

ABSTRACT

Archery demands precise posture and precise movement techniques to achieve optimal shooting accuracy. Small errors in posture can affect body balance, movement efficiency, and even increase the risk of injury. This research proposes a Human Activity Recognition (HAR)-based approach utilizing the Mediapipe model to automatically detect and analyze archers' postures in real-time. This technology enables the identification of key points of the human body from video images, which are then processed using feature extraction and classification methods based on Convolutional Neural Networks (CNNs).

Data was collected through video recordings of 10 to 20 archers, followed by pose extraction and spatial and temporal feature analysis using multiscale wavelet methods. Validation was performed by comparing the classification results with interviews with professional coaches to ensure correct technique.

The results show that the Mediapipe-based HAR application is capable of detecting archers' postures with a high degree of accuracy. This system is effective in identifying incorrect technique, providing immediate feedback, and assisting in personalized training based on data analytics. This technology can be applied to efficiently support remote training and opens up new opportunities in the automation and digitization of evaluation techniques in sports. Thus, this research contributes to improving the quality of training and athlete performance through a data-driven approach and artificial intelligence.

Keywords: Human Activity Recognition (HAR), Mediapipe, posture analysis, archery technique, CNN, sports training, automated evaluation.