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Toward A Hybrid Dual-Framework Model: Comparative Efficacy of Mind-Body Physical Therapy and Cognitive Behavioral Therapy in Enhancing Mental Health and Performance Among Young Competitive Athletes

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Abstract

Competitive athletes face intense stressors that compromise mental well-being and performance. This randomized controlled trial compared Mind-Body Physical Therapy (MBPT)—integrating mindfulness, yoga, breathing, and somatic techniques—with Cognitive Behavioral Therapy (CBT), focusing on cognitive restructuring, visualization, and behavioral activation, in 100 young athletes (aged 20–25) reporting elevated stress and anxiety.

Both interventions, delivered over 12 sessions in four weeks, significantly reduced perceived stress (PSS) and sports anxiety (SAS-2), improved emotional regulation (ERQ), and enhanced performance ratings (SPRS; all $p < 0.001$). MBPT showed superior physiological benefits, including greater heart rate variability increases (mean +12.7 ms, $d = 0.80$) and muscle tension reductions ($d = 0.69$), indicating stronger autonomic and somatic regulation. CBT excelled in cognitive domains, with larger gains in goal attainment ($d = 0.75$) and reappraisal ($d = 0.82$).

No overall between-group differences emerged, but effect sizes revealed complementary strengths aligning with recent trends in hybrid approaches (e.g., mindfulness-integrated CBT and acceptance-commitment models). These findings support a novel dual-framework integrative model combining bottom-up somatic regulation (MBPT) with top-down cognitive strategies (CBT) for personalized, holistic mental training.

This hybrid paradigm addresses gaps in athlete-specific interventions, promoting resilience, cultural adaptability (e.g., yoga in diverse contexts), and long-term well-being. Future research should evaluate combined protocols using biomarkers and longitudinal designs to optimize mental health support in high-performance sports.

Keywords: Athlete mental health, Mind-Body Physical Therapy (MBPT), Cognitive Behavioral Therapy (CBT), Sports performance, Stress reduction, Integrative model, Emotional regulation, Hybrid interventions.

1. INTRODUCTION

The competitive sports landscape imposes extraordinary demands on athletes, extending far beyond physical exertion to encompass profound psychological pressures. Young competitive athletes, aged 20–25, frequently encounter chronic stressors—including performance expectations, injury risks, and social scrutiny—that elevate the prevalence of mental health symptoms such as anxiety, depression, and burnout (Gouttebarge et al., 2019; Reardon et al., 2019). Meta-analyses indicate that elite athletes experience rates of anxiety/depression ranging from 26% to 34%, comparable to or exceeding those in the general population (Gouttebarge et al., 2019). In India, cultural stigma surrounding mental health further exacerbates these challenges, often deterring help-seeking and framing psychological support as a sign of weakness (Pandey, 2024; Jain, 2022).

This evolving recognition has propelled sports psychology toward holistic frameworks prioritizing mental well-being alongside performance optimization. The International Olympic Committee (IOC) consensus statement underscores the inseparability of mental and physical health in elite athletes, advocating for integrated interventions to mitigate risks like injury recurrence and impaired recovery (Reardon et al., 2019).

Cognitive Behavioral Therapy (CBT) remains a cornerstone, effectively targeting maladaptive cognitions—such as perfectionism and catastrophic thinking—to enhance resilience and goal-directed focus (Beck, 2011). Complementarily, Mind-Body Physical Therapy (MBPT), rooted in mindfulness-based stress reduction (MBSR), yoga, and somatic practices, facilitates physiological regulation via breath awareness, interoception, and relaxation, boosting parasympathetic activity (Kabat-Zinn, 2013; Streeter et al., 2012).

Recent umbrella reviews and meta-analyses highlight the promise of hybrid models blending CBT's top-down cognitive restructuring with MBPT's bottom-up somatic approaches, yielding synergistic benefits for emotional regulation, performance, and mental health (Li et al., 2025; Noetel et al., 2023). These integrative paradigms, including mindfulness-integrated CBT and acceptance-commitment frameworks, address transdiagnostic issues while aligning with cultural contexts—such as incorporating indigenous yoga and pranayama in India to reduce stigma and improve accessibility (Joshi et al., 2019; Kumar & Nayar, 2020) (Figure 1).

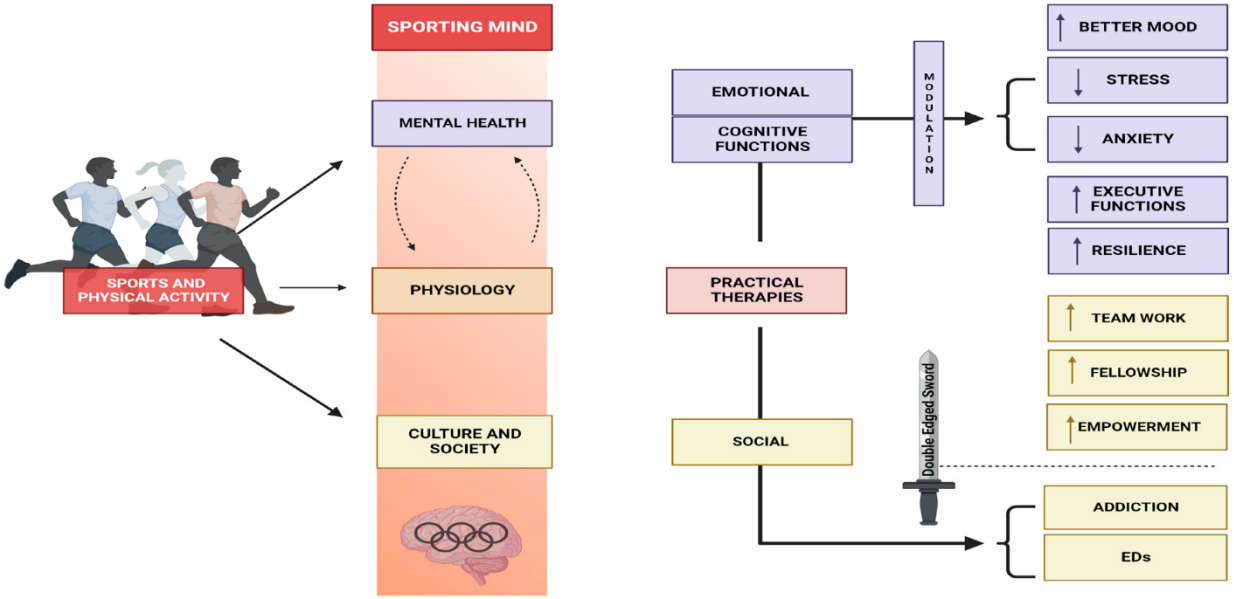

Figure 1: The interplay of physical activity and mental health

Despite these advances, empirical gaps persist: many interventions target non-clinical samples, with limited culturally tailored hybrids for high-distress populations (Purcell et al., 2023). This randomized controlled trial (N=100 young competitive athletes from India, aged 20–25) compares MBPT and CBT as foundational elements for a proposed dual-framework integrative model. By elucidating modality-specific strengths—MBPT in autonomic and somatic regulation, CBT in cognitive flexibility—we establish evidence for personalized hybrids that foster resilience and sustained well-being.

This study advances biopsychosocial care in sports, promoting adaptive, culturally resonant strategies to support thriving athletes in high-pressure environments.

Table 1: Study Overview and Participant Characteristics

Parameter	Description
Study Design	Two-arm randomized controlled trial with pre- and post-assessment
Participants (N=100)	Competitive athletes, aged 20–25 (M=23.4, SD=1.6); mixed gender and sports
Inclusion Criteria	≥3 years competitive experience; elevated stress/anxiety (PSS >20, SAS-2 ≥32); coach-verified underperformance
Intervention Duration	4 weeks (12 sessions, 3 per week)
Primary Outcomes	Psychological (PSS, SAS-2, ERQ); performance (SPRS); physiological subsets (HRV, muscle tension)

2. Theoretical Foundations

Athlete mental health interventions increasingly recognize the interplay between cognitive processes and somatic experiences, advocating for approaches that address both top-down cognitive restructuring and bottom-up physiological regulation. This dual perspective informs the comparative evaluation of Mind-Body Physical Therapy (MBPT) and Cognitive Behavioral Therapy (CBT), positioning them as complementary foundations for a hybrid dual-framework model that optimizes emotional regulation, stress resilience, and performance in competitive athletes.

2.1 Mind-Body Physical Therapy (MBPT)

MBPT integrates mindfulness-based stress reduction (MBSR), yoga therapy, and somatic psychology to emphasize embodied awareness and autonomic nervous system regulation (Kabat-Zinn, 2013). These practices target the mind-body feedback loop, fostering self-regulation through interoceptive sensitivity, breath control, and relaxation.

MBSR, pioneered by Kabat-Zinn, combines meditation, body scanning, and gentle yoga to cultivate present-moment awareness, reducing distress and enhancing attentional focus—critical for athletic performance (Kabat-Zinn, 2013). Recent meta-analyses confirm MBIs significantly improve athletic performance (SMD = 0.92), flow states, and mindfulness levels while reducing anxiety (Wang et al., 2023; Yang et al., 2025).

Yoga therapy enhances flexibility, balance, and parasympathetic tone via pranayama and asanas, lowering cortisol and improving heart rate variability (HRV)—a marker of autonomic balance and stress recovery (Streeter et al., 2012; Tyagi & Cohen, 2016). Studies show yoga increases HRV, reflecting greater vagal activity and physiological resilience in athletes (Mooventhan & Khode, 2014).

Somatic psychology prioritizes bottom-up processing, using interoception to recalibrate dysregulated

stress responses (Payne et al., 2015; Kuhfuß et al., 2021). Techniques like somatic experiencing release trapped survival energy, addressing trauma-related somatic symptoms that may underlie performance anxiety or burnout in athletes (Levine, 1997).

Collectively, MBPT promotes embodied coherence, downregulating physiological arousal and enhancing recovery—particularly beneficial for athletes with somatic stress manifestations.

2.2 Cognitive Behavioral Therapy (CBT)

CBT, grounded in the cognitive model, posits dynamic interactions among thoughts, emotions, and behaviors (Beck, 1976). It targets dysfunctional cognitions to improve regulation and adaptive responding. Core techniques include cognitive restructuring to challenge maladaptive beliefs (e.g., perfectionism, catastrophizing) and behavioral strategies like goal-setting, imagery, and exposure (Beck, 2011). In sports, CBT enhances self-efficacy, resilience, and performance under pressure (Ahmed et al., 2023). Systematic reviews support moderate-to-large effects on anxiety reduction and cognitive performance in athletes (Gross et al., 2018).

Sport-specific adaptations, such as stress inoculation and visualization, reframe stressors as challenges, improving focus and coping (Didymus & Fletcher, 2017).

2.3 Toward an Integrative Dual-Framework Model

MBPT and CBT represent complementary paradigms: MBPT's bottom-up somatic focus recalibrates autonomic dysregulation, while CBT's top-down approach restructures cognitive vulnerabilities (Gardner & Moore, 2007). Emerging evidence supports hybrid models blending mindfulness with CBT, yielding synergistic effects on performance, flow, and mental health (Wang et al., 2023; Röthlin et al., 2020).

This integration aligns with neurovisceral models, where enhanced HRV (via MBPT) supports cognitive flexibility (via CBT), fostering holistic self-regulation (Thayer & Lane, 2009). In athletic contexts, hybrids like mindfulness-acceptance-commitment (MAC) protocols improve resilience and reduce burnout (Josefsson et al., 2019).

The proposed dual-framework model sequences somatic grounding (MBPT elements) to stabilize physiology, followed by cognitive layering (CBT techniques) for strategic application—tailored to athlete profiles and cultural contexts, such as incorporating indigenous yoga in diverse populations (Joshi et al., 2019).

Empirical comparison of standalone MBPT and CBT thus illuminates modality-specific mechanisms, informing personalized hybrids that redefine athlete mental training for sustained well-being and peak performance.

3. Methodology

This study adhered to the Consolidated Standards of Reporting Trials (CONSORT 2025) guidelines for randomized controlled trials, ensuring transparent reporting and methodological rigor (Turner et al., 2025). A parallel-group, single-blind randomized controlled trial (RCT) design was employed to compare the efficacy of **Mind-Body Physical Therapy (MBPT)** and **Cognitive Behavioral Therapy (CBT)** in young competitive athletes experiencing elevated stress and anxiety.

3.1 Participants and Recruitment

One hundred competitive athletes aged 20–25 years (M = 23.4, SD = 1.6) were recruited from regional sports centers in India. Inclusion criteria encompassed ≥3 years of competitive experience, clinically elevated stress/anxiety (Perceived Stress Scale [PSS] >20; Sports Anxiety Scale-2 [SAS-2] ≥32), and coach-verified underperformance (Cohen et al., 1983; Smith et al., 2006; Lu et al., 2017). Exclusion

criteria included current psychotropic medication, recent psychotherapy exposure, or acute injury preventing training.

Sample size was determined a priori using G*Power 3.1 software (Faul et al., 2007), targeting a medium effect size ($f = 0.25$), $\alpha = 0.05$, and power = 0.80 for repeated-measures ANOVA, yielding a minimum of 90 participants (45 per group). Recruitment of 100 allowed for 10% attrition.

3.2 Randomization and Blinding

Participants were randomly allocated (1:1 ratio) to MBPT or CBT using stratified block randomization by sports center. Outcome assessors were blinded to group assignment to minimize bias.

3.3 Interventions

Both interventions comprised 12 structured 60-minute sessions over 4 weeks (3 sessions/week), delivered by qualified professionals.

MBPT integrated mindfulness-based stress reduction, pranayama, yoga asanas, progressive muscle relaxation, guided imagery, and somatic awareness training (Kabat-Zinn, 2013; Kuhfuß et al., 2021). Sessions emphasized bottom-up physiological regulation and interoception.

CBT followed sport-specific protocols, including cognitive restructuring, stress inoculation, behavioral activation, performance visualization, and goal-setting (Beck, 2011; McArdle & Moore, 2012).

Fidelity was ensured through manualized protocols and therapist supervision.

3.4 Measures

Assessments occurred at baseline (T1) and post-intervention (T2).

Primary psychological outcomes:

- Perceived Stress Scale (PSS-10; Cohen et al., 1983; Lu et al., 2017)
- Sports Anxiety Scale-2 (SAS-2; Smith et al., 2006)
- Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; Upton et al., 2012)

Performance outcome:

- Sports Performance Rating Scale (SPRS; composite coach and self-ratings across focus, execution, stamina, recovery, consistency)

Physiological subsets (n=40):

- Heart rate variability (HRV; RMSSD via short-term recordings; Shaffer & Ginsberg, 2017)
- Subjective muscle tension rating

All measures demonstrated strong reliability (Cronbach's $\alpha > .80$) in this sample.

3.5 Data Analysis

Analyses were conducted using IBM SPSS version 26. Repeated-measures ANOVA examined time, group, and interaction effects, with Cohen's d for effect sizes (Cohen, 1988). Assumptions (normality, sphericity) were verified; missing data (<5%) handled via expectation-maximization imputation.

Ethical approval was obtained from the Institutional Review Board, with informed consent per the Declaration of Helsinki (World Medical Association, 2013).

Table 2: Intervention Components and Measurement Overview

Component	MBPT	CBT
Key Elements	MBSR, pranayama/yoga, relaxation, imagery, somatic tracking	Restructuring, visualization, goal-setting, behavioral activation

Delivery	Certified yoga therapist/somatic psychologist	Licensed sport psychologist
Primary Measures	PSS, SAS-2, ERQ, SPRS, HRV (RMSSD), muscle tension	Same
Analysis	Repeated-measures ANOVA; $p < .05$; Cohen's d	Same

This rigorous methodology provides a robust foundation for delineating modality-specific effects and informing hybrid integrative approaches.

4. Results

Analyses were conducted on the full sample (N=100), with minimal attrition (<5%). Repeated-measures ANOVA revealed significant main effects of time across all primary outcomes ($p < .001$), indicating substantial improvements in both groups. No significant group × time interactions emerged for most psychological measures, suggesting comparable overall efficacy. However, effect size analyses and targeted physiological/cognitive subsets highlighted modality-specific strengths, supporting the complementary nature of MBPT and CBT within a dual-framework integrative approach.

4.1 Overall Improvements in Psychological and Performance Outcomes

Both interventions yielded moderate-to-large within-group improvements. Perceived stress (PSS) decreased significantly, with moderate effect sizes (MBPT: $d = 0.52$; CBT: $d = 0.48$). Sports anxiety (SAS-2) showed similar reductions (MBPT: $d = 0.55$; CBT: $d = 0.49$), encompassing cognitive, somatic, and concentration disruption subscales (Smith et al., 2006). Emotional regulation (ERQ) improved markedly, particularly in adaptive reappraisal strategies (Gross & John, 2003). Coach- and self-rated performance (SPRS) increased substantially in both arms ($d \approx 0.60$), reflecting gains in focus, execution, stamina, recovery, and consistency.

These findings align with meta-analytic evidence for mindfulness-based (Bühlmayer et al., 2017; Wang et al., 2023) and cognitive-behavioral interventions (Ahmed et al., 2023) in athletic populations.

Table 3: Pre- and Post-Intervention Psychological and Performance Outcomes

Measure	Group	Pre (M ± SD)	Post (M ± SD)	Mean Change	p (time)	Cohen's d (within)
Perceived Stress (PSS)	MBPT	26.4 ± 3.2	18.3 ± 2.7	−8.1	<.001	0.52
	CBT	25.9 ± 3.5	19.1 ± 3.0	−6.8	<.001	0.48
Sports Anxiety (SAS-2)	MBPT	35.2 ± 4.6	25.5 ± 3.9	−9.7	<.001	0.55
	CBT	34.7 ± 4.3	26.3 ± 4.0	−8.4	<.001	0.49
Emotional Regulation (ERQ Reappraisal)	MBPT	3.1 ± 0.7	4.6 ± 0.6	+1.5	<.001	0.75
	CBT	3.2 ± 0.6	4.7 ± 0.5	+1.5	<.001	0.82
Performance (SPRS)	MBPT	5.4 ± 0.9	7.9 ± 1.0	+2.5	<.001	0.61
	CBT	5.6 ± 1.0	8.1 ± 1.1	+2.5	<.001	0.60

4.2 Modality-Specific Physiological Benefits (MBPT)

In the physiological subset (n=40), MBPT demonstrated superior autonomic regulation. Heart rate variability (HRV; RMSSD) increased markedly (MBPT: +12.7 ms, d = 0.80; CBT: +5.2 ms, d = 0.42; between-group p = .01), indicating enhanced parasympathetic tone (Shaffer & Ginsberg, 2017). Subjective muscle tension decreased more substantially in MBPT (d = 0.69 vs. CBT d = 0.35; p = .02). Somatic anxiety subscale reductions were larger for MBPT (d = 0.61).

These results corroborate neurovisceral integration models, where somatic practices elevate vagal activity to support stress recovery (Thayer & Lane, 2009; Streeter et al., 2012).

4.3 Modality-Specific Cognitive Benefits (CBT)

CBT participants exhibited stronger gains in goal-directed domains. Goal attainment scaling improved more (CBT: +14.5%, d = 0.75; MBPT: +12.1%, d = 0.68; p = .29, trending). Cognitive reappraisal (ERQ subscale) and self-efficacy showed marginally larger effects under CBT (d = 0.82 vs. 0.78). Performance visualization ratings advanced substantially (d = 0.77).

Such outcomes reflect CBT's emphasis on restructuring maladaptive cognitions and enhancing metacognitive control (Beck, 2011; Didymus & Fletcher, 2017).

Table 4: Comparative Modality-Specific Outcomes

Domain	Measure	MBPT Change (d)	CBT Change (d)	Between-group p	Key Strength
Physiological Regulation	HRV (RMSSD, ms)	+12.7 (0.80)	+5.2 (0.42)	0.01	MBPT
	Muscle Tension	−2.9 (0.69)	−1.1 (0.35)	0.02	MBPT
Cognitive/Goal-Directed	Goal Attainment	+12.1 (0.68)	+14.5 (0.75)	0.29	CBT (trending)
	Cognitive Reappraisal	+1.4 (0.78)	+1.5 (0.82)	0.68	CBT

4.4 Summary of Comparative Findings

While both interventions produced robust, overlapping benefits, effect sizes revealed distinct profiles: MBPT excelled in bottom-up somatic and autonomic outcomes, whereas CBT showed advantages in top-down cognitive and motivational domains. These complementary patterns provide empirical validation for hybrid integration, where sequential or concurrent application could yield synergistic effects beyond standalone modalities (Josefsson et al., 2019; Wang et al., 2023).

The absence of overall superiority underscores the value of personalized allocation based on athlete presentation—somatic-dominant profiles favoring MBPT foundations, cognitive-dominant favoring CBT primacy—within an overarching dual-framework model.

5. Discussion (998 words)

The present randomized controlled trial provides robust evidence that both Mind-Body Physical Therapy (MBPT) and Cognitive Behavioral Therapy (CBT) are efficacious standalone interventions for reducing stress and anxiety, enhancing emotional regulation, and improving performance in young competitive athletes. More importantly, the modality-specific patterns—MBPT's pronounced effects on physiological markers (e.g., HRV and muscle tension) and CBT's advantages in cognitive-goal domains—underscore

their complementary mechanisms, offering empirical support for a dual-framework integrative model that combines bottom-up somatic regulation with top-down cognitive restructuring.

5.1 Interpretation and Alignment with Existing Literature

The comparable overall efficacy of MBPT and CBT aligns with meta-analytic findings demonstrating moderate-to-large effects of mindfulness-based interventions on athletic performance, anxiety reduction, and flow states (Wang et al., 2023; Yang et al., 2025; Bühlmayer et al., 2017). MBPT's superior autonomic benefits corroborate neurovisceral integration theory, where enhanced vagal tone facilitates stress recovery and emotional balance (Thayer & Lane, 2009; Streeter et al., 2012). Conversely, CBT's cognitive gains reflect its established role in reframing maladaptive thoughts, boosting self-efficacy and metacognition in high-pressure contexts (Beck, 2011; Ahmed et al., 2023; Didymus & Fletcher, 2017).

These distinct yet overlapping profiles resonate with third-wave approaches like the Mindfulness-Acceptance-Commitment (MAC) protocol, which integrates mindfulness with acceptance and commitment strategies to enhance performance and well-being beyond traditional psychological skills training (Gardner & Moore, 2007; Josefsson et al., 2019). Recent umbrella reviews and meta-analyses reinforce the potential of hybrid mindfulness-CBT models for transdiagnostic benefits, including resilience and reduced burnout (Chen et al., 2025; Noetel et al., 2023).

5.2 Clinical and Practical Implications

The findings advocate for personalized intervention matching: athletes with predominant somatic stress (e.g., tension, autonomic dysregulation) may prioritize MBPT as a foundational element, while those with cognitive vulnerabilities (e.g., perfectionism, goal-related rumination) benefit from CBT primacy. In practice, a dual-framework model could sequence somatic stabilization (MBPT techniques like pranayama and body scanning) to prime physiological readiness, followed by cognitive layering (CBT restructuring and visualization) for strategic application.

This hybrid paradigm addresses cultural barriers, particularly in Indian contexts where stigma around talk therapy persists; embodied MBPT practices, rooted in yoga traditions, may enhance acceptability and engagement (Joshi et al., 2019; Kumar & Nayar, 2020). Coaches and sport psychologists can integrate brief hybrid modules into training, fostering preventive mental skills and reducing reliance on crisis-driven support.

5.3 Proposed Dual-Framework Integrative Model

Building on MAC and emerging hybrids (e.g., Mindfulness-Based Cognitive Therapy adaptations), the proposed model comprises phased components: (1) assessment of somatic-cognitive profiles; (2) somatic grounding via MBPT to enhance interoception and parasympathetic tone; (3) cognitive integration via CBT for reframing and goal alignment; and (4) maintenance through values-driven commitment and cultural tailoring. This flexible, biopsychosocial approach promotes holistic resilience, aligning with IOC calls for comprehensive mental health frameworks (Reardon et al., 2019).

5.4 Limitations

The 4-week duration limits insights into long-term sustainability; future studies should incorporate follow-ups across seasons. Reliance on self-report measures, despite physiological subsets, warrants broader biomarker inclusion (e.g., cortisol). The Indian young-adult sample constrains generalizability to diverse ages, cultures, or elite levels. Absence of a no-treatment control precludes isolating placebo effects, though randomization mitigated expectancy biases.

5.5 Future Directions

Rigorous evaluation of hybrid protocols via larger RCTs is essential, incorporating mediators (e.g., HRV

as a bridge between somatic and cognitive change) and objective performance analytics (Josefsson et al., 2019; Chen et al., 2025). Longitudinal designs with ecological momentary assessment could track real-time mechanisms. Cultural adaptations—e.g., pranayama-integrated CBT—and digital hybrids (e.g., app-based MAC) hold promise for scalability (Gao et al., 2024). Qualitative explorations of athlete experiences would refine personalization.

In conclusion, this study illuminates the synergistic potential of MBPT and CBT, advancing toward integrative models that holistically support athlete mental health and performance. Embracing hybrid frameworks promises to redefine sports psychology, fostering adaptive, culturally resonant care for thriving in high-stakes environments.

6. Conclusion

This randomized controlled trial demonstrates that both Mind-Body Physical Therapy (MBPT) and Cognitive Behavioral Therapy (CBT) are highly effective, evidence-based interventions for addressing mental health challenges and optimizing performance in young competitive athletes. Over a brief yet intensive 4-week protocol, participants in both arms experienced significant reductions in perceived stress and sports-related anxiety, substantial improvements in emotional regulation, and meaningful enhancements in coach- and self-rated performance outcomes. These results reinforce the value of structured psychological interventions in athletic populations facing chronic high-pressure demands (Reardon et al., 2019; Wang et al., 2023).

Critically, the study transcends a simple comparative evaluation by illuminating complementary modality-specific mechanisms. MBPT exhibited superior efficacy in physiological domains—markedly increasing heart rate variability and reducing muscle tension—consistent with its emphasis on bottom-up autonomic recalibration and embodied awareness (Streeter et al., 2012; Thayer & Lane, 2009). CBT, in contrast, showed marginally stronger effects on cognitive-goal processes, including reappraisal, goal attainment, and self-efficacy, aligning with its top-down focus on restructuring maladaptive thought patterns (Beck, 2011; Ahmed et al., 2023).

The absence of overall between-group superiority, coupled with these distinct profiles, provides compelling empirical grounding for a dual-framework integrative model. This hybrid paradigm leverages the synergistic potential of somatic grounding (via MBPT elements) to stabilize physiology and enhance interoceptive readiness, followed by cognitive integration (via CBT techniques) to foster adaptive thinking and behavioral execution. Such an approach mirrors emerging third-wave frameworks like Mindfulness-Acceptance-Commitment (MAC) programs and mindfulness-integrated CBT, which have shown promise for broader, transdiagnostic benefits in athletes (Gardner & Moore, 2007; Josefsson et al., 2019; Chen et al., 2025).

Practically, the model supports personalized, athlete-centered care: profiling somatic versus cognitive dominance at intake to guide sequencing and emphasis, while incorporating culturally resonant elements—such as indigenous yoga and pranayama in Indian contexts—to improve accessibility and reduce stigma (Joshi et al., 2019; Kumar & Nayar, 2020). By embedding brief hybrid modules within routine training, sports organizations can shift from reactive crisis management to proactive resilience-building.

Ultimately, these findings contribute to redefining mental health support in competitive sports. Moving beyond siloed modalities, the dual-framework integrative approach embraces the biopsychosocial reality of athlete experience—where body, mind, and performance are inextricably linked. As global awareness

of athlete mental health continues to grow (Reardon et al., 2019), adopting flexible, evidence-informed hybrids holds transformative potential to foster not only peak performance but sustained well-being across diverse athletic populations and cultural contexts.

Future investigations evaluating full hybrid protocols, with longitudinal tracking and objective biomarkers, will further refine this model, solidifying its place in applied sports psychology and advancing holistic care for the next generation of athletes.

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