

KINEMATIC ANALYSIS OF GOLF DRIVER PERFORMANCE

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Purpose: Discuss the effects of golf tee shot performance on driving distances and offset distances. **Methods:** 34 golfers whose handicaps are less than 20 are the subjects of the study – with a low handicap group (16 people) and a high handicap group (18 people). The Golfzon golf simulator has been adopted to capture tee shot data - driving distances, flight distances, emission angles, ball speed, offset directions, golf club loft angles of attack and offset distances – analyzed by independent-sample t-test and Pearson's correlation and multiple stepwise regression analysis.

Results: There are significant relationships between the driving distances, handicaps, flight distances, ball speeds, and the number of years a golfer has played. There are significant relationships between the left or right offset distances, handicaps, golf club loft angles of attack, and players' heights. Stepwise regression analysis shows that, the value of ball speed and handicap is the better prediction mode for driving distance; the explanatory power is 62.1%. The value of golf club loft angle of attack and offset direction is the better prediction mode for offset distance; the explanatory power is 44.2%. In terms of driving distance, in the low handicap group it is statistically more significant than in the high handicap group. As to offset distance, in the low handicap group it is statistically less significant

than in the high handicap group. In years of playing, in the low handicap group it is statistically more significant than in the high handicap group.

Conclusion: This study validated that the longer the years of playing, the farther the driving distance and the shorter the offset distance with in the lower handicap group. Offset distance is affected by the golf club loft angles of attack. Ball speed and handicap have a high predictive power for driving distance. Golf club loft angles of attack and offset directions have high predictive power for offset distance.

Key words: ball speed, flight distances, simulator, handicap.

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