

Analyzing Thoracic Spine and Hip Mobility and the Effects on Kinematics in the Golf Swing and its Relation to Injury and Performance

Abstract

Low back pain (LBP) and low back injury have been found to be the most common symptom and injury sustained while playing golf (McHardy et al., 2006). Previous research has sought to determine precursors to injury by investigating physical limitations including hip internal rotation deficits. This study aims to build upon previous research by measuring joint mobility and forces placed on the lower back during the golf swing. Specifically, it evaluates active range of motion of both thoracic and hip rotation as well as joint kinematics and moment stressed placed on the low back during the golf swing.

To test the hypothesis that limited range of motion leads to higher levels of stress placed on the low back, subjects were assessed using movement screens created by the Titleist Performance Institute. Following the completion of tests, participants were placed into a "Healthy" or "Limited Mobility" group. All subjects hit 10 golf balls with their driver, with five trials being used for analysis based on carry distance calculated by FlightScope Mevo. Joint kinematics were compared using a Two-Factor Mixed Design ANOVA and low back moments were analyzed using a One-Sided Independent T-Test. No significant differences were found when comparing joint kinematics across both groups. Additionally, no significant differences were found when comparing low back moment across both groups.

These results suggest that physical limitations do not necessarily lead to higher forces to be experienced by the low back. With this in mind, further research should be done to analyze potential causative factors of low back pain in golfers, specifically, swing characteristics and volume of practice and play.