

# **A preliminary investigation of trunk and wrist kinematics when using drivers with different shaft properties**

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## **Abstract**

It is unknown whether skilled golfers will modify their kinematics when using drivers of different shaft properties. This study aimed to firstly determine if golf swing kinematics and swing parameters and related launch conditions differed when using modified drivers, then secondly, determine which kinematics were associated with clubhead speed. Twenty high level amateur male golfers ( $M \pm SD$ : handicap =  $1.9 \pm 1.9$  score) had their three-dimensional (3D) trunk and wrist kinematics collected for two driver trials. Swing parameters and related launch conditions were collected using a launch monitor. A one-way repeated measures ANOVA revealed significant ( $p \leq 0.003$ ) between driver differences; specifically, faster trunk axial rotation velocity and an early wrist release for the low kick point driver. Launch angle was shown to be  $2^\circ$  lower for the high kick point driver. Regression models for both drivers explained a significant amount of variance (60–67%) in clubhead speed. Wrist kinematics were most associated with clubhead speed, indicating the importance of the wrists in producing clubhead speed regardless of driver shaft properties.

**Keywords** Golf, 3D, Kinematics, Kick point, Clubhead speed, Ball launch conditions, Driving performance, Kick point, Golf, Movement, Parameters, Location, Length, Speed, Angle, Engineering, Sport Sciences