

Technology and AI for Impactful Coaching and Learning: Bridging Research, Practice, and Learning in Sports and Physical Education

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The rapid advancement of digital technologies and artificial intelligence (AI) is reshaping sports and physical education (PE), creating new opportunities to enhance coaching and teaching quality, instructional practice, and student-athlete learning. Empirical research shows that when technology is purposefully aligned with pedagogical intentions, it strengthens feedback processes, supports self-regulated learning, and improves decision-making for both coaches and educators. Video-based performance analysis enables precise, timely, and actionable feedback that improves technical execution and tactical awareness (Carson & Collins, 2016; Groom & Cushion, 2020). Wearable sensors and GPS systems provide objective data on training load and movement patterns, allowing practitioners to optimise performance and manage injury risk (Akenhead & Nassis, 2016). In PE settings, digital platforms and mobile applications facilitate differentiated instruction, enhance engagement, and support formative assessment practices that improve skill development and motivation (Casey et al., 2017). AI-driven tools amplify these benefits through automated tagging, pattern recognition, and personalised recommendations. Evidence shows that AI-assisted feedback enhances learning efficiency, scaffolds novice coaches' judgement, and deepens athletes' reflective capacity (Wang et al., 2023). Collectively, technology and AI contribute to more data-informed, learner-centred, and values-centric coaching and teaching approaches. When embedded within coherent pedagogical frameworks, these tools meaningfully expand coaches' and educators' capacity to deliver impactful learning experiences. In this panel discussion, the speakers will share how technology and AI are effectively used to facilitate self-reflection among coaches and educators and enhance students' and athletes' learning and performance.

Presentation Titles:

Dr. Koon Teck Koh: AI for Effective Coaching & Teaching in the 21st Century

Dr Qi Wang: Smart Campus Physical Education in China: Pathways and Challenges

Dr Fuxue Zhao: Shifting Paradigms in Physical Education: Toward AI-Enhanced Student Health Promotion.