

# A COMPARISON OF LEFT AND RIGHT CLUB HEAD SPEED TO PREVENT GOLF-RELATED MOVEMENT DISORDERS AND EVALUATION OF THE POTENTIAL FOR A REVERSED STANCE

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## Introduction

To excel on a golf course, players need to master swing skills in a certain direction. Right-handed swingers occasionally utilize left-handed swinging training to suppress excessive asymmetry in any given direction. However, there is no clarity regarding the fundamental shot data of dominant and non-dominant golf swings. Thus, to analyze the differences between dominant right-handed swings and non-dominant left-handed swings, this study investigated the differences in club head speed (CHS) between amateur golfers (AG) and professional golfers (PG).

## Methods

This study included 30 right-handed male golfers. Of these, 20 were AG (height: 170.7±5.0 cm; weight: 70.9±7.4 kg; age: 52.4±8.8 years; mean round score: 94.3±9.7) and 10 were PG (height: 174.1±6.5 cm; weight: 71.9±8.0 kg; age: 40.7±9.8 years). The study was initiated after explaining the nature of the experiment to the participants and obtaining their written consent and approval from the Academic Research Ethics Review Board of Tokyo International University (2018-15). After 5–10 minutes of warm-up exercises and practice shots, measurements were conducted on 20 driver shots, which included 10 right-handed (R) shots followed by 10 left-handed (LS) shots. The parameters measured included CHS on R and L shots, as well as the laterality index (LI), to derive the relative left-right difference (LI= Left CHS/Right CHS). Measurement of golf swing data was performed using TrackMan (TrackMan Denmark, Ltd) with information on clubhead movement and ball direction. All significance levels were set to 0.05, and statistical analysis was performed using SPSS version 27.0 software (IBM Japan, Ltd).

## Results and Discussion

For the CHS, the PG scored significantly higher than the AG [R: 39.15±3.04 (AG) < 44.82±3.99 (PG), L: 34.29±4.59 (AG) < 39.35±4.95 (PG)]. In addition, both AG and PG tended to score significantly higher for R shots than for L shots (Figure 1). The difference in CHS values between the L- and R-shots highlights the imbalance in the golf swing. Although the mean LI was approximately 88%, we observed a wide variation across individuals, ranging from approximately 66% to 101%. Moreover, the CHS of the L and R shots demonstrated a strong positive correlation, indicating that the CHS of the non-dominant side could predict the CHS of the dominant side by approximately 59%. This suggests that increasing the CHS of the non-dominant side may improve the CHS of the dominant side.

## Significance

- Because the mean LI is approximately 88%, improving one's laterality index may contribute to prevent the onset of motor dysfunction and swing skill bias.
- A strong correlation between L and R CHS suggests that increasing CHS on the non-dominant side may increase CHS on the dominant side.
- Two players in AGs had an LI >100%, suggesting a potential role for LI in diagnosing left-right aptitude at the beginner stage itself. They are both right-handed in daily life and may consider converting golf shots to a reversed stance.

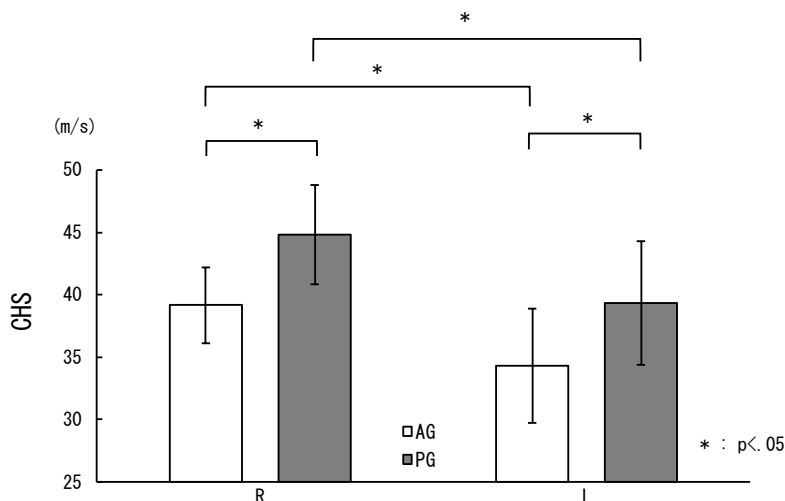


Figure 1: Comparison of skill differences in club head speed between the right and left