

# Intelligent Wearable Device the Future of Sports Medicine: A Narrative Review

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## ABSTRACT

Injuries resulting from sports can pose a substantial problem for players' economic well-being and quality of life. A new age of proactive injury prevention has begun with the recent integration of Artificial Intelligence (AI) and Inertial Measurement Unit (IMU) devices. IMU provides real-time objective data on the athletes' movement, fatigue and workload allowing early detection of overuse or improper technique. These sensors combine accelerometers, gyroscope and magnetometers to track acceleration, orientation and direction. AI provides valuable direction for the analysis of this data to make adjustments to the training.

This review aimed to explore the impact of AI and IMU wearables in sports physiotherapy to provide sports performance monitoring, prevention of injury and optimisation in training. The databases

PubMed, Google Scholar and Science Direct were researched thoroughly, duplicates were removed and final data were extracted. The database search yielded a total of 250 articles, of which only five met the inclusion criteria.

AI-powered wearables have enabled athletes to have better athletic performance, physiological efficiency and reduced injury risk. AI assisted training increased sprint speed, endurance, and shortened muscle recovery time and prevented injury, which ultimately raised athletes' performance. AI and wearable technology have completely transformed sports training from injury prevention and diagnosis to recovery and performance enhancement.

**Keywords:** Artificial intelligence rehabilitation, Inertial measurement unit, Sports injury prevention, Technology, Wearable devices

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