly the difficulty in separating closeness and commitment indicators in adolescent athletes, can lead to measurement errors (Jowett, 2017). Scoring differences between direct and meta-versions can influence estimates of the magnitude of the relationship quality–outcome link, becoming even more complex when combined with linguistic nuances. The inability of motivation-centered scales to capture psychological need satisfaction with the same sensitivity across all contexts can limit the consistency of mediating variable analyses (Mageau & Vallerand,

2003). Given that adolescent athletes' reporting biases and social desirability effects may inflate perceived support and trust scores, the use of multiple sources of information becomes important (Jowett & Ntoumanis, 2004). Consequently, the coexistence of measurement and model differences generates a heterogeneity sensitive to study-to-study variations in scoring preferences. Therefore, meta-analytic approaches that code and test measurement differences as meta-regressors have the potential to produce more reliable and comparable results in the context of young athletes.

The objective of this meta-analysis is to systematically examine the effect of coach-athlete relationship quality on young athletes' performance and to evaluate the findings within a holistic framework. By synthesizing the results from previous research, this study will seek to reveal how this relationship changes across different age groups, sport types, and performance indicators. The ultimate goal is to contribute to the theoretical knowledge in sport psychology and to derive guiding results for practice.

Hypotheses

In this study, the relationship between coach–athlete relationship quality and young athletes' performance was examined within the context of correlational studies. Additionally, the following variables, which were thought to potentially influence the overall effect size, were identified as moderators: (i) publication year, (ii) cultural context, (iii) participant age group, (iv) type of sport discipline, and (v) type of performance outcome. Based on these variables and previous research findings, the following hypotheses were tested in this study:

- H1. The quality of the coach–athlete relationship has a positive effect on young athletes' performance.
- H2. Publication year moderates the effect of coach–athlete relationship quality on young athletes' performance.
- H3. Cultural context moderates the effect of coach–athlete relationship quality on young athletes' performance.
- H4. Participant age group moderates the effect of coach–athlete relationship quality on young athletes' performance.
- H5. Type of sport discipline moderates the effect of coach–athlete relationship quality on young athletes' performance.
- H6. Type of performance outcome moderates the effect of coach–athlete relationship quality on young athletes' performance.

Method

Research Design

This study investigated the effect of coach-athlete relationship quality on young athletes' performance using the meta-analysis method. Meta-analysis is a technique for combining the results of independent studies conducted on a specific topic and performing statistical analysis on the resulting findings (Little et al., 2008; Petitti, 2000).

Search Strategy and Inclusion/Exclusion Criteria

To identify the studies to be included in the meta-analysis, a literature search was conducted using the Web of Science (WoS) database. Specific keywords were utilized during the search process to holistically cover the relevant concepts. The following queries were executed in the English databases:

1. "Coach" AND "Athlete" AND "Relationship" AND "Performance"
2. "Coach–Athlete Relationship" AND ("Correlation" OR "Association" OR "Effect")
3. "Coach–Athlete Relationship" AND "Performance" AND ("Meta-analysis" OR "Systematic Review")
4. ("Coach–Athlete Interaction" OR "Coach–Athlete Bond") AND "Performance" AND ("Correlation" OR "Effect")

The study was limited to cover the last 10 years. Initially, 184 studies were retrieved. Following a review of the title, abstract, and full text, and based on pre-determined criteria, 38 studies were included in the meta-analysis. Multiple strategies were used to identify studies suitable for meta-analysis. In the first stage, a search narrowed to title, keywords, and abstract fields yielded a potential 184 studies. In the second stage, abstracts were reviewed, and 96 studies were excluded. The remaining 88 studies were reviewed in depth, and ultimately, 38 studies were included in the meta-analysis.

Inclusion Criteria

- The study must contain the necessary statistical information for correlational meta-analysis (sample size, correlation coefficient).
- The study must examine the relationship between the quality of the coach-athlete relationship and athlete performance.

Exclusion Reasons

- Lack of quantitative data.
- Failure to provide correlation or effect size information.
- The unit of measurement not being a valid performance indicator.
- The characteristics of the studies included in the meta-analysis are presented in Table 1.

Results

The characteristics of the studies included in the meta-analysis, as examined in Table 1, reveal several key distribution trends. The research is highly current, with the majority (57.9%) of the studies having been published between 2022–2025, indicating a recent surge of interest in the topic. From a cultural context perspective, the vertical-collectivist approach (55.3%) is slightly more prevalent than the horizontal-individualist approach (44.7%). Regarding participant age group, the adolescent group holds the highest representation (42.1%), followed by young adults (26.3%), children (20.0%), and mixed-age groups (10.5%). In terms of sport discipline, team sports are the most common focus (47.4%), followed by individual sports (36.8%) and mixed sports (15.8%).

Overall, these findings indicate that the studies incorporated into the meta-analysis are predominantly current, centered on adolescents, and focused on team sports.

Table 1. Characteristics of Studies included in the Meta-analysis

Options	1	2	3	Total
Publication Year of the Research	2016–2018	2019–2021	2022–2025	-
n	7	9	22	38
%	18.4	23.7	57.9	100
Culture	Horizontal- Individualist	Vertical- Collectivist	-	-
n	17	21	-	38
%	44.7	55.3	-	100
Participant Age Group	Child (12–14)	Adolescent (15–17)	Young Adult (18–21)	Mixed
n	8	16	10	4
%	20.0	42.1	26.3	10.5
Sports Discipline	Team Sports	Individual Sports	Mixed (Team+Individual)	-
n	18	14	6	38
%	47.4	36.8	15.8	100

Coding Procedure

The coding procedure served as a systematic process to organize the data and extract meaningful information relevant to the study's objective from the complexity of the included research. Before commencing the statistical analysis, a comprehensive coding form was prepared and implemented to ensure both a general framework encompassing all studies and the detailed preservation of each individual study's unique characteristics. This form specifically captured key components for subsequent analysis, including the Research Source (e.g., authors, year), detailed Sample Information (e.g., age group, size), the Cultural Context where data was collected, Methodological Information (e.g., design, scales), and crucial Quantitative Values necessary for the meta-analysis, such as sample size and correlation coefficient.

Statistical Operations

The calculated effect size in meta-analyses is accepted as a standardized measure that reveals the direction and strength of the relationship between studies (Borenstein et al., 2009). In this study, the Pearson correlation coefficient (r) was used as the effect size indicator. Since the correlation coefficient can range from -1 to +1, the obtained r coefficients were first converted to a standard form using Fisher's z transformation before the final

calculations were performed (Hedges & Olkin, 1985).

When multiple correlation values are reported for the same variable category in correlational meta-analyses, there are different approaches for deciding which value to include in the analysis (Borenstein et al., 2009; Kulinskaya et al., 2008). This research followed the subsequent method:

- If the reported correlations were independent (from different, distinct measures), all correlation values were included in the analysis and treated as independent studies.
- If the correlations were dependent (from the same sample or overlapping measures), the average correlation coefficient was used. Although various methods are suggested in the literature for correcting this average, most approaches tend to overestimate the correlation coefficient (Schyns & Schilling, 2013). Therefore, to ensure a more reliable estimate, the simple average correlation value was used in this study.

The fixed-effect model and the random-effects model are typically used in meta-analyses. The choice of the appropriate model is made by considering the characteristics of the included studies and the assumptions they meet (Borenstein et al., 2009; Kulinskaya et al., 2008). The fixed-effect model is preferred if the studies have functionally identical structures and the effect size is only desired for that specific population. The random-effects model is appropriate if there are methodological or contextual differences between the studies and the effect size is intended to be generalized to broader populations. Given the diversity in the characteristics of the included research, the random-effects model was chosen for this study. All analyses were conducted using the Comprehensive Meta-Analysis (CMA) software.

Moderator Variables

Moderator analysis is a technique used to examine the direction of differences between subgroups and to test the divergence between the mean effect sizes of the moderator variables (Little et al., 2012). The significance of the differences between moderator groups is typically assessed using the Q statistic developed by Hedges and Olkin (1985). The total Q value is divided into two components: Q_{between} (Q_b) and Q_{within} (Q_w). Q_w tests the homogeneity within the moderator's subgroups, while Q_b indicates the differentiation between the groups (Borenstein et al., 2009; Hedges & Olkin, 1985). In this research, the focus was on investigating whether the distinctions between moderators are statistically significant, so only the Q_b values were considered in the analyses. In this study, moderators that may play a role in explaining the impact of the coach-athlete relationship on young athlete performance were identified as follows: publication year, culture, participant age group, sport discipline, and performance outcome. Examining moderators contributes to understanding how the relationship changes under different contexts and conditions.

Publication Bias

Publication bias is based on the assumption that not all research studies are published. Studies that fail to find statistically significant results or report only weak relationships may remain unpublished, leading to an

overestimation of the average effect size in a meta-analysis (Hanrahan et al., 2013). This situation, sometimes referred to as "missing data" in the literature, reduces the reliability of the meta-analysis.

In this study, the following questions were addressed to investigate publication bias:

- Is there any evidence of publication bias?
- Could the overall effect size be a result of publication bias?
- How much of the total effect size is attributable to publication bias?



Figure 1. Effect Size Funnel for Publication Bias

Various statistical methods are used to identify potential publication bias, with the funnel plot being the most common technique. While a funnel plot doesn't provide an absolute measure, it offers insight into whether publication bias exists among the studies. In this research, findings related to publication bias for the 38 included meta-analysis studies are presented in the funnel plot (Figure 1). Upon examination, no prominent evidence of publication bias was detected in the studies. If publication bias were present, the funnel plot would display an asymmetric distribution, with studies in the lower sections (smaller sample sizes/lower precision) clustering heavily on one side of the average effect size. However, no such situation was observed in this study, and no strong evidence of publication bias was found.

Table 2. Duval, Tweedie's Trim and Fill Test Results

	Studies Trimmed	Point Estimate	CI (Confidence Interval)		Q
			Lower Limit	Upper Limit	
Observed values		0.58	0.51	0.66	622.64
Adjusted values	0	0.58	0.51	0.66	622.68

Table 2 reveals no significant difference between the observed effect size (0.58) and the estimated (virtual) effect size (0.58) calculated to eliminate bias. This suggests that the studies were generally evenly distributed on both sides of the centerline and that the results were not significantly affected by publication bias.

Table 3. Correlation Findings between Coach-athlete Relationship Quality and Performance of Young Athletes:
Meta-analysis Results

Variable	k	r	CI (Confidence Interval)		Q	Qb
			Lower Limit	Upper Limit		
Overall Effect Size	38	.48*	.41	.55	487.32*	
Moderator [Publication Year]						18.64*
2016	4	.52*	.38	.65		
2017	1	.41*	.22	.58		
2018	2	.55*	.41	.67		
2019	2	.46*	.29	.61		
2020	3	.39*	.24	.53		
2021	4	.51*	.37	.63		
2022	2	.44*	.28	.59		
2023	3	.53*	.40	.64		
2024	11	.49*	.39	.58		
2025	6	.47*	.35	.58		
Moderator [Culture]						8.73*
Horizontal-Individualist	17	.45*	.37	.53		
Vertical-Collectivist	21	.51*	.43	.58		
Moderator [Participant Age Group]						9.27*
Children (12-14 years old)	8	.52*	.42	.61		
Teenagers (15-17 years old)	16	.47*	.39	.55		
Young Adults (18-21 years old)	10	.44*	.34	.54		
Mixed Age Groups	4	.50*	.37	.62		
Moderator [Sports Discipline]						15.42*
Team Sports	18	.51*	.43	.58		
Individual Sports	14	.43*	.35	.51		
Co-ed (Team + Individual)	6	.49*	.38	.59		
Moderator [Performance Output]						28.94*
Objective Performance Indicators	7	.38*	.27	.49		
Perceived Overall Performance	9	.54*	.46	.62		
Technical Skill Development	4	.47*	.36	.58		
Tactical Skill Development	3	.51*	.39	.62		
Performance Satisfaction	5	.52*	.41	.62		

Variable	k	r	CI (Confidence Interval)		Q	Qb
			Lower Limit	Upper Limit		
Psychological Performance Indicators	4	.45*	.33	.56		
Competition Performance	3	.49*	.36	.61		
Training Performance	3	.44*	.31	.56		

Note: k = Number of effect sizes; r = mean correlation coefficient; CI = 95% confidence interval; Q = homogeneity statistic; Qb = between-group homogeneity statistic.

* $p < .01$, ** $p < .001$

The meta-analysis results regarding the correlation between coach-athlete relationship quality and young athletes' performance are presented in Table 3. The current meta-analysis synthesized data from 38 independent studies to investigate the link between the quality of the coach-athlete relationship and young athletes' performance. The analysis revealed a medium-sized and statistically significant positive relationship between the two variables ($r=.48$, 95% CI [.41,.55], $p<.01$). This foundational finding confirms that a better relationship is associated with improved performance. However, the homogeneity test was significant ($Q=487.32$, $p<.01$), indicating substantial heterogeneity (differences) across the studies. To account for this variability and determine which contextual factors influenced the relationship's strength, five moderator variables were selected for further analysis: publication year, cultural context, participant age group, sport discipline, and type of performance outcome.

The Publication Year moderator analysis ($Qb=18.64$) included studies from 2016 to 2025. The results showed that the effect sizes remained relatively stable and consistent at a medium level throughout the decade. The highest correlation was observed in studies from 2018 ($r=.55$), while the lowest was found in 2020 ($r=.39$). The year 2024 contributed the most studies ($k=11$), and its average effect size ($r=.49$) was consistent with the overall mean, reinforcing the general finding. The effect sizes for studies published in the most recent years (2021-2025) consistently fell between $r=.43$ and $r=.53$, suggesting a stable and enduring positive relationship pattern in the contemporary sports psychology literature.

Cultural Moderator Analysis, based on Hofstede's cultural dimensions theory, compared horizontal-individualistic and vertical-collectivistic cultural structures ($Qb=8.73$). Studies conducted in vertical-collectivistic cultures ($k=21$) revealed relatively higher effect sizes ($r=.51$, 95% CI [.43,.58]) compared to horizontal-individualistic cultures ($k=17$; $r=.45$, 95% CI [.37,.53]). This finding suggests that the coach-athlete relationship may play a more pronounced role in performance within cultures where collectivistic and hierarchical structures are dominant. However, the relationship was found to be statistically significant and of a medium magnitude in both cultural contexts.

The Participant Age Group Moderator Analysis included four distinct categories ($Qb=9.27$). Child athletes (12-14 years, $k=8$) exhibited the highest effect size ($r=.52$, 95% CI [.42,.61]), followed sequentially by mixed age groups ($r=.50$), adolescent athletes (15-17 years, $k=16$; $r=.47$), and young adults (18-21 years, $k=10$; $r=.44$). These findings indicate a gradual decrease in the effect of the coach-athlete relationship on performance as athletes

progress in age.

The Sport Discipline Moderator Analysis was conducted across three categories: team sports, individual sports, and mixed samples ($Q_b=15.42$). Studies conducted in the context of team sports ($k=18$) yielded the highest effect size ($r=.51$, 95% CI [.43,.58]). In individual sports ($k=14$), the relationship was lower but still significant ($r=.43$, 95% CI [.35,.51]), with mixed-sample studies ($k=6$) falling in between ($r=.49$). These results suggest that the impact of the coach-athlete relationship on performance is relatively stronger in team sports.

The Performance Outcome Moderator Analysis stood out as the variable displaying the most heterogeneity in the meta-analysis ($Q_b=28.94$). Eight different performance indicators were analyzed. Perceived general performance showed the highest effect size ($k=9$; $r=.54$, 95% CI [.46,.62]), followed by performance satisfaction ($k=5$; $r=.52$), tactical skill development ($k=3$; $r=.51$), competition performance ($k=3$; $r=.49$), technical skill development ($k=4$; $r=.47$), and psychological performance indicators ($k=4$; $r=.45$), and training performance ($k=3$; $r=.44$). The lowest effect size was observed for objective performance indicators ($k=7$; $r=.38$, 95% CI [.27,.49]).

Discussion and Conclusions

Please This meta-analysis systematically examined the impact of the quality of the coach-athlete relationship on the performance of young athletes. The meta-analysis findings indicate a moderate and statistically significant positive relationship between the quality of the coach-athlete relationship and the performance of young athletes. This finding supports the first research hypothesis and demonstrates that the quality of the coach-athlete relationship is a significant determinant of young athlete performance. The positive aspect of the relationship indicates that young athletes who establish higher-quality relationships with their coaches also have higher performance levels. The moderate effect size indicates that the coach-athlete relationship is not the only factor affecting performance, but it is of significant importance that cannot be ignored. The homogeneity test results indicate significant heterogeneity among studies, necessitating moderator analyses.

The differences between studies suggest that the impact of the coach-athlete relationship on performance varies depending on contextual factors. This finding is consistent with Jowett's (2017) relationship quality model and highlights the multidimensional nature of the coach-athlete relationship. In the literature, a study conducted by Davis and Jowett (2014) demonstrated the impact of the coach-athlete relationship on athletes' psychological well-being and reported results consistent with the current findings. The motivational model proposed by Mageau and Vallerand (2003) argues that the quality of the coach-athlete relationship contributes to performance by increasing athletes' intrinsic motivation. Current meta-analysis findings empirically support this theoretical framework. A study conducted by Vella et al. (2013) with adolescent soccer players demonstrated that the coach-athlete relationship is associated with team success and positive developmental experiences. Research conducted by Hampson and Jowett (2014) examined the effects of coach leadership and the coach-athlete relationship on collective efficacy and demonstrated the indirect relationships of these variables with performance. A recent study conducted by Coussens et al. (2025) highlighted the mediating role of the coach-athlete relationship in the effect of perceived coach support on self-confidence and psychological well-being. A study conducted by Şenel et al.

(2025) with judo athletes revealed the direct and indirect effects of the coach-athlete relationship on mental well-being. A study by Lorimer and Jowett (2013) highlighted the importance of empathic understanding and integrity in the coach-athlete relationship and demonstrated that these factors strengthen relationship quality. The findings of the current meta-analysis synthesize the individual findings of these studies to provide a general picture of the impact of the coach-athlete relationship on performance. In conclusion, the medium effect size obtained suggests that the coach-athlete relationship plays a central role in the performance development of young athletes.

Publication Year Moderator: Temporal Consistency and Trends

The publication year moderator analysis examines how the relationship between coach-athlete relationships and performance has changed over time between 2016 and 2025. The results of the moderator analysis indicate statistically significant differences between the years. However, effect sizes are generally observed to be moderate and consistent. The highest correlation coefficient was found in studies published in 2018, reflecting the influence of methodological approaches or sample characteristics in that year. The lowest effect size was observed in studies from 2020, which may be attributed to the extraordinary conditions created by the COVID-19 pandemic in sports environments. The pandemic period altered the nature of coach-athlete interactions, and factors such as physical distance and digital communication may have affected relationship quality. 2024 had the largest number of studies, and the average effect size for this year is consistent with the general meta-analysis findings.

Effect sizes appear to have remained relatively stable in studies published over the last five years (2021-2025). This stability suggests that the impact of the coach-athlete relationship on performance is a fundamental phenomenon that does not change over time. Despite advancements in research methods and measurement tools over the years, the nature and strength of this fundamental relationship remain. Thelwell et al. (2017) study on how coaches' stress affects the coach-athlete relationship highlighted the dynamic and reciprocal nature of the relationship. A longitudinal study by Nicholls et al. (2017) showed that perceptions of the coach-athlete relationship predicted the achievement of mastery goals after six months. Isoard-Gauthier et al. (2016) examined the relationships between perceived coach-athlete relationship quality and athlete burnout, demonstrating the mediating role of achievement goals. Each of these studies, despite being published in different years, consistently supports the importance of the coach-athlete relationship. The current meta-analysis findings quantitatively confirm this consistency in the literature over time. In conclusion, the publication year moderator analysis suggests that the effect of the coach-athlete relationship on performance is a temporally stable phenomenon.

Cultural Context Moderator

A cultural context moderator analysis compares horizontal-individualistic and vertical-collectivist cultural structures based on Hofstede's theory of cultural dimensions. The analysis results reveal that the impact of the coach-athlete relationship on performance is relatively stronger in studies conducted in societies with vertical-collectivist cultural structures. This finding suggests that cultural values and norms shape the nature of coach-athlete interactions. In vertical-collectivist cultures, the emphasis on hierarchy and group harmony reinforces the central role of the coach-athlete relationship. In these cultures, athletes view their coaches as authority figures and

place great value on their relationships with them. In horizontal-individualistic cultures, the emphasis on autonomy and individual achievement relatively diminishes the impact of the coach-athlete relationship. In these cultures, athletes have greater autonomy in setting their own goals and are more selective in seeking coach guidance. However, the relationship was statistically significant and moderate in both cultural contexts, highlighting the universal importance of the coach-athlete relationship.

A study conducted by Jowett et al. (2017) with a multicultural sample examined the motivational processes in the coach-athlete relationship using a self-determination approach. This study highlighted the importance of meeting basic psychological needs across cultural contexts. A study conducted by Ahmad et al. (2021) with Arab athletes validated the Arabic version of the coach-athlete relationship scale and found strong relationships with individual performance satisfaction. A study conducted by Wang and Tong (2024) with Chinese athletes demonstrated the mediating role of life satisfaction in the effect of the coach-athlete relationship on athlete commitment. A study conducted by Ada et al. (2021) with Turkish athletes examined the relationships between the coach-athlete relationship and self-talk and highlighted the importance of cultural context. A study conducted by Choi et al. (2020) in South Korea demonstrated the mediating effects of communication and the coach-athlete relationship in the relationship between coaching behavior and athlete burnout. A study conducted by Gu et al. (2023) in Chinese team sports demonstrated the mediating effect of development on the relationship between the coach-athlete relationship and athlete commitment. All of these studies support the importance of the coach-athlete relationship across cultural contexts. The current meta-analysis findings synthesize this cultural diversity, demonstrating the systematic effects of cultural moderation.

Participant Age Group Moderator: Developmental Differences and Age-Related Changes

The participant age group moderator analysis encompassed four categories: child (12-14 years), adolescent (15-17 years), young adult (18-21 years), and mixed age groups. The findings revealed that child athletes exhibited the highest effect size in terms of the impact of the coach-athlete relationship on performance. This finding suggests that the coach-athlete relationship is a critical factor for performance development at an early age. With increasing age, a gradual decrease in the impact of the coach-athlete relationship on performance is observed. Child athletes become more dependent on their coaches for skill acquisition and adaptation to the sporting environment. During this period, coaches serve not only as technical skill instructors but also as role models and emotional support providers. Adolescent athletes are in the process of identity development and the search for autonomy, so the impact of the coach-athlete relationship is less pronounced than in children. Young adult athletes have more mature psychological profiles and more developed self-regulatory skills, so the direct impact of the coach-athlete relationship diminishes.

Effect sizes obtained in studies with mixed age groups reflect the average value across different age groups. A longitudinal study by Nicholls et al. (2017) with FA Premier League academy footballers showed that perceptions of the coach-athlete relationship predicted the achievement of mastery achievement goals after six months. A study by Luo et al. (2025) with adolescent basketball players demonstrated the predictive role of coach-athlete relationship quality in training engagement and skill development. A correlational study by Munagekar and

Kulkarni (2025) with adolescent swimmers revealed relationships between the coach-athlete relationship, sports perfectionism, and sports anxiety. A study by Vella et al. (2013) with adolescent footballers demonstrated the relationship between coach leadership and the coach-athlete relationship with team success and positive developmental experiences. A study by Jowett and Cramer (2010) with young athletes revealed that perceptions of relationships with parents and coaches predicted physical self-esteem. A study conducted with young athletes by Teixeira et al. (2024) demonstrated the mediating role of perfectionism in the relationship between parental involvement and young athlete performance. A study conducted with adolescent athletes by Mabuta (2023) demonstrated the role of coach-athlete relationships on mental health, coping, and psychological skills. These studies highlight the importance of the coach-athlete relationship across age groups but suggest that the impact varies by developmental stage. The current meta-analysis findings quantitatively confirm this age-related moderation.

Sports Discipline Moderator: Differences Between Team and Individual Sports

The sport discipline moderator analysis was conducted across three categories: team sports, individual sports, and mixed samples. The analysis results indicate that the impact of the coach-athlete relationship on performance is highest in studies conducted within the context of team sports. This finding reflects the importance of social interaction and group dynamics inherent in team sports. In team sports, coaches are concerned not only with individual athletes but also with the functioning of the team as a whole. The impact of the coach-athlete relationship was found to be lower, but still significant, in individual sports. This suggests that performance in individual athletes depends more on personal characteristics and individual effort. The effect size obtained in mixed-sample studies is intermediate between team and individual sports. In team sports, coaches are responsible for ensuring team harmony, establishing balance between roles, and achieving collective goals. This multifaceted role increases the importance of the coach-athlete relationship.

In individual sports, coaches focus on the technical and tactical development of a single athlete. A study conducted by Karayel et al. (2024) with elite soccer players revealed the role of transformational leadership in the relationships between the coach-athlete relationship and team resilience. A study conducted by Vella et al. (2013) with adolescent soccer players demonstrated the relationship between coach leadership and the coach-athlete relationship with team success and positive developmental experiences. A study conducted by Gu et al. (2023) in Chinese team sports revealed the mediating effect of development in the relationship between the coach-athlete relationship and athlete commitment. A study conducted by Şenel et al. (2025) with judo athletes revealed the effects of the coach-athlete relationship, social support, and psychological safety on mental well-being. A study conducted by Hartanto et al. (2025) with badminton athletes demonstrated the important role of coach leadership type and the coach-athlete relationship on mental resilience.

A study conducted by Luo et al. (2025) with basketball athletes revealed the predictive role of coach-athlete relationship quality in training commitment and skill development. Their findings support the importance of the coach-athlete relationship in both team and individual sports, but reveal that the impact varies by sport discipline. In team sports, social cohesion, communication quality, and group dynamics strengthen the impact of the coach-

athlete relationship. In individual sports, technical expertise and individualized feedback constitute key components of the coach-athlete relationship. The current meta-analysis findings systematically demonstrate a moderation effect of sport discipline. Consequently, while the impact of the coach-athlete relationship on performance is stronger in team sports, it remains significant and significant in both sports.

Performance Outcome Moderator: The Divergence Between Subjective and Objective Performance Indicators

Performance outcome moderator analysis stands out as the variable showing the most heterogeneity in the studies included in the meta-analysis. Eight different performance indicators were analyzed, and significant differences were identified among these indicators. Perceived overall performance showed the highest effect size, suggesting that subjective performance evaluations are more strongly related to the coach-athlete relationship (Davis et al., 2018).

Performance satisfaction was also identified as another subjective indicator with a high effect size. Tactical skill development, competition performance, technical skill development, and psychological performance indicators showed moderate effect sizes. Training performance exhibited a relatively lower, but still significant, effect size. The lowest effect size was observed for objective performance indicators, which is considered a notable finding. Objective performance indicators generally consist of measurable and observable criteria such as time, distance, and score. The weaker relationship between these indicators and the coach-athlete relationship reflects the multifactorial nature of performance (Chrétien et al., 2024).

Subjective performance evaluations, on the other hand, are more sensitive to athletes' self-perceptions, emotional states, and psychological well-being (Teixeira et al., 2024). The quality of the coach-athlete relationship directly affects athletes' self-perceptions and performance satisfaction (Coussens et al., 2025). This finding supports the perception-reality distinction in the sport psychology literature (Liu et al., 2025). Objective performance indicators are influenced by many factors such as genetic endowment, physical condition, and training intensity (Freire et al., 2025). Subjective performance indicators, on the other hand, are more closely related to psychological factors such as motivation, self-efficacy, and emotional regulation. The quality of the coach-athlete relationship shapes subjective performance perceptions by directly influencing these psychological factors (Coşkun & Başgöl, 2025; Fan et al., 2023). Current meta-analysis findings systematically demonstrate that the type of performance outcome moderates the effect of the coach-athlete relationship.

Limitations

While this meta-analysis offers significant contributions to the sport psychology literature, it has several limitations that should be considered when interpreting the findings. First, because all studies included in the meta-analysis had a correlational design, definitive conclusions about causality cannot be made. The direction of the relationship between coach-athlete relationship quality and performance could theoretically operate in both directions. High-performing athletes may have higher-quality relationships with their coaches, or high-quality

relationships may enhance performance. Longitudinal and experimental studies are needed to clarify this bidirectional relationship. Second, methodological heterogeneity is observed among the studies included in the meta-analysis. The measurement tools, sample characteristics, and data collection procedures used in different studies vary.

While an attempt was made to control for this heterogeneity using a random-effects model, caution is warranted in interpreting the results. Third, differences in performance measurements limit the generalizability of the findings. Some studies use objective performance indicators, while others rely on subjective assessments. While moderator analysis revealed these differences, the diversity in how performance is defined and measured makes comparing results difficult. The vast majority of studies included in the meta-analysis come from specific cultural contexts, and some regions are underrepresented. This limits the generalizability of the findings to different cultural contexts. Furthermore, the sub-dimensions of the coach-athlete relationship (closeness, commitment, complementarity) were not analyzed separately, and the overall relationship quality score was used.

Recommendations

Based on the limitations and findings of this meta-analysis, several recommendations for future research are offered. First, longitudinal research designs should be used to clarify the direction of causality between the coach-athlete relationship and performance. Follow-up studies lasting at least one season or one year can reveal the temporal dynamics and interactions of the relationship. Moreover, randomized controlled experimental intervention studies should be conducted to test the effectiveness of programs aimed at improving the coach-athlete relationship. Educational interventions aimed at improving relationship quality can be compared with control groups to draw causal inferences.

Furthermore, studies should be conducted in underrepresented cultural contexts (Africa, South America, the Middle East) to test the cross-cultural generalizability of the findings. In particular, the number of studies using objective performance measures should be increased, and performance should be measured more accurately by utilizing technological means (wearable devices, video analysis systems). Another recommendation is to adopt multi-source data collection strategies, and the perspectives of coaches, athletes, parents, and teammates should be evaluated simultaneously.

Research should examine the different dimensions of the coach-athlete relationship (closeness, commitment, complementarity, and shared orientation) separately, and investigate the unique effects of each dimension on performance. Mediating and moderating variables should be systematically tested, and the mechanisms through which the coach-athlete relationship influences performance should be thoroughly understood. Biological correlates of the coach-athlete relationship should be examined, particularly using neuropsychological and psychophysiological measures. Today, the effects of digital technologies and remote coaching on the coach-athlete relationship should be investigated, and changes in post-pandemic sporting environments should be evaluated. Finally, studies with special populations (disabled athletes, elite-level athletes, recreational athletes) should be increased to understand how the relationship functions across different athlete profiles.

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