

The Digital Counselor in Sport: A Systematic Review of AI-Mediated Psychological Counseling, Emotional Support, and Mental Health Care for Athletes

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Abstract: Difficulties that affect mental health among athletes are now more widely understood, but issues such as the stigma, limited resources, and constraints due to schedule all these factors prevent a regular psycho-support being provided to the athletes. Artificial intelligence (AI) and other digital technologies have appeared as alternative avenues for providing counseling, emotional support, and mental-health care for athletes, although supporting evidence in this area is currently limited and scattered. This article is an up-to-date review of literature which focuses on understanding how AI and various digital technologies are developed and used for providing mental support to athletes and the results, as well as the design factors and gaps that either promote the usage or limit its adoption. Records were taken by searching Scopus, PubMed, and ScienceDirect for studies and then a filtering was done based on predefined criteria of inclusion for eligibility. Of the 164 records that were retrieved first, 15 were marked as duplicates, 149 were checked by title, abstract, or keywords, 41 full texts were reviewed, which culminated in the final selection of 21 papers. Methodological Quality was checked using the Mixed Methods Appraisal Tool. The findings are related to a few categories such as the Chatbots and Large LanguageModel-based Advisors as counselors, e-mental health adoption, assessment and emotion regulation through artificial intelligence (AI) and AI training.

Keywords: Artificial intelligence; Athlete mental health; Conversational agents; E-mental health; Sport psychology

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INTRODUCTION

Mental health has become a central concern in high-performance and recreational sport, as athletes navigate performance pressure, injury, identity demands, and public scrutiny that can elevate the risk of psychological distress (Balcombe & de Leo, 2020; Mehrafar et al., 2020; Joseph & Bigliassi, 2025; Hu et al., 2026). Contemporary scholarship increasingly frames athlete well-being as inseparable from physical health, situating mental health within a biopsychosocial model of care (Balcombe & de Leo, 2020). Simultaneously, the digital transformation of sport science has

accelerated, with wearable sensing, data analytics, and intelligent systems reshaping how training, recovery, and health behaviours are monitored and supported (Petrovsky et al., 2022; Aleksandrova et al., 2024; Panackal et al., 2025; Balasamy et al., 2025; Wei et al., 2024; Fares et al., 2024). This convergence of rising mental-health need and rapid technological change has created fertile ground for AI-mediated psychological support, positioning digital tools as potential complements to traditional sport-psychology practice (Pang et al., 2026; Grady, 2023).

Athletes nonetheless remain a distinctive population for whom help-seeking is often suppressed by stigma, fear of de-selection, and a performance culture that valorises self-reliance (Balcombe & de Leo, 2020; Gorczynski, 2025). Elite athletes report comparable or elevated rates of common mental disorders relative to the general population, yet under-recognition and engagement barriers persist (Balcombe & de Leo, 2020). Events such as the COVID-19 pandemic further exposed the fragility of athletes' psychological resources and the need for flexible, low-threshold support channels (Mehrsafar et al., 2020). These conditions motivate interest in scalable, private, and always-available assistance—precisely the affordances that AI-mediated and digital interventions claim to offer (Geiger et al., 2024; Geiger et al., 2025).

An initial body of work has examined digital mental-health solutions in sport, spanning screening and tracking platforms, app-based literacy programs, and telehealth-enabled counseling (Balcombe & de Leo, 2020; Pankow & Vella, 2026; Grady, 2023). Parallel advances in affective computing and natural language processing have enabled systems that detect emotional states, classify psychological symptoms, and generate supportive responses (Wei et al., 2026; Gao et al., 2018; Verma et al., 2024; Ninivaggi, 2017). Generative AI and large language models (LLMs) have extended these possibilities toward conversational counseling, with prototypes tailored to athlete psychology and sport-specific stressors (Yang et al., 2024; Guo & Xu, 2026; Takahara et al., 2025). Reviews mapping this landscape report rapid publication growth and identify mental health, sport, and digital health as core themes (Pang et al., 2026).

Recent trends indicate a shift from passive monitoring toward interactive, personalised support. Chatbots and conversational agents have been trialled to reduce depressive symptoms and provide emotional companionship, while digital-twin and readiness-oriented frameworks integrate psychological state with physiological data (Qi, 2025; Lo & Rau, 2025; Amawi et al., 2026). Emerging generative-AI systems are also being deployed for domain-specific counseling tasks such as antidoping decision support (Lee et al., 2026). In adjacent medical contexts, scoping reviews of generative AI and LLMs highlight both promise and accuracy-and-ethics concerns that carry over to psychological applications (Dergaa et al., 2026; Fedor et al., 2023). An important gap concerns the fragmentation and heterogeneity of the evidence. Studies span diverse technologies, populations, and outcomes, and few have been synthesised systematically with attention to athletes specifically (Pang et al., 2026; Y. Zhang et al., 2026a). Much emotion-related AI work prioritises detection and classification over contextual, athlete-centred understanding, and sport and exercise appear only indirectly in prominent AI discourse (Y. Zhang et al., 2026a). Consequently, it is difficult to determine which forms of AI-mediated support are effective, for whom, and under what conditions.

A second gap is methodological and theoretical. Many contributions are conceptual frameworks, protocols, technical benchmarks, or small pilots rather than adequately powered controlled trials (Zeng et al., 2026; Chakraborty et al., 2026; Guo & Xu, 2026). Evidence on the psychological consequences of AI itself—such as dependence or evaluative pressure introduced by AI-assisted training—remains nascent, even as buffering strategies like mindfulness are proposed (W. Zhang et al., 2026). Questions of acceptance, needs, and demands are only beginning to be mapped across elite, adolescent, and collegiate athletes (Geiger et al., 2024; Geiger et al., 2025; Geiger et al., 2026), and ethical issues of privacy and responsible use are frequently flagged but rarely resolved (Grady, 2023).

Given the accelerating deployment of these technologies in applied settings, a timely and rigorous synthesis is warranted to consolidate what is known, expose what is uncertain, and guide responsible innovation. This review adopts the PRISMA 2020 framework (Page et al., 2021) to systematically appraise AI-mediated psychological counseling, emotional support, and mental-health care for athletes. Three research questions structure the synthesis and its intended contribution to sport psychology, digital mental health, and human–AI interaction. **RQ1:** What forms of AI-mediated and digital tools are being developed and applied to deliver psychological counseling, emotional support, and mental-health care to athletes, and what functions do they serve?. **RQ2:** What psychological and implementation outcomes-such as symptom change, emotion regulation, help-seeking, acceptance, and feasibility-have been reported, and what evidence exists for their effectiveness and acceptability?. **RQ3:** What design considerations, barriers, and research gaps-including ethical, methodological, and population-specific factors-shape the adoption of AI-mediated psychological support for athletes?

METHOD

Research Design and Framework

We conducted a systematic literature review (SLR) to find, evaluate, and summarize evidence in a transparent, reproducible way (Tranfield et al., 2003; Liberati et al., 2009). The study was carried out and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement (Page et al., 2021), which provides an updated, structured framework for identification, screening, eligibility assessment and inclusion of studies. Due to the interdisciplinary and rapidly evolving nature of this area AI-based psychological support in sport we found a structured review method to be the most suitable way of putting together a comprehensive view from the scattered evidence in such areas as sport psychology, digital health, and human, AI interaction. The search strategy was mainly focused on the initial identification of relevant literature through decomposition of the review questions using PICOS framework (Population, Intervention/Interest, Comparison, Outcome, Study design).

Search Strategy

Decomposition of review questions using the PICOS framework (Population, Intervention/Interest, Comparison, Outcome, Study design) mainly facilitated systematic identification of key concepts prior to constructing the search string. Furthermore, each element was transformed into a cluster of synonyms and combined with Boolean operators.

Table 1. PICOS framework guiding the search strategy

Element	Operationalisation for this review
Population (P)	Athletes and sport/exercise participants, including elite, collegiate/student, and adolescent athletes
Intervention/Interest (I)	AI-mediated or digital tools for psychological counseling, emotional support, and mental-health care (chatbots, LLMs, e-mental-health apps, digital screening/monitoring, digital twins)
Comparison (C)	Standard care, no digital support, or face-to-face support where reported; often no formal comparator
Outcome (O)	Psychological/mental-health outcomes (depression, anxiety, stress, emotion regulation, well-being), acceptance, feasibility, and help-seeking
Study design (S)	Empirical studies (quantitative, qualitative, mixed methods), reviews, protocols, and conceptual frameworks

The Boolean search string combined the population, intervention, and outcome clusters:

("athlete*" OR "sport*" OR "student-athlete*" OR "exercise") AND ("artificial intelligence" OR "AI" OR "machine learning" OR "large language model*" OR "chatbot*" OR "conversational agent*" OR "generative AI" OR "digital" OR "e-mental health") AND ("mental health" OR "psychological" OR "counsel*" OR "emotional support" OR "well-being" OR "depression" OR "anxiety" OR "stress" OR "emotion regulation")

Truncation and wildcard operators (e.g., athlete to capture “athlete,” “athletes,” “athletic”; counsel to capture “counseling,” “counselling,” “counsellor”) were used to maximise sensitivity. In Scopus the string was applied to the TITLE-ABS-KEY field, restricting the search to titles, abstracts, and keywords, with equivalent title/abstract/keyword field codes used in PubMed and ScienceDirect. The string was piloted and refined iteratively: an initial specification returned a large volume of biomechanics- and injury-prediction records, prompting the addition of the mental-health cluster to sharpen relevance to psychological support. The PICOS framework here structures the search strategy only and is distinct from the quality-appraisal procedure in Section Quality Assessment.

Study Selection Process

Study selection proceeded in multiple stages consistent with PRISMA 2020. After identification and removal of duplicates, records were screened by title and abstract against the eligibility criteria. Potentially relevant reports then underwent full-text assessment, with reasons recorded for each exclusion. Screening and eligibility decisions were made by the review team using the predefined criteria, and disagreements were resolved through discussion and re-examination of the full text against the criteria until consensus was reached.

Quality Assessment

Methodological quality was appraised using the Mixed Methods Appraisal Tool (MMAT), version 2018 (Hong et al., 2018), selected for its suitability in appraising the heterogeneous designs anticipated in this literature (quantitative descriptive, quantitative non-randomized, quantitative randomized, qualitative, and mixed methods). Each empirical study was first classified by design category and then appraised against the five MMAT criteria for that category (rated Yes = 1, Can't tell/Partial = 0.5, No = 0). Studies whose design does not fit MMAT categories-narrative or bibliometric reviews, conceptual frameworks, protocols, and purely technical development or benchmarking papers-were appraised descriptively using an equivalent JBI-style logic for transparency and coherence, and this substitution is noted explicitly in Table 3.

Studies scoring $\geq 60\%$ (≥ 3 of 5 criteria) were regarded as of higher methodological confidence. Consistent with MMAT developer guidance against using total scores as an exclusion cutoff, no study was excluded on quality grounds alone; lower-confidence studies were retained but weighted accordingly in synthesis. Appraisal was conducted by the review team using the predefined scheme; because appraisal drew on the exported metadata and available abstracts/full texts within a single-team process, a formal inter-rater reliability coefficient (Cohen's kappa) was not computed, which is acknowledged as a limitation (Section 5.5).

Table 3. Methodological quality appraisal of included studies (MMAT 2018)

Study	Design category	Q1	Q2	Q3	Q4	Q5	Score	Rating
Takahara et al. (2025)	Quantitative non-randomized	1	0.5	0.5	0.5	1	3.5	Medium
Lo & Rau (2025)	Qualitative	1	0.5	0.5	0.5	0.5	3.0	Medium
Qi (2025)	Quantitative non-randomized	1	1	1	0.5	1	4.5	High

Study	Design category	Q1	Q2	Q3	Q4	Q5	Score	Rating
Yang et al. (2024)	Technical development - appraised descriptively	-	-	-	-	-	-	Low
Lee et al. (2026)	Quantitative descriptive	1	1	0.5	1	1	4.5	High
Guo & Xu (2026)	Technical benchmark - appraised descriptively	-	-	-	-	-	-	Medium
Geiger et al. (2024)	Quantitative descriptive	1	1	1	1	1	5.0	High
Geiger et al. (2025)	Quantitative descriptive	1	1	1	0.5	1	4.5	High
Pankow & Vella (2026)	Mixed methods	1	1	0.5	1	1	4.5	High
Geiger et al. (2026)	Quantitative descriptive	1	1	1	1	1	5.0	High
Jing et al. (2026)	Quantitative descriptive	1	1	1	0.5	1	4.5	High
Wei et al. (2026)	Quantitative descriptive	1	1	0.5	0.5	0.5	3.5	Medium
Y. Zhang et al. (2026b)	Quantitative descriptive	1	1	0.5	0.5	0.5	3.5	Medium
W. Zhang et al. (2026)	Quantitative randomized	1	1	1	1	1	5.0	High
Y. Zhang et al. (2026a)	Conceptual - appraised descriptively	-	-	-	-	-	-	Medium
Amawi et al. (2026)	Narrative review - JBI/descriptive	-	-	-	-	-	-	Medium
Zeng et al. (2026)	Conceptual - appraised descriptively	-	-	-	-	-	-	Medium
Balcombe & de Leo (2020)	Review - JBI/descriptive	-	-	-	-	-	-	High
Chakraborty et al. (2026)	Protocol - appraised descriptively	-	-	-	-	-	-	Medium
Pang et al. (2026)	Bibliometric review - descriptive	-	-	-	-	-	-	High
Grady (2023)	Narrative review - descriptive	-	-	-	-	-	-	Medium

Note. Q1–Q5 = the five MMAT criteria for the assigned design category (Yes = 1, Can't tell/Partial = 0.5, No = 0). “-” indicates a design outside MMAT categories, appraised descriptively (JBI-style). Ratings: High ≥ 4.0 ; Medium 3.0–3.9; Low < 3.0 or limited reporting.

Data Extraction Procedure

A structured extraction form captured, for each included study: authors and year; study design and method; population and setting; the AI/digital modality and its intended function; reported outcomes; and key findings. Extraction was performed directly from the source records and abstracts/full texts. Author affiliation and country were not consistently available in the exported metadata; consequently, geographic attribution was limited to information explicitly identifiable in the source text, and setting/population was recorded instead where country could not be verified (Section 5.5).

Network and Bibliometric Analysis

To complement the narrative synthesis, a keyword co-occurrence analysis was conducted across the author and index keywords of the included studies. Keywords were normalised to canonical forms, and pairs co-occurring within studies were used to construct a co-occurrence network in which node size reflects term frequency and edge weight reflects co-occurrence strength (Figure 4). This descriptive analysis was used to visualise the conceptual structure of the corpus rather than to draw inferential conclusions.

Data Analysis and Synthesis

A thematic synthesis approach was applied (Thomas & Harden, 2008). Included studies were read and coded according to the AI/digital modality and its psychological function; codes were then grouped into higher-order analytical themes through iterative comparison. Six functional themes

were derived: conversational agents and LLM-based counselors; e-mental-health uptake; AI-driven assessment; AI-assisted training and emotion regulation; screening, monitoring, and platforms; and field landscape and overview. Findings were synthesised narratively within and across themes, with attention to agreements, contradictions, and nuances, and organised around the three research questions.

Reporting and Documentation

The review was reported in accordance with the PRISMA 2020 checklist (Page et al., 2021). The study identification, screening, eligibility, and inclusion process is documented in the PRISMA 2020 flow diagram (Figure 1), and all quantitative flow values are reported consistently across the Abstract, Methods, and Results.. PRISMA 2020 Flow Diagram.

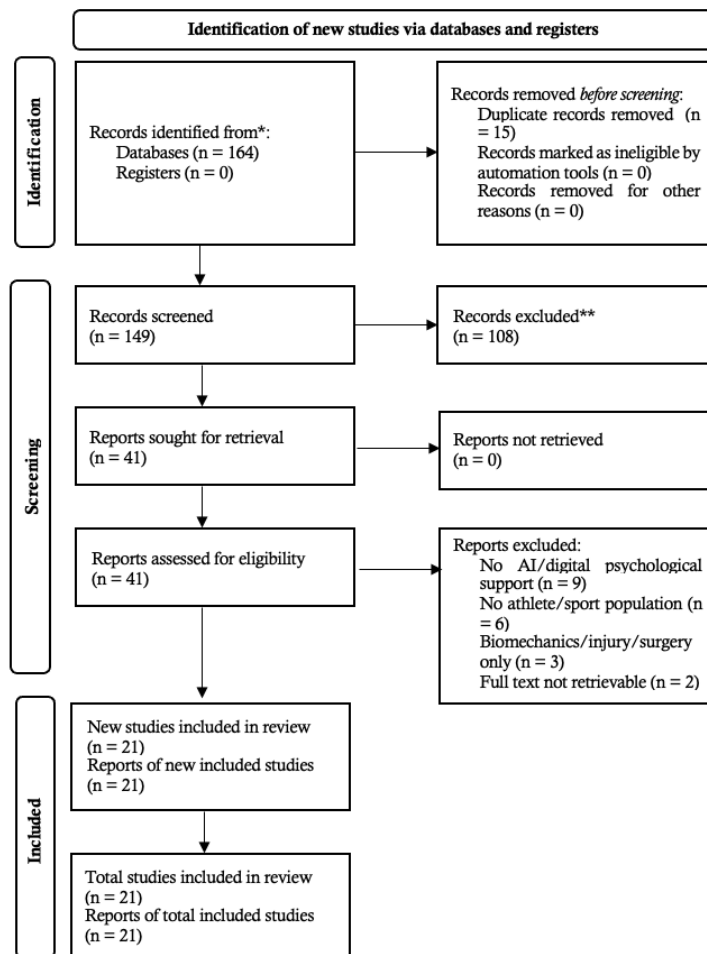


Figure 1. PRISMA 2020 flow diagram of the identification, screening, eligibility assessment, and inclusion of studies. Adapted from the PRISMA 2020 statement (Page et al., 2021).

RESULTS AND DISCUSSION

Study Selection Results

The database searches identified 164 records from Scopus (n = 149), PubMed (n = 9), and ScienceDirect (n = 6). After removing 15 duplicate records-principally PubMed and ScienceDirect hits already retrieved from Scopus-149 unique records proceeded to screening. Title-and-abstract screening excluded 108 records that were off-topic or not concerned with psychological/mental-health support in sport, leaving 41 reports for full-text assessment. Of these, 20 were excluded: 9

provided no AI- or digital-mediated psychological support, 6 involved no athlete or sport population, 3 addressed only biomechanical, injury-prediction, or surgical outcomes, and 2 had no retrievable full text. Twenty-one studies met all criteria and were included in the synthesis (Figure 1).

Descriptive Characteristics

The 21 included studies were published between 2020 and 2026, with a pronounced concentration in 2025–2026 (Figure 2), reflecting the recency of AI-mediated psychological support as a research focus. Study designs were heterogeneous, ranging from randomized controlled and quasi-experimental trials to cross-sectional surveys, deep-learning analyses, conceptual frameworks, protocols, and reviews. Table 4 summarises each study's full title, authorship, design, and key findings, and Table 5 classifies the studies by population, functional theme, modality, and reported outcome. The distribution across functional themes is shown in Figure 3, and the conceptual structure of the corpus is visualised in Figure 4.

Table 4. Characteristics and key findings of the 21 included studies

Title	Study	Design & method	Key findings
A New Approach to Solving FAT Issues in Female Student Athletes Through Generative AI: A Psychological Support Model to Promote Body Appreciation	Takahara et al. (2025)	Quant., 2-group experiment (14 days)	A Custom-GPT support system targeting gratitude, self-compassion, and media influence yielded foundational evidence that AI-guided interaction can improve body appreciation and eating attitudes relative to peer communication.
Beyond Chatbots: Athlete AI as an Emotional Support Agent for Adolescents	Lo & Rau (2025)	Qualitative study (n = 4)	A personality-trained “athlete AI” increased adolescents’ willingness to share personal concerns versus a generic agent, though balancing personality expression with natural conversation remained challenging.
Pilot Quasi-Experimental Research on the Effectiveness of the Woebot AI Chatbot for Reducing Mild Depression Symptoms among Athletes	Qi (2025)	Quasi-experimental (N = 84, control)	Daily interaction with the Woebot chatbot lowered mild depression in the intervention group from weeks 5–8, while controls showed no significant change, supporting conversational agents as an adjunct for prevention and treatment.
Athlete-LLMs: A Specialized Large Language Model for Athlete Psychology	Yang et al. (2024)	System development (LLM)	Introduced the first LLM specialised for athlete psychology, designed to help athletes stabilise their mindset before, during, and after competition and training.
Developing a Generative AI-Based Anti-Doping Consultation System to Enhance Coaching Practice and Athlete Decision-Making	Lee et al. (2026)	System development & evaluation (51 items)	A retrieval-augmented generative-AI chatbot for doping prevention achieved 82.35% accuracy and 96.08% response consistency, offering scalable counseling and education for athletes, coaches, and parents.
SPPBench: A Comprehensive Sports Psychology Performance Benchmark for LLMs	Guo & Xu (2026)	Benchmark construction & LLM evaluation	Proposed a five-dimension benchmark (explainability, actionability, emotional support, personalization, professionalism) that exposed gaps in LLMs’ sport-specific counseling competence.
Determining the Acceptance of E-Mental Health Interventions in Elite Athletes Using the Unified Theory of Acceptance and Use of Technology	Geiger et al. (2024)	Cross-sectional survey (N = 275)	Acceptance of e-mental-health interventions was high; performance expectancy, effort expectancy, social influence, depressive symptoms, and digital confidence significantly predicted acceptance.
Needs and Demands of e-Mental Health Interventions for Elite	Geiger et al. (2025)	Cross-sectional survey (N = 275)	Elite athletes preferred an individual smartphone program with audio/video and

Title	Study	Design & method	Key findings
Athletes: User-Centered Design Approach Based on a Cross-Sectional Study			interactive tasks, weekly 20–30-minute sessions, prioritising “coping with pressure.”
MindMoves: Exploring the Acceptability and Feasibility of a Digital Mental Health Literacy Program for Collegiate Athletes	Pankow & Vella (2026)	Mixed-methods pre–post (N = 289)	An online, co-designed mental-health-literacy program increased knowledge and help-seeking intentions and reduced stigma, with high acceptability and minimal gender differences.
Acceptance, Needs and Demands of E-Mental Health Interventions in Adolescent Elite Athletes	Geiger et al. (2026)	Cross-sectional survey (N = 217)	Acceptance among adolescent elite athletes was moderate and higher for females and individual-sport athletes; performance expectancy, effort expectancy, and social influence were key predictors.
Deep Learning Driven Clustering of Post-Traumatic Stress Disorder (PTSD) Profiles in Student-Athletes: Implications for Precision and Stratified Mental Health Support	Jing et al. (2026)	Deep-learning clustering (N = 468)	Deep-learning semantic clustering identified five distinct PTSD profiles among injured college athletes, demonstrating feasibility for precision, stratified mental-health support.
A Psychological Education Model Integrating Artificial Intelligence-Based BERT in Physical Education	Wei et al. (2026)	NLP/BERT model development	A BERT-based four-dimensional model reached ~91.5% accuracy in psychological-state recognition on counseling text, but transferability to authentic PE classroom discourse remained uncertain.
Physical Activity-Related Language and Psychosocial Themes in a Psychological AI-Training Q&A Corpus: An Exploratory BERTopic Analysis	Y. Zhang et al. (2026b)	Computational text mining (209,715 records)	BERTopic analysis of >200,000 student–AI mental-health exchanges characterised physical-activity, body, lifestyle, and emotion themes, while noting corpus-level, non-attributable limitations.
Psychological Consequences of AI-Assisted Training and the Buffering Role of Mindfulness	W. Zhang et al. (2026)	Randomized controlled factorial (N = 160)	In an RCT, AI-assisted training without support raised perceived stress and AI dependence, whereas concurrent mindfulness training buffered stress via enhanced mindful awareness.
Contextualizing AI-Supported Emotion Regulation Through Sport and Exercise in Higher Education: A Conceptual Reframing	Y. Zhang et al. (2026a)	Conceptual discourse analysis	Discourse analysis of AI Index reports showed health and education themes expanding while sport, exercise, and embodied support appeared only indirectly-signalling a contextual gap.
Digital Twin for Taekwondo Athletes: Integrating Sports Nutrition and Psychological Readiness Using Artificial Intelligence	Amawi et al. (2026)	Narrative review	An AI digital-twin integrating nutrition, psychological state, load, and biomarkers enabled readiness scoring and early detection of fatigue and stress dysregulation.
Post-Competition Psychological Recovery in Elite Adolescent Athletes: A Technology-Scaffolded Perspective	Zeng et al. (2026)	Conceptual perspective	Proposed a technology-scaffolded framework (physiological anchoring → emotional reframing → cognitive recharging) in which VR and conversational AI support post-competition recovery.
Psychological Screening and Tracking of Athletes and Digital Mental Health Solutions in a Hybrid Model of Care: Mini Review	Balcombe & de Leo (2020)	Mini (evaluative) review	Synthesised evidence that athletes face comparable mental-ill-health risk yet high stigma; digital screening and tracking can complement prevention within a hybrid model of care.
Leveraging Student-Athlete Mental Health Through an AI-	Chakraborty et al. (2026)	Study protocol (cluster-RCT)	A protocol for a cluster-randomised trial of the ThriveNudge app, enabling coaches to

Title	Study	Design & method	Key findings
Augmented Mobile Platform: The ThriveNudge Study Protocol			monitor mood, flag disruptions, and rehearse supportive communication for youth athletes.
Digital Interventions in Sport Psychology and Psychiatry: A Bibliometric Analysis	Pang et al. (2026)	Bibliometric review	Bibliometric mapping revealed rapid growth of digital-intervention research, with mental health, sport, and digital health as core themes and virtual reality and social media emerging.
The Role of Information Technology in Enhancing Sport Psychology Interventions for Athlete Development and Performance Optimization	Grady (2023)	Narrative overview review	Reviewed IT roles in sport psychology-remote counseling, biofeedback, dashboards, and mental-health apps-while stressing data-privacy, cybersecurity, and ethical safeguards.

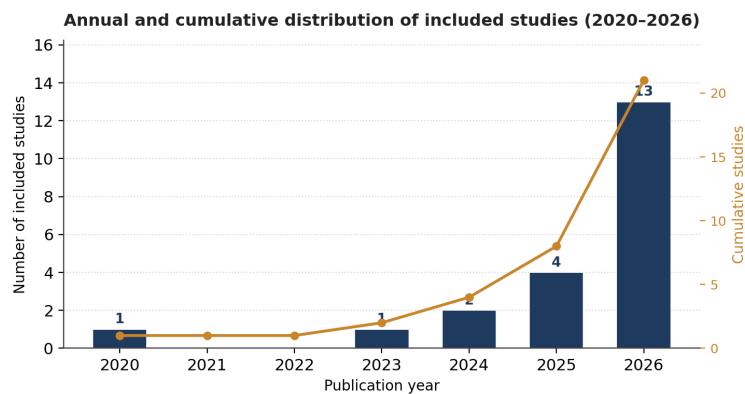


Figure 2. Annual and cumulative distribution of the included studies (2020–2026), showing the marked increase in publications from 2024 onward.

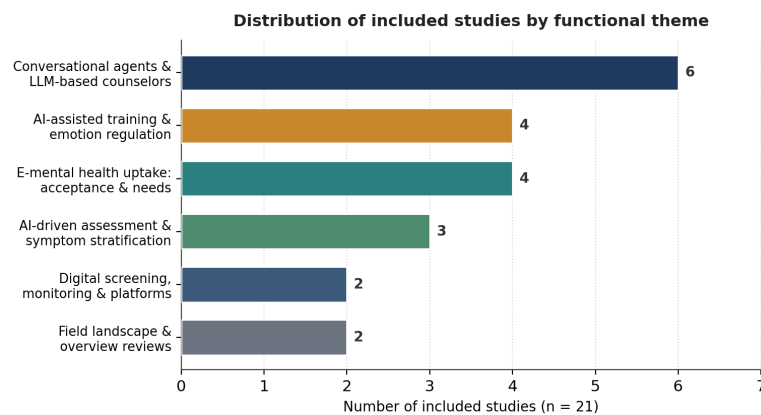


Figure 3. Distribution of the 21 included studies across the six functional themes derived through thematic synthesis.

Table 5. Classification of included studies by population, theme, modality, and outcome

Study	Population / setting	Functional theme	AI / digital modality	Reported outcome
Takahara et al. (2025)	Female student athletes (aesthetic sports); Japan	Conversational agents & LLM counselors	Generative AI (Custom GPT) body-appreciation support	Body appreciation; eating attitudes
Lo & Rau (2025)	Adolescents	Conversational agents & LLM counselors	Personality-trained AI emotional-support agent	Willingness to disclose; engagement

Study	Population / setting	Functional theme	AI / digital modality	Reported outcome
Qi (2025)	College athletes; China (Lishui College)	Conversational agents & LLM counselors	Woebot conversational-agent chatbot	Depressive-symptom reduction
Yang et al. (2024)	Athletes (pre/post-competition, training)	Conversational agents & LLM counselors	Domain-specialised LLM (Athlete-LLM)	Pre/post-competition mindset support
Lee et al. (2026)	Athletes, coaches, parents; South Korea (KADA)	Conversational agents & LLM counselors	Generative-AI (RAG) counseling chatbot	Counseling accuracy & consistency
Guo & Xu (2026)	Sports-psychology scenarios (10 ball sports)	Conversational agents & LLM counselors	LLM counseling-evaluation benchmark	LLM counseling-quality dimensions
Geiger et al. (2024)	Elite athletes	E-mental-health uptake	E-mental-health intervention (acceptance)	Acceptance & predictors
Geiger et al. (2025)	Elite athletes (individual & team)	E-mental-health uptake	E-mental-health intervention (needs/design)	Design needs & preferences
Pankow & Vella (2026)	Collegiate student-athletes; USA	E-mental-health uptake	Online mental-health-literacy program	Help-seeking; stigma; literacy
Geiger et al. (2026)	Adolescent elite athletes (14–17 yrs)	E-mental-health uptake	E-mental-health intervention (acceptance)	Acceptance & predictors
Jing et al. (2026)	High-performance college athletes with injury	AI-driven assessment	Transformer/DL symptom clustering	PTSD symptom stratification
Wei et al. (2026)	PE / sports-psychology text corpora	AI-driven assessment	BERT psychological-state evaluation	Psychological-state recognition accuracy
Y. Zhang et al. (2026b)	University students on an AI counselling platform	AI-driven assessment	AI mental-health Q&A corpus analytics	PA & psychosocial theme mapping
W. Zhang et al. (2026)	Collegiate athletes	AI-assisted training & emotion regulation	AI-assisted training + mindfulness	Perceived stress; AI dependence
Y. Zhang et al. (2026a)	Higher-education context (AI-report discourse)	AI-assisted training & emotion regulation	AI-supported emotion regulation (framing)	Emotion-regulation framing gaps
Amawi et al. (2026)	Taekwondo athletes	AI-assisted training & emotion regulation	AI digital-twin (readiness scoring)	Readiness; stress detection
Zeng et al. (2026)	Elite adolescent athletes	AI-assisted training & emotion regulation	Technology-scaffolded recovery (VR, conversational AI)	Post-competition recovery framework
Balcombe & de Leo (2020)	Elite athletes (at-risk sub-populations)	Screening, monitoring platforms	Digital screening & tracking (hybrid care)	Screening/tracking feasibility

Study	Population / setting	Functional theme	AI / digital modality	Reported outcome
Chakraborty et al. (2026)	Youth athletes (14–18 yrs) & coaches; USA	Screening, monitoring platforms	AI-augmented mobile & app (coach-mediated)	Burnout, motivation, coach–athlete relations (protocol)
Pang et al. (2026)	Sport psychology & psychiatry literature (2005–2024)	Field landscape & overview	Digital interventions (landscape mapping)	Research-landscape trends
Grady (2023)	Athletes, coaches, sport psychologists	Field landscape & overview	IT tools (telehealth, biofeedback, apps)	IT roles & ethics in sport psychology

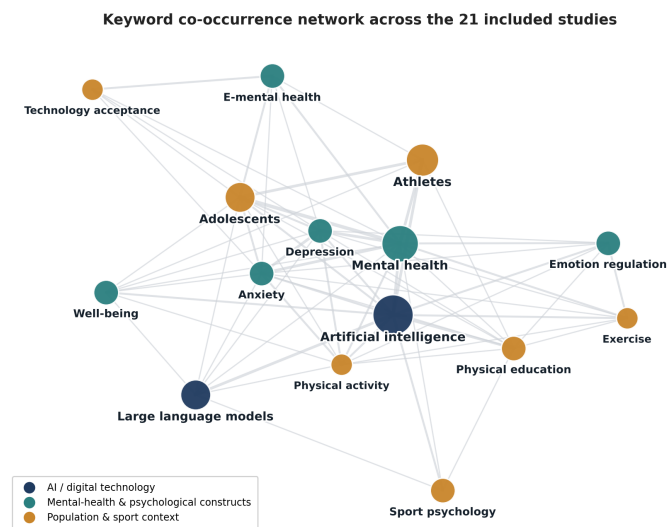


Figure 4. Keyword co-occurrence network across the 21 included studies. Node size reflects term frequency; edge thickness reflects co-occurrence strength. Colours denote AI/digital technology, mental-health constructs, and population/sport context.

Thematic Synthesis

Findings for RQ1: Forms and functions of AI-mediated support

Across the corpus, AI-mediated support for athletes assumed several distinct forms. The most prominent were conversational agents and LLM-based counselors, which ranged from general chatbots repurposed for athletes to purpose-built systems. Qi (2025) deployed the Woebot chatbot for daily interaction with athletes, while Lo & Rau (2025) embedded athlete personality traits into an emotional-support agent for adolescents, and Takahara et al. (2025) used a Custom-GPT system to promote body appreciation among female student athletes. Purpose-built systems included the first athlete-specific large language model (Yang et al., 2024), a retrieval-augmented anti-doping consultation chatbot (Lee et al., 2026), and a benchmark for evaluating LLM counseling quality in sport (Guo & Xu, 2026). Collectively, these tools function as accessible, private, and scalable channels for emotional support, symptom-focused counseling, and decision support.

Beyond conversational agents, a second cluster comprised e-mental-health interventions whose function is to widen access and literacy. Studies mapped athletes' acceptance, needs, and preferences for such interventions (Geiger et al., 2024; Geiger et al., 2025; Geiger et al., 2026) and evaluated an online literacy program designed to strengthen help-seeking (Pankow & Vella, 2026). A third cluster used AI for assessment and stratification-clustering PTSD profiles (Jing et al., 2026), recognising psychological states from text (Wei et al., 2026), and mining large counseling corpora (Y. Zhang et al., 2026b). A fourth cluster addressed AI-assisted training and emotion regulation,

including the psychological consequences of AI (W. Zhang et al., 2026), conceptual reframing of emotion regulation (Y. Zhang et al., 2026a), digital-twin readiness monitoring (Amawi et al., 2026), and technology-scaffolded post-competition recovery (Zeng et al., 2026). Screening and monitoring platforms (Balcombe & de Leo, 2020; Chakraborty et al., 2026) and landscape reviews (Pang et al., 2026; Grady, 2023) complete the picture. In answer to RQ1, AI-mediated support for athletes is functionally diverse, spanning conversational counseling, literacy and access, assessment, regulation, and monitoring.

Findings for RQ2: Reported outcomes, effectiveness, and acceptability

Reported outcomes were promising but unevenly evidenced. The strongest efficacy signal came from a quasi-experimental trial in which Woebot interaction reduced mild depression among athletes over weeks 5–8 relative to controls (Qi, 2025), complemented by a randomized controlled trial showing that mindfulness training buffered the perceived stress and AI dependence introduced by AI-assisted training (W. Zhang et al., 2026). Acceptability and implementation outcomes were more frequently reported: acceptance of e-mental-health interventions was high among elite athletes (Geiger et al., 2024) and moderate among adolescent elite athletes, with performance expectancy, effort expectancy, and social influence emerging as consistent predictors (Geiger et al., 2025; Geiger et al., 2026). A co-designed literacy program improved knowledge and help-seeking intentions and reduced stigma (Pankow & Vella, 2026).

Assessment-oriented studies reported strong technical performance-five interpretable PTSD clusters (Jing et al., 2026), ~91.5% accuracy in psychological-state recognition (Wei et al., 2026), and high accuracy and consistency for an anti-doping counseling chatbot (Lee et al., 2026)-yet these are proof-of-concept metrics rather than clinical outcomes. Several influential contributions are conceptual frameworks, protocols, or benchmarks without outcome data (Y. Zhang et al., 2026a; Zeng et al., 2026; Chakraborty et al., 2026; Guo & Xu, 2026). Thus, in answer to RQ2, early evidence indicates reductions in depressive symptoms, improved help-seeking, favourable acceptance, and stress buffering, but effectiveness claims rest on a small number of controlled studies and many pilots, so certainty remains limited.

Findings for RQ3: Design considerations, barriers, and gaps

Design considerations recurred across studies. Athletes expressed clear preferences for individualised, smartphone-delivered, briefly-dosed support prioritising “coping with pressure” (Geiger et al., 2025), and personality and relational qualities increased willingness to disclose (Lo & Rau, 2025). Barriers included stigma and engagement difficulties characteristic of sporting populations (Balcombe & de Leo, 2020), the risk of AI dependence and evaluative pressure (W. Zhang et al., 2026), and the recurrent ethical concerns of data privacy, cybersecurity, and responsible use (Grady, 2023). A conceptual gap was that sport and embodied activity feature only indirectly in mainstream AI discourse (Y. Zhang et al., 2026a), and benchmarking revealed that general LLMs underperform on sport-specific counseling demands (Guo & Xu, 2026). In answer to RQ3, adoption hinges on athlete-centred, ethically-governed design that overcomes stigma, avoids fostering dependence, and is validated for sport-specific needs.

Comparative and Critical Analysis

Methodologically, the corpus is dominated by cross-sectional surveys, technical development, and conceptual work, with only two adequately controlled trials (W. Zhang et al., 2026; Qi, 2025) and one mixed-methods evaluation (Pankow & Vella, 2026). This distribution mirrors an early-stage field in which feasibility and acceptability precede efficacy testing. Sample sizes were generally modest, and several high-visibility contributions were protocols or benchmarks awaiting empirical validation (Chakraborty et al., 2026; Guo & Xu, 2026). Over time, a shift is visible from screening-and-tracking framings (Balcombe & de Leo, 2020) toward interactive, generative, and personalised systems (Yang et al., 2024; Lee et al., 2026; Amawi et al., 2026), consistent with the broader trajectory of generative

AI in health and sports medicine (Dergaa et al., 2026; Fares et al., 2024). Underused designs include longitudinal and multi-site randomized trials and qualitative studies of lived experience, which would strengthen causal and contextual understanding.

Discussion

Interpreted together, the findings suggest that AI-mediated tools are being positioned not as replacements for sport psychologists but as scalable complements that extend reach, lower thresholds to help-seeking, and provide continuous, private support (Balcombe & de Leo, 2020; Pankow & Vella, 2026; Grady, 2023). Theoretically, the evidence both extends and complicates existing frameworks: acceptance is well explained by technology-acceptance models (Geiger et al., 2024; Geiger et al., 2026), yet the observation that AI can itself generate stress and dependence (W. Zhang et al., 2026) indicates that adoption models must be paired with stress-and-coping and self-regulation perspectives to capture AI's double-edged psychological effects (Kong, 2026; Cheng & Bayasgalan, 2025).

Practically, the results offer actionable guidance for practitioners, coaches, and system designers: prioritise individualised, briefly-dosed, smartphone-based delivery (Geiger et al., 2025); foreground relational and personality qualities that build trust (Lo & Rau, 2025); pair AI tools with human support and skills such as mindfulness (W. Zhang et al., 2026); and embed literacy and anti-stigma components-including gamified and socially-connected designs-to convert access into help-seeking (Pankow & Vella, 2026; Cheng et al., 2018). Compared with prior reviews that mapped the field bibliometrically or surveyed IT broadly (Pang et al., 2026; Grady, 2023), the present synthesis contributes a function-focused, appraisal-based account specific to athletes.

Contradictions in the literature are instructive. Acceptance findings diverge-high among elite adults (Geiger et al., 2024) but only moderate among adolescents (Geiger et al., 2026)-suggesting developmental and contextual moderators. Enthusiasm for generative counseling (Yang et al., 2024; Lee et al., 2026) coexists with benchmark evidence that general models underperform on sport-specific tasks (Guo & Xu, 2026), tempering claims of readiness for deployment. At least three research gaps follow: (i) a scarcity of adequately powered, controlled effectiveness trials; (ii) limited attention to ethics, safety, and data governance beyond acknowledgement (Grady, 2023); and (iii) uneven population coverage, with adolescent, para-sport, and non-Western athletes underrepresented.

This review has limitations. First, the screening and extraction relied primarily on a Scopus-format export; although PubMed and ScienceDirect were searched, unique non-Scopus records were not separately analysed, and English-only inclusion may introduce language bias. Second, author affiliation and country were not consistently available in the exported metadata, precluding a robust geographic synthesis. Third, quality appraisal was conducted within a single-team process without a formally computed inter-rater coefficient, and the heterogeneity of designs required descriptive appraisal for non-empirical works. These constraints warrant cautious interpretation of the synthesis.

Future research should prioritise multi-site randomized and longitudinal trials that test psychological outcomes rather than technical accuracy; co-designed, athlete-centred systems evaluated for safety, privacy, and equity across developmental stages and cultures; and hybrid human-AI models of care in which digital tools are integrated with, and governed by, qualified practitioners (Balcombe & de Leo, 2020; Chakraborty et al., 2026; Y. Zhang et al., 2026a; Alkasasbeh et al., 2026). In summary regarding RQ1 and RQ2, AI-mediated support for athletes is functionally diverse and shows early positive signals for depression, help-seeking, acceptance, and stress buffering; regarding RQ3, its responsible adoption depends on athlete-centred design, ethical governance, and sport-specific validation.

CONCLUSIONS

This systematic review synthesised 21 studies on AI-mediated psychological counseling, emotional support, and mental-health care for athletes. In answer to the research questions, the evidence shows a functionally diverse and rapidly growing field-spanning conversational agents and LLM counselors, e-mental-health interventions, AI-driven assessment, and emotion-regulation and monitoring tools-that reports early positive signals for reduced depressive symptoms, improved help-seeking, favourable acceptance, and stress buffering, while its responsible adoption depends on athlete-centred design, ethical governance, and sport-specific validation. The core contribution is a function-focused, appraisal-based map of an emerging evidence base, clarifying what these technologies do and how well they are evidenced. Practically, findings support integrating individualised, ethically-governed digital tools as complements to, not replacements for, human sport-psychology support. The review is limited by heterogeneous, largely early-stage designs and incomplete metadata, and it calls for rigorous, multi-site trials and safety-focused, athlete-centred innovation.

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