

The effect of fatigue build-up on 18-m archery performance: A kinematic analysis.

April 2021

Abstract

- **Background:** Archery involves repetitive movements, which can cause fatigue gradually. In response to fatigue, the body explores compensatory movements to try to maintain performance. The aim of this study was to understand compensatory movement by analysing the total draw duration, and body and bow arm angles over continuous shooting.
- **Methods:** Two archers from TP Archery team were selected based on their shooting distance of 18 meters. Both Archers have 6 years of experience in shooting. However, Archer 1 has an average score of 220 while Archer 2 has an average score of 268. Anatomical markers were placed on the Archers to analyse the body and bow arm angles during shoot. Both archers shot a total of 36 arrows at 18-meters on a triple face target placed horizontally. Recording was done using Sony Cybershot DSC-RX0 camera at 50fps, ISO 1/1000 and was analysed using Kinovea (version 0.9.1). The data (draw duration, body angle and bow arm angle) were analysed with Microsoft Excel to generate the average, standard deviation and graphical representation.
- **Results:** As the shoot progresses, a shift in body angle was observed in Archer 1. However, this shift was negligible in Archer 2. The bow arm angle for both Archers did not seem to change over time.
- **Conclusion:** In this study, the variables of draw duration, body and bow-arm angles were not found to affect performance in any significant way