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# Motion Capture Technology: Applications in Sports Science

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**ABSTRACT**

Motion capture (MoCap) technology has emerged as a transformative tool in the field of sports science, enabling the precise tracking and analysis of human motion to improve athletic performance, prevent injuries, and optimize training. From its historical roots in cinematographic analysis to the advent of wearable and computer vision-based systems, MoCap technology has evolved significantly in accuracy, portability, and applicability across diverse sports. This paper examines the core types and components of motion capture systems, their critical role in sports training, rehabilitation, and performance evaluation, and how they support biomechanical analysis in both controlled and real-world settings. Additionally, the paper examines ethical considerations surrounding data ownership and privacy, and projects future trends in the integration of artificial intelligence, multimodal data sources, and low-cost hardware into motion capture systems. Overall, motion capture is revolutionizing how athletes are trained, evaluated, and supported, offering new possibilities for performance enhancement and injury prevention in both professional and amateur athletics.

**Keywords:** Motion Capture Technology, Sports Science, Biomechanics, Athletic Performance, Wearable Sensors, Computer Vision

## INTRODUCTION

Motion capture technology has emerged as a crucial component in understanding, analyzing, and enhancing athletic performance. Motion capture refers to the process of recording and translating the movement of objects or people into digital data. Data recorded using motion capture systems can be synchronized with other modalities, such as pressure and video data, during post-processing. Data obtained can be converted into kinematic and kinetic parameters, which can be scientifically analyzed for further understanding of the underlying mechanics of the motion being captured or the development of methods for improvement. Indispensable for viewing, understanding, and reliving key moments in sports, motion capture technology has been used in professional sports globally, with the expressed aim of improving team tactics as well as individual skills. Significant investments have been made in establishing large studio facilities for motion capture, with similar facilities established for sports science at premier educational institutions. Such facilities, utilizing state-of-the-art equipment, are crucial for optimizing an athlete's skills, techniques, and strategies, and they enable performance to be examined in great detail using powerful computers, with that data used to provide teams with the feedback they need to help coach their players to conserve energy, improve form, and gain a competitive advantage [1, 2].

### History of Motion Capture in Sports

Motion capture technology has become essential in analyzing and improving athletic performance, originating in the 19th century with early studies of human motor activity. The first systems emerged in this period, and in the 1950s, motion picture cameras allowed for the quantification of athletic performance. The development of 3D motion capture systems in the 1980s and 1990s established cinematography as a primary tool for biomechanical analysis, providing detailed kinematic and kinetic information. Research initially focused on sports like running and throwing. The early 21st century saw advancements in wireless systems, allowing for field-based biomechanical analysis using wearable sensor technology, benefiting coaching, rehabilitation, and injury prevention across various sports, such as winter sports, golf, and tennis. Meanwhile, growth in computer hardware and machine learning has

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improved the accuracy and reliability of computer vision-based motion capture. This progress spans sports scenarios including basketball, soccer, swimming, and ping pong. Furthermore, multimodal motion capture technology is making waves in surveillance, security, player development, and injury reduction. By integrating data from multiple sources and leveraging AI tools, it aids sports researchers in analyzing complex scenarios, proving effective in investigating player teamwork and interaction in sports like basketball, soccer, esports, and tabletop games. [3, 4].



## Types of Motion Capture Systems

Motion capture (MC) systems can be classified into two major categories: (1) traditional optical systems, including optical marker-based and marker-less systems, and (2) computer vision-based motion capture technology. Among these, traditional optical systems have been the gold standard in the field of motion capture and 3D reconstruction for several decades. However, in recent years, the rapid development and application of deep learning and artificial intelligence techniques have paved the robust motion capture technology. This review thoroughly analyzed various types of motion capture technologies under different application scenarios, providing researchers and practitioners with more insights and guidance for choosing appropriate motion capture systems and methods. Cinematography capture systems are generally considered the gold standard in the field of motion capture. They usually combine multiple cameras to simultaneously capture the target motion from different angles, thus reliably calculating the target's trajectory in its coordinate system. The performance of optical triangulation in motion capture systems is related to several factors, including the relative positions of the cameras, the distance between the cameras and the object to be captured, the number and quality of optical markers, the specific modeling approach of the object, and the movement of the markers in the tracking space. The output parameters of customized capture systems include the spatial coordinates (x, y, and z), joint angles, and angular velocity (Va), linear velocity, and acceleration of each point (An) on the target body. More comprehensive tools require higher costs and more installations. This is a drawback of optical systems. Wireless marker-based systems typically utilize MEMS (Micro-electro-mechanical system) sensors, which contain a three-dimensional accelerometer, gyroscope, and magnetometer to compute relative angular position and linear acceleration in real-time on a dedicated microcontroller. MEMS-based motion capture systems are more portable and require less setup effort. The output parameters of the systems are typically joint angles, bandwidth, and angular stiffness. With the rapid advancement of wearable sensor technology, there has been rising interest in studying motion capture systems that employ inertial measurement sensors (IMUs) to track three-dimensional motion. Powerful analysis algorithms enable these approaches to achieve comparable accuracy performance to optical systems easily, while the flexibility and portability of these items in diverse environments under real-world applications are worth considering [5, 6].

## Key Components of Motion Capture Systems

Motion capture systems consist of various components: data collection, transmission, storage, analysis devices, markers, and a recording medium. High-performance systems with 22 infrared cameras optimize parameters like lens, shutter speed, and exposure, achieving linear accuracy of ≤0.03 mm and angular accuracy of ≤0.007 degrees. Alternative systems use color cameras for movement detection in uncontrolled lighting, unaffected by target color-blindness. Wireless sensors, including accelerometers and gyroscopes, measure movement and provide high accuracy without needing cameras, fitting comfortably on the body. Most have validated accuracy within 4 degrees for angles and 2.5% for speed changes, although complex calibrations require physical inspection. A data cable connects storage devices with on-board analysis for remote data capture. Unlike local-only devices, mainframes capture raw data and convert formats, removing offsets and performing transformations. Professional software, compatible with mainstream motion analysis tools, processes over 8000 frames per second for gait and step analysis. After recording, data sets undergo signal processing, which includes cursor calibration, frame delay compensation, zero-point offset removal, cutoff frequency determination, and step frequency calculation. [7, 8].

## Applications In Sports Training

Motion capture technology has diverse applications in sports training, providing objective evaluations of athlete performance and shaping effective training protocols. Research has explored common challenges in many sports through the systematic analysis of athletic motion. This technology is also essential for assessing pre-season fitness, executing rehabilitation exercises, and analyzing post-game physiological demands. A notable advancement has been the development of performance assessment tools that can be

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utilized while scouts observe athletes in action. These assessments can be customized for different sports disciplines, with peak sprinting speed frequently serving as a key performance indicator. The technique varies among athletes within disciplines that require distinct approaches. Using sensors equipped with accelerometers and gyroscopes, this study examined a clear template for triple-jump take-off and landing, offering insights into these phases, facilitating individualized coaching to enhance jump techniques and reduce injury risks. Strength training is crucial in preparing athletes for contact sports, helping to manage injury risks. Athletes need to perform strength training at suitable intensity, frequency, duration, and modality to target relevant muscle groups. High repetition thresholds from motion capture data serve as an objective measure of load and injury risk. The ability to quantify performance using GPS data fosters strong stakeholder engagement, particularly beneficial for smaller systems wanting to charge for services. New possibilities exist for automating data logging and enhancing the analysis of multi-sensor data across varied sporting contexts. Advances in motion capture make dynamic measurements in regular settings more practical. Athletes are evaluated within their training or competitive environments, which involve fluctuating velocities, accelerations, and resistances, thereby challenging conventional biomedical models. Novel algorithms have been created or refined to adjust for these varying dynamics when estimating joint angles. [9, 10].



**Applications in Sports Rehabilitation**

Most injuries in sport are due to the motions leading to some positions that exceed anatomical limits of the human skeleton. Indeed, most catastrophic injuries happen at boundary conditions. Based on a benchmark testing of a specific event, simulations/benchmarks of cases at the boundaries of body motion can be reproduced to recreate potentially serious injuries and to help design and improve safety equipment to alleviate dangerous collisions. The biomechanics of elite athletes is of great interest to coaches and sport's governing bodies. 3D biomechanics programs allow for lab environments with controlled motion. However, it is complicated and costly to transfer methodologies developed there to the field or competitive conditions. In conjunction with multi-camera video systems and computer vision, 3D motion capture with trail markers on the athletes allows for a wide range of motion analysis. Trajectory of field position over time can also be acquired and tracked; through combining the two information sets, techniques beyond simple extraction of events can be performed. In particular, one system in operation examines lateral control of alley-oop actions in basketball. Optical human motion measurement systems are employed for various applications. Although such systems are known for their accuracy, they do not have total motion analysis ability in the real world, as it needs pre-defined, calibrated series of cameras that detect bright markers, which inhibit measurement in low light levels, at a distance greater than 25m and with general coordination of the human operator. In contrast, monocular video cameras are widely used for various scenarios, like filming people walking in a city or tracking a lone player or a basketball in a sports court. Although monocular video cameras can explore unconstrained environments, motion measurement techniques based on monocular video imaging do not have sufficient performance [11, 12].

**Applications In Sports Performance Analysis**

Motion capture technology (MCT) has seen significant application in sports performance analysis. The potential applications of motion capture technology in the field of sports performance are reviewed and classified into seven types, including competition recording, technical analysis, commercial motion capture, training, technique adjustment, athletic assessment, sports injury medicine, and rehabilitation. Each application category presents motion capture's strengths and challenges. The seven applications of motion capture technology in the context of sports have been reviewed and classified. Apart from the clear glimpses into each application's use, strength, challenges, and shortcomings, potential future development directions are also proposed in sports competition, training, and sports injury medicine. Traditional sports motion capture typically utilizes video analysis of competitions at a distance, generating a wealth of player movement details. However, video analysis cannot provide sufficient information to improve player movement and the accuracy of quantification. Attention has now shifted to a three-dimensional (3D) multi-camera sports performance analysis system. This professional system can capture reasonably high-resolution motion information compared to a single RGB camera. A feasible index in this sports motion capture system can assist coaches in better understanding the development of players' skills. An accurate anthropometric calibration system can recover accurate deformation of surface-based 3D anatomical modeling on a camera of each public camera view. Video feedback from the camera becomes a dominant tool to evaluate gestures in coaching and training. However, joint surface-based markers focus on the analysis of specific bodily segments, which does not support the entire body as

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a whole. A semi-automatic H-shape skeleton modeling method that obtains the optimal skeleton joints was proposed. Motion features are the movement information, evaluative and quantifiable indices for athletes' performance. Body and joint angles, speed, length, and maximum width play an important role in indicating players' muscle strength exertion. The umbrella-patterned index was proposed to ensure global multi-joint angle synchronization and frame synchronization for analyzing whole body motion [13, 14].



## Impact on Athlete Training Regimens

Motion capture technology has recently become one of the most crucial tools to optimize athletes' skills, techniques, and strategies. It has received considerable attention from researchers as a powerful technology to collect athletes' motion data and give feedback. Automated feedback can be generated using motion data and detailed comparisons of the signed motion data with the reference ones or the ideal motion data of the current action knowledge. Feedback on an athlete's motion accuracy helps to improve the correction of their techniques. Implementing the advanced technologies focuses on providing accurate and detailed information on the current motion state of the athletes. Such motion data can be collected and then mapped to visual results to analyze the skill or technique level and identify motion patterns. Different comparative studies of motion capture technology with distinct features and applications need to be carried out to help researchers select suitable motion capture technology for motions or sports scenarios. Motion capture technology is often classified according to the capturing modes of its sensors, including cinematography motion capture technology, vision-based motion capture technology, and sensor-based motion capture technology. In-sport application of motion capture technology in training and coaching is highlighted as motion capture technology is becoming increasingly portable and affordable. Meanwhile, the advancement in practice-based research makes it highly desirable to attach high-order biomechanical biofeedback to surface-established analytics [15, 16].

## Ethical Considerations in Motion Capture

With rapid technological advancement, sports teams are exploring motion-capture analysis systems. Similar to scientific fields, sports organizations should establish ethics committees to address potential concerns, particularly regarding player data ownership. As the National Rugby League (NRL) prepares for such technologies, proactive strategies are essential to prevent issues already encountered by other leagues. Future systems may utilize sensors on uniforms or GPS in shoes, raising concerns about privacy due to monitoring vital signs and player conditions. Players should have ownership of their data, similar to body-camera policies in policing, but current laws may limit this. Only federations might have the resources to manage this data, leading to potential licensing or contractual requirements that could disadvantage players. Since independent appeals against federations are absent in organizations like the NRL, players could face unjust arrangements favoring federations over clubs. Clubs must remain cautious; the initial focus on match footage analysis has led some to risk using subpar technology, leaving them behind competitors who adapt effectively. Clubs that integrate advanced systems and capture footage promptly will gain a significant advantage over those hesitant to embrace necessary cultural and technological shifts despite the associated costs and risks [17, 18].

## Future Trends in Motion Capture Technology

Motion capture (MoCap) technology records motion parameters and translates them into digital formats, enabling the analysis of motion behavior with highly accurate and objective data. In sports science, MoCap technology measures athletes' skills, techniques, and strategies in various sports scenarios, aiming to optimize performance and enhance competition results. Matched with expert knowledge from sports coaches, motion data translates directly into targeted feedback, such as improving skills by adjusting biomechanical parameters or optimizing play tactics by rematching positions of defenders and attackers. Besides, MoCap technology plays a useful role in developing sports equipment to maintain compliance with regulations and prevent injuries. Based on the technology used, MoCap technology can be broadly classified into four promising categories: cinematography-based, wearable sensor-based, computer vision-based, and multimodal MoCap technology. Cinematography motion capture (cMoCap) technology, a relative-to-dollar motion capture solution using optical cameras, projectors, and markers, remains a mature and mainstream approach for prestigious sports research. cMoCap systems perform accurate reconstruction of marked frames in 2D and motion data in 3D, which serve as biomechanical parameters to characterize an athlete's motion behavior based on sensor placement. However, these systems have an explicit limitation in short-term observations of action sequences due to the occlusion of sensors and markers. Moreover, cMoCap systems are limited in outdoor capture and processing speed due to

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dependence on post-processing, while the available commercial solutions remain considerably costly, making the technology less approachable to common teams. Wearable sensor-based motion capture (wMoCap) technology, a low-threshold motion capture solution directly recording inertia motion data, has emerged as a reliable tool to measure athletes' performance in various sports competitions. In addition to other sensors like GPS and electromyography, researchers have conducted in-depth investigations into display-aided gait analysis, athletic jump physiology, and closed-suit systems for rehabilitation training and commercial videogames. However, short- and long-term validation remains a challenge for wMoCap technology in sports scenario applications, and performance always suffers when using one or two available sensors, in terms of counting accuracy and detection reliability. Computer vision-based motion capture (CVMoCap) technology, a low-cost motion capture solution employing cameras and computers, has rapidly evolved towards a less-obtrusive, runner-friendly, and outdoor-friendly apparatus [19, 20].

## Case Studies of Motion Capture in Sports

Motion capture technology is essential for optimizing athletes' skills, providing detailed feedback on motion data. Recent advancements focus on improving accuracy and reliability in capturing sports performance in 2D/3D. Classifying motion capture technology by intention (objective vs. subjective) and modality (marker-based vs. markerless) helps researchers grasp new developments. A review of the last decade's literature summarizes the current status of sports applications, noting advantages and limitations in research topics, sports disciplines, and common practices, aiding methodology selection for researchers. With Olympic Games and high-level competitions emphasizing performance optimization, many researchers and engineers are innovating tools for continuous athlete training worldwide. Historically, researchers used laboratory settings with motion capture technology to assess athletes' skills and strategies. However, the complex data can be challenging for coaches and trainers accustomed to qualitative analysis. To address this, deep learning and hybrid sensors are being utilized to create tools that simplify performance quantification, enhancing monitoring and evaluation in real-time during training. Increased demand for on-site analysis systems reflects the need for effective tools in sports training. [21, 22].

## Challenges and Limitations of Motion Capture

The suitability of different motion capture techniques for tracking human postures in sports scenarios is discussed in depth. For the motion capture technologies surveyed, four characteristics are considered to evaluate their applicable scenarios: cost of devices, tracking accuracy and update rate, portability and configuration complexity, and topology construction capability. A reasonable purchase and application plan is provided for coaches and researchers based on their edge scenarios. These motion capture technologies should be operational and thrive in sports improvement research and athlete training practices. As a crucial factor in evaluating technology, cost plays an important role in technology selection. The complexity of device configuration also plays a significant role in the application of motion capture technology. Commercially available positioning and posture tracking technologies in the past few decades can be similarly classified based on the aforementioned four capabilities. There may also be development trends and problems in each classification, which are comprehensively summarized in this section. Optical systems equipped with multiple cameras are superior to other types of motion capture technologies in positioning and posture tracking accuracy. Although emerging passive markers have advantages in cost, portability, and in-depth application scenarios, traditional camera systems with low-cost active markers are still the preferred solution for typical academic scenarios. However, these setups require complex configuration, camera calibration, and troubleshooting. Moreover, the need for a guaranteed configuration during continuous operation and post-processing may hinder the application in the professional sports field. Thus, when there's a small space for camera installation and movement, small motion capture area requirements, and controlling whether to display information, these optical-based motion capture systems, grounded on a prominent academic background, are suitable solutions. A variety of optical camera systems with an established equipment setup can be considered prior plans for a relatively short tilling period for new sports research. However, coaching-grade technological choices are easily distinguished by subjects already used to these setups. When not for post processing, such cameras require longer formation and calibration processes, hindering their applications in professional sports fields [23, 24].

## CONCLUSION

Motion capture technology stands at the forefront of innovation in sports science, offering powerful tools to capture, interpret, and leverage human movement data for enhanced athletic performance. By enabling

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detailed biomechanical analysis, MoCap systems contribute significantly to sports training, injury rehabilitation, and real-time performance monitoring. The shift from traditional optical systems to wearable and AI-driven solutions has expanded their accessibility and practicality, allowing athletes to benefit from advanced feedback even in natural sporting environments. While the technology promises enormous benefits, ethical issues related to data privacy and athlete autonomy must be addressed to ensure fair and transparent use. Looking ahead, the integration of AI, machine learning, and multimodal capture systems will continue to refine motion capture capabilities, making it an indispensable asset in modern sports practice and research.



**REFERENCES**


1. Suo X, Tang W, Li Z. Motion capture technology in sports scenarios: a Survey. Sensors. 2024 May 6;24(9):2947.
2. Chen H. Advancements in Human Motion Capture Technology for Sports: A Comprehensive Review. Sensors & Materials. 2024 Jul 15;36.
3. Qiu S, Hao Z, Wang Z, Liu L, Liu J, Zhao H, Fortino G. Sensor combination selection strategy for kayak cycle phase segmentation based on body sensor networks. IEEE Internet of Things Journal. 2021 Aug 5;9(6):4190-201. [HTML]
4. Zhang Q, Jin T, Cai J, Xu L, He T, Wang T, Tian Y, Li L, Peng Y, Lee C. Wearable triboelectric sensors enabled gait analysis and waist motion capture for IoT-based smart healthcare applications. Advanced Science. 2022 Feb;9(4):2103694. wiley.com
5. Zeng J, He X, Hu Y, Zhang Y, Yang H, Zhou S. Research status of data application based on optical motion capture technology. In2021 2nd International Conference on Artificial Intelligence and Information Systems 2021 May 28 (pp. 1-8). [HTML]
6. Debnath B, O'brien M, Yamaguchi M, Behera A. A review of computer vision-based approaches for physical rehabilitation and assessment. Multimedia Systems. 2022 Feb;28(1):209-39.
7. Touati S, Boumediri H, Karmi Y, Chitour M, Boumediri K, Zemmouri A, Moussa A, Fernandes F. Performance analysis of steel W18CR4V grinding using RSM, DNN-GA, KNN, LM, DT, SVM models, and optimization via desirability function and MOGWO. Heliyon. 2025 Feb 28;11(4). cell.com
8. Rezvanian K, Panickar R, Soso F, Rangari V. Mathematical Modeling and Optimization of Poly (Ethylene Vinyl Alcohol) Film Thickness and Ethylene Composition Based on I-Optimal Design. Journal of Applied Polymer Science. 2025 May 10;142(18):e56827. researchgate.net
9. Aresta S, Musci M, Bottiglione F, Moretti L, Moretti B, Bortone I. Motion Technologies in Support of Fence Athletes: A Systematic Review. Applied Sciences. 2023 Jan 28;13(3):1654. mdpi.com
10. Teer B. Performance analysis of sports training based on random forest algorithm and infrared motion capture. Journal of Intelligent & Fuzzy Systems. 2021 Apr 12;40(4):6853-63.
11. Lewis JD, Knoblauch M, Turgeon R. The phloem as an arena for plant pathogens. Annual Review of Phytopathology. 2022 Aug 26;60(1):77-96.
12. Pecina S. Fundamentals of Human Anatomy. InDance Pedagogy (pp. 38-57). Routledge.
13. Stenum J, Cherry-Allen KM, Pyles CO, Reetzke RD, Vignos MF, Roemmich RT. Applications of pose estimation in human health and performance across the lifespan. Sensors. 2021 Nov 3;21(21):7315. mdpi.com
14. Bai Z, Bai X. Sports big data: management, analysis, applications, and challenges. Complexity. 2021;2021(1):6676297.
15. Armitano-Lago C, Willoughby D, Kiefer AW. A SWOT analysis of portable and low-cost markerless motion capture systems to assess lower-limb musculoskeletal kinematics in sport. Frontiers in Sports and Active Living. 2022 Jan 25;3:809898. frontiersin.org
16. Edriss S, Romagnoli C, Caprioli L, Zanela A, Panichi E, Campoli F, Padua E, Annino G, Bonaiuto V. The role of emergent technologies in the dynamic and kinematic assessment of human movement in sport and clinical applications. Applied Sciences. 2024 Jan 24;14(3):1012. mdpi.com
17. Papadimitriou I. Employing emerging technologies such as motion capture to study the complex interplay between genotype and power-related performance traits. Frontiers in Physiology. 2024 May 22;15:1407753.


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18. Pescatello LS, Roth SM, editors. Exercise genomics. Springer Science & Business Media; 2011 Mar 23.
19. Maduwantha K, Jayaweerage I, Kumarasinghe C, Lakpriya N, Madushan T, Tharanga D, Wijethunga M, Induranga A, Gunawardana N, Weerakkody P, Koswattage K. Accessibility of Motion Capture as a Tool for Sports Performance Enhancement for Beginner and Intermediate Cricket Players. Sensors. 2024 May 24;24(11):3386. mdpi.com
20. Talha M. Research on the use of 3D modeling and motion capture technologies for making sports training easier. Revista de Psicología del Deporte (Journal of Sport Psychology). 2022 Oct 16;31(3):1-0. rpd-online.com
21. Ang Z. Application of IoT technology based on neural networks in basketball training motion capture and injury prevention. Preventive Medicine. 2023 Oct 1;175:107660.
22. Chen H. Human motion capture data retrieval and segmentation technology for professional sports training. Journal of Mobile Multimedia. 2023 Mar;19(2):419-36.
23. Amosa TI, Sebastian P, Izhar LI, Ibrahim O, Ayinla LS, Bahashwan AA, Bala A, Samaila YA. Multi-camera multi-object tracking: A review of current trends and future advances. Neurocomputing. 2023 Oct 1;552:126558. sciencedirect.com
24. Wang J, Tao B, Gong Z, Yu S, Yin Z. A mobile robotic measurement system for large-scale complex components based on optical scanning and visual tracking. Robotics and Computer-Integrated Manufacturing. 2021 Feb 1;67:102010. [HTML]



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