Do leaders *actually* influence sports performance?

An integrated systematic review and meta-analyses

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Abstract

The precise nature of the leadership-sport performance relationship remains unclear. Furthermore, understanding of how leadership effects might differ across coach and athlete leaders or across team and individual performance is currently limited. To address these issues, we conducted an integrated systematic and meta-analytical review (50 studies, 17,158 athletes), to quantify differences between coach and athlete leaders, and examine potential moderator variables. Results revealed a significant yet small positive relationship between leadership and performance (r = .21; Hedges' g = .44). Significantly stronger relationships emerged for team captains (r = .34) with team performance than coaches (r = .18), and informal athlete leaders (r = .15). Moreover, significantly larger effect sizes were yielded for authentic (r = .44) and transformational (r = .33) compared to social identity leadership (r = .19). In sum, both coaches and athletes possess the potential to be effective leaders, who influence both team and individual performance.

Keywords: coaches, team captains, informal athlete leaders, transformational leadership, social identity leadership, leadership hierarchies

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Leaders play a pivotal role in the recruitment, training, tactics, and overall development of sports teams; all of which are inextricably linked to performance. As such, the behaviors exhibited by leaders are often assumed to have a profound and lasting effect on their athletes and teams (Arthur & Bastardoz, 2020). At the same time, however, there is considerable heterogeneity in the sources of leadership, types of leadership behaviors enacted, and the context in which such a process is embedded. Thus, despite an abundance of primary studies examining the effects of leadership on sport performance, the precise nature of this complex relationship is poorly understood. Inevitably there have been reviews of the sport leadership literature, however, these have either placed an emphasis on a single source of leadership (e.g., athletes, Cotterill et al., 2022), a single theoretical perspective (e.g., social identity theory, Stevens et al., 2021; transformational leadership theory, Turnnidge & Côté, 2018), or are narrative in nature. Here, we combine a theory driven logic model with integrated systematic review and meta-analytical techniques, to provide the first estimates of the strength, direction, and precision of the leadership-sport performance relationship. To this end, we synthesized all available evidence by assessing both published journal articles and unpublished dissertations/theses for eligibility. In addition, we also captured a broad profile of leadership (i.e., coach, formal athlete, informal athlete) and incorporated a wide spectrum of leadership models, to gain insight into the conditions under which the leadership-performance relationship might differ.

Overarching Review Model

To enhance the rigor of our review, we produced a review model, which offers a rich pictorial method of communicating complex interrelationships. Although such models are not frequently utilized within sport psychology reviews, our model (see Supplementary

Materials) was intended to help guide readers through the existing leadership-sport performance literature. Our review model presents the proposed relationships between global, coach, formal athlete and informal athlete leadership[1] with global[2], team, and individual performance. We also include potential mediator (e.g., team cohesion, intrinsic motivation) and moderator (e.g., theoretical leadership perspective, athlete competitive level) variables that are proposed to influence these relationships.

Global Leadership and Sport Performance

Northouse (2024) defined leadership as "a process whereby an individual influences a group of individuals to achieve a common goal" (p.6). This definition highlights the potential for effective leaders to not only facilitate goal attainment, but ultimately, and of particular relevance in the sports setting, influence performance. Consistent with existing literature demonstrating a relationship between global leadership and sport performance (e.g., Krug et al., 2021; Hong & Jeong, 2020), we examine the following research question (RQ):

RQ[1]: Is there a relationship between global leadership and global sport performance (pathway g^0)?

However, a coherent and contemporary understanding of *when* and *how* leadership contributes to sport performance is still lacking. Therefore, we delve deeper into this relationship by examining several potential moderator and mediator variables[3].

Global Leadership and Team versus Individual Performance?

Performance has been operationalized in diverse ways, including the nature of the measures (i.e., objective vs. subjective assessments), referent groups (i.e., team performance or individual athletic performance), and the level of statistical analysis (i.e., performance variable assessed at the individual-level or aggregated at the team-level). Although most studies utilize objective measures of team performance (i.e., win/loss percentages), several researchers have captured athletes' subjective perceptions of their team's performance (e.g.,

participant ratings; Fransen et al., 2017). Within the current paper we use the terms *objective team-level* and *subjective team-level performance* with respect to these different operationalizations, and *team performance* as an umbrella term to encompass both.

Our first moderating variable refers to potential differences in the relationship between global leadership with team compared to individual performance. Scholarly consensus is that leadership is a process occurring in the interactions between leaders and followers (Uhl-Bien et al., 2014). Indeed, Northouse's (2024) definition of leadership emphasizes the importance of social and relational interactions between people in the pursuit of common/team goals, which suggests that leadership has the potential to foster positive outcomes for both individuals and teams:

RQ^2: Does the leadership-performance relationship differ when performance is captured at a team (pathway g^1) rather than individual level (pathway g^2)?

Unfortunately, much of the extant literature exclusively focuses on leadership provided by coaches. However, leadership is not only limited to those who possess control over valued resources or a position of authority within a group, athletes are also crucial potential sources of leadership (Eys et al., 2020). Therefore, there is a need to consider how the leadership-performance association may vary across different sources of leadership (e.g., athlete, coach).

Coach versus Athlete Leaders

Research suggests that coach and athlete leaders serve different functions for their teams (e.g., Loughead & Hardy, 2005). As a result, a complete picture of leadership can only emerge if the roles of both coach *and* athlete leaders are considered. In recent years, an increasing number of scholars have argued for the need to examine the interplay between these leadership sources (e.g., Steffens & Haslam, 2022); however, this focus is currently beyond the scope of the existing literature. Only a handful of studies have considered these

sources of leadership in concert (e.g., Butalia et al., 2024; Fransen, Boen, et al., 2018). Using a social identity approach, this research suggests that coaches, team captains, and informal athlete leaders positively influence both team and individual levels of performance. However, researchers within the organizational psychology domain have documented that the hierarchical distance between leaders and followers moderates the effectiveness and desirability of particular leadership behaviors (Nichols & Cottrell, 2014). In sport this distance may be relatively large (e.g., a coach in comparison to an athlete) or relatively small (e.g., a team captain in comparison to an athlete). Kane and Tremble Jr (2000) examined the effects of leadership behavior across hierarchical distances of the US Army and found that the variance accounted for by leadership behavior increased as a function of the leaders' rank, due to their control over resources and ability to dictate personnel decisions, strategy, and tactics. Therefore, given that coaches occupy an elevated position in the hierarchy within sports teams relative to athletes, we test the following:

RQ^3: Does the relationship between leadership and (global, team, and individual) performance vary when leadership stems from coaches (Panel B) rather than athletes (Panels C & D)?

Theoretical Leadership Perspective

As different leadership theories emphasize distinct patterns of behavior and areas of foci, it follows then that the strength of the leadership-performance association might depend on the theoretical perspective adopted by researchers. The effect of leadership on performance hinges on the ability of an individual to coordinate, motivate, and unify members in relation to the pursuit of personal and collective goals. As such, the inspirational and emotional leadership behaviors conceptualized within transformational leadership theory (TL; Avolio & Bass, 1995) appear to possess potential for influencing follower and team performance. Indeed, transformational leaders are charismatic individuals who inspire their

followers to realize their full potential and ultimately surpass their own performance expectations (Mach et al., 2022).

Different leadership models also present distinct mechanisms by which leaders might influence performance. Whereas transformational leaders elevate followers and produce positive growth, change, and motivation; authentic leaders exhibit moral/ethical behaviors in an effort to enhance follower awareness of values, knowledge, and strengths (i.e., self-efficacy and collective efficacy), which are key antecedents of performance (Walumbwa et al., 2008). Moreover, servant leaders place people's needs, aspirations, and interests above their own, in an attempt to contribute towards the growth of followers (Hammermeister et al., 2008). The demonstration of servant leadership behaviors (e.g., empathy, awareness) enhances team member trust and cohesion, ultimately improving collective performance (Gillham et al., 2015).

Within the last decade, leadership theories have further evolved to give greater consideration towards more shared social experiences. Social identity leadership involves cultivating a sense of "we" to motivate individuals to exert effort toward collective aims (Steffens et al., 2014). This approach even encourages players participating in their individual sports (e.g., diving) to define themselves as members of a particular team or club.

A more traditional approach used to examine leadership behavior in sport is the multidimensional model of leadership (MML; Chelladurai & Saleh, 1978), which proposes that the congruency between required (i.e., situationally demanded), actual (i.e., behaviorally exhibited), and preferred (i.e., desired by the athletes) leadership directly influences athlete performance. This model links the notion of transformational leadership (e.g., democratic behavior) to elements of leadership with a more transactional (e.g., autocratic behavior) nature (Riemer & Harenberg, 2014). However, the MML possesses fewer

emotional/inspirational components compared to the aforementioned theories (e.g., servant leadership).

To obtain an integrative perspective on the role of different leadership styles in relation to performance, we complemented our quantitative analyses—which were necessarily limited to the more popular leadership perspectives due to the number of studies available—with narrative techniques to analyze less cited models (see Systematic and Narrative Review). Considered in concert, we advance:

RQ[4]: Does the relationship that global leadership has with global, team, and individual performance vary across leadership perspectives?

Theory-Building Moderator Analyses

Previous leadership-sport performance studies have not dealt with potential moderator variables in much detail. However, the limited data suggests that certain sample characteristics may influence both the strength and direction of this association. The current work pools existing research to help clarify knowledge and ultimately aid theoretical development. We report the findings of our sample sex and sport type moderation analyses within the Supplementary Materials, due to limited study numbers. Specifically, these analyses allowed us to assess whether the leadership-performance relationship differs across male only compared to mixed sex samples (only two studies used female only samples) as well as across teams with high (e.g., soccer, integrated) relative to multi-level (e.g., golf, collective; swimming, cooperative) task interdependence.

Athlete Competitive Level

While not a central feature of the literature, the effect of leadership may be relatively limited within younger and less developed athletes (i.e., youth sport) given that they require more technical skill-based learning. In addition, effective leadership within less competitive samples may reflect different aims of the leader (e.g., prioritizing character development over

performance). By contrast, the leadership goals/aims of more competitive samples (e.g., elite) may better promote successful performance. Older (e.g., NCAA university) and more developed (e.g., elite) athletes who possess advanced skill sets may rely more heavily on leadership for performance. Within these skilled samples, factors beyond technical skills, such as leadership may become more salient. As a result, we test the following:

RQ[5]: Is the leadership-performance relationship different across competitive levels?

Explanatory Mechanisms

Despite the number of primary studies examining the association between the leadership and performance constructs, the vast majority have focused exclusively on the direct leadership-sport performance relationship, thereby ignoring the potential influence of mediator variables and emergent states. McEwan and Beauchamp's (2014) model of team effectiveness proposes sixteen potential mediator processes (e.g., goal specification, coordination) and emergent states (e.g., team cohesion) that have the potential to influence this direct relationship. Given that the extant literature has largely overlooked the role of mediator variables, it is difficult to test the influence of different mechanisms quantitatively. Consequently, we narratively synthesized this potentially insightful pocket of literature.

Present Study

Using systematic and meta-analytical techniques we conducted a review of the leadership-sport performance relationship. Of note, our secondary sourced review also addressed voids in the current knowledge concerning the potential differences between the influence of coach, formal, and informal athlete leaders, and their effects across team and individual levels of performance. Beyond filling gaps in the literature, the current work helps to advance the theoretical understanding of leadership through the examination of previously underexplored moderator and mediator variables. From an applied perspective, our findings have relevance for how coach and athlete leaders can modify their behaviors to optimize both

individual and team performance. Our objectives include: (a) establishing whether a relationship exists between the (global) leadership and performance constructs; (b) quantifying the influence of sports leaders on both team and individual level performance; (c) quantifying the differences between coach, formal, and informal athlete leadership; (d) exploring potential moderator variables that may influence the leadership-performance relationship; and (e) using narrative syntheses to identify potential mediator variables. As far as we are aware, this is the most comprehensive sport leadership review to date. Our review provides an accurate and up to date depiction of leadership in sport as well as a better understanding of which theoretical leadership perspectives have more relevance within sport settings.

Method

We conducted our integrated systematic review and meta-analyses in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA; Page et al., 2021) and the Meta-analyses Of Observational Studies in Epidemiology (MOOSE; Stroup et al., 2000) checklists (see Supplementary Materials). We pre-determined and described the methods of the present review in advance within a review protocol; registered on the Open Science Framework (PQJA7).

Search Strategy

Search procedures focused on studies examining coach, formal, or informal athlete leadership in relation to sport performance. First, we conducted a series of scoping exercises to identify key search terms and relevant databases. We used Boolean operators to combine key search terms as well as truncation "*" and wild card symbols "#" to overcome limitations with spelling, synonyms, and alternative keyword phrasing (see Supplementary Materials on the OSF for the electronic search strategy including specific search terms and Boolean operators). The lead author formally located articles via exhaustive online searches of six

scholarly electronic databases (e.g., PsycInfo, ScienceDirect, PubMed, Web of Science, MEDLINE) from inception to 3 August 2024, the date of the final electronic search. The manual screening of retrieved article bibliographies also revealed studies that were missed by electronic searches. Finally, the lead author examined existing reviews of the coach and athlete leadership literature (e.g., Turnnidge & Côté, 2018; Cotterill et al., 2022) and scrutinized the ResearchGate and Google Scholar profiles of prominent authors within the field, to identify additional relevant publications. We wanted the current review to synthesize all available evidence by appraising both published journal articles and grey literature (e.g., unpublished dissertations/theses) as this ensured a rigorous approach; increasing the accuracy of the results and reducing the likelihood of publication bias (Gunnell et al., 2020). To locate grey literature, we searched the ProQuest Dissertations and Theses database.

Eligibility Criteria

Studies included within the current review fulfilled the following criteria: (a) conducted within a sport setting; (b) captured coach, formal, or informal athlete leadership in relation to sport performance (either qualitatively or quantitatively); (c) had sufficient information to allow data extraction, and inclusion in the data analysis and critical appraisal; (d) a primary data source; and (e) written in English, the primary language of the authors.

Systematic Review Team

Our review team consisted of five authors ─ the first three authors met most regularly to discuss and challenge decisions at key stages of the process (e.g., study screening). Example discussions centered on the assessment of study quality, namely, the selection of an appropriate measure and quality rating discrepancies (see Assessment of Study Quality).

Search Process

The lead author performed the electronic, manual, and author searches, storing all returned articles in an electronic folder in RefWorks, a reference management program. First,

we used the RefWorks automation tool to delete duplicate articles. Second, the lead author assessed the titles and abstracts of located articles for suitability; with publications clearly beyond the scope of the current review being excluded (any ambiguous articles were retained). Finally, two authors independently subjected the remaining prospective articles to a full-text evaluation with reference to the pre-determined eligibility criteria and retained the remaining studies. Search outcomes are documented in the Results section.

Assessment of Study Quality

Given the heterogeneity of study designs employed across the included publications, we deemed the Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) appropriate for aiding our interpretation of quality in the reviewed literature. This tool is widely recognized as one of the most useful tools for appraising studies included within reviews (e.g., Pace et al., 2012). The initial phase comprises two screening questions irrespective of research design (e.g., Are there clear research questions?), followed by five items specific to the following study designs: randomized control trials (RCTs), qualitative, quantitative non-randomized, quantitative descriptive, and mixed method studies. Each criterion is rated with a “yes”, “no”, or “cannot tell”; one point was awarded to each yes response, and zero points for each no or cannot tell response[4].

Data Extraction

First, we developed an electronic data extraction coding frame using Microsoft Excel version 2407; we subsequently piloted tested five randomly selected studies and adjusted the template accordingly. Two reviewers independently extracted data from the included studies and any discrepancies were resolved by consensus or arbitration by a third reviewer. The coding frame (see Supplementary Materials on the OSF) was designed for the extraction of study (e.g., reference type, research methods) and sample characteristics (e.g., sample size, sample sex) as well as moderator (e.g., leadership source, theoretical leadership perspective)

and mediator (i.e., emergent states) variables.

Integrated Analyses

We adopted an integrated approach to facilitate a deeper understanding of the effects of coach and athlete leadership on performance. Amalgamating quantitative and narrative methods allowed us to present complex findings in a comprehensive and coherent manner. Indeed, the narrative findings provided an additional layer of detail for the meta-analytical and moderation results. The specific components of each method are discussed below.

Meta-Analyses

We quantitatively tested the relationships presented within our logic model via a series of meta-analyses using JASP version 0.19. We implemented a random effects model as the effect sizes used in the quantitative syntheses did not stem from a homogenous population. This process accounted for within-study error and between-study variation (Borenstein et al., 2010). To meta-analyze descriptive research, we used Pearson's correlation *r* as the effect size (ES) statistic. To normalize these values, we converted all correlation coefficients to Fisher's (1928) *z* scores for analysis and subsequently back transformed for post-analysis interpretation. With regards to experimental research, we calculated the standardized mean differences (Hedges' *g*) for within-group (i.e., pre-test vs. post-test) and between-group (i.e., treatment vs. control groups) comparisons, as Hedges' *g* includes an adjustment for small sample sizes. We interpreted the magnitude of our ES estimates using Cohen's (1992) guidelines: Pearson's *r* values of .10, .30, and .50 were indicative of small, medium, and large effects (.20, .50, and .80, respectively, for Hedges' *g*). Finally, we used the 95% confidence intervals (CI_{95}) and *p*-values to determine statistical significance. Specifically, CI_{95} that did not span zero and a *p*-value less than .05 to represent a significant association.

Sensitivity Analyses. We conducted a series of sensitivity analyses to examine the robustness of the global leadership-performance ES to the influence of (a) potential outlier studies, (b) selective reporting, and (c) studies judged to have moderate methodological quality. Analyses were conducted with selective studies included and excluded, and the results were compared to establish whether the conclusions drawn were substantially different.

Publication Bias. As recommended by Lin and Chu (2018), we conducted multiple tests to examine publication bias. Primarily, we inspected the funnel plot of the standard error for a symmetrical distribution of studies about the mean ES. Second, we computed the fail-safe *N* statistic to estimate the number of unpublished studies with null findings necessary to reduce the effect size to zero (Rosenthal, 1979). The probability of publication bias is low if this value is greater than 5n + 10 (*n* denotes number of studies). Egger's regression test was also used to examine the association between the observed effect sizes and their standard error, if the intercept of this regression is nonsignificant, publication bias is unlikely (Egger et al., 1997). If publication bias was observed, we used Duval and Tweedie's (2000) "Trim and Fill" procedures to adjust by creating a symmetrical plot about a new ES.

Heterogeneity. We conducted two statistical tests to assess heterogeneity, the Cochran *Q* statistic and the I^2 index. A significant Cochran *Q* statistic provides evidence that the true effects between studies varies (Huedo-Medina et al., 2006). We complemented its use with the I^2 index, as this parameter represents the percentage of variance that would remain in the absence of sampling error (Borenstein et al., 2017). Following Tod and Edwards' (2015) heterogeneity recommendations, we conducted moderation analyses when the I^2 value exceeded 30%.

Sub-Group Analyses. To quantitatively assess the effects of our proposed moderator variables, we conducted a series of post-hoc analyses within SPSS 29 using Field and Gillet's

(2010) syntax. Akin to the main analyses, we used a random effects model. Within the main text, we considered the effects of five potential moderator variables: performance level data (i.e., team, individual), performance measurement type (i.e., subjective, objective), leadership source (i.e., coach, formal athlete, informal athlete), theoretical leadership perspective (i.e., MML, TL, authentic leadership, social identity leadership), and athlete competitive level (i.e., national, university, recreational, multi-competitive level samples). As previously mentioned, sub-group analyses examining sport type and sample sex are reported in the Supplementary Materials.

Systematic and Narrative Review

The systematic and narrative review aided theory building by either supporting or disputing the relationships suggested within the logic model. To form the basis of our narrative synthesis, we interpreted small bodies of quantitative literature to inform our subjective conclusions. The narrative findings from our systematic review helped to explain and provide detail on our quantitative results from both the meta- and moderation analyses. The narrative syntheses identified gaps in the literature. Moreover, we were able to provide commentary on small pockets of emerging research, where an insufficient number of studies had been conducted to enable meta-analytical comparison. In other words, this review allowed us to identify themes that had received less formalized examinations within the sport literature (e.g., servant leadership). Further, this approach enabled closer inspection of studies analyzing multiple leadership sources or theoretical perspectives, or where both team and individual level performance data were simultaneously collected, as this presents statistical issues for conducting direct comparisons in the meta-analyses. In addition, the systematic review facilitated exploration of potential explanatory mechanisms at the group-level (i.e., mediator variables and emergent states) in comparison to meta-analyses, which are tailored towards the examination of main effects.

Results

This section integrates both quantitative and narrative syntheses. First, we present the search results and quality assessment findings followed by the sample and research design characteristics of our included studies (see Supplementary Materials for detailed evidence tables). Next, we analyze the relationships proposed within our logic model using both quantitative and narrative methods to answer our proposed RQs. Subsequently, we assess potential moderator variables via meta-analytical and narrative syntheses. Finally, we report narrative syntheses to examine mechanistic variables that have the potential to underpin the leadership-sport performance relationship.

Search Results

As summarized in our PRISMA flow diagrams (see Supplementary Materials on the OSF), our searches (i.e., electronic, manual, author) generated an initial pool of 33,793 prospective articles. After removing duplicate articles with the RefWorks automation tool (n = 18,011) and by hand (n = 27), 15,355 articles underwent a title and abstract review. This process reduced the available pool to 1,627 studies. We subjected these studies to a full article assessment with reference to the predetermined eligibility criteria. During this process we contacted nine authors to request bivariate correlations; two authors provided the necessary statistics for inclusion. Owing to this assessment process, we excluded 1,577 articles with specific rationale (see Supplementary Materials). Ultimately, 50 publications met all inclusion criteria.

Study Quality Appraisal

We assessed all included studies using the MMAT criteria (see Supplementary Materials for a graphical presentation of results). Specifically, we examined the methodological quality of six RCTs, one qualitative paper, 41 quantitative descriptive, and two quantitative non-randomized studies. Overall, 44 (88%) of all included studies fulfilled at

least four out of the five relevant assessment criteria, whilst all 50 studies satisfied the two general screening items. Our evaluation deemed that the qualitative and non-randomized studies met all five of the corresponding quality assessment criteria. We judged all 41 quantitative descriptive studies to have adequately represented target populations and used appropriate measures and statistical procedures. However, we identified 20% of these studies to have a high risk of non-response bias (i.e., an unsuccessful attempt to obtain the desired information from an eligible unit), whilst 17% failed to report the necessary information. Finally, with regards to the six RCTs; two papers failed to perform the randomization appropriately and four papers did not provide sufficient information on the randomization process. Moreover, five of the RCTs did not blind the outcome assessors to the intervention and one did not provide the necessary information to judge this criterion. Only one RCT provided complete outcome data, whilst two studies supplied the required information to assess whether experimental groups were comparable at baseline, and whether participants adhered to the intervention.

Sample Characteristics

The 50 studies comprised a total population size of 17,158 athletes, with 10,848 males (61.9%), 5,017 females (28.6%). The remaining 9.4% (n = 1,653) of the sample came from studies which failed to denote the sex of their athletes. Sample sizes ranged from eight to 3,193 participants (median sample size = 201.50, SD = 606.12) with a mean age of 21.10 (SD = 6.00) years. Almost 50% of studies (n = 23, 46%) employed samples that comprised both males and females. The remaining studies used male only samples (n = 16, 32%), female only samples (n = 2, 4%), or did not state sex (n = 9, 18%). In terms of athlete competitive standard, a total of 12 studies (24%) sampled athletes from multiple competitive levels. Of the single competitive level studies, the majority sampled athletes at a national (n = 11, 22%) or university level (n = 11, 22%), followed by recreational (n = 4, 8%), high school (n = 3,

6%), club (*n* = 2, 4%), and provincial level (*n* = 2, 4%); five studies did not report athlete competitive level (10%). Overall, 32 studies employed homogeneous samples from a single sport, whereas 17 studies used multi-sport samples, and one did not disclose sport type. In total, 38 distinct sports were sampled and the most prevalent was soccer (*n* = 11).

Research Design

Similar to existing leadership reviews (e.g., Turnnidge & Côté, 2018); the largest proportion of research (*n* = 49, 98%) was conducted using a quantitative approach; only one study adopted qualitative (*n* = 1, 2%) methods. Studies were further categorized as cross-sectional (*n* = 26, 52%), longitudinal (*n* = 15, 30%), RCTs (*n* = 6, 12%), quasi-experimental (*n* = 2, 4%), and a descriptive case study (*n* = 1, 2%). At the time of analysis, 39 studies (78%) were published journal articles and 11 (22%) were unpublished dissertations.

Research Methods

Forty-nine studies (98%) administered questionnaires, whereas one qualitative study used a combination of interviews and focus groups to assess the influence of leadership on performance. Twenty-one studies (42%) assessed performance with objective statistics and 23 studies (46%) captured subjective perceptions of performance via questionnaires, whereas five studies used both methods (10%). In terms of objective performance, six RCTs implemented experimental tasks (e.g., cycle ergometer time trial) to assess the impact of leadership on team or individual athlete performance. Twenty studies employed singular research methods (40%), whilst 30 studies utilized multiple methods (60%). The most common combination of research methods was questionnaires to assess leadership behaviors and objective statistics to capture performance (*n* = 21).

Logic Model Results

The following results pertain to the relationships presented within our logic model (see Figures 1 & 2 and Tables 1 & 2 for a summary of meta-analytical results).

Global Leadership-Performance Relationship (Panel A, Pathway g^0)

Our analysis of 44 descriptive effect sizes (one qualitative study not included) revealed a significant small to medium positive relationship between the global leadership and global performance constructs (r = .21, p < .001, CI_{95} = .14, .28). Similarly, the equivalent experimental ES estimates revealed that leadership interventions led to significant and modest improvements in global performance on both the between (Hedges' g = .44; p < .001, CI_{95} = .29, .58, k = 8) and within-group analyses (Hedges' g = .40; p < .001, CI_{95} = .25, .55, k = 7). The Rosenthal (1979) fail-safe n statistics exceeded the corresponding critical values for each analysis (see Supplementary Materials). Moreover, all funnel plots presented largely symmetrical, well-distributed scatters about the mean ES (see Supplementary Materials). Finally, all Egger's regression tests were nonsignificant (p values = .31-.48). Therefore, there was limited evidence of a publication bias.

Level of Performance Data (Panel A, Pathways g^1 and g^2)

Forty-five descriptive studies examined the leadership-sport performance relationship. More than half of those papers exclusively captured performance at a team level (n = 24, 53.3%), 15 studies assessed individual performance (33.3%), five papers (11.1%) operationalized performance at both levels, and the remaining paper computed a composite performance construct (2.2%). Of the 29 papers measuring team performance, 15 studies captured objective team-level performance (e.g., win/loss percentages), 13 papers analyzed subjective perceptions of team-level performance (e.g., perceived team success scale; Charbonneau et al., 2001) and a single study combined both objective and subjective performance measures (i.e., averaged season satisfaction with objective team ranking; Leo et al., 2014).

Meta-analytical techniques allowed us to quantitively test the team (pathway g^1) and individual (pathway g^2) level performance effects. Analyses demonstrated that significant

positive relationships existed between global leadership with both team (r = .21, p < .001, CI_{95} = .12, .30, k = 28) and individual performance (r = .19, p = .001, CI_{95} = .08, .30, k = 20). Our between-group experimental ES corroborated these descriptive results; generally, leadership interventions elicited significant modest improvements in both team (Hedges' g = .49; p < .001, CI_{95} = .31, .66, k = 6) and individual performance (Hedges' g = .41; p < .001, CI_{95} = .22, .61, k = 5). With regards to within group (i.e., pre-test vs. post-test) analyses, global leadership interventions produced significant modest positive changes in team (Hedges' g = .44; p < .001, CI_{95} = .26, .62, k = 5) and individual performance (Hedges' g = .48; p < .001, CI_{95} = .28, .68, k = 5). Moderation analyses indicated no significant performance level differences for our descriptive (χ^2 = .21, p = .88), between-group (χ^2 = .67, p = .41), or within-group (χ^2 = .01, p = .93) analyses.

Examinations of the five descriptive studies that simultaneously captured individual and team level performance data provided a deeper understanding of potential performance level differences. Using a social identity approach, Krug et al. (2021) reported a significant moderate positive relationship between coach identity leadership and subjective team-level performance, whereas a null association was evident with individual performance. In the same vein, Fransen et al. (2022) observed a moderate positive association between athlete identity leadership and subjective team-level performance, and a small relationship with individual performance. These findings were corroborated and further extended by Butalia et al. (2024), who demonstrated significant and positive (social identity) leadership-performance relationships regardless of performance level (i.e., subjective team and individual) and leadership source (i.e., coaches, team captains, and informal athlete leaders). However, caution must be taken as these descriptive findings are based solely on singular sources of data collected at one time point. As such, common method variance may threaten the validity of these results by either inflating or deflating the observed correlations (Tehseen

et al., 2017). Cubitt and Eys (2015), however, utilized multi-source data collection techniques by combining objective data (team win/loss statistics) with coach subjective perceptions of athlete individual performance. Results showed significant modest positive relationships between team captain transformational behaviors in relation to both objective team-level performance and coach-rated individual performance.

The above analysis alludes to potential differences in the leadership-performance relationships as a function of performance measurement type. Therefore, we used our descriptive body of research (n = 44) to quantitatively determine whether significant differences existed between the use of objective and subjective performance measurements. Team performance comprised 15 measures of objective team-level (r = .13, p = .002, CI_{95} = .05, .21) and 12 measures of subjective team-level (r = .32, p < .001, CI_{95} = .18, .49) performance (one of the subjective measures used qualitative methods). Moderation analyses confirmed a significant difference (χ^2 = 7.58, p = .01); a stronger correlation was apparent when team performance was captured via subjective rather than objective measures. With regards to individual performance, 16 papers administered subjective measurements (r = .21, p = .002, CI_{95} = .08, .35), whilst 6 studies utilized objective individual performance measures (r = .09, p = .06, CI_{95} = -.00, .19). However, we found no significant differences between these two individual-level measurement types (χ^2 = 1.48, p = .22).

Sensitivity Analyses. For brevity we report the main findings of the descriptive and experimental sensitivity analyses, however greater detail can be found in the Supplementary Materials (e.g., ES estimates, residual I^2 values). With regards to the descriptive research, we first identified six potential outlier studies using a scatterplot constructed within SPSS (see Supplementary Materials). Once excluded from our main analysis, our descriptive ES was reduced, and the corresponding confidence intervals were narrowed. However, we retained all papers within our review. To provide a comprehensive examination of the leadership-

sport performance relationship, we examined several potential moderator variables. As such, the observed between-study heterogeneity may be attributed to our examination of multiple theoretical leadership perspectives, sources of leadership, and levels of performance data. Rather than excluding these potential outliers, we conducted a series of subgroup analyses to better understand and explain this between study heterogeneity. Second, we tested the influence of a descriptive study deemed to be a higher risk of reporting bias (incomplete reporting of leadership behaviors, Huang, 2003). However, the results retained from the revised analysis (see Supplementary Materials) were comparable to those found in our original analysis, which we therefore deemed robust to selective outcome reporting. The final descriptive sensitivity analysis assessed the influence of methodological study quality on the estimate derived from our initial analysis. Following the procedures of Williams et al. (2022), we removed two studies identified as having moderate methodological quality (see Supplementary Material). However, no significant differences were evident between models, thus the original ES was robust to variations in methodological quality. With respect to the experimental research, we observed no potential outliers or studies at risk of reporting bias, however we judged five studies to have low to moderate study quality. When removed from our between-and within-group comparisons, the ES estimates remained comparable to our original analyses (see Supplementary Materials). As such, the experimental effect sizes were robust to variations in methodological quality.

Leadership Source (Panels B, C, & D)

Researchers have examined the leadership-sport performance relationship using three broad paradigms: (a) a singular focus on coach leadership, (b) a singular focus on athlete leadership, and (c) very occasionally dual focus on both sources of leadership. Within the subsequent sections we explore the impact of each of these leader sources.

Coach Leaders (Pathways c^0, c^1, c^2). A total of 33 descriptive studies captured coach leadership in relation to individual (n = 15, 45.5%), and team (n = 15, 45.5%) performance, with three studies examining the performance variable at both levels (n = 9.1%). Meta-analytical analyses demonstrated that coach leadership was significantly related to global (pathway c^0; r = .19, p < .001, CI_{95} = .10, .28), team (pathway c^1; r = .18, p = .004, CI_{95} = .06, .30), and individual (pathway c^2; r = .19, p = .004, CI_{95} = .06, .32) performance. Significant relationships were also present between coach leadership and objective (r = .12, p = .02, CI_{95} = .02, .22, k =11) as well as subjective team-level performance (r = .33, p = .03, CI_{95} = .03, .65, k = 5). Akin to our global analysis, a significantly stronger association existed between coach leadership and subjective rather than objective team performance (χ^2 = 4.12, p = .04)[5]. With regards to individual performance, we observed a significant relationship with subjective (r = .22, p = .01, CI_{95} = .06, .38, k = 14), but not objective performance (r = .09, p = .12, CI_{95} = -.02, .20, k = 5), and these observed differences were non-significant (χ^2 = 1.39, p = .24). The Rosenthal fail-safe n (12) indicated possible publication bias within the objective individual performance analysis. The "Trim and Fill" procedures added one additional study on the positive side of our funnel plot, thus producing a slightly larger adjusted effect size (r = .12, CI_{95} = .01, .22)[6].

To augment our coach summary statistics, further narrative interpretation of findings from these studies revealed a more nuanced perspective. Several studies demonstrated significant positive associations between coach transformational leadership behaviors (e.g., inspirational motivation) and team winning percentages (e.g., Dawson, 2019; Mach et al. 2022) as well as individual perceptions of athletic performance (e.g., Oh, 2023; Park et al. 2021). Similarly, Nam et al. (2024) and Park et al. (2021) reported significant positive relations between coach authentic leadership behaviors (i.e., human connection, balanced coaching, and sincere attitude) with individual perceptions of success in judo and golf

performance, respectively. Finally, the use of more punitive (i.e., abusive) behaviors were generally related to decreases in athletic performance (e.g., Lopez et al., 2019), whereas supportive coaching was associated with increased sport achievement (Nicolas et al., 2011). Several studies demonstrated key methodological strengths as they utilized multi-source data (i.e., Dawson, 2019, Mach et al., 2021, Lopez et al., 2019). Indeed, perceptions of leadership were captured via psychometric measures, whereas objective statistics were used as measures of individual and team level performance. In sum, the meta-analytical results present a modest positive association between the coach leadership and sport performance constructs, whereas the narrative review indicates that the nature of this relationship may depend on the theoretical leadership perspective—a point we unpack in a subsequent moderation analysis.

Formal Athlete Leaders (Pathways f^0, f^1, f^2). Meta-analytically, formal athlete (i.e., team captain) leadership was significantly and positively related to global (pathway f^0; r = .34, p < .001, CI_{95} = .12, .57, k = 6) and team (pathway f^1; r = .34, p < .001 CI_{95} = .13, .58, k = 6) performance. Two studies examined the association between formal athlete leadership and perceived individual performance and reported modest positive correlations (Butalia et al., 2024, r = .17; Cubitt & Eys, 2015, r = .13). Similarly, only two experimental studies assessed team captain motivational leadership, effect sizes were indicative of significant small positive team (Hedges' g = .19 and .55) and individual (Hedges' g was .41) performance effects.

Informal Athlete Leaders (Pathways i^0, i^1, i^2). A total of 14 descriptive studies examined informal athlete leadership (i.e., individuals who emerge into leadership roles based on their interactions with team members); quantitative syntheses revealed significant modest positive relationships with global (pathway i^0; r = .21, p < .001, CI_{95} = .11, .31, k = 14), team (pathway i^1; r = .15, p < .001 CI_{95} = .09, .21, k =10) and individual (pathway i^2; r = .24, p < .04 CI_{95} = .01, .49, k = 6) performance. The between-group experimental ES estimates support the correlational findings. Specifically, informal athlete leadership

interventions produced significant modest positive changes in global (Hedges' $g = .44$; $p < .001$, $CI_{95} = .27, .61$, $k = 7$), team (Hedges' $g = .51$; $p < .001$, $CI_{95} = .31, .72$, $k = 4$) and individual (Hedges' $g = .42$; $p < .001$, $CI_{95} = .20, .65$, $k = 4$) performance. The within-group meta-analyses also revealed significant modest improvements in global (Hedges' $g = .39$; $p < .001$, $CI_{95} = .24, .54$, $k = 7$), team (Hedges' $g = .44$; $p < .001$, $CI_{95} = .26, .61$, $k = 5$), and individual (Hedges' $g = .47$; $p < .001$, $CI_{95} = .25, .69$, $k = 5$) performance.

Closer inspection of studies assessing formal and informal athlete leadership highlights differences in the leadership-performance relationship that appear to be a function of the theoretical leadership model examined by the researchers. For example, Fransen et al. (2015) demonstrated that when an athlete leader was perceived to express high team confidence, team members' performance increased significantly over the course of the test session. In contrast, when the leader was perceived to express low team confidence, team members' performance decreased significantly. However, due to the lack of a control group, it is unclear whether these effects could solely be attributed to the leaders' behavior. As such, Fransen et al. (2016) replicated the experiment with the addition of a neutral control group and confirmed their findings from the previous study. Research has also demonstrated that the presence and occupation of more athlete leadership roles (i.e., task, motivational, social, external) within a team enhanced player and coach collective efficacy beliefs as well as feelings of team identification, which in turn improved team performance ranking (Fransen et al., 2014). More recently, research has identified significant and positive associations between players' perceived quality of informal athlete leadership with both objective and subjective team performance (López-Gajardo et al., 2021; López-Gajardo et al., 2023).

In contrast to these clear effects, research using other perspectives has been inconsistent and contradictory. Spalding (2010) reported positive relationships between formal *and* informal athlete leaders' training and instruction, social support, democratic

behavior, and positive feedback with subjective team-level performance. Whereas Hood (2015) reported a significant correlation with team winning percentage only for athlete social support out of the five behaviors of the MML. Similarly, Vander Laan (2012) demonstrated significant positive relationships between perceptions of individual athlete performance and the following athlete transformational leadership behaviors: individualized consideration, inspirational motivation, intellectual stimulation, fostering acceptance of group goals, and appropriate role modelling. However, Wheaton (2012) found no evidence of a relationship between team captain leadership (transformational or transactional) and team winning percentages. These differences might be attributed to the use of distinct team performance measures. Both Spalding (2010) and Vander Laan (2012) captured subjective team-level performance whilst Wheaton (2012) and Hood (2015) measured objective team-level performance. Subjective performance ratings are prone to contamination effects (e.g., leniency effects), which may inflate the observed relationships, whereas objective measures may fail to represent the entire performance domain (i.e., they may only capture the final outcome), thus underestimating the strength of associations (Mesmer-Magnus & DeChurch, 2009). In line with the coach leadership studies, the narrative synthesis again suggests that the leadership behaviors adopted by athlete leaders likely moderate the global leadership-performance relationship. This position is tested within the subsequent moderation analysis.

Informal versus Formal Athlete Leaders. Research has begun to directly compare potential differences between the influence of formal athlete leaders (i.e., team captains) and those who emerge into more informal leadership roles (i.e., task, social, motivational, external). Using the MML, Spalding (2010) reported similar positive associations between formal (r_s = .25, .22, .27, .34) and informal (r_s = .21, .19, .19, .31) athlete democratic behavior, positive feedback, social support, and training and instruction with performance achievement. These findings suggested that both forms of athlete leadership might be equally

important for their teams' performance. More recent research provides support for these initial conclusions; Butalia et al. (2024) examined the influence of athlete social identity leadership and observed modest significant associations for both formal ($r = .22$, $p < .05$) and informal ($r = .17$, $p < .05$) leaders in relation to a composite of team and individual performance. Taken as a whole, these findings indicate the potential for both types of leaders to positively influence performance outcomes.

Coach versus Athlete Leaders. Moderation analyses indicated that significant differences existed between team captain and coach leadership in relation to team performance ($\chi^2 = 9.221$, $p = .01$). However, the observed differences between team captain and informal athlete leadership did not meet our predetermined cut-off of $p < .05$ ($\chi^2 = 3.151$, $p = .08$). These findings indicate that a stronger leadership-performance relationship exists for team captains relative to coaches. With respect to global and individual levels of performance, we did not observe any significant differences between leadership sources (see Supplementary Materials).

The narrative synthesis presents mixed findings, which suggests that the leadership-performance relationship may differ due to the behaviors exhibited by coaches, team captains, and informal athlete leaders. Fransen, Boen, et al. (2018) manipulated the extent to which coach and athlete leaders supported other members' competence during two highly interactive basketball tasks (i.e., required passing, dribbling, and shooting). Findings demonstrated that coach and athlete leaders yielded a very similar impact on athletes' performance. That is, the motivational feedback of athlete leaders reduced the time needed for subordinates to perform the task without a loss of accuracy to the same extent as the positive feedback delivered by coaches. In contrast, Mertens et al. (2018) reported that the coach had a larger direct impact on participants' objective performance compared to the athlete leader. This latter study suggests that coach and athlete leaders may be best suited to

fulfil different roles and thus, a model of shared leadership, in which coaches encourage athlete leaders to assume responsibility in providing competence support leadership, might be most effective in improving performance. Butalia et al. (2024) documented small positive leadership-sport performance relationships for three distinct leadership sources (i.e., coaches, team captains, informal athlete leaders). Correlations were marginally stronger for coach (r = .25), followed by team captain (r = .22), and informal athlete (r = .17) leadership; however, it was not reported whether these differences were significant. In contrast, Fransen et al. (2022) presented longitudinal evidence demonstrating that athlete identity leadership (more so than the coach) early in the season was associated with enhanced team identification (i.e., shared sense of "we") later in the season, which in turn improved perceptions of individual and team performance. Interestingly, Hood (2015) reported no significant relationships between the five coach leadership behaviors of the MML and team win/loss records as well as a significant negative association between captain social support and win/loss records. Finally, Vander Laan (2012) reported non-significant associations between coach leadership behaviors rooted in either the MML or transformational leadership theory with perceptions of individual performance, however, a significant association was found when these behaviors were exhibited by athlete leaders.

Combination of leadership sources. One singular experimental study examined the combined impact of coach and athlete competence support leadership (Fransen, Vansteenkiste, et al., 2018). Although no additive effect was present for subjective performance, an additive effect did emerge for objective performance. Indeed, athletes performed better when both the coach and the athlete leader provided competence support instead of only the coach. Again, this finding suggests that, to maximize team performance, it is important for coaches to stimulate their athlete leaders to encourage their teammates, above and beyond providing motivational leadership themselves.

Sub-Group Analyses

Corroborating the proposal of potential moderator variables within our logic model, homogeneity tests confirmed the presence of statistical heterogeneity ($Q = 576.11$, $p < .001$, $I^2 = 95\%$) within the global leadership-performance relationship. This between-study variance may be explained by the proposed moderator variables within our logic model. To evaluate our theorizing, we conducted subgroup analyses focusing on the theoretical leadership perspective and athlete competitive level as potential moderator variables (see Supplementary Materials for sample sex and sport type analyses).

Theoretical Leadership Perspective

The four most popular theoretical approaches utilized in the literature were TL (n = 13, 26%), the MML (n = 10, 20%), social identity leadership (n = 9, 18%), and authentic leadership (n = 4, 8%). By contrast, several perspectives were less frequently adopted including, narcissistic, abusive, and servant leadership (n = 1, 2%). We conducted quantitative analyses on the MML, TL, social identity, and authentic leadership.

Significant small to moderate positive relationships existed between the global leadership and performance constructs for three theoretical leadership perspectives, although the strongest positive effect size was evident for authentic ($r = .44$, $p = .01$, $CI_{95} = .14, .80$, $I^2 = 96\%$, $k = 4$), followed by transformational ($r = .33$, $p < .001$, $CI_{95} = .16, .51$, $I^2 = 96\%$, $k = 13$), and social identity leadership ($r = .19$, $p < .001$, $CI_{95} = .13, .25$, $I^2 = 69\%$, $k = 7$). A nonsignificant ES was yielded for the MML ($r = .13$, $p = .14$, $CI_{95} = -.04, .30$, $I^2 = 94\%$, $k = 10$). Moderation analyses confirmed that significant differences existed between authentic and social identity leadership ($\chi^2 = 7.52$, $p = .01$) as well as between TL and social identity leadership ($\chi^2 = 4.95$, $p = .03$). As such, the ES estimates computed for authentic and transformational leadership were significantly stronger than the ES yielded for social identity leadership (see Supplementary Materials for nonsignificant statistics).

With regards to the leadership-individual performance relationship, significant modest ES estimates were computed for TL (r = .24, p = .04, CI_{95} = .01, .46, I^2 = 94%, k = 6), and social identity leadership (r = .14, p < .001, CI_{95} = .09, .19, I^2 = 23%, k = 4), but these observed differences were nonsignificant (χ^2 = 1.22, p = .27). Three studies examined the MML producing negligible effect sizes (correlations were r = -.04, r =.05, and r =.06) and two studies analyzed authentic leadership, which indicated significant moderate to large relationships (correlations were r = .33 and r = .71).

Finally, regarding the leadership-team performance relationship, significant small to moderate effect sizes were computed for TL (r = .45, p < .001, CI_{95} = .24, .66, I^2 = 95%, k = 8), followed by social identity leadership (r = .19, p < .001, CI_{95} = .12, .26, I^2 = 72%, k = 6), and a nonsignificant ES was computed for the MML (r = .18, p = .15, CI_{95} = -.06, .42, I^2 = 96%, k = 7). Significant differences existed between TL and social identity leadership (χ^2 = 7.05, p = .01). All other differences were non-significant (see Supplementary Materials). Again, only two studies examined authentic leadership (correlations were r = .11 and r = .51), indicating significant small to moderate positive relationships.

From a narrative perspective, the theoretical leadership model explored by researchers influenced both the strength *and* direction of the leadership-performance relationship. Furthermore, our narrative syntheses indicated that leadership models that do not specify clear mechanisms for how specific patterns of behavior lead to changes in either individual or team behavior, tend to be less robust predictors of performance. Indeed, mixed results were evident for MML-based research. For example, Garland and Barry (1988) found that individual performance was positively influenced by higher levels of social support, positive feedback, democratic behavior, and training and instruction. However, Keatlholetswe and Malete (2019) reported null findings concerning the aforementioned MML behaviors and

objective team-level performance. We further discuss the potential influence of mechanistic variables within the Explanatory Mechanisms section.

Athlete Competitive Level

Meta-analyses revealed significant small to moderate positive relationships between the global leadership and performance constructs; the strongest effect was evident within recreational samples (r = .32, p = .05, CI_{95} = .00, .66, I^2 = 96%, k = 4) followed by university (r = .16, p = .01, CI_{95} = .04, .28, I^2 = 84%, k = 10), national (r = .16, p = .01, CI_{95} = .05, .28, I^2 = 88%, k =11), and multi-competitive level (r = .16, p = .03, CI_{95} = .02. .30, I^2 = 96% k = 11) samples. The differences between the calculated ES were nonsignificant (χ^2 = 3.59, p = .31).

Focusing on leadership and team performance, significant positive relationships existed for both national (r = .19, p = .01, CI_{95} = .06, .32, I^2 = 89%, k = 9) and university athletes (r = .19, p = .02, CI_{95} = .03, .36, I^2 = 89%, k = 7). A nonsignificant ES was yielded for multi-level competitive samples (r = .16, p = .18, CI_{95} = -.08, .40, I^2 = 98%, k = 6). Only three studies examined the leadership-team performance relationship within recreational samples (correlations were r = .19, r = .21, and r = .12). All observed differences were nonsignificant (see Supplementary Materials). Given the lack of individual performance effect sizes, we examined these studies through a narrative lens below.

Within recreational samples, Fransen et al. (2022) documented that coach social identity leadership was significantly related to perceptions of team, but not individual performance. However, Mertens et al. (2021) did not observe any significant associations between the perceived competence support of coach and athlete leaders in relation to perceptions of team and individual performance as well as objective athlete performance. With regards to team performance, Hong and Jeong (2020) reported significant positive relationships between authentic leadership and subjective team-level performance within

national soccer teams. Although this study implemented a single-source cross-sectional design, authors controlled for several demographic characteristics (e.g., number of years as professional player) to ensure that results were not distorted by exogenous factors. In addition, Mach et al. (2022) reported a significant relationship between coach TL and previous national team performance across a number of different integrated sports (e.g., basketball, handball). These authors overcame several existing methodological limitations by using a quasi-longitudinal design, multisource approach, and data aggregated at the team level, which increases the likelihood of more robust findings. The possibility of within-person common method variance was reduced by randomly splitting the teams into two groups, which allowed the researchers to test the relationships between TL rated by one half of the team members and team cohesion as rated by the other half. This split-sample technique ensured that the sources of the mediator and predictor were independent. Taking a closer look at university samples, significant positive associations were present between TL and objective team-level performance (Dawson, 2019). Again, varied results were reported for the MML. Indeed, Spalding (2010) found that all leadership behaviors proposed within the MML (except autocratic behavior) were significantly and positively related to subjective team-level performance. However, Weiss and Fredrichs (1986) found only coach social support to be negatively related to objective team-level performance.

Explanatory Mechanisms

An insufficient number of studies precluded quantitative tests of underlying mechanisms for the leadership-performance relationship. A total of five studies examined potential influential mechanisms, three of these studies captured coach leadership whilst one assessed formal and one measured informal athlete leadership. Two mechanistic themes emerged involving team (e.g., collective efficacy, team cohesion, team identification) and individual (e.g., intrinsic motivation, inside sacrifice) level mediators. With regards to team-

level variables, Hong and Jeong (2020) reported that collective efficacy was a mechanism through which coach authentic and TL influenced subjective team and individual performance. Authentic and TL behaviors can promote feelings of collective efficacy through ameliorating team members' mutual trust. As such, teams with higher levels of collective efficacy value their membership and show high levels of commitment, which in turn can positively influence performance. Moreover, López-Gajardo et al. (2021) demonstrated that team identification significantly mediated the relationship between perceived athlete leadership quality and global performance. As athlete leaders work for the team (i.e., they create a shared sense of "we" and "us" within the group); this strengthens team members' identification with the team, thus encouraging players motivation to exert more effort for the team, ultimately enhancing their perceived performance.

With respect to individual level variables, research has demonstrated that psychological ownership (Grégoire et al., 2021), and self-management (Nam et al., 2024) are mechanisms through which coach authentic leadership influences subjective team and individual performance. Authentic leaders develop the feeling of psychological ownership by promoting enhanced perceptions of self-efficacy and autonomy in the decision-making process. Individuals who feel a sense of psychological ownership are willing to exert extra effort and thus are more motivated, which positively influences performance. These findings need to be interpreted with caution however, as the studies adopted cross-sectional designs and utilized single data sources, thus precluding assessments of causality (Wang & Cheng, 2020) and increasing the likelihood that effects are, at least in part, influenced by common method variance (Podsakoff et al., 2003). In contrast, Charbonneau et al. (2001) and Mach et al. (2022) used longitudinal designs to examine the mediating effects of intrinsic motivation and team cohesion on the leadership-performance relationship. Transformational leaders empower followers rather than control them (promoting autonomy), and this process

increases followers' self-efficacy and capacity for self-determination, which in turn enhances individual sport performance (Charbonneau et al., 2001). Moreover, transformational leaders have the potential to foster acceptance of group goals and promote teamwork, which can enhance cohesiveness within teams (Callow et al., 2009). In turn, team members may feel a deeper sense of identity with the team itself, its values, mission, and vision, which can positively influence both individual and team performance (Bass et al., 2003). Within this longitudinal research (i.e., Charbonneau et al., 2001; Mach et al., 2022), data on the independent and mediator variables were captured simultaneously during mid-season, whereas performance statistics were collected post-season. Although this design allowed for some inference to be made regarding the temporal ordering of relationships, caution is needed as this still does not represent a causal relationship. More recently, López-Gajardo et al. (2023) demonstrated that athlete leadership quality perceptions at the beginning of the season had a positive association with teamwork execution in the mid-season. In other words, when athletes believed that their team had high-quality athlete leaders, they appeared more likely to have higher perceptions of teamwork execution behaviors (i.e., coordination, cooperation, communication). Moreover, these perceptions of teamwork execution behaviors were positively associated with perceived team performance at the end of the season. These findings suggest that teams seeking to improve team performance at the end of the season should develop strong teamwork execution behaviors during the season.

Summary

In sum, a significant small positive relationship existed between global leadership and performance (see forest plots in Supplementary Materials). This relationship was present irrespective of performance data and athlete competitive levels. However, significantly stronger global leadership-performance relationships were present for authentic and TL compared to social identity leadership. Moreover, the ES computed for the TL and team

performance relationship was significantly stronger relative to the social identity ES. We also observed a stronger leadership-team performance association when leadership stemmed from team captains rather than coaches. Finally, our narrative review revealed several variables that appear to mediate the leadership-performance relationship, such as team cohesion, collective efficacy, team identification, and intrinsic motivation.

Discussion

Despite frequent discussions in the sport literature on the links between leadership and performance (e.g., Murray et al., 2021; Fransen et al. 2022), the precise nature of this relationship is not fully understood. Guided by our logic model we conducted an integrated systematic and meta-analytical review to provide the first estimates of the strength, direction, and precision of the leadership-performance relationships. We also examined the potential influence of several moderator (e.g., leadership source, theoretical leadership perspective) and mediator variables (e.g., team identification), to provide a comprehensive understanding of this association.

Robust Relationship Between Global Leadership and Performance (Panel A, Pathway g^0)

With regards to RQ^1, results revealed a significant, albeit small positive association between the global leadership and performance constructs. This relationship was present *irrespective* of performance data level (RQ^2) and athlete competitive level (RQ^5). Thus, while small, and perhaps smaller than previously theorized by researchers, the relationship appears fairly robust. Indeed, the seminal leadership work by Smoll and Smith (1989) proposed the "great practical influence" of leadership in the effective functioning of social groups (p.1523). Nevertheless, our small leadership-performance relationship appears consistent with work from different domains (e.g., business and industry, Wang et al., 2011).

A possible explanation for this small association is that the vast majority (90%) of studies included within the present review focused exclusively on the direct leadership-performance relationship, ignoring the potential influence of more proximal mediators. McEwan and Beauchamp's (2014) model of team effectiveness proposes a number of proximal mediators (e.g., psychological support) and emergent states (e.g., team cohesion) that may have the potential to underpin the direct relationship between leadership and performance. As reported within our integrated results section, five studies investigated the indirect effects of potential mediator variables. Both individual and team level mechanistic variables were revealed to significantly mediate the leadership-sport performance relationship including, team identification (López-Gajardo et al., 2021), collective efficacy (Hong & Jeong, 2020), and psychological ownership (Grégoire et al., 2021). However, these findings should be interpreted with caution as design issues (e.g., single source data collection) exist. We return to the issue of research design in the future directions section.

McEwan and Beauchamp's (2014) model of team effectiveness also proposed multi-level input variables (i.e., individual, team, external). According to this model, coach and athlete leadership are both conceptualized as examples of team level input variables. Given that the parameters of our review focused exclusively on leadership, our findings ignore both external and individual level influences on performance. Moreso, we were unable to consider the interplay between leadership with both external and individual factors to impact performance due to a lack of primary research. This exclusive focus on team level input variables may have contributed to the small effect size reported.

Furthermore, the small leadership-performance relationship obtained ought to be contextualized within a larger performance perspective as many factors interact to influence individual and team level performance (Ivarsson et al., 2020). Notable examples include external social factors (e.g., coach-player relationships, opponent skill level), as well as the

psychological characteristics (e.g., resilience, intrinsic motivation) and physiological skills (e.g., speed, strength) involved in sport performance. Despite the multitude of factors that can influence sport performance, whether it be proximal mediator variables, psychological, or physiological factors, a significant direct relationship still existed between the leadership and performance constructs. A stronger relationship, however, might emerge if researchers accounted for these other variables.

More contemporary definitions of leadership have evolved to also consider the role of followers. Antonakis and Day (2018) defined leadership as "a goal-influence process that occurs between a leader and a follower or groups of followers" (p.5). From this illustration it is apparent that a complete picture of leadership can only emerge if the role of followers is considered. Organizational literature has highlighted the fundamental issue that leadership cannot exist without the energy and enthusiasm of followers (Steffens & Haslam, 2022). Nevertheless, the vast majority of leadership research focuses on only half of this equation; leader-centric analyses continue to have a broad appeal, whilst followers have often been relegated to the role of passive recipients (Oc et al., 2023). Indeed, the primary data examined within the current review cannot account for the integral role of followership, which may also explain the small relationship observed between the leadership and performance constructs (see Future Research for further discussion).

Leadership Positively Influences Both Team and Individual Performance (Panel A, Pathways g^1 and g^2)

We observed significant modest positive relationships between leadership with both team (pathway g^1) and individual (pathway g^2) performance. This result again reflected those of Wang et al's. (2011) review, who also reported significant small positive correlational ES estimates between TL with team performance and individual job performance. As documented throughout our review, evidence from a wealth of primary studies has

demonstrated positive leadership-performance associations through examinations of different sport leaders (coaches, team captains, informal athletes) and behavioral models (e.g., Nam et al., 2024; Jabeen et al., 2021). As such, it was unsurprising that global leadership was significantly and positively related to *both* team and individual levels of performance. We did, however, observe a marginally stronger ES for team performance, which may be explained by the team level emphasis placed on leadership. Uhl-Bien et al. (2014) defined leadership as "a process that is co-created in social and relational interactions between people" (p.83). As described within our introduction, leadership theories have evolved to view leadership as a process of social influence. Indeed, the social identity approach promotes all athletes, even those competing within individual sports (e.g., golf) to define themselves as members of a group or a team (Stevens et al., 2021). Hence, this relational focus may account for the somewhat stronger association we witnessed between leadership and team performance.

Leadership Source Moderates the Relationship Between Global Leadership and Team Performance (Panels B, C, and D)

As presented in our logic model (see Panels B, C, & D), we examined whether the relationships between global leadership and performance (global, team, and individual) vary when leadership stems from coaches, formal and informal athlete leaders. We observed significant small to moderate positive relationships between all leadership sources (coaches, team captains, informal athlete leaders) in relation to all levels of performance (global, team, individual). However, in line with previous theorizing (Loughead & Hardy, 2005; Berson & Halevy, 2014), moderation analyses revealed significant differences existed between coach and team captain leadership with regards to team performance (informal athlete leadership differences were nonsignificant). Berson and Halevy (2014) established that the effectiveness of particular leadership behaviors differed depending on the level of the leader within an

organization. Moreover, Loughead and Hardy (2005) demonstrated that coach and athlete leaders served two distinct functions for their teams, by differing in the types and frequencies of behaviors exhibited. Specifically, our findings revealed a significantly stronger relationship between team captain leadership with team performance in comparison to coach leadership. As formal leaders, team captains are uniquely positioned within sports teams given that they function as members of the group, yet simultaneously have close relationships with the coaching staff (Bucci et al., 2012). As such, these individuals often serve as a communication bridge between coaches and players. This liaison role may account for the stronger influence of team captains on team and individual athlete performance. Studies have highlighted the high expectations associated with the role of team captains by identifying the following multifaceted responsibilities: communicating team related information, providing direct leadership to subordinates, motivating teammates, facilitating relationships within the team, mediating conflicts, and modelling expectations (Filho et al., 2014). Given the number of interpersonal responsibilities shouldered by the team captains, it is not surprising that these individuals provide an added performance benefit above and beyond coaches.

Theoretical Leadership Perspective Influences Some Aspects of the Leadership-Performance Relationship

By incorporating a spectrum of leadership models, we were able to ascertain which theoretical perspective has more predictive utility within the sports domain. We assessed whether the relationship between global leadership with global, team, and individual performance varied across leadership perspectives. Moderation analyses indicated that the strength of the leadership-performance relationship differed according to the behaviors examined by researchers. With regards to global performance, we observed significant differences between authentic and social identity leadership as well as between TL and social identity leadership. Specifically, significantly stronger leadership-performance relationships

were present for both authentic and TL compared to the social identity approach (nonsignificant differences for MML). Transformational leaders serve as role models by inspiring their followers to go beyond their own expectations for the good of the group, which can lead to higher performance (Bass et al., 2003). Authentic leaders are also believed to be role models by demonstrating moral behaviors and acting in a manner that is consistent with their true inner values. These behaviors promote a positive ethical climate built on trustworthy relationships, which translates to enhanced athlete commitment and ultimately performance (Walumbwa et al., 2008). The social identity approach, however, addresses followers at the group-level rather than focusing on individual leader-follower relations. Social identity leaders motivate and mobilize their subordinates towards common goals by embodying a shared sense of "we" and "us" (e.g., inspiring a sense of belonging and emotional attachment to the group; Bruner et al., 2022). In terms of performance, followers may prefer individualized consideration/attention from their leaders, which is a central feature of transformational and authentic leadership. In contrast, social identity leadership tends to place a greater emphasis on group-identity rather than focusing on followers as individuals.

In comparison to social identity and transformational approaches, the behaviors within the MML do not include such an inspirational component. Therefore, the nonsignificant relationships observed for the MML may be a result of the distinct behavioral characteristics that exist between the leadership perspectives. In sum, results from quantitative analyses indicate that authentic and TL have the greatest predictive ability in relation to performance. The authentic and TL theories help us to develop a more informed understanding of the leadership-performance relationship compared to other theoretical perspectives, as they direct our attention to the leadership behaviors that seemingly matter.

Applied Implications

The current findings lend support to the notion that coaches, formal and informal athlete leaders contribute to sport performance. Thus, both coaches and athletes possess the potential to be effective leaders and powerful motivators, who appear to influence both team and individual levels of performance. Results suggest that with regards to team performance, team captains may be a more influential source of leadership compared to coaches. Thus, there may be benefit in ensuring particular messaging comes via captains as well as coaches due to the unique position captains hold within sports teams. It is also important that all types of leaders understand how to modify their behavior to benefit their team**.** Callow et al. (2010) suggest that workshop formats may not be the most effective medium for leader education. Instead, they suggest that a needs-based approach with a practice opportunity is more promising, as this method offers leaders chances to gain mastery experience which in turn enhances coach confidence and subsequent behavior. Therefore, specific interventions based around the needs of the coach/athlete leader appear to be effective. In conjunction with our results, tailored coach and athlete authentic or TL programs that afford practice opportunities to develop key behaviors (e.g., human connection, inspirational motivation) are of relevance.

Limitations (of the literature)

Although our leadership-performance ES was robust to a battery of sensitivity analyses, the majority of the included descriptive studies utilized a single-source, cross-sectional design. As previously discussed, this approach is more susceptible to bias in comparison to longitudinal studies or RCTs. As such, common method variance and endogeneity bias are legitimate concerns when interpreting the leadership-sport performance literature. Formally defined, endogeneity occurs when a predictor variable correlates with the error term of the outcome variable (Antonakis et al., 2010). While several studies attempted to control for such bias (e.g., controlling exogenous variables, multi-source data), the majority of studies failed to acknowledge or account for endogeneity. As a result, our

findings must be interpreted with caution, given that endogeneity has the potential to over or underestimate the coefficients yielded from existing studies. Methodological recommendations are discussed within the Future Research section.

Another source of weakness evident within the extant research is the inadequate representation of female only samples when examining the leadership-performance relationship. Indeed, only two unpublished studies have investigated this relationship using female samples compared to 16 studies sampling male athletes and teams. Considerably more work will need to be conducted to determine the precise nature of the leadership-sport performance relationship within female groups.

Future Research

Although we believe our findings represent the most comprehensive summary of the leadership-sport performance relationship, there is scope to expand our logic model to also incorporate conditional indirect effects. However, further primary research is required to establish the influence of more proximal mediator variables (e.g., team cohesion) on performance outcomes. The examination of indirect effects allows one to model the relationships between more proximal variables ─ as a result it is expected that the observed associations would be closer approximations of the full influence of sports leaders (cf. McEwan & Beauchamp, 2014). To protect against the aforementioned sources of bias (e.g., common method variance, endogeneity bias), researchers should account for possible covariates (e.g., time spent with leader) and adopt a longitudinal approach, so data are captured chronologically, such that independent variables are collected before mediators, and mediators before dependent variables. Further, experimental research would allow for causal inferences to be made regarding the influence of leadership on for example, team cohesion and the subsequent influence of team cohesion on performance. In line with our findings, researchers should use objective rather than self-report performance measures, as subjective

ratings are often prone to contamination effects, which may inflate relationships (Mesmer-Magnus et al., 2009). We do note, however, that objective performance measures are not without limitations. Indeed, these measures tend to be more outcome orientated, and as a result they often do not take into account performance processes. It would also be of interest to examine the potential influence of age on the leadership-sport performance relationship. Specifically, a focus on how the relationships between leaders (i.e., coaches and athletes) and their subordinates may differ between adults, adolescents, and children.

There has been sustained empirical investigation of leadership in the sport (and exercise) domain. This work has, however, almost exclusively emphasized leadership provided by coaches. Given that the leadership structure of sports teams also includes team captains and informal athlete leaders, this is an obvious oversight, and more recent research has investigated leadership stemming from players. Whilst an improvement, this is still removed from the reality of the combined —coach *and* captain — leadership experienced by team members. Thus, the use of primary sports data to examine the direct comparison of distinct leadership sources within the same teams is of great interest. Berson and Halevy (2014) demonstrated that hierarchical leadership position moderated the effectiveness of leadership behaviors; such findings reinforce the importance of systematic investigation emphasizing the sources of leadership on sports teams.

Conclusions

Using a logic model, we conducted the first integrated systematic and meta-analytical review of the leadership-sport performance relationship. Our review not only addressed voids in the current knowledge concerning the theorized differences between the influence of coach and athlete leaders, and their effect across team and individual levels of performance, but also advanced leadership theory by exploring potential moderator and mediator variables. Steered by our logic model, the present work unearthed a significant, albeit small positive

relationship between the global leadership and sports performance constructs. This robust relationship was present irrespective of the performance data level, and athlete competitive level. However, significant differences emerged for the performance measurement type, source of leadership, and theoretical leadership perspective. Indeed, we observed stronger leadership-performance relationships when performance was captured via subjective methods (i.e., questionnaires). Moreover, a stronger relationship was observed between leadership and team performance when leadership stemmed from team captains compared to coaches. Stronger relationships were also present between authentic and transformational leadership in comparison to the social identity approach. Not only does this study provide a thorough examination of the leadership-sport performance relationship, but it also lays the groundwork for future research into potential mediators utilizing causally strong study designs, and analysis strategies limiting the impact of endogeneity.

Footnotes

[1]The global leadership construct refers to a combination of coach and athlete leadership studies, which encompass multiple theoretical perspectives (e.g., transformational leadership, the multidimensional model of leadership, authentic leadership, social identity leadership).

[2] The global performance construct is an amalgamation of studies examining team and/or individual performance.

[3]Our selected moderator variables have not received much attention within the extant literature, therefore we aim to advance the theoretical understanding of the conditions under which the leadership-performance relationship may differ. Our selected mechanistic variables are limited to those formally examined within existing studies.

[4]Prior to quality assessment, three of the authors participated in two calibration exercises. First, each author independently evaluated a sample of 15 papers. A second sample

of 15 studies was divided up into batches of five papers, two authors independently appraised each batch. All authors discussed any discrepancies in ratings until a consensus was reached. We assessed inter-rater reliability of appraisals using a two-way random, absolute agreement intra-class correlation (ICC) coefficient. Following the ICC interpretation guidelines provided by Koo and Li (2016), average inter-rater reliability across calibration exercises was good prior to discussion (ICC = 0.78) with an excellent post-discussion score (ICC = 1.0); initial discrepancies chiefly revolved around "cannot tell" ratings. After these exercises, the authors evenly divided and individually appraised the remaining papers, the lead author corroborated any "cannot tell" ratings.

[5]Interestingly, two randomized control trials examined the effectiveness of coach motivational feedback and reported larger individual athlete performance improvements for objective (Hedges' *g* were .53 and 1.10) rather than subjective measures (Hedges' *g* were .14 and .22). There are several possible explanations for these contrasting findings. Firstly, motivational feedback provided by coaches during the experimental task produced an immediate effect on participant objective performance (e.g., number of free throws scored), presumably due to participants exerting extra effort into the task at hand. In contrast, subjective perceptions of performance were collected via questionnaires following the test sessions, during this time participants were not receiving motivational feedback from their coaches and were required to complete multiple measures, consequently, perceptions of performance at this time may be lower. Secondly, greater importance was placed on objective performance outcomes within the RCTs. Participants were informed that they would be publicly judged on objective performance scores, which again may have elicited greater participant effort during the tasks.

[6] In cases where we observed publication bias, we applied Duval and Tweedie's (2002) "Trim and Fill" procedures. We report the findings of any adjustments within Table 1.

Data availability statement

The dataset can be made available upon reasonable request to the corresponding author. Evidence tables and supplementary materials can be found on the Open Science Framework (ID Number: PQJAF).

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The authors declare no conflicts of interest.

References

Please note that for the sake brevity, all studies included in our analyses have been listed in the Supplementary Materials.

Antonakis, J., & Day, D. V. (2018). Leadership: Past, present, and future. In J. Antonakis & D. V. Day (Eds.), *The nature of leadership* (3rd ed., pp. 3-28). Sage Publications.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, *21*(6), 1086-1120. https://doi.org/10.1016/j.leaqua.2010.10.010

Arthur, C. A., & Bastardoz, N. (2020). Leadership in sport. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (4th ed., pp. 344-371). John Wiley and Sons, Inc. https://doi.org/10.1002/9781119568124.ch16

Avolio, B. J., & Bass, B. M. (1995). Individual consideration viewed at multiple levels of analysis: A multi-level framework for examining the diffusion of transformational leadership. *The Leadership Quarterly*, *6*, 199-218. https://doi.org/10.1016/1048-9843(95)90035-7

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, *88*(2), 207. https://psycnet.apa.org/doi/10.1037/0021-9010.88.2.207

Berson, Y., & Halevy, N. (2014). Hierarchy, leadership, and construal fit. *Journal of Experimental Psychology: Applied, 20*(3), 232–246. https://doi.org/10.1037/xap0000017

Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2010). A basic introduction to fixed-effect and random-effects models for meta-analysis. *Research Synthesis Methods*, *1*(2), 97-111. https://doi.org/10.1002/jrsm.12

Borenstein, M., Higgins, J. P., Hedges, L. V., & Rothstein, H. R. (2017). Basics of meta-analysis: I^2 is not an absolute measure of heterogeneity. *Research Synthesis Methods*, *8*(1), 5-18. https://doi.org/10.1002/jrsm.1230

Bruner, M. W., McLaren, C. D., Mertens, N., Steffens, N. K., Boen, F., McKenzie, L., ... & Fransen, K. (2022). Identity leadership and social identification within sport teams over a season: A social network analysis. *Psychology of Sport and Exercise*, *59*, Article 102106. https://doi.org/10.1016/j.psychsport.2021.102106

Bucci, J., Bloom, G. A., Loughead, T. M., & Caron, J. G. (2012). Ice hockey coaches' perceptions of athlete leadership. *Journal of Applied Sport Psychology*, *24*(3), 243-259. https://doi.org/10.1080/10413200.2011.636416

Callow, N., Roberts, R., Bringer, J. D., & Langan, E. (2010). Coach education related to the delivery of imagery: Two interventions. *The Sport Psychologist*, *24*(3), 277-299. https://doi.org/10.1123/tsp.24.3.277

Chelladurai, P., & Saleh, S. D. (1978). Preferred leadership in sports. *Canadian Journal of Applied Sport Sciences*, *3,* 85-92. Preferred leadership in sports. (apa.org)

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1)*,* 155-159. https://doi.org/10.1037/0033-2909.112.1.155

Cotterill, S. T., Loughead, T. M., & Fransen, K. (2022). Athlete leadership development within teams: Current understanding and future directions. *Frontiers in Psychology*, *13*, Article 820745. https://doi.org/10.3389/fpsyg.2022.820745

Duval, S., & Tweedie, R. (2000). Trim and fill: a simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(2), 455-463. https://doi.org/10.1111/j.0006-341X.2000.00455.x

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal*, *315*(7109), 629-634. https://doi.org/10.1136/bmj.315.7109.629

Eys, M.E., Evans, M.B., & Benson, A. (2020). *Group dynamics in sport* (5th ed.). Fit Publishing.

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, *63*(3), 665-694. https://doi.org/10.1348/000711010X502733

Filho, E., Gershgoren, L., Basevitch, I., Schinke, R., & Tenenbaum, G. (2014). Peer Leadership and Shared Mental Models in a College Volleyball Team: A Season Long Case Study. *Journal of Clinical Sport Psychology*, *8*(2), 184-203. Retrieved Sep 17, 2024, from https://doi.org/10.1123/jcsp.2014-0021

Fisher, R.A. (1928). *Statistical Methods for Research Workers* (2nd ed.). Oliver and Boyd.

Gillham, A., Gillham, E., & Hansen, K. (2015). Relationships among coaching success, servant leadership, cohesion, resilience and social behaviours. *International Sport Coaching Journal*, *2*, 233-247. https://doi.org/10.1123/iscj.2014-0064

Gunnell, K., Poitras, V. J., & Tod, D. (2020). Questions and answers about conducting systematic reviews in sport and exercise psychology. *International Review of Sport and Exercise Psychology*, *13*(1), 297-318. https://doi.org/10.1080/1750984X.2019.1695141

Hammermeister, J., Burton, D., Pickering, M., Chase, M., Westre, K., & Baldwin, N. (2008). Servant-leadership in sport: A concept whose time has arrived. *The International Journal of Servant-Leadership*, *4*(1), 185-215. IJSL-Vol 4-14.pdf (gonzaga.edu)

Hong, Q. N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A, Rousseau, M.-C., & Vedel, I. (2018). Mixed methods appraisal tool (MMAT), version 2018 for information

professionals and researchers. *Education for Information, 34*(4), 285-291. https://doi.org/10.3233/EFI-180221

Huedo-Medina, T. B., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I^2 index? *Psychological Methods*, *11*(2), 193-206 https://doi.org/10.1037/1082-989X.11.2.193

Ivarsson, A., Kilhage-Persson, A., Martindale, R., Priestley, D., Huijgen, B., Ardern, C., & McCall, A. (2020). Psychological factors and future performance of football players: A systematic review with meta-analysis. *Journal of Science and Medicine in Sport*, *23*(4), 415-420. https://doi.org/10.1016/j.jsams.2019.10.021

Kane, T. D., & Tremble Jr, T. R. (2000). Transformational leadership effects at different levels of the army. *Military Psychology*, *12*(2), 137-160. https://doi.org/10.1207/S15327876MP1202_4

Lin, L., & Chu, H. (2018). Quantifying publication bias in meta-analysis. *Biometrics*, *74*(3), 785-794. https://doi.org/10.1111/biom.12817

Loughead, T. M., & Hardy, J. (2005). An examination of coach and peer leader behaviours in sport. *Psychology of Sport and Exercise*, *6*(3), 303-312. https://doi.org/10.1016/j.psychsport.2004.02.001

McEwan, D., & Beauchamp, M. R. (2014). Teamwork in sport: A theoretical and integrative review. *International Review of Sport and Exercise Psychology*, *7*(1), 229-250. https://doi.org/10.1080/1750984X.2014.932423

Mesmer-Magnus, J. R., & DeChurch, L. A. (2009). Information sharing and team performance: a meta-analysis. *Journal of Applied Psychology*, *94*(2), 535. https://psycnet.apa.org/doi/10.1037/a0013773

Nichols, A. L., & Cottrell, C. A. (2014). What do people desire in their leaders? The role of leadership level on trait desirability. *The Leadership Quarterly*, *25*(4), 711-729. https://doi.org/10.1016/j.leaqua.2014.04.001

Northouse, P. G. (2024). *Introduction to leadership: Concepts and practice* (6th ed). Thousand Oaks: SAGE publications Ltd.

Oc, B., Chintakananda, K., Bashshur, M. R., & Day, D. V. (2023). The study of followers in leadership research: A systematic and critical review. *The Leadership Quarterly*, 101674. https://doi.org/10.1016/j.leaqua.2022.101674

Pace, R., Pluye, P., Bartlett, G., Macaulay, A. C., Salsberg, J., Jagosh, J., & Seller, R. (2012). Testing the reliability and efficiency of the pilot Mixed Methods Appraisal Tool (MMAT) for systematic mixed studies review. *International Journal of Nursing Studies*, *49*(1), 47-53. https://doi.org/10.1016/j.ijnurstu.2011.07.002

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, *10*(1), 1-11. https://doi.org/10.1186/s13643-021-01626-4

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879. https://psycnet.apa.org/doi/10.1037/0021-9010.88.5.879

Riemer, H. A., & Harenberg, S. (2014). Leadership in a team sport context: Implications for coaches. In A. R. Gomes, R. Resende, & A. Albuquerque (Eds.), *Positive human*

functioning from a multidimensional perspective (pp. 133-156). Nova Science Publishers, Inc. Retrieved from: liv5.pdf (ardh.pt)

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin*, *86*(3), 638-641. https://doi.org/10.1037/0033-2909.86.3.638

Smoll, F. L., & Smith, R. E. (1989). Leadership behaviours in sport: a theoretical model and research paradigm 1. *Journal of Applied Social Psychology*, *19*(18), 1522-1551. https://doi.org/10.1111/j.1559-1816.1989.tb01462.x

Steffens, N. K., & Haslam, S. A. (2022). The narcissistic appeal of leadership theories. *American Psychologist*, *77*(2), 234. https://psycnet.apa.org/doi/10.1037/amp0000738

Steffens, N. K., Haslam, S. A., Reicher, S. D., Platow, M. J., Fransen, K., Yang, J., Ryan, M. K., Jetten, J., Peters, K., & Boen, F. (2014). Leadership as social identity management: Introducing the Identity Leadership Inventory (ILI) to assess and validate a four-dimensional model. *The Leadership Quarterly*, *25*(5), 1001-1024. https://doi.org/10.1016/j.leaqua.2014.05.002

Stevens, M., Rees, T., & Cruwys, T. (2021). Social identity leadership in sport and exercise: Current status and future directions. *Psychology of Sport and Exercise*, *55*, Article 101931. https://doi.org/10.1016/j.psychsport.2021.101931

Stroup, D. F., Berlin, J. A., Morton, S. C., Olkin, I., Williamson, G. D., Rennie, D., Moher D., Becker, B. J., Sipe, T. A., & Thacker, S. B. (2000). Meta-analysis of observational studies in epidemiology: a proposal for reporting. *The Journal of the American Medical Association*, *283*(15), 2008-2012. https://doi.org/10.1001/jama.283.15.2008

Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of Management Sciences*, *4*(2), 142-168. https://doi.org/10.20547/JMS.2014.1704202

Tod, D., & Edwards, C. (2015). A meta-analysis of the drive for muscularity's relationships with exercise behaviour, disordered eating, supplement consumption, and exercise dependence. *International Review of Sport and Exercise Psychology*, *8*(1), 185-203. https://doi.org/10.1080/1750984X.2015.1052089

Turnnidge, J., & Côté, J. (2018). Applying transformational leadership theory to coaching research in youth sport: A systematic literature review. *International Journal of Sport and Exercise Psychology*, *16*(3), 327-342. https://doi.org/10.1080/1612197X.2016.1189948

Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly*, *25*(1), 83-104. https://doi.org/10.1016/j.leaqua.2013.11.007

Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson, S. J. (2008). Authentic leadership: Development and validation of a theory-based measure. *Journal of Management*, *34*(1), 89-126. https://doi.org/10.1177/0149206307308913

Wang, G., Oh, I. S., Courtright, S. H., & Colbert, A. E. (2011). Transformational leadership and performance across criteria and levels: A meta-analytic review of 25 years of research. *Group & Organization Management*, *36*(2), 223-270. https://doi.org/10.1177/1059601111401017

Wang, X., & Cheng, Z. (2020). Cross-sectional studies: strengths, weaknesses, and recommendations. *CHEST*, *158*(1), S65-S71. https://doi.org/10.1016/j.chest.2020.03.012

Williams, C., Neil, R., Cropley, B., Woodman, T., & Roberts, R. (2022). A systematic review of sport-based life skills programs for young people: The quality of design and evaluation methods. *Journal of Applied Sport Psychology*, *34*(2), 409-435. https://doi.org/10.1080/10413200.2020.1792583

1 **Figure captions**

2 *Figure 1.* Descriptive logic model results.

3 *Figure 2.* Experimental logic model results.

Table 1

Summary of Descriptive Meta-Analyses

Meta-Analysis	***k***	***R***	**CI_{95}**	***Q***	***I^2***
Main analysis					
Global leadership - global performance	44	.21***	[.14, .28]	576.11***	95%
Level of performance data					
Global leadership – team performance	28	.21***	[.12, .30]	379.73***	96%
Global leadership – objective team performance	15	.13**	[.05, .21]	84.20***	89%
Global leadership – subjective team performance	12	.32***	[.18, .49]	217.54***	97%
Global leadership – individual performance	20	.19**	[.08, .30]	207.46***	94%
Global leadership – subjective individual performance	16	.21**	[.08, .35]	179.52***	95%
Global leadership – objective individual performance	6	.09	[-.00, .19]	15.67***	69%
Leadership source					
Coach leadership – global performance	32	.19***	[.10, .28]	442.42***	95%
Coach leadership – team performance	17	.18**	[.06, .30]	262.41***	96%
Coach leadership – objective team performance	11	.12**	[.02, .22]	69.78***	88%
Coach leadership – subjective team performance	5	.33**	[.03, .65]	122.51***	98%
Coach leadership – individual performance	18	.19**	[.06, .32]	223.37**	95%
Coach leadership – objective individual performance[a]	5	.09	[-.02, .20]	15.53**	74%
Coach leadership – subjective individual performance	14	.22**	[.06, .38]	192.74***	96%
Team captain leadership – global performance	6	.34**	[.12, .57]	90.41***	96%
Team captain leadership – team performance	6	.34**	[.13, .58]	82.60***	96%
Informal athlete leadership – global performance	14	.21***	[.11, .31]	111.26***	95%
Informal athlete leadership – team performance	10	.15***	[.09, .21]	42.39***	81%
Informal athlete leadership – individual performance	6	.24*	[.01, .49]	63.32***	96%
Theoretical leadership perspective					
Authentic leadership – global performance	4	.44**	[.14, .80]	85.92***	96%
Transformational leadership – global performance[a]	13	.33***	[.16, .51]	219.54***	96%
Transformational leadership – team performance	8	.45***	[.24, .66]	120.24***	95%

Transformational leadership – individual performance	6	.24*	[.01, .46]	85.72***	94%
Social identity leadership – global performance	7	.19***	[.13, .25]	17.74	69%
Social identity leadership – team performance	6	.19***	[.12, .26]	17.69**	72%
Social identity leadership – individual performance	4	.14***	[.09, .19]	2.97	23%
Multidimensional model of leadership – global performance	10	.13	[-.04, .30]	139.73***	94%
Multidimensional model of leadership – team performance	7	.18	[-.06, .42]	128.17***	96%
Athlete competitive level					
National level samples					
Global leadership - global performance	11	.16**	[.05, .28]	58.77***	88%
Global leadership - team performance	9	.19**	[.06, .32]	50.75***	89%
University level samples					
Global leadership - global performance	10	.16**	[.04, .28]	47.82***	84%
Global leadership - team performance	7	.19*	[.03, .36]	45.16***	89%
Multi-level samples					
Global leadership - global performance	11	.16*	[.02, .30]	219.71***	96%
Global leadership - team performance	6	.16	[-.08, .40]	141.14***	98%
Recreational level sample					
Global leadership - global performance	4	.32*	[.00, .66]	70.38***	96%

Note. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$, k = number of effect sizes, r = Pearson's correlation effect sizes, CI_{95} = 95% Confidence Intervals, Q = Cochran Q Statistic, I^2 = percentage of heterogeneity. [a] indicates the presence of publication bias and the use of Duval and Tweedie's "Trim and Fill" procedures to produce an adjusted effect size.

Table 2

Summary of Experimental Meta-Analyses

Meta-Analysis	***k***	***Hedges' g***	**CI_{95}**	***Q***	***I^2***
Between-group meta-analyses					
Global leadership – global performance	8	.44***	[.29, .58]	7.18	1%
Level of performance data					
Global leadership – team performance	6	.49***	[.31, .66]	5.73	10%
Global leadership – individual performance	5	.41***	[.22, .61]	2.43	0%
Leadership source					
Informal athlete leadership – global performance	7	.44***	[.27, .61]	7.06	14%
Informal athlete leadership – team performance	4	.51***	[.31, .72]	2.57	2%
Informal athlete leadership – individual performance	4	.42***	[.20, .65]	2.68	0%
Within-group meta-analyses					
Global leadership – global performance	7	.40***	[.25, .55]	4.40	0%
Level of performance data					
Global leadership – team performance	5	.44***	[.26, .62]	3.11	0%
Global leadership – individual performance	5	.48***	[.28, .68]	4.30	4%
Leadership source					
Informal athlete leadership – global performance	7	.39***	[.24, .54]	5.06	0%
Informal athlete leadership – team performance	5	.44***	[.26, .61]	2.67	0%
Informal athlete leadership – individual performance	5	.47***	[.25, .69]	5.29	23%

Note. ***$p \leq .001$, **$p \leq .01$, *$p \leq .05$, k = number of effect sizes, Hedges' g = Hedges' g effect sizes, CI_{95} = 95% Confidence Intervals, Q = Cochran Q Statistic, I^2 = percentage of heterogeneity.