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Special Issue Reprint

Dynamic Insights

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This Special Issue presents contemporary research that advances the understanding of human movement in sport, rehabilitation, and performance contexts through biomechanical analysis and emerging technologies. The contributions illustrate how motion analysis, neuromuscular assessment, and data-driven approaches can enhance performance optimisation, injury prevention, and athlete development. Several articles highlight the growing role of advanced analytical techniques in understanding movement mechanics and fatigue. For example, Daniel et al. (2026) review the methodological challenges associated with assessing muscle fatigue during dynamic movement using surface electromyography, identifying limitations in experimental design while outlining new research directions for fatigue analysis. Other studies illustrate the integration of motion analysis and technology in applied sport and clinical settings. Lee and Yu (2025) examine the effectiveness of a personalised augmented reality exercise programme for improving physical fitness, demonstrating the potential of immersive technologies to support training outside laboratory environments. Together with research investigating neuromuscular training adaptations, injury-related loading patterns in runners, and task-specific kinematic changes in sports such as golf, the papers in this Special Issue demonstrate the breadth of contemporary biomechanics research. Collectively, they illustrate how motion analysis and emerging technologies are reshaping the evaluation of sport performance, biomechanics, and rehabilitation.

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