

COMPARISON OF SWING PATTERNS FOR HIGH AND LOW HANDICAP GOLFERS

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INTRODUCTION: The majority of research in golf to date has focused on both professional and elite level competitors (Hume et al., 2005). However, with only 7% of male golfers falling into the category 1 group (handicap <5.5) and 53% falling into categories 3&4 (handicap 13-24) (USGA, 2007), the research being conducted does not reflect today's average golfer. The aim of the present study was to carry out a kinematic analysis of the golf swing for category 1 and category 3&4 golfers to examine variation in movement patterns between skill levels.

METHOD: Eight healthy male golfers were divided into two groups, dependant on skill level. This was determined by each golfer's Golfing Union of Ireland (GUI) handicap. The groups consisted of four Category 1 (mean handicap 4.5 ± 0.5) and four Category 3&4 (mean handicap 17.8 ± 1.3). Following approval from the University of Limerick Ethics Committee each volunteer performed 7 trials using their own driver in an indoor driving facility. Kinematic data was collected using a 6-camera system (Motion Analysis Corp., Santa Rosa, California) operating at 200 Hz. for 29 reflective surface markers placed on the body and the golf club. The 7 trials for each subject were digitized, ensemble averaged and comparisons were made at key events during the swing.

RESULTS: The swing was divided into three events: Address (Add), Top of Backswing (TB), defined as the maximum height of the wrist marker in the frontal plane, and Ball Impact (Imp), defined as the moment when the club head returned to the Add position. Head movement was defined as a movement away from the initial address position and was measured in millimetres (mm). Table 1 presents preliminary results for lateral head movement.

Table 1 Mean Head Movement in Frontal Plane (x-axis)

Event	Head movement (mm)	
	Category 1	Category 3&4
Top of Backswing	54.66 (± 29.56)	123.68 (± 17.22)
Impact	-31.18 (± 8.89)	52.33 (± 5.71)

DISCUSSION: Table 1 above clearly shows increased head movement at TB and Imp for Category 3&4 when compared to the Category 1 group. This increased head movement at TB compared to Address was also greater for the less skilled performer when sagittal plane (y-axis) movement was analysed. Category 1 demonstrated an average displacement of 19.66 (± 21.01) mm when compared to 117.8 (± 37.59) mm for Cat 3&4.

CONCLUSION: The present study suggests that practitioners should strive to decrease the magnitude of lateral and vertical head movement for less skilled golfers, during the weight shift that exists between backswing and downswing. Further data will be presented comparing tempo, rhythm and the delayed release of wrist angle during the downswing.

REFERENCES:

Hume, P. A., Keogh, J. & Reid, D. (2005) The role of biomechanics in maximising distance and accuracy of golf shots. *Sports Medicine*, 35, 429-449