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Investigating the contribution of information technology to sports and games

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Abstract

The realm of physical education and sports holds substantial potential to influence the role of technology in our lives by thoughtfully evaluating the advantages and drawbacks of new information technologies on the holistic well-being of individuals, encompassing both body and mind. Information technology significantly shapes human existence, particularly in the domain of sports and games, with its rapid expansion. Notably, novel devices serve diverse purposes such as aiding referees in decision-making and quantifying athletes' performance during games, thereby assisting coaches in devising training programs and game strategies. This application aids in minimizing errors in organizing and managing various sports and games on a global scale. Information technology has forged scientific disciplines, fostering research endeavors, enhancing learning and coaching methodologies, advancing biomechanical analyses, and propelling field research. The impact of technology in sports and games is discernible in cricket, athletics, and basketball. Presently, five innovative technologies are revolutionizing the sports industry: instant replay systems, sensor tools, precise timing mechanisms, RFID chips, and advancements in equipment development.

Keywords: Athletics, basketball, cricket, information technology, physical education, sports and games

Introduction

Technology encompasses both tangible and intangible entities resulting from mental and physical endeavors aimed at creating value. In sports and games, technology pertains to tools and machinery utilized to address real-world challenges. Its role in sports mirrors its influence across various facets of life. Advancements in technology confer competitive edges to athletes through specialized equipment, a trend viewed by many as conflicting with the ethos of sportsmanship. Incorporating cutting-edge technology fosters safety improvements in sports, exemplified by innovations like smart helmets and wearable tech that enable enhanced monitoring of potentially injurious incidents, facilitating prompt and efficient medical intervention.

One exemplary application of technology in modern sports is instant replay, affording officials a secondary perspective on sporting events. It finds utility in cricket, American Football, rugby, soccer, and even combat sports, offering precision in analyzing crucial moments. Sensor tools serve to ascertain the validity of goals, particularly when the naked eye fails to discern critical details.

Various sports deploy specific sensor technologies, like cricket's Hawk-Eye determining ball trajectory and tennis employing laser-based systems for boundary judgments. Timing systems have evolved, eliminating reaction time discrepancies by employing synchronized clocks triggered by starter signals or employing touch pads and wearable sensors in swimming events. RFID chips, either active or passive, aid in precise timing and tracking contestants' locations during long-distance races.

Equipment development stands as a pivotal aspect of sports safety, with manufacturers devising mechanisms to curtail athlete injuries. Specialized helmets in the National Football League, designed to absorb impact and prevent head and neck injuries, exemplify this technology-driven safety initiative. Analogously, similar safety-focused technology is integrated into auto racing and hockey.

The pervasive influence of technology manifests in today's sports arena, where governing bodies, both professional and amateur, embrace innovative gears and gadgets to safeguard athletes and streamline officiation processes.

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The information age emerged in the 1970s, revolutionizing society with the inception of the World Wide Web (the web). Technological evolution reshaped communication channels and the nature of conveyed messages. Computer technology established protocols in the early 1960s, eventually giving rise to the internet in 1969. Subsequently, the development of Hypertext Markup Language (HTML) in 1989 laid the groundwork for the web's expansion in 1993, introducing it to the public sphere. During the nascent stage of the web, a multitude of elements such as email, blogs, Facebook, Twitter, numerous websites, journals, YouTube, and more were incorporated.

The integration of information technology in sports administration is evident through trend analysis conducted by sports administrators, franchises, and leagues. Basic functions like storing data for statistics, updating game scores, or sharing live game images for fans were pivotal. Formerly, tasks like compiling athlete, manager, official, timekeeper, driver, and medical staff rosters were laborious manual processes. However, with IT implementation in sports, team administration streamlined roster creation and scheduling. Modern sports venues boast sophisticated scoreboards programmed to relay updated statistics and information directly to computer systems. This technological reliance has automated nearly every facet of sports, resonating with global spectators.

The internet and web services have democratized access to live sports events globally. Professional sports have long utilized instant replay and high-tech aids to assist referees in accurate decision-making. Video replay systems have been integral to scrutinizing referees' calls across various sports. Basketball referees leverage replay systems for time-bound shot executions, while cricket incorporates a third umpire for specific scenarios, using wireless communication for off-field umpires. Football/soccer utilizes replays to ascertain offside decisions and goal-line crossings.

Computer

Computers, electronic devices adept at storing, retrieving, and processing qualitative and quantitative data swiftly and accurately, have revolutionized various aspects of sports. They facilitate document production, lesson planning, score management, and employ video units, heart rate monitors, and educational software. Motion analysis via computers enhances learning experiences by dissecting movements, aiding athletes in refining their motor skills and performance. Specialized software delves into the intricacies of movements, allowing teachers to swiftly correct and enhance pupils' learning experiences. Sports-specific software, like Professional Evolution Soccer (PES), serves as a tool for learners to engage with the sport, identifying skills, rules, and evaluating officiating.

Video Conference

Facilitating connections between individuals at disparate locations, video conferencing enables simultaneous audiovisual communication. This technological advancement revolutionizes sports colleges, libraries, and formal instruction platforms, fostering the exchange of coaching strategies across distances. In physical education, audio aids like drums or piano, both direct and indirect, serve as compelling multimedia tools, engaging students and enhancing their active participation. Utilizing a radio cassette recorder equipped with CD/DVD capabilities aids in acclimatizing students to diverse auditory environments, reinforcing movement paces and

competitive conditions. Employing digital cameras during instructional sessions allows for swift verification of students' positioning and postures, while also emphasizing body segment alignment during motor skill performances. These technological potentials significantly augment the teaching and learning experiences within physical education.

Internet-Based Chat

Interactive online chat platforms revolutionize communication by facilitating discourse among experts, colleagues, and community members. Through internet chat functionalities, physical educators engage in real-time discussions, both publicly on websites and privately within networks like extranets. Distance ceases to be a barrier as team members, classmates, and course participants convene effortlessly for online meetings. These virtual spaces serve as meeting grounds for intimate groups, fostering discussions pertinent to physical education. Moreover, these platforms enable collective engagement in substantial online events where experts, celebrities, instructors, coaches, and teachers interact, addressing academic issues within the realm of physical education and sports.

Applications in Sports and Physical Education

The domain of physical education and sports contributes significantly to our technological landscape by conscientiously assessing the merits and drawbacks of emerging information technologies on the holistic well-being of individuals—both physically and mentally. Educational institutions have embraced IT and computer-based systems to deliver structured and disciplined education, marking a compelling and authentic innovation. A spectrum of programs aids in various tasks, from tracking and grading to conducting health assessments, monitoring research endeavors, and analyzing sports performances. These technological integrations underscore the evolution of education and its multidimensional impact on athletic development and scholarly pursuits within physical education and sports.

The Advantages of Information Technology in Physical Education

The influence of information technology in physical education has notably transformed classrooms, leveraging apps, online videos, personal computers, laptops, Zoom, Google Meets, and Google Classroom. These digital tools empower instructors to diversify teaching methods, emphasizing the significance of fitness goals and strategic planning through technological integration. Pedometers and heart rate monitors exemplify technology's application in measuring and monitoring physical activity within educational settings. The overarching objective remains cultivating physically literate individuals equipped with knowledge, skills, and confidence for sustained physical wellbeing.

Benefits of Information Technology Contribution in Sports and Games

Increase accuracy in time measurements of sport performance. Enabling referees, umpires, and sport officials to make better decisions on rule infringements. Improvements in the design of sport equipment and apparel. Providing spectators with better viewing of sport performance. The game-changing benefits of technology in sports and games are weather control, improved field conditions, better viewing experience, better coaching and scouting, modernized training, and make the game fair.

In sports and games, the infusion of information technology yields heightened accuracy in performance timekeeping and aids officials in making well-informed decisions pertaining to rule adherence. Additionally, technological advancements enhance sports equipment and apparel design while offering spectators a superior viewing experience. The transformative benefits encompass weather management, improved field conditions, enhanced coaching and scouting, modernized training methodologies, and a drive towards fairness within the games.

The future of sports technology heralds innovation as a catalyst for refining accuracy and fairness. Technological advancements bolster athlete safety, augment fan engagement, and revolutionize the design of sports equipment and attire, elevating their functionality and performance capabilities.

Cricket

In cricket, technological aids such as Hawkeye and the Snick-o-Meter contribute to informed decision-making, ensuring fairness and accuracy during gameplay. Athletics leverages sophisticated tools like computer simulations, advanced cameras, and intricate mathematical models to deconstruct physical movements for improvement.

Athletics

Advanced technological tools like computer simulations, high-grade video cameras, wind tunnels, and intricate mathematical and physics models empower athletes to dissect their physical movements into constituent parts, allowing them to identify flaws or avenues for improvement.

Basketball

Basketball embraces technology through systems like replay vision, enhancing referee judgment and aiding player performance analysis, fostering better training methodologies and game strategies.

Conclusion

The pivotal role of information technology in fostering the advancement of physical education is significant. It is instrumental not only in nurturing fair play in sports and games but also in catalyzing numerous transformative changes and developments aimed at elevating the standards of sporting activities in the contemporary era. Leveraging technology for teaching methodologies enhances sportsmanship and augments the efficacy of coaching, including the utilization of scouting for future developmental strategies. Consequently, my research underscores that the contribution of Information Technology is rapidly evolving and embracing new trends that are poised to reshape the future landscape of global sports and games.

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