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Athlete-Centred Digital Innovation in Sports Injury Management

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ABSTRACT

The sports sector has witnessed a rapid technological transformation, influencing training, performance, and injury management. Digital tools are increasingly integrated to assess physical demands, support rehabilitation, and enhance overall athletic well-being. This study explores the contribution of digital innovations from 2010 to 2023, highlighting their role as key drivers in reshaping athlete care.

This review aimed to apply athlete-centred digital innovations for performance enhancement, injury prevention and detection, personalised rehabilitation, psychological support, inclusivity, data-driven decision making, and athlete empowerment.

A focused literature review was conducted through Google Scholar and PubMed using keywords such as "wearable sensors" and "biometric tracking." Ten peer-reviewed studies published between 2010 and 2023 were analysed to examine recent advancements in digital tools relevant to sports injury management.

Wearable devices, biometric monitoring, and motion-tracking technologies are central to athlete-centred digital health. These tools enable continuous monitoring, optimise training regimens, and contribute to early injury detection. Evidence indicates that integrating digital health with sports science improves performance outcomes, supports recovery, and enhances rehabilitation strategies. Innovations such as virtual reality, social media platforms, and online performance tracking provide additional dimensions of support by addressing psychological health, engagement, and accessibility.

Digital innovations are redefining approaches to sports injury management and athlete performance. Research highlights their capacity to provide objective measurements, refine training techniques, and promote inclusivity. Athlete-centred applications of these technologies empower individuals, improve recovery processes, and enable data-informed decisions, underscoring their growing significance in modern sports science and healthcare.

Keywords: Biometric tracking, Digitalisation, Virtual coaching, Wearable sensors

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