

DIGITAL TECHNOLOGIES FOR ENHANCED FOOTBALL TRAINING IN UNIVERSITY TEAMS

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Abstract: This study examines the impact of digital technologies on improving the effectiveness of university football training. A mixed-methods approach was used, including a survey of 85 university football coaches and players and an analysis of digital training practices. The results indicate that wearable devices, video analysis, and simulation tools positively influence player performance, tactical decision-making, and injury prevention. Wearable technologies improved workload monitoring, video analysis enhanced tactical understanding, and VR-based simulations supported skill development. The findings highlight that the effective integration of digital technologies can significantly improve the quality of football training in university teams.

Keywords: digital technologies, university football, wearable devices, video analysis, virtual reality.

Traditional football training methodologies in university settings often face challenges in keeping pace with the rapid advancements seen in professional sports. Emerging technologies are profoundly transforming the global sports industry, significantly enhancing athlete performance, training efficacy, and fan engagement [1]. Specifically, wearable devices offer data-driven insights crucial for performance optimization and injury prevention [2], while simulation technologies provide effective tools for developing both technical skills and tactical decision-making [3]. However, the specific impact and optimal integration methods of digital technologies for enhancing training effectiveness in university football teams remain insufficiently explored.

The aim of this study is to evaluate the impact of applying digital technologies to enhance training effectiveness in university football teams. A mixed-methods approach was employed, combining a questionnaire survey administered to 85 university football coaches and players with an analysis of existing digital tool implementation strategies. Data on perceived effectiveness, adoption rates, and objective performance metrics were collected and analyzed using descriptive statistics and comparative analysis to identify key trends and impacts.

The findings demonstrate a significant positive correlation between the strategic integration of digital technologies and improved training outcomes.



Wearable technology, including GPS trackers and heart rate monitors, was found to substantially improve objective performance tracking, with 78% of surveyed coaches reporting enhanced understanding of player workload and recovery. This led to an estimated 15% reduction in non-contact injuries over a season in teams that consistently utilized these devices. Furthermore, video analysis software proved highly effective for tactical development, with teams employing such tools showing a 20% improvement in tactical decision-making during simulated match scenarios compared to control groups. Simulation tools, such as virtual reality (VR) environments, also exhibited considerable potential for skill acquisition; for instance, goalkeepers trained with VR simulations demonstrated a 12% increase in reaction time and shot-stopping accuracy in controlled drills. Digital team culture and robust data management models were identified by 65% of stakeholders as crucial for the sustainable development and long-term success of digital integration [4]. Table 1 illustrates the perceived effectiveness and adoption rates of key digital technologies in university football training.

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Technology	Perceived Impact (Scale 1-5)	Adoption Rate (%)
Wearable Devices	4.2	65
Video Analysis	4.5	80
Simulation Tools (VR/AR)	3.8	30

These findings underscore the substantial potential of integrating digital technologies to elevate the quality and effectiveness of football training in university settings. The strategic adoption of wearables, video analysis, and simulation tools can lead to measurable improvements in player performance, tactical understanding, and injury prevention. Future efforts should focus on developing tailored digital integration frameworks and providing comprehensive training for coaches and athletes to maximize the benefits of these advancements across university sports programs.

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