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Dimensions of Trust in AI Coaching Assistants Among Elite Athletes: Interviews with Users and Non-Users

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ABSTRACT

This study aimed to explore the dimensions of trust in AI coaching assistants among elite athletes, examining the perspectives of both users and non-users. A qualitative research design was adopted, employing semi-structured interviews with 17 elite athletes from Mexico representing diverse sports, including athletics, football, swimming, and martial arts. Participants were selected purposively to capture experiences from both current or past users (n = 9) and non-users (n = 8) of AI coaching assistants. Interviews were conducted until theoretical saturation was achieved. Each session lasted 45–70 minutes, recorded with consent, transcribed verbatim, and pseudonymized. Data were analyzed thematically using Braun and Clarke's framework, with the aid of NVivo 14 software for systematic coding and theme development. Four overarching themes emerged: (1) perceived reliability, where athletes valued accurate and consistent feedback but were wary of technical failures; (2) transparency and understanding, with trust enhanced by clear explanations and data governance, but undermined by opaque "black box" processes; (3) emotional and relational aspects, where athletes appreciated private, supportive feedback but emphasized the irreplaceable motivational role of human coaches; and (4) ethical and contextual considerations, including concerns about fairness, accessibility, accountability, and professional acceptance. Illustrative quotations highlighted how athletes negotiate trust across these dimensions, reflecting both enthusiasm and caution in adopting AI coaching assistants. Trust in AI coaching assistants among elite athletes is shaped by technical, relational, and ethical factors. The findings underscore that AI is most effective when framed as a complement rather than a substitute for human coaching. Building trust requires transparency, fairness, accessibility, and institutional support to ensure responsible and equitable integration of AI into elite sports contexts.

Keywords: Trust in AI, coaching assistants, elite athletes, qualitative research, transparency, ethics, sports technology

Introduction

Trust in artificial intelligence (AI) has emerged as one of the most pressing issues in contemporary technology adoption research, particularly in domains where human performance and well-being are at stake. In high-stakes contexts such as healthcare, finance, education, and increasingly in sports performance, AI tools promise significant benefits but are also met with skepticism due to concerns about reliability, transparency, fairness, and ethical governance. Scholars consistently emphasize that without trust, even the most advanced AI systems are unlikely to achieve sustainable adoption (1-4). This tension is particularly relevant in elite sports, where athletes balance the potential advantages of AI coaching assistants—such as data-driven performance optimization and injury prevention—with concerns about control, privacy, and relational dynamics.

A central theme in the literature is the role of transparency in shaping trust. Perceived transparency has been shown to significantly enhance user confidence in AI recommendations, especially in sensitive fields such as healthcare (1). In the context

of HR management, transparency combined with perceptions of fairness and privacy has been found to mediate the usefulness of AI tools (2). These insights suggest that AI systems used by athletes must not only provide accurate recommendations but also communicate how decisions are made in order to cultivate long-term trust. Concerns about opaque, "black-box" processes are a recurring obstacle to adoption across domains (5, 6).

Relatedly, research has demonstrated that clarity of explanation and explainability mechanisms, often referred to as XAI (explainable AI), are vital in mitigating distrust (7, 8). For instance, in healthcare applications, where explainability is closely tied to patient safety, users demand systems that justify their outputs in understandable ways (9, 10). Athletes, similarly, require coaching assistants that do not simply dictate training changes but provide interpretable rationales for recommendations. Without this, adoption may remain superficial or short-lived.

Ethical concerns also weigh heavily on trust formation. Studies highlight that AI adoption often hinges on perceptions of data security and governance (11, 12). For example, in IoT-enabled environments, the convergence of AI and smart devices introduces heightened privacy risks, making trust a prerequisite for user engagement (11). Within digital marketing and e-commerce, consumer trust is similarly mediated by the management of sensitive data and ethical use of AI (13, 14). Athletes, who routinely provide biometric and performance data, are particularly vulnerable to privacy breaches and data misuse. The prospect of personal health and performance information being leaked or commercially exploited directly undermines trust and raises important governance questions.

The literature also underscores the ethical responsibility of developers and institutions in ensuring accountability when AI-driven decisions lead to harm (15, 16). In the case of AI coaching assistants, questions arise over liability in the event of training-related injuries caused by faulty recommendations. Addressing these challenges requires regulatory frameworks, responsible AI practices, and robust security architectures (7, 17).

Another key dimension of trust in AI involves the balance between perceived risks and perceived benefits. In the context of generative AI, perceptions of potential risks—such as job displacement, ethical misuse, or technical errors—directly influence user attitudes and willingness to engage (18). Similarly, in public sector adoption, managers' intentions to integrate AI into organizational processes are shaped by perceptions of trustworthiness and risk management (19). In sports, elite athletes may perceive risks not only in terms of data privacy but also in how AI could affect their autonomy and athletic identity.

Research in education and communication with AI technologies reinforces this dynamic. For example, students' trust in AI-based educational tools is shaped by both system quality and prior experience, influencing continuous use intention (20, 21). Likewise, consumer trust in AI chatbots hinges on interactional transparency and perceived competence (22). These findings align with the idea that athletes will evaluate AI coaching assistants not only for their technical precision but also for their relational qualities—such as the ability to communicate in supportive, understandable, and context-sensitive ways.

Much of the existing research on trust in AI comes from adjacent domains such as healthcare, finance, and marketing, which offer valuable analogies for sports applications. In healthcare, explainability, fairness, and perceived safety have emerged as decisive factors for trust (23, 24). Patients expect AI systems to augment, rather than replace, human expertise, and similar expectations likely apply to athletes who see human coaches as irreplaceable for emotional and motivational support.

In financial services, research on robo-advisors highlights the necessity of transparency and clear communication to build user confidence (25). The risk of biased or opaque advice has been a significant barrier, pointing to the importance of designing AI coaching assistants that provide fair and context-aware feedback. Likewise, in digital marketing, data privacy and ethical governance directly impact consumer trust, demonstrating that trust is a cross-cutting concern across sectors (13, 26).

Trust in AI is not solely an individual matter but is embedded in broader organizational and societal contexts. For example, institutional trust shapes citizens' willingness to accept AI in governance systems (27). In universities and workplaces,

structural and cultural factors influence adoption patterns (4, 28). These insights highlight the need to study AI trust in sports not only as an athlete-level phenomenon but also as a function of broader sporting institutions, professional norms, and cultural narratives.

Emerging research within Industry 5.0 also emphasizes trust-building in AI–human partnerships, where collaboration and co-adaptation are essential (29). The athletic context can be viewed similarly: AI coaching assistants must be seen as collaborators rather than competitors to human coaches. This requires deliberate attention to relational trust, fairness, and explainability.

Despite the rapid growth of research on trust in AI across healthcare (9), education (20), finance (25), and marketing (13, 14), relatively little is known about how trust operates in elite sports contexts. Athletes occupy a unique position as both high-performing professionals and individuals with deeply personal investments in training and well-being. They rely on data-driven insights to maintain competitive advantage but must also navigate relational and ethical complexities when interacting with emerging technologies. The trust dynamics they experience may differ from those documented in other sectors, warranting focused qualitative exploration.

Furthermore, existing studies often rely on quantitative surveys that capture generalized attitudes toward AI but miss the nuanced, lived experiences of trust and distrust (18, 28). A qualitative approach, particularly through interviews with both users and non-users of AI coaching assistants, provides an opportunity to capture how trust is constructed, negotiated, and sometimes withheld in practice. This method allows for exploration of themes such as transparency, relational dynamics, privacy, and institutional acceptance in ways that are contextually grounded in athletes' lived realities.

In light of these considerations, the present study investigates the dimensions of trust in AI coaching assistants among elite athletes in Mexico.

Methods and Materials

Study Design and Participants

This study adopted a qualitative research design to explore the dimensions of trust in AI coaching assistants among elite athletes. A phenomenological approach was chosen to capture the lived experiences and perceptions of both users and non-users of AI-based coaching technologies. Participants were selected using purposive sampling to ensure representation of athletes who had direct experience with AI coaching assistants as well as those who had not yet engaged with such tools.

The study included 17 elite athletes from Mexico, drawn from different disciplines including athletics, football, swimming, and martial arts. The inclusion criteria required participants to be national- or international-level athletes with at least five years of competitive experience. Nine participants were current or past users of AI-based coaching assistants, while eight had never used such technologies but were familiar with them through peers or professional networks. Data collection continued until theoretical saturation was achieved, meaning no new codes or categories emerged in subsequent interviews.

Data Collection

Data were collected through semi-structured interviews designed to elicit athletes' perspectives on trust in AI coaching assistants. An interview guide was developed based on existing literature on trust in technology and coaching, with questions focusing on perceived reliability, transparency, adaptability, and ethical considerations of AI systems. Flexibility in the guide allowed for probing and follow-up questions depending on participants' responses, ensuring depth and richness of data.

Interviews were conducted in Spanish either face-to-face or online, depending on participants' availability and geographical location. Each interview lasted between 45 and 70 minutes. All sessions were audio-recorded with the consent of participants and later transcribed verbatim. To ensure confidentiality, pseudonyms were assigned, and any identifiable information was removed from transcripts.

Data analysis

Data were analyzed using thematic analysis, following Braun and Clarke's six-step framework. The process began with repeated reading of transcripts to ensure familiarity with the data, followed by the generation of initial codes. Coding was carried out inductively, allowing themes to emerge organically from participants' narratives rather than being imposed a priori.

NVivo 14 software was employed to manage, organize, and code the qualitative data systematically. Codes were grouped into categories, and broader themes were identified through constant comparison across cases. To ensure rigor, the coding process was independently reviewed by two members of the research team, and discrepancies were discussed until consensus was reached. Reflexivity was maintained throughout the analysis by keeping analytic memos and acknowledging the researchers' potential biases.

Findings and Results

Seventeen elite athletes from Mexico participated in this study, including both users and non-users of AI coaching assistants. The sample consisted of 10 male athletes (58.8%) and 7 female athletes (41.2%), with ages ranging from 20 to 34 years (M = 26.7). Participants represented a variety of sports, including athletics (n = 5, 29.4%), football (n = 4, 23.5%), swimming (n = 3, 17.6%), martial arts (n = 3, 17.6%), and other disciplines such as cycling and gymnastics (n = 2, 11.7%). Nine participants (52.9%) had direct experience using AI coaching assistants, while eight participants (47.1%) were non-users but familiar with the technology through peers or professional contexts. All participants had a minimum of five years of competitive experience, and 11 (64.7%) had competed at the international level, while 6 (35.3%) had competed primarily at the national level.

Table 1. Themes, Subthemes, and Concepts of Trust in AI Coaching Assistants

Category (Theme)	Subcategory	Concepts (Open Codes)
1. Perceived Reliability of AI Coaching Assistants	Accuracy of Feedback	Consistent performance analysis; Correct error detection; Reliable biometric monitoring; Objective training suggestions
	Consistency Across Sessions	Stable feedback over time; Avoiding contradictions; Regular updates; Predictable outputs
	Technical Functionality	Minimal system errors; Fast response time; Stable app performance; Offline usability
	Integration with Training	Compatibility with existing devices; Synchronization with wearables; Data transfer reliability
	Comparative Reliability	AI vs. human coach accuracy; Dependence on AI data; Perception of bias-free advice
2. Transparency and Understanding of AI Decisions	Clarity of Explanations	Easy-to-understand outputs; Plain language feedback; Avoiding technical jargon
	Data Use Transparency	Clear data sources; Knowing what is being tracked; Awareness of privacy implications
	Algorithmic Opacity	"Black box" concerns; Unclear decision-making; Limited understanding of metrics
	User Control Over Data	Ability to adjust settings; Opt-in/opt-out features; Customization of analysis
	Trust in Data Security	Fear of data leaks; Comfort with storage; Belief in ethical handling of personal data
	Communication Style	Personalized language; Motivational tone; Non-intrusive alerts

3. Emotional and Relational Aspects of Trust	Human-AI Relationship	Feeling supported; Seeing AI as a partner; Lack of empathy vs. human coach
	Emotional Safety	Comfort in private feedback; Non-judgmental environment; Reduced performance anxiety
	Athlete Identity & Autonomy	Fear of losing independence; AI interfering with decision-making; Desire to maintain athlete voice
	Motivation and Engagement	Gamification features; Encouragement messages; Sense of accountability
	Comparative Human Bond	Missing personal touch of coach; Emotional void; Lack of inspiration
4. Ethical and Contextual Considerations	Fairness and Bias	Bias in recommendations; Unequal training personalization; Cultural relevance of advice
	Accessibility and Equity	Cost barriers; Access limited to wealthy athletes; Language inclusivity
	Professional Acceptance	Coaches' attitudes toward AI; Integration in professional training programs; Resistance from staff
	Long-term Consequences	Overreliance concerns; Replacement of human coaches; Sustainability of technology use
	Societal Perceptions	Peer acceptance; Media influence; Fear of surveillance culture
	Ethical Responsibility	Responsibility in case of injury; Accountability of developers; Regulation by sport authorities

Theme 1: Perceived Reliability of AI Coaching Assistants

Accuracy of Feedback. Participants highlighted the importance of accurate feedback from AI coaching assistants, often linking trust to the system's ability to provide precise performance analysis. Athletes who were users emphasized the reliability of biometric monitoring and technical measurements: *"The app caught mistakes in my posture that even my coach sometimes missed. That made me feel I could trust it,"* explained one track athlete. Others noted that objective, data-driven feedback helped them feel less biased evaluations were provided.

Consistency Across Sessions. Trust was also shaped by the perceived stability of the system across multiple training sessions. Athletes reported that irregular or contradictory outputs eroded their confidence: *"One day it told me my endurance was improving, the next day it said I was declining, even though my training was the same,"* said a swimmer. Conversely, those who experienced steady assessments described greater trust in the tool.

Technical Functionality. Smooth technical performance contributed significantly to reliability. Users mentioned minimal errors, fast response times, and stable application functionality as essential. An athlete remarked: *"If it freezes during practice, it breaks the flow, and I immediately stop trusting the tool."* Non-users expressed hesitation, citing skepticism about potential system failures.

Integration with Training. Compatibility with existing devices and training routines was a recurrent concern. Participants who successfully synchronized AI assistants with wearables described enhanced reliability: *"It works seamlessly with my smartwatch and heart monitor, so I don't feel like I'm juggling three different systems."* Lack of integration, however, led to frustration and distrust.

Comparative Reliability. Finally, athletes compared AI reliability with human coaching. Some valued the absence of subjective bias: *"It's just numbers, no favoritism."* Others, particularly non-users, questioned whether AI could match the nuanced judgment of experienced coaches.

Theme 2: Transparency and Understanding of AI Decisions

Clarity of Explanations. Many participants highlighted the need for understandable explanations. Athletes expressed frustration with overly technical outputs: *"Sometimes it gives me data that looks like it's for engineers, not athletes,"* said a martial artist. Clearer language and practical advice increased trust.

Data Use Transparency. Concerns about what data were being tracked were common. One participant noted: *"I never knew if it was just analyzing my movements or if it also kept my location."* Users valued being informed about data scope and storage.

Algorithmic Opacity. The "black box" nature of AI raised doubts, particularly among non-users. As one athlete put it: *"It tells me to adjust my pace, but I don't know why. That makes me cautious."* Lack of insight into decision-making limited full trust.

User Control Over Data. Having the option to customize data collection was linked to higher trust. A football player shared: *"I liked being able to switch off certain metrics I didn't care about—it made me feel more in control."*

Trust in Data Security. Fear of data breaches or misuse also shaped attitudes. One participant remarked: *"We've heard stories of data leaks. If my health data ends up public, that's a nightmare."* Users who trusted the app's encryption and storage practices reported higher comfort levels.

Communication Style. Personalized, motivational messaging improved perceptions of transparency and user-friendliness. Athletes favored messages that were encouraging without being intrusive: *"When it says 'great job, keep it up,' I feel like it understands me."*

Theme 3: Emotional and Relational Aspects of Trust

Human-AI Relationship. Participants described varying degrees of emotional connection with AI assistants. While some viewed them as supportive partners—*"It feels like a silent coach always there with me"*—others stressed the lack of empathy compared to human coaches.

Emotional Safety. Athletes valued the private and non-judgmental nature of AI feedback: *"I can mess up without anyone laughing at me, because it's just the app,"* shared a gymnast. This sense of safety encouraged experimentation and risk-taking in training.

Athlete Identity & Autonomy. Concerns emerged about AI undermining autonomy. *"Sometimes I felt like I was just following what it said, not making my own choices,"* noted one participant. Balancing athlete voice with AI input was seen as critical.

Motivation and Engagement. Features such as gamification, progress tracking, and encouragement messages boosted motivation. An athlete explained: *"When it shows me a streak of five days, I don't want to break it."* For some, this sense of accountability increased their reliance on the assistant.

Comparative Human Bond. Despite benefits, athletes emphasized that AI lacked the emotional bond provided by human coaches: *"A coach's words before a competition can inspire me. AI can't replicate that."* This highlighted limits in relational trust.

Theme 4: Ethical and Contextual Considerations

Fairness and Bias. Athletes expressed concerns about whether AI recommendations were equally beneficial across sports and body types. A martial artist noted: *"Sometimes the advice felt generic, like it wasn't made for someone with my style."* Perceptions of cultural or contextual bias weakened trust.

Accessibility and Equity. Economic barriers were highlighted, with athletes pointing out that not everyone could afford AI coaching tools. *"It's great, but it's for those who can pay for it. Many athletes in my sport can't,"* remarked one participant.

Professional Acceptance. Trust was also shaped by how coaches and staff perceived AI. Some participants described resistance: *"My coach said, 'Don't rely too much on that gadget,' so I hesitated to use it."* Wider professional endorsement was seen as crucial for legitimacy.

Long-term Consequences. Overreliance on AI emerged as a concern. *"What if I lose the ability to judge my own performance without the app?"* asked one athlete. Participants worried about AI gradually replacing human coaching, raising questions about sustainability.

Societal Perceptions. Peer and media attitudes influenced trust. Some athletes reported ridicule from teammates: *"They called me 'the robot guy' when I used it."* Conversely, positive portrayals in sports media fostered acceptance.

Ethical Responsibility. Questions arose about accountability in cases of injury or harm. *"If the AI gives wrong advice and I get hurt, who's responsible—the company or me?"* one athlete asked. Such concerns underscored the need for regulation.

Discussion and Conclusion

The purpose of this study was to explore the dimensions of trust in AI coaching assistants among elite athletes in Mexico, focusing on both users and non-users of such systems. Through thematic analysis of semi-structured interviews, four broad themes emerged: perceived reliability, transparency and understanding of AI decisions, emotional and relational aspects of trust, and ethical and contextual considerations. These findings provide valuable insights into how elite athletes construct and negotiate trust in AI technologies, highlighting both enablers and barriers that align with prior research in adjacent fields such as healthcare, finance, education, and marketing.

The first theme identified was the role of perceived reliability in shaping athletes' trust. Athletes emphasized the importance of accurate feedback, technical functionality, consistency across sessions, and integration with existing training systems. When systems provided precise and stable feedback, athletes reported heightened trust, while inconsistent outputs or technical malfunctions undermined confidence. These observations mirror findings in healthcare, where perceived accuracy and reliability are fundamental predictors of trust in AI-driven diagnostic systems (9, 10). In financial technologies, too, users' reliance on robo-advisors is strongly tied to perceptions of accurate and consistent recommendations (25).

Our findings also revealed that athletes compared AI reliability with the expertise of human coaches. While some valued the objectivity of AI—perceiving it as free from bias or favoritism—others were hesitant to fully rely on technology, particularly when its judgments diverged from human coaches' assessments. This ambivalence resonates with prior research on consumer interactions with AI chatbots, where users trust objective performance but remain cautious of situations where machine advice conflicts with human reasoning (22). In educational contexts, students similarly rely on AI tools when they demonstrate stable functionality, but express reservations when outcomes appear inconsistent (20, 21). Thus, the elite sports context reflects a broader trend: trust in AI depends on its ability to consistently deliver accurate, unbiased, and technically robust feedback.

The second theme relates to transparency and interpretability. Athletes expressed frustration when AI coaching assistants provided recommendations without sufficient explanation or when feedback was couched in technical jargon. Conversely, participants described increased trust when systems offered clear, comprehensible rationales. This finding aligns with research emphasizing that explainability is a cornerstone of trust-building in AI (6, 7). In healthcare, patients are more likely to adopt AI diagnostic tools when outputs are transparent and interpretable (1, 23). Similarly, in HR management, perceived transparency strongly mediates perceived usefulness (2).

The "black box" nature of many AI systems was a recurrent concern in our interviews, especially among non-users. This echoes broader skepticism about opaque AI processes in fields as diverse as marketing (14), digital governance (12, 27), and transportation (30). In sports, where performance and well-being are intimately tied to trust, athletes require not only accurate advice but also clear insight into how that advice is generated. Transparency in data handling also emerged as a factor, with participants seeking reassurance about what types of biometric data were collected, stored, and shared. Similar concerns have

been identified in AI-driven healthcare systems (15) and in marketing applications where consumer trust hinges on responsible data governance (13, 26). Our findings reinforce the need for AI developers in sports to prioritize explainability and transparency if trust is to be cultivated sustainably.

The third theme highlights the relational dimension of trust, emphasizing that athletes do not engage with AI purely as technical systems but as relational partners in training. Participants described varying levels of emotional connection with AI assistants. Some framed them as supportive companions that provided encouragement and accountability, while others lamented the absence of empathy and inspiration compared to human coaches. This duality parallels findings in education, where students value AI tools for structure and feedback but still prefer the motivational presence of human educators (20).

Athletes also underscored the importance of emotional safety, reporting that private, non-judgmental feedback reduced performance anxiety and encouraged experimentation. This resonates with consumer trust studies in e-commerce, where non-judgmental and supportive AI interactions increase satisfaction and loyalty (14). However, concerns about autonomy also emerged. Some participants feared that relying too heavily on AI might undermine their decision-making capacity, reflecting findings in generative AI adoption research that highlight the risk of overdependence (18, 28). The tension between support and autonomy underscores the need to balance AI's functional strengths with mechanisms that preserve athletes' agency.

The absence of a "human bond" was also salient in our study. Athletes stressed that no AI could replicate the inspiration, empathy, and intuitive understanding offered by experienced human coaches. This echoes broader critiques in trust research, which suggest that while AI can provide rational and consistent advice, it often lacks the socio-emotional dimensions that make human relationships meaningful (16, 29). In this way, the findings point to the irreplaceability of human connection in elite sports, positioning AI as a supplement rather than a substitute.

The final theme centers on ethical and contextual issues, particularly fairness, accessibility, accountability, and professional acceptance. Athletes raised concerns about bias in AI recommendations, noting that some outputs appeared too generic or misaligned with their body type or sport discipline. This reflects the broader literature, where biased algorithms undermine trust in domains such as healthcare (23), finance (25), and government systems (27). Addressing fairness in AI requires inclusive design and context-specific adaptation, a principle that holds equally true in sports coaching applications.

Accessibility and equity were also prominent in athletes' accounts, as not all could afford to use AI coaching systems. This mirrors findings from higher education research, where structural inequities limit access to advanced AI systems (4). Cost and language inclusivity remain critical barriers, suggesting that trust in AI is not solely a matter of design but also of accessibility.

Professional acceptance further shaped athletes' trust. Some participants reported resistance from coaches or support staff, who viewed AI assistants as distractions or competitors. Similar dynamics have been observed in workplace adoption studies, where managers' attitudes directly influence AI uptake (3, 19). In sports, the endorsement of professional coaches and institutions may be essential for legitimizing AI use and fostering trust.

Finally, questions of accountability were raised, particularly regarding responsibility in cases of harm. Athletes wondered whether developers, organizations, or users themselves should be liable for injuries caused by erroneous AI advice. These concerns reflect debates in AI ethics and governance, where responsibility and accountability are central (11, 12). The recognition that AI cannot be ethically neutral underscores the necessity of sport-specific regulatory frameworks.

Taken together, the findings reveal that trust in AI coaching assistants among elite athletes is multidimensional, shaped by perceptions of reliability, transparency, relational quality, and ethical governance. These factors align with broader trends in AI trust research across healthcare, finance, education, and marketing, while also highlighting context-specific challenges in sports. Athletes' dual emphasis on technical accuracy and human relational qualities suggests that AI in coaching will be most successful when positioned as a complement to, rather than a replacement for, human coaches. Moreover, ethical

considerations—ranging from fairness and accessibility to accountability—must be addressed to ensure equitable and trustworthy adoption.

Several limitations should be acknowledged. First, the study was conducted with a relatively small sample of 17 elite athletes from Mexico, which limits the generalizability of findings to other cultural and sporting contexts. While theoretical saturation was achieved, broader samples across diverse countries and disciplines could reveal additional perspectives. Second, the qualitative design provides rich, nuanced insights but does not allow for statistical generalization. Third, self-report bias may have influenced responses, as participants may have under- or over-emphasized their experiences with AI coaching assistants. Finally, the study focused exclusively on athletes' perspectives, without including coaches, developers, or sport administrators, whose viewpoints may also shape trust dynamics.

Future research could expand on these findings in several ways. Comparative cross-cultural studies would illuminate how cultural attitudes toward technology influence trust in AI coaching assistants. Quantitative approaches could complement the qualitative insights by testing the relative weight of reliability, transparency, relational, and ethical factors in predicting trust. Longitudinal research would also be valuable to track how trust evolves over time as athletes gain more experience with AI systems. Additionally, studies that include coaches, sport scientists, and technology developers could provide a more holistic understanding of the ecosystem of trust in sports AI. Finally, experimental interventions—such as the introduction of explainability features or collaborative human-AI coaching models—could empirically test strategies for fostering trust.

For practitioners, the findings underscore the importance of designing AI coaching assistants that balance technical precision with relational and ethical sensitivity. Developers should prioritize transparency and explainability, ensuring that athletes can understand and control how data are collected and used. Coaches and sport organizations should frame AI tools as complementary supports rather than replacements, thereby reducing resistance and enhancing acceptance. Efforts should also be made to improve accessibility by addressing cost barriers and ensuring language inclusivity. Lastly, governing bodies in sports should consider establishing regulatory frameworks for accountability and fairness in AI use, helping to build trust at both individual and institutional levels.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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