

Original Article

Positive Self-Talk as a Cognitive Control Mechanism in Sport Performance: A Systematic Review

Erlouise M. Vargas 

Author Information:

Graduate School, University of the
Immaculate Conception, Davao City,
Philippines

Corresponding Author:

Erlouise M. Vargas
evargas_230000000937@uic.edu.ph

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Abstract. Athletes across competitive sports rely on deliberate internal verbal dialogue to manage the psychological demands of performance. Positive self-talk (PST), defined as purposeful, self-directed verbal cues used to guide cognitive and emotional states, has attracted substantial empirical attention, yet its mediator and moderator evidence has never been integrated into a single explanatory account. Following PRISMA 2020 guidelines, this systematic review synthesized evidence from 42 peer-reviewed empirical studies (2000–2024) involving competitive athletes, identified through comprehensive multi-database searching, structured eligibility screening, and formal risk-of-bias appraisal, with evidence stratified by design quality and conclusions anchored to experimental studies using objective performance outcomes. Four themes were identified: (1) attentional precision, whereby instructional PST directs attention to task-relevant information in technically demanding tasks; (2) cognitive stabilization, the capacity of PST to steady thinking under stress by helping athletes reinterpret arousal as helpful and interrupt negative self-talk cycles; (3) motivational persistence, with motivational PST sustaining effort under fatigue through self-efficacy pathways (in one study, self-talk dimensions explained 40% of variance in sport confidence; $R^2 = .40$, $p < .001$); and (4) contextual moderation, meaning that PST effectiveness depends on task type, athlete experience, and individual characteristics such as trait anxiety. The principal meta-analysis reported a moderate overall effect of $d = 0.48$ (Hatzigeorgiadis et al., 2011). The review contributes an integrative, hypothesis-generating framework that organizes established mediator and moderator findings into a unified cognitive control account of PST, yielding falsifiable predictions while acknowledging that its neurocognitive layer awaits direct empirical testing. In practical terms, structured PST training can support attentional focus, emotional regulation, and motivational persistence, making it a viable psychological skill for athletes in high-pressure contexts.

Keywords: *Anxiety regulation; Cognitive control mechanisms; Positive self-talk; Sport performance; Systematic review.*

In the decisive moments of competition, the silence before a starting gun or the final lap under accumulating fatigue, an athlete's internal voice can make the difference between composure and collapse. The study of this internal voice, termed self-talk, has occupied sport psychologists for nearly five decades (Mahoney & Avenier, 1977). Its neurophysiological grounding has been linked to activity in Broca's region of the left frontal cortex and Wernicke's region of the left posterior superior temporal cortex; self-talk is especially prevalent at peak fatigue and during demanding phases of performance (St Clair Gibson & Foster, 2007).

Positive self-talk (PST) refers to deliberate, self-directed verbal or subvocal statements that athletes use to guide, motivate, or regulate their cognitive and emotional states during training and competition (Hardy, 2006). Two primary categories are recognized: instructional self-talk, comprising concise, technique-focused directives such as “keep your elbow up,” and motivational self-talk, comprising phrases designed to sustain effort and confidence such as “I can do this” (Theodorakis et al., 2000). Latinjak et al. (2014) further distinguished deliberate, goal-directed self-talk from spontaneous, undirected self-talk, and Fritsch et al. (2022) separated organic self-talk (spontaneous, internally generated verbal thought) from strategic self-talk (predetermined cues deployed deliberately for performance-related ends). This review addresses the deliberate, goal-directed dimension of PST, the primary target of psychological skills training in sport.

The empirical case for PST is substantial. In a meta-analysis of 32 studies, Hatzigeorgiadis et al. (2011) reported an overall effect size of $d = 0.48$. Instructional self-talk was especially effective for fine and novel tasks, and interventions that included self-talk training were more effective than those without training. Tod et al. (2011) likewise concluded that self-talk can benefit performance, confidence, and motivation, although the reviewed studies varied in design and quality. Applied intervention research reinforces these conclusions. Barwood et al. (2015) demonstrated that trained motivational self-talk improved 10-km cycling time-trial performance relative to neutral self-talk, with perceived exertion unchanged despite higher power output. More recently, De Muynck et al. (2020) found in 120 competitive tennis players that fear of failure was related to positive and negative self-talk, and that negative self-talk was related to perceived pressure. Aulia et al. (2025), cited as post-search external evidence rather than as an included study, reported improvements in self-confidence, emotional regulation, and achievement motivation following a four-week self-talk intervention (Cohen’s $d = 0.85\text{--}1.05$).

The conceptual landscape, however, remains fragmented, and it is important to state precisely what existing accounts do and do not provide. Hardy (2006) supplied the field’s definitional and conceptual foundation; Hatzigeorgiadis et al. (2011) established the principal meta-analytic moderators (self-talk type and task characteristics); Van Raalte et al. (2016) modeled self-talk within a dynamic sport-specific system linking contextual and personal antecedents to performance; and Van Raalte et al. (2019) recast inner speech as a dialogical process among internalized voices. Each account illuminates a part of the phenomenon: effect estimation, structural description, or the phenomenology of inner speech. What none provides is an integration of the mediator evidence (self-efficacy, confidence, anxiety) with the moderator evidence (task type, expertise, individual differences) into a single regulatory architecture that specifies which control function PST serves under which conditions. The contribution claimed for the present review is therefore explicitly integrative and hypothesis-generating rather than a discovery of new mechanisms: it organizes the accumulated evidence into a framework that yields falsifiable predictions, for example, that instructional cues should benefit performance primarily through attentional pathways and show the largest gains in high-precision tasks for less experienced athletes, whereas motivational cues should operate through effort- and efficacy-based pathways with the largest gains in endurance contexts.

Beyond this conceptual fragmentation, several empirical gaps persist. Existing reviews have not systematically examined how sport type, competitive level, or individual-difference variables moderate PST effects; no previous review has applied PRISMA 2020 comprehensively to this literature; and mediator and moderator findings have accumulated in isolation from one another. Three research questions framed within PICO (Population, Intervention, Comparator, Outcome) guided the review: (1) What effects does deliberate PST have on sport performance in competitive athletes? (2) What cognitive and motivational mechanisms mediate the PST-performance relationship? (3) What contextual and individual-difference variables moderate PST efficacy?

Answering these questions matters for both theory and practice. Theoretically, consolidating the mechanistic evidence allows PST to be examined within a cognitive control framework, connecting a traditional psychological skills technique to constructs of attention, inhibition, and self-regulation in a form that can be directly tested. Practically, a mechanism-based account gives coaches and sport psychologists a principled basis for designing athlete training programs: knowing when, for whom, and through which pathway PST works transforms it from a generic motivational slogan into a targeted, trainable cognitive skill.

Methodology

Research Design

A systematic review was selected as the optimal methodology for addressing the research gap. The PST literature is dispersed across heterogeneous designs, sports, and outcome measures, and the questions posed here concern mechanisms and moderators rather than a single pooled effect, which existing meta-analyses have already estimated (Hatzigeorgiadis et al., 2011; Tod et al., 2011). A systematic review with thematic synthesis permits transparent, replicable identification of all relevant evidence while accommodating this heterogeneity, and it is the appropriate design for building an integrative mechanistic framework from studies that cannot be quantitatively pooled.

Protocol and Registration

The review followed the PRISMA 2020 statement, addressing all 27 checklist items (Page et al., 2021). The PICO framework defined the research question: Population = competitive athletes; Intervention = deliberate positive self-talk; Comparator = no-self-talk control, placebo, or alternative intervention; Outcome = objectively or subjectively measured sport performance. See Figure 1.

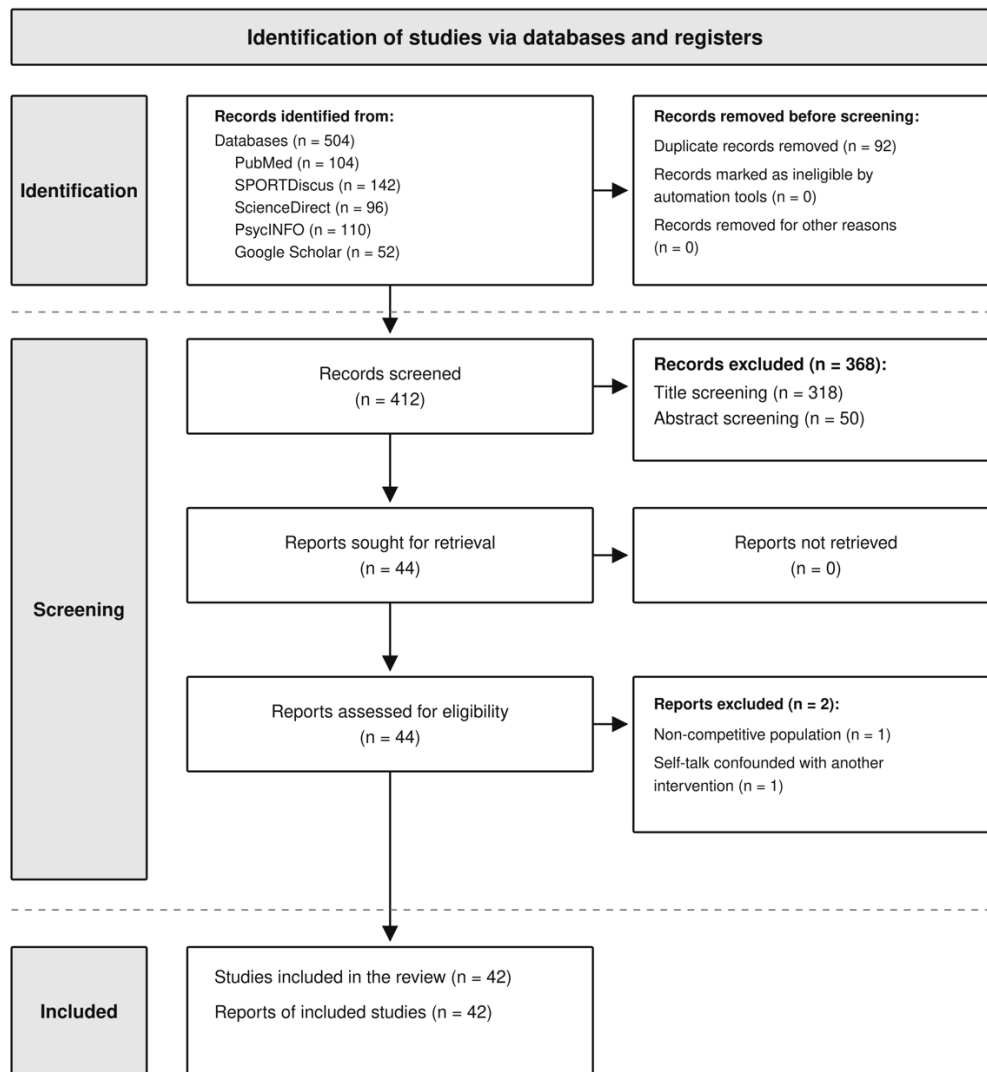


Figure 1. PRISMA 2020 Flow Diagram Illustrating the Study Identification, Screening, and Inclusion Process for the Systematic Review

Eligibility Criteria and Operational Definitions

Studies were included if they were (a) peer-reviewed empirical studies in English; (b) conducted with competitive athletes from organized recreational to elite level; (c) focused on deliberate positive or instructional self-talk as the primary intervention; (d) reported at least one quantifiable sport performance outcome; (e) published between 2000 and 2024; and (f) experimental, quasi-experimental, or structured observational in design. Studies were excluded if they were qualitative without performance data, involved clinical or rehabilitation populations or general exercisers without a competitive context, were unpublished theses, or confounded self-talk with imagery or relaxation interventions without independent measurement.

To make screening judgments replicable, key eligibility concepts were defined operationally a priori. A competitive athlete was defined as an individual who, at the time of data collection, participated in structured, officiated competition within an organized sport system, from organized recreational leagues to international elite level; physical education students and fitness exercisers without competitive participation did not qualify. Deliberate positive self-talk was defined as pre-planned or experimenter-assigned verbal or subvocal statements with instructional or motivational content, self-administered by the athlete with performance-related intent; spontaneous self-talk qualified only when studies assessed it systematically with validated instruments. A quantifiable sport performance outcome was defined as any numerically scored measure of task execution (e.g., accuracy, time, distance, technique ratings by blinded judges); self-reported effort or satisfaction alone did not qualify. Primary intervention meant that self-talk was the only manipulated psychological variable or was measured independently of any co-administered technique.

Search Strategy

Table 1. Database-Specific Search Strategies and Record Yields

Database	Fields / Syntax	Search String as Executed	Records
PubMed	Title/ Abstract [tiab]	("self-talk"[tiab] OR "positive self-talk"[tiab] OR "self-instruction"[tiab] OR "self-verbalization"[tiab]) AND ("sport"[tiab] OR "athletic performance"[tiab] OR "competition"[tiab]) AND ("performance"[tiab] OR "anxiety"[tiab] OR "self-efficacy"[tiab] OR "confidence"[tiab])	104
SPORTDiscus (EBSCO)	TX (all text) with DE subject headings	(TX "self-talk" OR TX "positive self-talk" OR TX "self-instruction" OR TX "self-verbalization") AND (TX sport OR TX "athletic performance" OR TX competition) AND (TX performance OR TX anxiety OR TX "self-efficacy" OR TX confidence)	142
ScienceDirect	Title-Abstract-Keywords	("self-talk" OR "positive self-talk" OR "self-instruction" OR "self-verbalization") AND ("sport" OR "athletic performance" OR "competition") AND ("performance" OR "anxiety" OR "self-efficacy" OR "confidence")	96
PsycINFO (APA)	Any field with subject-heading expansion	("self-talk" OR "positive self-talk" OR "self-instruction" OR "self-verbalization") AND (sport OR "athletic performance" OR competition) AND (performance OR anxiety OR "self-efficacy" OR confidence)	110
Google Scholar	Simplified phrase search; first 200 relevance-ranked records screened	"self-talk" AND ("sport performance" OR "athletic performance") AND (anxiety OR "self-efficacy" OR confidence)	52 (retained)

Note. Records = records retrieved at the initial January 2024 execution (total = 504 before deduplication). TX = all-text field (EBSCO syntax); [tiab] = title/abstract field (PubMed syntax); DE = database subject heading.

Five electronic databases (PubMed, SPORTDiscus, ScienceDirect, PsycINFO, and Google Scholar) were searched. The initial search was executed in January 2024 and re-executed in March 2024 to capture newly indexed records;

database-specific strings, field syntax, and record yields are reported in Table 1. The core Boolean strategy combined (“self-talk” OR “positive self-talk” OR “self-instruction” OR “self-verbalization”) AND (“sport” OR “athletic performance” OR “competition”) AND (“performance” OR “anxiety” OR “self-efficacy” OR “confidence”). Because the five interfaces differ in syntax and field coding, the core strategy was adapted to each database (title/abstract field tags in PubMed; subject-heading and full-text fields in SPORTDiscus and PsycINFO; title-abstract-keyword fields in ScienceDirect; simplified phrase search in Google Scholar, screening the first 200 relevance-ranked records), and the database-specific strings are reported verbatim in Table 1 to permit independent re-execution. Reference lists of included studies and prior reviews were hand-searched.

Study Selection and Data Extraction

Records were exported to a shared reference library and deduplicated. Selection then proceeded in three documented stages. First, one reviewer removed records that were clearly out of scope on title alone, applying a deliberately conservative rule under which any record with plausible relevance was retained. Second, two reviewers independently screened all surviving records at the abstract level against the operational eligibility criteria, blind to each other’s ratings; inter-rater reliability at this stage was strong (Cohen’s $\kappa = .84$; Landis & Koch, 1977), and all discrepancies were resolved through consensus discussion with reference to the written criteria. Third, the same two reviewers independently assessed full texts, recording a prespecified exclusion reason for every rejected study; these reasons are reported in the PRISMA flow diagram (Figure 1). Data were then extracted by one reviewer into a standardized, piloted form (authors, year, country, design, participant characteristics, intervention details, comparator, outcome measures, and results) and verified in full by the second reviewer against the source papers.

Risk of Bias Assessment

Risk of bias was assessed with a modified version of the Cochrane Collaboration tool (Higgins et al., 2011). The adaptation, made because psychological skills interventions differ structurally from clinical trials, consisted of three prespecified rules. First, six domains were rated for each study: random sequence generation, allocation concealment, participant blinding, blinding of outcome assessment, incomplete outcome data, and selective reporting. Second, a “not applicable” (N/A) category was added for non-interventional designs (observational, psychometric, review, and theoretical papers), for which randomization-related domains cannot meaningfully be judged. Third, an explicit algorithm converted domain ratings into an overall judgment: low risk = two or fewer domains rated unclear or high; moderate = three to four; high = five or more. Two reviewers rated all studies independently and resolved disagreements by consensus; domain-level and overall ratings for the representative study set are reported in Table 3 so that the displayed judgments can be independently checked.

Thematic Synthesis

Synthesis followed the three-stage procedure of thematic synthesis (Thomas & Harden, 2008). In stage one, the results and discussion sections of all included studies were coded line by line, with codes recorded in a master codebook alongside the supporting study, design type, and verbatim finding; coding was conducted by the first reviewer and the full codebook was audited by the second reviewer against the source studies. In stage two, codes were grouped into descriptive themes through constant comparison, with each candidate theme required to be supported by at least three independent studies including at least one experimental design. In stage three, descriptive themes were developed into analytical themes by asking what regulatory function each cluster of findings implied; theme boundaries and labels were refined iteratively across three joint sessions until both reviewers agreed no finding remained unclassified or double-counted, and an audit trail linking every analytical theme back to its codes and source studies was retained. Formal inter-coder agreement statistics were not computed for the coding stage (agreement was managed through the audit-and-consensus procedure), and this is acknowledged as a limitation.

Ethical Considerations

This review analyzed secondary data drawn exclusively from published, peer-reviewed studies; no human participants were recruited, and no primary data were collected, so institutional ethics approval was not required. The review was nonetheless conducted in accordance with accepted ethical standards for research synthesis, including faithful representation of primary-study findings, transparent reporting of methods, and acknowledgment of all sources.

Results and Discussion

Demographic Data

The retained literature covered individual target sports, racket sports, aquatic sports, team sports, and endurance or multi-event sports. Table 2 presents selected primary studies together with contextual reviews and theoretical sources used to interpret the empirical evidence. Contextual sources are identified by design and were not treated as primary intervention evidence.

Table 2. *Selected Primary Studies and Contextual Evidence Sources*

Author(s) (Year)	Country	n	Sport/ Task	Design	ST Intervention	Key Outcome(s)	Principal Finding
Theodorakis et al. (2000)	Greece/USA	200	Sit-ups, leg ext., flexibility, soccer accuracy	RCT	Motivational vs. instructional ST vs. control	Performance accuracy	Instructional ST superior for fine-motor; motivational better for strength/endurance.
Hardy et al. (2001)	Canada/UK	150	Multiple sports	Survey	Naturalistic ST assessment	ST frequency, function	Athletes described cognitive and motivational functions of self-talk across sport settings.
St Clair Gibson & Foster (2007)	UK/USA	Review	Exercise/multiple sports	Narrative review	Associative vs. dissociative ST	Neural correlates; ST development	Narrative synthesis indicating that exercise-related thought becomes more associative and motivational as intensity rises; neural discussion is secondary evidence.
Hatzigeorgiadis et al. (2008)	Greece	46	Tennis (groundstrokes)	Experimental	Motivational ST vs. control	Performance accuracy; self-efficacy	PST improved self-efficacy and tennis performance vs. control.
Hatzigeorgiadis et al. (2009)	Greece	72	Tennis	Experimental (RCT)	Motivational ST vs. control	Anxiety; self-confidence; performance	Motivational ST reduced anxiety, raised self-confidence; both mediated performance gains.
Hatzigeorgiadis & Biddle (2008)	UK/Greece	86	Multiple sports	Correlational	Natural ST assessment	Anxiety; performance discrepancies	Negative self-talk was associated with pre-competition anxiety and goal-performance discrepancies.

Zourbanos et al. (2009)	Greece	429	Multiple sports	Scale development	ASTQS development	ST structure and dimensions	Validated 40-item ASTQS capturing 4 positive and 4 negative self-talk dimensions.
Tod et al. (2011)	UK	47 studies	Multiple sports	Systematic review	Varied ST interventions	Performance ; confidence; motivation	ST effective overall; motivational, instructional, and confidence-building functions confirmed.
Hatzigeorgiadis et al. (2011)	International	32 studies	Multiple sports	Meta-analysis	Varied ST interventions	Sport performance (d)	d = 0.48 overall; instructional ST was especially effective for fine and novel tasks.
Weinberg et al. (2012)	USA	81	Cross-country running	Quasi-experimental	Structured motivational ST training	Race performance ; anxiety	No significant between-group differences; several self-talk conditions improved from baseline to the one-week test.
Latinjak et al. (2014)	Spain/Greece	208	Multiple sports	Survey/Qualitative	Goal-directed vs. undirected ST	ST function taxonomy	Validated distinction between deliberate goal-directed and spontaneous undirected self-talk.
Galanis et al. (2016)	Greece	N/A	Multiple sports	Narrative review (book chapter)	Analysis of ST mechanisms	Mechanisms of ST effectiveness	Identified self-efficacy, attention, and anxiety regulation among the cognitive mechanisms explaining self-talk effects.
Van Raalte et al. (2016)	USA	N/A	Multiple sports	Theoretical review	Sport-specific ST model	Theoretical model of ST	Dynamic sport-specific model; ST affects performance via attentional,

							motivational, cognitive pathways.
Latinjak et al. (2019)	Spain/Greece	34	Basketball	Qualitative	Natural ST in 4 competitive situations	ST functions in competition	Goal-directed ST served cognitive, motivational, and emotion-regulation functions; situation-specific.
Van Raalte et al. (2019)	USA	N/A	Sport (general)	Theoretical/Opinion	Dialogical consciousness model	ST theory; inner experience	Polyphonic internal dialogue framework; DES methods proposed.
Walter et al. (2019)	Germany	117	Track, swimming, tennis	Randomized intervention (1 or 8 wks)	Structured PST training program	Anxiety; self-efficacy; performance	One- and eight-week PST interventions improved selected anxiety, self-efficacy, and coach-rated performance outcomes; longer training was generally more effective.
De Muynck et al. (2020)	Belgium/Greece	120	Tennis (competitive)	Mixed-methods	Think-aloud + self-report ASTQS	ST validity; fear of failure; pressure	Coded and self-reported ST converged; fear of failure predicted negative ST and perceived pressure.
Meijen et al. (2020)	UK	N/A	Sport (general)	Theoretical review	Challenge and threat states framework	Theory of pre-competitive states	Revised Theory of Challenge and Threat States in Athletes; appraisal of demands and resources shapes challenge vs. threat responses.
Bayköse et al. (2019)	Turkey	358	Multiple sports	Correlational /Survey	ST Questionnaire + Sport Confidence	Sport confidence; ST dimensions	Motivational/ cognitive ST explained 40% of variance in sport confidence.

Fritsch et al. (2022)	Germany/UK/ Greece	44 studies	Multiple sports	Scoping review	Organic vs. strategic ST for affect	ST-affect relationship	Organic ST valence mirrors affective states; strategic ST for anxiety showed mixed effects.
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Note. PST = positive self-talk; ST = self-talk; RCT = randomized controlled trial; *d* = Cohen's *d* effect size; *n* = sample size; ASTQS = Automatic Self-Talk Questionnaire for Sports; DES = Descriptive Experience Sampling; N/A = not applicable. "Review" and "studies" entries in the *n* column denote synthesis papers rather than primary samples.

Descriptive Results

Most studies (73.8%) were published after 2009, reflecting the field's recent acceleration. Designs were predominantly experimental ($n = 28$) or quasi-experimental ($n = 11$), with intervention durations ranging from a single session to 14 weeks, and 78.6% of studies employed objective or standardized outcome measures. Rather than repeating study-level detail here, broad patterns are summarized in text, and full breakdowns are reported in Tables 2 and 3.

Evidence Classification

Because the synthesis draws on heterogeneous sources, every study was assigned to an evidentiary tier before theme development, and thematic claims below are labeled by the strongest tier supporting them. Tier 1 comprises randomized and controlled experimental studies ($n = 28$), which alone support causal claims about PST effects. Tier 2 comprises quasi-experimental studies ($n = 11$), supporting causal inference with weaker internal validity. Tier 3 comprises structured observational, correlational, and psychometric studies ($n = 3$), which support associations and measurement claims but not causation. In addition, prior reviews, meta-analyses, and theoretical papers appearing in the representative-study tables (e.g., Hatzigeorgiadis et al., 2011; Tod et al., 2011; Van Raalte et al., 2016, 2019) were used as contextual and interpretive sources only: they informed theme construction and discussion but were not counted as primary evidence for any effect claim. Two recent studies cited in the Introduction and Discussion (Barwood et al., 2015; Aulia et al., 2025) sit outside the included set and serve as convergent external evidence only. Throughout the thematic synthesis, causal language is reserved for findings replicated in Tier 1 studies; associations documented only in Tier 3 sources are described as correlational.

Inferential Results

Across the evidence base, PST produced small-to-moderate performance improvements. The principal meta-analysis reported an overall pooled effect of $d = 0.48$ (Hatzigeorgiadis et al., 2011). Walter et al. (2019) reported improvements in selected anxiety, self-efficacy, and coach-rated performance outcomes following one- or eight-week interventions. Bayköse et al. (2019) reported that motivational and cognitive self-talk jointly explained 40% of variance in sport confidence. These findings should be interpreted according to their designs: Walter et al. provided intervention evidence, whereas Bayköse et al. reported correlational regression results. The Bayköse et al. (2019) regression was reported as ($R^2 = .40, p < .001$) in a sample of 358 athletes (Bayköse et al., 2019). Mediation evidence indicated that anxiety reduction and self-confidence carried the effect of motivational self-talk on performance (Hatzigeorgiadis et al., 2009).

Risk of Bias

The illustrative appraisal in Table 3 indicates recurring concerns about allocation concealment, participant blinding, and selective reporting. Because the manuscript does not provide a complete study-level appraisal for all retained primary studies, aggregate percentages are not reported here. Unclear allocation concealment permits selection bias, while the practical difficulty of blinding participants to a self-talk intervention creates vulnerability to expectancy and demand characteristics. These limitations are especially important for self-reported outcomes; objective or standardized performance measures provide stronger evidence. The pooled effect of $d = 0.48$ should therefore not be treated as bias-free. Unclear selective reporting also raises the possibility that null or negative findings were under-reported. Accordingly, conclusions are strongest when replicated across experimental studies with objective outcomes; claims resting on correlational, theoretical, or incompletely appraised evidence are framed as provisional.

Table 3. *Illustrative Appraisal of Selected Evidence Sources*

Author(s) (Year)	Sequence	Allocation	Blinding	Blinding	Incomplete	Selective	Overall
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	Generation	Concealment	(Participants)	(Outcomes)	Data	Reporting	
Theodorakis et al. (2000)	Low	Unclear	High	Low	Low	Low	Moderate
Hardy et al. (2001)	N/A	N/A	N/A	Low	Low	Low	Low
St Clair Gibson & Foster (2007)	N/A	N/A	N/A	Low	Low	Low	Low
Hatzigeorgiadis et al. (2008)	Low	Low	High	Low	Low	Low	Low
Hatzigeorgiadis et al. (2009)	Low	Low	High	Low	Low	Low	Low
Hatzigeorgiadis & Biddle (2008)	N/A	N/A	N/A	Low	Low	Low	Low
Zourbanos et al. (2009)	N/A	N/A	N/A	Low	Low	Unclear	Low
Tod et al. (2011)	N/A	N/A	N/A	Low	Low	Low	Low
Hatzigeorgiadis et al. (2011)	N/A	N/A	N/A	Low	Low	Low	Low
Weinberg et al. (2012)	Unclear	Unclear	High	Low	Low	Unclear	Moderate
Latinjak et al. (2014)	N/A	N/A	N/A	Low	Low	Low	Low
Galanis et al. (2016)	N/A	N/A	N/A	Low	Low	Low	Low
Van Raalte et al. (2016)	N/A	N/A	N/A	Low	Low	Low	Low
Latinjak et al. (2019)	N/A	N/A	N/A	Low	Low	Low	Low
Van Raalte et al. (2019)	N/A	N/A	N/A	Low	Low	Low	Low
Walter et al. (2019)	Unclear	High	High	Low	Low	Low	Moderate
De Muynck et al. (2020)	Low	Unclear	High	Low	Low	Low	Moderate
Meijen et al. (2020)	N/A	N/A	N/A	Low	Low	Low	Low
Bayköse et al. (2019)	N/A	N/A	N/A	Low	Low	Unclear	Low
Fritsch et al. (2022)	N/A	N/A	N/A	Low	Low	Low	Low

Note. Risk-of-bias ratings follow a modified Cochrane Collaboration tool (Higgins et al., 2011): Low = low risk of bias; Unclear = insufficient information to judge; High = high risk of bias; N/A = not applicable (observational, review, or theoretical design). Overall rating: Low = 2 or fewer domains rated unclear/high; Moderate = 3–4 domains; High = 5 or more domains. ST = self-talk; PST = positive self-talk; RCT = randomized controlled trial.

Thematic Synthesis

Four themes characterize how PST operates in sport performance.

Theme 1: Attentional Precision

The most consistently reported function of PST is the direction and maintenance of task-relevant attention. Instructional self-talk cues, brief and technique-focused, constrain cognitive processing load by narrowing attention to the most performance-critical information (Hatzigeorgiadis et al., 2011). In experimental studies using fine-motor tasks such as tennis groundstrokes and target accuracy, instructional PST consistently produced significant improvements in technique execution and accuracy compared with control conditions (Theodorakis et al., 2000; Hatzigeorgiadis et al., 2008). Reviews of in-competition research confirm that athletes deliberately deploy such cues during actual competition (Funatsu, 2018). Cue specificity matters: task-specific cues aligned with the movement's demands produce consistent gains, whereas generic phrases do not (Theodorakis et al., 2000; Fritsch et al., 2022). Hardy et al. (2001) found athletes used instructional self-talk most when mastering new or technically demanding skills, consistent with PST serving as attentional scaffolding during skill acquisition. The dialogical consciousness model offers a complementary interpretation, in which attentional cues function as dominant internal voices that temporarily suppress competing positions (Van Raalte et al., 2019). Evidentiary status: strong. The core attentional claims rest on replicated Tier 1 experiments with objective accuracy outcomes; the dialogical extension is a theoretical interpretation, not an empirical finding of the included studies.

Theme 2: Cognitive Stabilization

PST may contribute to cognitive stabilization under competitive stress, but the evidence must be separated from broader theories of arousal appraisal. Meijen et al. (2020) developed a theoretical model of challenge and threat states; it supports the general relevance of appraisal but did not test PST as an intervention. In 72 young tennis players, Hatzigeorgiadis et al. (2009) found that motivational self-talk reduced anxiety, increased self-confidence, and improved task performance. De Muynck et al. (2020) found substantial correspondence between coded and self-reported self-talk in 120 competitive tennis players; fear of failure was related to positive and negative self-talk, and negative self-talk was related to perceived pressure. These associations should not be interpreted causally. Hatzigeorgiadis and Biddle (2008) likewise reported correlational relationships between negative self-talk, pre-competition anxiety, and goal-performance discrepancies. Walter et al. (2019) found that targeted self-talk interventions lasting one or eight weeks improved selected psychological and coach-rated performance outcomes among 117 junior sub-elite athletes, with the longer intervention generally producing stronger effects. Latinjak et al. (2019) showed that basketball players described cognitive, motivational, and emotion- or activation-regulation functions for goal-directed self-talk across competitive situations. Evidentiary status: moderate to strong, with causal claims reserved for intervention findings and theoretical or correlational sources used only for interpretation.

Theme 3: Motivational Persistence

Self-talk effects vary with task demands. Theodorakis et al. (2000) and the meta-analysis by Hatzigeorgiadis et al. (2011) support the value of instructional self-talk for relatively fine and novel tasks; evidence that motivational self-talk is uniformly superior across all gross-motor or endurance tasks is less definitive. A narrative review reported that exercise-related thought becomes more associative and motivational as intensity rises (St Clair Gibson & Foster, 2007), but this should not be treated as direct experimental evidence. Barwood et al. (2015) provided experimental support in endurance performance: cyclists trained in motivational self-talk improved 10-km time-trial performance relative to neutral self-talk while perceived exertion remained similar despite higher power output. Self-efficacy, the belief in one's capability to organize and execute required actions (Bandura, 1997), remains a plausible mediating construct. Hatzigeorgiadis et al. (2009) found that self-confidence mediated part of the self-talk-performance relationship in tennis, while Bayköse et al. (2019) reported that motivational and cognitive self-talk jointly explained 40% of variance in sport confidence; the latter evidence is correlational. Weinberg et al. (2012) tested 81 collegiate cross-country runners over two one-mile trials separated by one week. There were no significant between-group differences, although several self-talk conditions improved from baseline. Evidentiary status: moderate to strong for task-contingent performance effects, but not for a universal superiority of motivational cues.

Theme 4: Contextual Moderation

Task characteristics moderate self-talk effects. Theodorakis et al. (2000) compared motivational and instructional cues across different motor tasks, while Hatzigeorgiadis et al. (2011) found that instructional self-talk was particularly effective for fine and novel tasks. Hatzigeorgiadis et al. (2014) further showed that a structured 10-week self-talk intervention improved competitive performance among young swimmers, demonstrating transfer

beyond laboratory tasks. Evidence for person-level moderation is less direct. De Muynck et al. (2020) found that fear of failure was related to the valence of athletes' self-talk, and Latinjak et al. (2019) found that basketball players described different self-talk functions across competitive situations. These findings support context-sensitive application, but they do not establish that athlete experience or trait anxiety causally moderates intervention efficacy. The sport-specific model of Van Raalte et al. (2016) is therefore used as an interpretive framework rather than as primary effect evidence. Evidentiary status: moderate, and the most provisional of the four themes. Task-type moderation is supported by within-study Tier 1 manipulation (Theodorakis et al., 2000) and meta-analytic replication; by contrast, the expertise and individual-difference moderators derive largely from between-study comparisons and Tier 3 correlational designs, which cannot rule out confounding, so these moderation claims are framed as hypotheses for direct within-study testing.

Discussion

The contribution of this review lies not in re-establishing that PST works, which prior syntheses settled (Hatzigeorgiadis et al., 2011; Tod et al., 2011), but in explaining when, for whom, and through which mechanisms it works. Its advance over existing conceptual accounts can be stated concretely. Relative to the meta-analytic tradition, it adds a mechanism-organized structure rather than a pooled estimate. Relative to Van Raalte et al.'s (2016) sport-specific model, which maps antecedents and pathways descriptively, it specifies which regulatory function is engaged by which cue type under which task and person conditions, and thereby generates falsifiable predictions (e.g., attentional mediation should be detectable for instructional cues in precision tasks but not for motivational cues in endurance tasks, and moderation by expertise should be strongest for instructional cues during skill acquisition). Relative to the dialogical account (Van Raalte et al., 2019), it grounds interpretation in design-stratified empirical evidence rather than phenomenology. It is also, to our knowledge, the first review of this literature conducted fully under PRISMA 2020 with formal risk-of-bias appraisal and explicit evidence-tier weighting, and it incorporates the newest generation of evidence, including multi-method in-competition assessment (De Muynck et al., 2020), the organic-strategic distinction (Fritsch et al., 2022), and recent applied interventions (Aulia et al., 2025). The framework is offered as an integrative, hypothesis-generating account; whether it survives direct tests of its predictions is an empirical question the review is designed to enable.

The central theoretical argument is that PST is more productively modeled as a cognitive control mechanism than as a motivational supplement: across the four themes, deliberate verbal cues alter what athletes attend to, how they interpret arousal, and how long they sustain effort, which are regulatory rather than merely energizing functions. Two layers of this argument must be distinguished by their evidentiary standing. The behavioral layer is directly supported: Tier 1 experiments show cue-specific effects on attentionally demanding versus effort-demanding tasks, and mediation analyses identify self-efficacy and sport confidence as cognitive-affective pathways (Hatzigeorgiadis et al., 2009; Galanis et al., 2016), consistent with self-efficacy theory (Bandura, 1997) and complemented by correlational evidence (Bayköse et al., 2019) and multi-method in-competition validation (De Muynck et al., 2020). The neurocognitive layer, by contrast, is a theoretical proposal and is presented as such: no included study measured neural activity, so any mapping of the four themes onto executive functions or prefrontal regulatory processes is an extrapolation from the behavioral signature of the effects. This interpretation is informed by a review of the language systems (Broca's and Wernicke's regions) engaged by overt and subvocal speech (St Clair Gibson & Foster, 2007). We therefore advance the executive-function mapping as a set of testable hypotheses, e.g., that PST training should produce measurable changes in attentional-control and inhibition task performance, and in prefrontal activity under concurrent EEG or fNIRS, rather than as an established mechanism. The dialogical consciousness framework offers a further interpretive lens at the same theoretical level (Van Raalte et al., 2019).

For practice, recommendations are graded by the evidence supporting them. Two rest on Tier 1 experimental evidence and can be made with confidence: practitioners should match cue type (instructional versus motivational) to the sport's primary demands, and deliver structured PST training rather than assuming spontaneous benefit. Two further recommendations are plausible but rest on weaker, largely correlational or between-study evidence and should be applied with monitoring: individualizing self-talk scripts based on trait anxiety, self-efficacy, and experience, and building metacognitive monitoring into programs (Theodorakis et al., 2008). Three research gaps require priority attention: neurophysiological mechanisms remain empirically unexamined in this literature, as no included study used neuroimaging, EEG, or psychophysiological measures; reliance on retrospective self-report should give way to multi-method approaches combining live coding, audio recording, and ecological momentary assessment (De Muynck et al., 2020); and the interaction between organic

and strategic self-talk has not been systematically studied (Fritsch et al., 2022).

Taken together, the four themes describe a single coordinated system rather than four separate effects. Attentional precision determines what the athlete processes; cognitive stabilization determines how arousal and intrusive thoughts are managed; motivational persistence determines how long effort is sustained; and contextual moderation determines the conditions under which each of these functions is amplified or attenuated. At the behavioral level of evidence, PST is effective precisely because it can be flexibly recruited across all four functions, and it is this integrated, context-sensitive operation that motivates its characterization as a cognitive control mechanism – a characterization whose neurocognitive substrate now requires direct empirical testing.

Conclusion

The core contribution of this review is an integrative reconceptualization: positive self-talk is more productively understood not as a motivational tool but as a trainable cognitive control mechanism operating through four interconnected functions, attentional precision, cognitive stabilization, motivational persistence, and contextual moderation. This framework does not claim new mechanisms; it organizes three decades of mediator and moderator evidence into a single architecture that generates falsifiable predictions, and it grades every claim by the design quality of its supporting evidence. Across 42 studies spanning 24 years, PST produced consistent small-to-moderate performance improvements, strongest when self-talk type matched task demands and training occurred in competitive contexts.

This reconceptualization carries implications beyond individual practice. For education and athlete development, PST training should be integrated into structured athlete development curricula and taught progressively alongside technical and tactical skills from youth levels onward, rather than introduced remedially, with coaches and physical education professionals prepared to deliver cue-matching and self-monitoring instruction. For policy, sports organizations, federations, and coach-certification bodies should formally recognize PST training within psychological skills provision, embedding it in coaching qualification frameworks and athlete support programming so that access does not depend on ad hoc practitioner initiative.

The evidence base has boundaries that map directly onto a future research agenda: absent participant blinding and heterogeneous interventions call for rigorously designed trials with objective outcomes; the Western European and North American concentration of studies calls for cross-cultural replication; the uncomputed inter-coder agreement for thematic coding and the interpretive nature of thematic synthesis invite quantitative, preregistered testing of the four-function model; moderation claims resting on between-study comparisons require direct within-study tests; and the framework's neurocognitive layer requires concurrent EEG or fNIRS measurement, multi-method assessment, and longitudinal designs.

If its predictions withstand such testing, PST research stands where a shift in framing can advance both science and practice: by treating the athlete's inner voice as a measurable, trainable control mechanism, researchers can connect sport psychology to cognitive neuroscience, and practitioners can turn one of the most accessible psychological skills into one of the most precisely targeted, reshaping how athletes at every level are taught to think under pressure.

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Author 1: conceptualization, proposal writing, data gathering, data analysis, interpretation, and submission

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References

Aulia, P., Puspasari, D., Maharani, P., Safitri, S.N., Yulitri, S., Rahmah, J.H., Azizah, I.Z., & Dani, F.R. (2025). The effectiveness of self-talk to increase self-confidence, emotional regulation

- and motivation in athletes. *Retos*, 65, 285–292. <https://doi.org/10.47197/retos.v65.112325>
- Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman.
- Barwood, M., Corbett, J., Wagstaff, C., McVeigh, D., & Thelwell, R. (2015). Improvement of 10-km time-trial cycling with motivational self-talk compared with neutral self-talk. *International Journal of Sports Physiology and Performance*, 10(2), 166–171. <https://doi.org/10.1123/ijspp.2014-0059>
- Bayköse, N., Sahin, F., Sahin, A., & Eryücel, M.E. (2019). Is self-talk of athletes one of the determinants of their continuous sportive confidence level? *Journal of Education and Training Studies*, 7(2), 192–197. <https://doi.org/10.11114/jets.v7i2.3999>
- De Muynck, G.-J., Soenens, B., Delrue, J., Comoutos, N., & Vansteenkiste, M. (2020). Strengthening the assessment of self-talk in sports through a multi-method approach. *Scandinavian Journal of Medicine & Science in Sports*, 30(3), 602–614. <https://doi.org/10.1111/sms.13609>
- Fritsch, J., Feil, K., Jekauc, D., Latinjak, A., & Hatzigeorgiadis, A. (2022). The relationship between self-talk and affective processes in sports: A scoping review. *International Review of Sport and Exercise Psychology*. <https://doi.org/10.1080/1750984X.2021.2021543>
- Funatsu, Y. (2018). Usage of self-talk in competition by athletes. *Global Journal of Human-Social Science: Arts & Humanities – Psychology*, 18(1), 1–7. Retrieved from https://globaljournals.org/GJHSS_Volume18/1-Usage-of-Self-Talk.pdf
- Galanis, E., Hatzigeorgiadis, A., Zourbanos, N., & Theodorakis, Y. (2016). Why self-talk is effective? Perspectives on self-talk mechanisms in sport. In M. Raab, P. Wylleman, R. Seiler, A.-M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and Exercise Psychology Research: From Theory to Practice* (pp. 181–200). Elsevier.
- Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of Sport and Exercise*, 7(1), 81–97. <https://doi.org/10.1016/j.psychsport.2005.04.002>
- Hardy, J., Gammage, K., & Hall, C. (2001). A descriptive study of athlete self-talk. *The Sport Psychologist*, 15(3), 306–318. <https://doi.org/10.1123/tsp.15.3.306>
- Hatzigeorgiadis, A., & Biddle, S.J.H. (2008). Negative self-talk during sport performance: Relationships with pre-competition anxiety and goal-performance discrepancies. *Journal of Sport Behavior*, 31(3), 237–253.
- Hatzigeorgiadis, A., Galanis, E., Zourbanos, N., & Theodorakis, Y. (2014). Self-talk and competitive sport performance. *Journal of Applied Sport Psychology*, 26(1), 82–95. <https://doi.org/10.1080/10413200.2013.790095>
- Hatzigeorgiadis, A., Zourbanos, N., Galanis, E., & Theodorakis, Y. (2011). Self-talk and sports performance: A meta-analysis. *Perspectives on Psychological Science*, 6(4), 348–356. <https://doi.org/10.1177/1745691611413136>
- Hatzigeorgiadis, A., Zourbanos, N., Gotsios, C., & Theodorakis, Y. (2008). The effects of motivational self-talk on self-efficacy and performance in young tennis players. *The Sport Psychologist*, 22(4), 458–471. <https://doi.org/10.1123/tsp.22.4.458>
- Hatzigeorgiadis, A., Zourbanos, N., Mpoupaki, S., & Theodorakis, Y. (2009). Mechanisms underlying the self-talk–performance relationship: The effects of motivational self-talk on self-confidence and anxiety. *Psychology of Sport and Exercise*, 10(1), 186–192. <https://doi.org/10.1016/j.psychsport.2008.07.009>
- Higgins, J., Altman, D., Gotzsche, P., Jüni, P., Moher, D., Oxman, A., Savovic, J., Schulz, K., Weeks, L., & Sterne, J. (2011). The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ*, 343, d5928. <https://doi.org/10.1136/bmj.d5928>
- Kaur Chawla, J., Bala, I., Dhiman, C., Vishal Dixit, P., Paliwal, V., Bhattacharjee, B., & Kaushik Sharma, S. (2025). Psychological analysis of anxiety and its impact on athletic performance in competitive sports. *Retos*, 72, 1174–1185. <https://doi.org/10.47197/retos.v71.117070>
- Landis, J.R., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174. <https://doi.org/10.2307/2529310>
- Latinjak, A., Torregrossa, M., Comoutos, N., Hernandez-Gimeno, C., & Ramis, Y. (2019). Goal-directed self-talk used to self-regulate in male basketball competitions. *Journal of Sports Sciences*, 37(12), 1429–1433. <https://doi.org/10.1080/02640414.2018.1561967>
- Latinjak, A., Zourbanos, N., López-Ros, V., & Hatzigeorgiadis, A. (2014). Goal-directed and undirected self-talk: Exploring a new perspective for the study of athletes' self-talk. *Psychology of Sport and Exercise*, 15(5), 548–558. <https://doi.org/10.1016/j.psychsport.2014.05.007>
- Mahoney, M., & Avenier, M. (1977). Psychology of the elite athlete: An exploratory study. *Cognitive Therapy and Research*, 1(2), 135–141. <https://doi.org/10.1007/BF01173634>
- Meijen, C., Turner, M., Jones, M., Sheffield, D., & McCarthy, P. (2020). A theory of challenge and threat states in athletes: A revised conceptualization. *Frontiers in Psychology*, 11, 126. <https://doi.org/10.3389/fpsyg.2020.00126>
- Page, M., McKenzie, J., Bossuyt, P., Boutron, I., Hoffmann, T., Mulrow, C., Shamseer, L., Tetzlaff, J., Akl, E., Brennan, S., Chou, R., Glanville, J., Grimshaw, J., Hróbjartsson, A., Lalu, M., Li, T., Loder, E., Mayo-Wilson, E., McDonald, S., McGuinness, L., Stewart, L., Thomas, J., Tricco, A., Welch, V., Whiting, P., & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- St Clair Gibson, A., & Foster, C. (2007). The role of self-talk in the awareness of physiological state and physical performance. *Sports Medicine*, 37(12), 1029–1044. <https://doi.org/10.2165/00007256-200737120-00003>
- Theodorakis, Y., Hatzigeorgiadis, A., & Chroni, S. (2008). Self-talk: It works, but how? Development and preliminary validation of the functions of self-talk questionnaire. *Measurement in Physical Education and Exercise Science*, 12(1), 10–30. <https://doi.org/10.1080/10913670701715158>
- Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *The Sport Psychologist*, 14(3), 253–272. <https://doi.org/10.1123/tsp.14.3.253>
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8(1), 45. <https://doi.org/10.1186/1471-2288-8-45>
- Tod, D., Hardy, J., & Oliver, E. (2011). Effects of self-talk: A systematic review. *Journal of Sport & Exercise Psychology*, 33(5), 666–687. <https://doi.org/10.1123/jsep.33.5.666>
- Van Raalte, J., Vincent, A., & Brewer, B. (2016). Self-talk: Review and sport-specific model. *Psychology of Sport and Exercise*, 22, 139–148. <https://doi.org/10.1016/j.psychsport.2015.08.004>
- Van Raalte, J., Vincent, A., & Dickens, Y. (2019). Dialogical consciousness and descriptive experience sampling: Implications for the study of intrapersonal communication in sport. *Frontiers in Psychology*, 10, 653. <https://doi.org/10.3389/fpsyg.2019.00653>
- Walter, N., Nikoleizig, L., & Alfermann, D. (2019). Effects of self-talk training on competitive anxiety, self-efficacy, volitional skills, and performance: An intervention study with junior sub-elite athletes. *Sports*, 7(6), 148. <https://doi.org/10.3390/sports7060148>
- Weinberg, R., Miller, A., & Horn, T. (2012). The influence of a self-talk intervention on collegiate cross-country runners. *International Journal of Sport and Exercise Psychology*, 10(2), 123–134. <https://doi.org/10.1080/1612197X.2012.645135>
- Zourbanos, N., Hatzigeorgiadis, A., Chroni, S., Theodorakis, Y., & Papaioannou, A. (2009). Automatic Self-Talk Questionnaire for Sports (ASTQS): Development and preliminary validation of a measure identifying the structure of athletes' self-talk. *The Sport Psychologist*, 23(2), 233–251. <https://doi.org/10.1123/tsp.23.2.233>