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In-Field Tactical Training In Modern Soccer: A Scoping Review

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Abstract

Background: Tactical performance in football is now widely understood through an ecological-dynamics lens, in which representative, in-field training tasks rather than decontextualized technical drills are held to drive the emergence of tactical behavior. Despite considerable applied interest in the Constraints-Led Approach, small-sided games, and related methodologies, no review has yet mapped the controlled-trial evidence for in-field tactical training, as distinct from the broader, design-unrestricted evidence on soccer decision-making recently scoped elsewhere (Machado et al., 2026). The objective of this review was to map and characterize the available controlled-trial evidence on in-field/on-pitch tactical training methodologies and their effects

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on tactical-behavioral and decision-making outcomes in football players, from youth through professional and semi-professional levels.

Methods: The PRISMA Extension for Scoping Reviews (PRISMA-ScR) was followed to conduct this review. Three major databases were searched; PubMed, Scopus, and Web of Science for records published between January 2010 and May 2026. Eligible designs comprise randomised controlled trials, quasi-experimental/non-randomised trials, and pre-post intervention studies conducted in applied, ecologically valid training environments.

Results: The search returned 74 records; 23 remained after de-duplication and title/abstract screening, and seven studies satisfied the full eligibility criteria. Included studies spanned U-12 to professional levels and examined the Constraints-Led Approach, nonlinear pedagogy, small-sided and conditioned games, tactical-periodization-informed designs, and hybrid on-/off-field approaches. All seven studies reported a favorable effect of the in-field intervention on tactical behavior or decision-making, although heterogeneity in outcome instrumentation precluded meta-analysis.

Conclusions: Representative, constraint-manipulated in-field training designs are consistently associated with improved tactical behavior across the developmental pathway, but the evidence base remains small and methodologically heterogeneous. Larger randomised trials and standardized tactical-assessment instrumentation are needed.

Keywords: tactical training; soccer; football; constraints-led approach; small-sided games; ecological dynamics

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1. Introduction

Tactical performance in football emerges from the continuous interplay between a player's perception, decision-making, and action within a dynamic, opposed environment, rather than from the execution of pre-set instructions. For much of the twentieth century, however, tactical instruction was typically delivered through decontextualized technical drills followed by isolated tactical walkthroughs, with technique and decision-making treated as separable components of performance. Over the past two decades, an ecological-dynamics perspective, most visibly expressed through the Constraints-Led Approach (CLA) has reframed tactical development as something that must be cultivated in-field, on the pitch, within representative, game-like tasks in which players self-organize their behavior in response to manipulated task, environmental, and individual constraints, rather than through instructed technique delivered away from the game itself (Davids, Button, & Bennett, 2008).

This theoretical shift has given rise to a family of related in-field methodologies. Small-sided and conditioned games (SSGs/SSCGs) remain the most widely adopted vehicle, often structured as reduced or positional games built around deliberate numerical or spatial overloads to provoke specific tactical problems (Ometto et al., 2018). Alongside these sit nonlinear pedagogy (Chow et al., 2006) and differential learning (Santos et al., 2018), both of which emphasize variability of practice over repetition of a single "correct" solution, and tactical-periodization-informed weekly training structures, which attempt to align physical, technical, tactical, and increasingly psychological loading around a team's principles of play across a training microcycle, despite the concept's empirical base remaining notably thin (Afonso et al., 2020). The applied appeal of these designs is evident in professional environments: positional-demand analyses comparing various-sided training games against competitive match play (Martín-García et al., 2019) and load-monitoring studies contrasting small-, medium-, and large-sided formats (Beato et al., 2023) both reflect the extent to which coaching and sport-science staff now use game-format manipulation as a routine training lever, not merely a research curiosity.

Despite this interest, the controlled-trial evidence base that specifically isolates tactical-behavioral outcomes in professional or semi-professional players as opposed to physical, physiological, or purely descriptive load outcomes, remains relatively young and dispersed despite this significant applied interest. Instead of testing the training designs thought to result in tactical improvement, a large portion of the tactical-analysis literature has focused on describing collective behavior

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through positional-tracking data (Rico-González et al., 2022) or methodologically integrating physical and tactical performance metrics (Teixeira et al., 2022)**.** Perceptual-cognitive and video-based training has been investigated as an alternate or supplemental path to tactical competence in a parallel stream of research (Zhao et al., 2022)**,** further dispersing the findings across sport-science, pedagogy, and performance-analysis journals that rarely cite each other. When there are syntheses of applied training designs, they typically focus on related rather than central issues. For example, SSG effects on technical execution have been thoroughly reviewed, but tactical-behavioral outcomes were noticeably missing from the eligible studies, a gap that the authors themselves identified as a priority for future work (Clemente et al., 2021)**.**

Taken together, these observations point to a literature that is theoretically converging around ecological-dynamics principles but empirically scattered: substantial variability in study design, competitive level, and outcome instrumentation makes it difficult for coaches and researchers to judge which in-field tactical methodologies have genuine experimental support, at which stage of the developmental pathway, and against which comparator. A scoping review methodology following the framework of Arksey and O'Malley (2005) as further formalized in the PRISMA Extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018)**,** was therefore adopted to map this evidence base systematically. A recent scoping review by Machado et al. (2026) mapped the broader evidence on developmental activities and both field and laboratory-based interventions for soccer decision-making, without restricting inclusion by study design. No review to date, however, has specifically mapped the controlled or quasi-controlled trial evidence for in-field/on-pitch tactical training methodologies organized by methodological family (CLA, nonlinear pedagogy, SSGs, tactical periodization) and their effects on tactical-behavioral as well as decision-making outcomes, spanning youth through professional and semi-professional football. This review addresses that narrower but methodologically stricter gap.

Using the Population-Concept-Context (PCC) framework recommended for scoping reviews, the guiding question was: among youth, professional, and semi-professional football players (Population), what controlled or quasi-controlled in-field tactical training methodologies have been evaluated (Concept), and what tactical-behavioral or decision-making outcomes have been reported, within applied, on-pitch training environments (Context)?

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2. Methodology

This review was conducted and is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018) and drew on the methodological framework originally proposed by Arksey and O'Malley (2005) statement for study identification, screening, charting, and reporting.

Eligibility Criteria

The eligibility criteria which were specified using the Population-Concept-Context (PCC) framework and search strategy reported below were agreed by the review team in advance of full-text screening. Population comprised youth through professional or semi-professional football (soccer) players of either sex; Concept comprised in-field/on-pitch tactical training methodologies including the Constraints-Led Approach, small-sided and conditioned games, nonlinear pedagogy, and tactical-periodization-informed designs and their reported effects on tactical-behavioral or decision-making outcomes; Context was restricted to applied, ecologically valid training environments, as opposed to laboratory-only or purely video-based simulations. The full inclusion and exclusion criteria are detailed in Table 1.

Table 1. Eligibility criteria for source selection

Inclusion Criteria	Exclusion Criteria
Only open access articles	Studies on non-football/soccer sports
Published between January 2010 – May 2026	Cross-sectional/observational studies; systematic review/narrative articles; case studies
RCTs, quasi-experimental/non-randomized trials, pre-post intervention studies	Duplicate publications or conference proceedings superseded by journal articles
Focused on youth through professional or semi-professional athletes	Grey literature, blogs, and news articles
Peer-reviewed journals	Non-English studies without English translation
Interventions delivered in applied, in-field/on-pitch training environments	Lab-only simulations lacking an ecologically valid, in/on-field training component

Search Strategy

Three major databases were searched on 20 July 2026: PubMed, Scopus, and Web of Science. In PubMed, the following search strategy was applied to title/abstract fields: (soccer[tiab] OR

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football[tiab]) AND ("tactical training"[tiab] OR "tactical behavior"[tiab] OR "decision-making"[tiab] OR "decision making"[tiab] OR "decision-making"[MeSH Terms]) AND ("constraints-led approach"[tiab] OR "constraints led approach"[tiab] OR "small-sided game*"[tiab] OR "small sided game"[tiab] OR "conditioned game"[tiab] OR "game-based approach"[tiab] OR "tactical periodization"[tiab] OR "ecological dynamic"[tiab] OR "nonlinear pedagogy"[tiab] OR "differential learning"[tiab]), limited to records published between 1 January 2010 and 31 May 2026 (n = 21). The equivalent strategy was adapted for Scopus (n = 30) and Web of Science (n = 23) databases with searches limited to peer-reviewed records across all three databases, together yielding 74 records before de-duplication.

Records retrieved across the three databases were pooled and de-duplicated. Titles and abstracts were then independently screened against the eligibility criteria (Table 1) by two reviewers [S.K.B. and M.B], who also independently assessed the full texts of records advancing to that stage. Disagreements at either stage were resolved through discussion and, where consensus could not be reached, adjudication by a third reviewer [S.K.D]. This process eliminated the systematic or narrative reviews and excluded studies that were cross-sectional/observational in design, lacked an in-field or on-pitch intervention, or did not report a tactical-behavioral outcome (Figure 1).

Data Charting Process

The review team developed a standardized charting form to direct data extraction. To create a summary table (Table 2), two reviewers [S.K.B and M.B.] used this form to independently chart data from each included source. They recorded publication details, population and competitive level, study design, training methodology/intervention, and the main tactical-behavioral outcome or outcomes provided. Before synthesis, differences between the two sets of plotted data were discussed and compared to the original articles.

Synthesis of Results

Given the heterogeneity of study designs, populations, and outcome instruments, a narrative synthesis approach was used. Included studies were grouped according to the dominant training methodology under evaluation: Constraint-Led Approach/nonlinear pedagogy, small-sided and conditioned games/tactical periodization, and augmented or hybrid in-field approaches, and findings were synthesized within and across these groups to identify converging patterns and points of divergence.

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3. Results

Study Selection

The database search resulted in a total of 74 records which after deduplication followed by title and abstract screening, 23 unique records remained for full-text assessment. Out of the remaining studies, only 7 studies met the full eligibility criteria for the narrative synthesis (Figure 1).

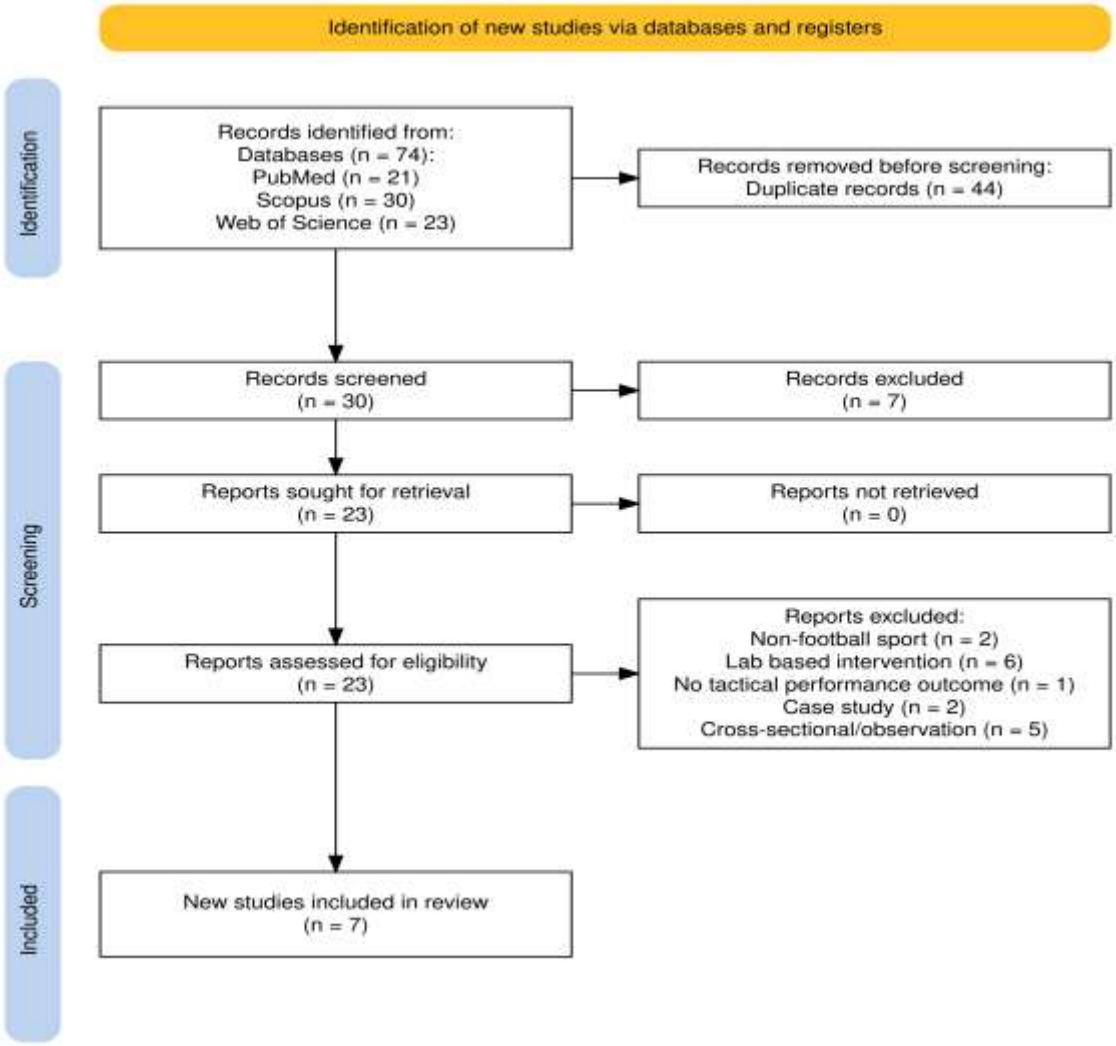


Figure 1: PRISMA 2020 flow diagram of the identification, screening, and inclusion of studies.

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Characteristics of the Included studies

Twenty-three unique, non-duplicate records were evaluated against the full eligibility criteria. Seven studies satisfied all inclusion criteria and were retained for the synthesis. Their characteristics are summarized in Table 2.

#	Study	Population / Level	Design	Methodology	Key Tactical Outcome
1	D'Isanto et al. (2021)	U-13 amateur (n = 24)	Quasi-experimental, pre-post, control group	Constraints-Led Approach (CLA) vs. conventional/cognitive-approach training, 2 months	CLA group improved dribbling accuracy/technical-tactical execution significantly more than controls (d = 0.90)
2	Gonzalez-Artetxe et al. (2021)	U-14 & U-16 club players (n = 32)	Quasi-experimental, pre-post, control vs. experimental	Nonlinear pedagogy: modified games with artificial rules vs. free play, tracked via local positioning system	Artificial-rule games produced more regular (organised) team tactical behaviour in possession phase
3	Práxedes et al. (2022)	U-14 (n = 20)	Experimental, repeated-measures	Sequenced small-sided games (numerical superiority vs. equality) manipulating CLA task constraints	Numerical-superiority-first sequencing improved offensive decision-making and ball-possession performance
4	Farhani et al. (2025)	Semi-professional (n = 16)	Randomised, counterbalanced crossover, field-based	Manipulation of player numbers (3v3/4v4) and bout duration in SSGs	Continuous longer bouts improved successful-pass and tactical/technical execution rates vs. fractionated bouts
5	Machado et al. (2024)	U-12 elite academy (n = 25)	Pre-post intervention	25 sessions of tactical-principles-based small-sided and conditioned games (SSCGs)	Improved perceptual-cognitive and perceptual-motor decision-making time in offensive and defensive phases
6	Schorer et al. (2018)	U-14–16 club players (n = 26)	Quasi-experimental, 3-arm (field-only vs. field+cognitive vs. control)	On-field tactical-skill training, with/without augmented pattern-recall component	Field-based tactical training improved pattern-recall/tactical-recognition performance; combined condition showed added retention benefit
7	Tassi et al. (2024)	U-21/U-23 professional (Argentina, n = 46)	Quasi-experimental, pre-post, pilot	5-week holistic/ecological training integrating tactical principles-of-play tasks with psychological (emotional/attentional) components	Significant improvement in tactical "principles of play" performance post-intervention in both teams

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Note: Six of seven included studies employed quasi-experimental or single-group pre-post designs; only Farhani et al. (2025) used a randomized design.

Synthesis of Results

Constraints-Led Approach (CLA) and nonlinear pedagogy: Across studies 1, 2, and 3, manipulating task constraints; pitch dimensions, player numbers, rules, and sequencing of numerical (im)balance – reliably shaped emergent tactical behavior, improving technical-tactical execution (D'Isanto et al., 2021) and inducing more organized, repeatable collective patterns (Gonzalez-Artetxe et al., 2021), while the ordering of constraint difficulty influenced decision-making transfer (Práxedes et al., 2022). This is consistent with ecological-dynamics theory, which frames tactical skill as self-organized adaptation to a designed practice environment rather than instructed technique.

Small-sided and conditioned games (SSCGs) and tactical periodization: Studies 4 and 5 converge on SSCGs as an efficient vehicle for simultaneously training tactical, technical, and (to a lesser extent) physical qualities. Embedding SSGs within a tactical-periodization microcycle produced measurable offensive-effectiveness gains in youth players, while manipulating bout structure/number of players modulated both technical-tactical execution and players' psychological state (Farhani et al., 2025)**.** Machado et al. (2024) demonstrated that SSCGs explicitly framed around tactical principles of play improved perceptual-cognitive decision-making speed, though quality of decisions did not uniformly improve, underscoring that volume of representative practice alone does not guarantee gains in decision quality.

Augmented / hybrid in-field approaches: Schorer et al. (2018) showed that on-field tactical training remains foundational, with a modest added benefit from combining it with off-field cognitive (pattern-recall) reinforcement – suggesting hybrid designs may complement, but not replace, in-field practice. Tassi et al. (2024) extended the "holistic" ecological approach by embedding psychological (stress-coping, attentional) content directly within tactical training tasks for professional players, and found this improved principles-of-play performance over a competitive season – indicating integration of the mental/emotional dimension may be a promising, still under-researched, extension of in-field CLA-based methodology at the elite level.

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4. Discussion

Summary of Evidence

Overall, the seven included studies spanning U-12 to professional levels provide converging, though methodologically heterogeneous, support for representative in-field tactical training designs (particularly CLA-informed SSGs) as effective tools for developing tactical behavior and decision-making in soccer players. Sample sizes were generally small (n = 16-46), interventions were short-to-medium term (4 sessions to one competitive season), and outcome instrumentation varied widely (GPET, FUT-SAT, TacticUP®, local positioning systems, pattern-recall tasks), limiting quantitative pooling. This review's scope is deliberately narrower than the recent scoping review by Machado et al. (2026)**,** which mapped soccer decision-making evidence across any empirical design and included laboratory-based as well as field-based interventions. By restricting inclusion to controlled/quasi-controlled trials conducted in ecologically valid, in-field training environments, and by including tactical-behavioral outcomes alongside decision-making, the present review isolates a smaller but more methodologically homogeneous evidence base directly relevant to applied, on-pitch coaching decisions.

The findings reinforce a broader shift in soccer coaching science away from decontextualized, block-practice drills toward representative, task-constrained, in-field designs. Across age groups (U-12 through professional), all seven included studies reported a positive direction of effect on tactical or decision-making outcomes, suggesting a consistent; though not yet robust, pattern of benefit for the CLA/SSG family of methods across the developmental pathway. This distinction matters: six of the seven included studies were quasi-experimental or single-group pre-post designs (Table 2), only one (Farhani et al., 2025) was a randomized trial, and no formal critical appraisal of individual sources was performed. The direction of effect is therefore better characterized as a promising and consistent signal across the pathway than as an established, high-certainty finding. The specific mechanism of benefit also appears to differ by age and level: younger players appear to benefit from constraint-driven exploration and rule manipulation, while older or elite players may benefit more from precisely sequenced constraint difficulty (Práxedes et al., 2022) or integration with psychological demands of competition (Tassi et al., 2024)**.**

A notable gap, visible in both the included and excluded literature, is the scarcity of true randomized controlled trials: most eligible studies used quasi-experimental or single-group pre-post designs, and several strong candidate studies were excluded specifically because they were cross-sectional or observational comparisons rather than interventions – for example, studies comparing full-sided vs. small-sided game tactical behavior without a training-intervention

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component. This mirrors a broader pattern noted in adjacent reviews of CLA/team-synergy and SSG research by Ramos et al. (2020), in a systematic review and meta-analysis of 62 CLA/team-synergy studies, similarly reported that the great majority of investigations evaluated task-constraint manipulations through observational or associative designs assessing emergent tactical behavior, rather than through controlled interventions – a pattern that restricts causal inference across this broader literature as well.

A second gap concerns outcome standardization: no two included studies used the same tactical-assessment instrument, which – consistent with prior systematic reviews in this space precluded meta-analysis and limits direct comparability of effect sizes.

Limitations

- The body of evidence found was limited with only seven studies and restricted to open-access, English-language publications, which may have left out important paywalled or those published in other languages and created a degree of selection bias.
- The types of studies included were mostly quasi-experimental or single-group pre-post studies. They were not randomised controlled trials, which makes it harder to prove cause and effect from the results.
- The tools used to measure the outcomes varied a lot, for example, GPET, FUT-SAT, TacticUP®, local positioning systems, pattern-recall tasks; which made it impossible for meta-analysis and limited the ability to compare how strong the effects were.
- The results above should be interpreted as a map of the available evidence rather than a graded assessment of its certainty because a formal critical appraisal/risk-of-bias assessment of included sources was not conducted.
- Due to the search restriction to three databases (PubMed, Scopus, and Web of Science) and exclusion of grey literature, many eligible trials, especially those that were recently finished or unpublished, may have been missed.
- The eligibility/search decisions presented here are based on the review team's judgment rather than an externally verifiable priori strategy, and a formal review methodology was not prospectively registered.

Implications for Practice

- The findings suggest a preference for representative, whole-practice designs (small-sided/conditioned games) over isolated technical drills when the training goal is tactical behavior, though this is based on a small and design-heterogeneous evidence base.

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- Where constraint manipulation is used, the included studies suggest doing so deliberately and progressively; numerical (im)balance, pitch size, rules – rather than randomly; the sequencing of constraint difficulty (e.g., superiority before equality) appeared to influence transfer in at least one included study (Práxedes et al., 2022), though this finding awaits replication.
- Consider integrating psychological/attentional content directly into tactical tasks for older/elite players, rather than treating "mental" and "tactical" training as separate blocks.
- The literature reviewed here suggests a need for greater consistency in tactical-assessment instrumentation (e.g., FUT-SAT, GPET, TacticUP®) within a club pathway to enable longitudinal tracking, since no single agreed instrument currently exists across studies.

5. Conclusion

Modern in-field tactical training methodologies most prominently the Constraints-Led Approach and constraint-manipulated small-sided or conditioned games – show consistent, positive direction of effect on tactical behavior and decision-making in soccer players from youth through professional levels, though the strength of this pattern cannot yet be stablished given the predominance of non-randomized designs and the absence of formal quality appraisal. Future research should prioritize larger randomised controlled trials, standardized tactical-assessment instrumentation, and longer-term retention follow-up, particularly for the still-nascent integration of psychological and tactical training content at the elite level.

Declarations

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Informed Consent Statement: Not applicable.
Data Availability: The extracted and synthesized in this review are presented within the article (Table 2); no new primary data were generated.
AI-use Disclosure Statement: Claude Sonnet 5 (Anthropic) was used during manuscript preparation for language refinement and editing assistance (e.g., grammar, clarity, and phrasing).



It was not used to generate, analyze, or interpret study data, to conduct the literature search or study selection, or to draft substantive scientific content or conclusions. All intellectual content, data extraction, synthesis, and interpretation are the original work of the authors, who take full responsibility for the accuracy and integrity of the manuscript.

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