Grip position affects optimal driver loft

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Introduction

Recently we have presented data on the effects of systematically adapted strong, weak and neutral grip positions (GPs) on driving performance outcomes showing that (1) amateur recreational golfers reveal asymmetrical performance differences in driving distance and accuracy when using stronger and weaker GPs, respectively, and (2) weak GPs produce significantly worse outcomes than neutral or strong GPs (D`Arcy et a, 2021). For the first time, we now discuss the data from the respective study with respect to the impact of GP on optimal driver loft selection.

Methods

Twenty-eight amateur recreational golfers (driver clubhead speed range between 120 km/h and 153 km/h) were recruited. All subjects carried out five sets of nine drives using five pre-defined GPs ranging in 15-degree increments from +30° (very weak) to −30° (very strong). Driver shafts with identical specifications were fitted with moulded pre-defined GPs to a single driver head from Titleist series 915 D 3, loft 10.5°. Data on attack angle (AA), dynamic loft (DL), vertical launch angle (VLA) and spin rate (SR) were collected using a TrackmanTM Doppler radar device (Trackman TMA3B, ISG Company, Denmark). The data were analysed using SPSS IBM Statistic version 28 (28 Subjects*9 shots; 252 drives per GP). Repeated measures analyses of variance were carried out to calculate the effects of GP on club movement parameters and ball flight outcomes. All subjects signed a consent form approved by the Ethics Commission.

Results and Discussion

Table 1. Attack angle, dynamic loft, vertical launch angle and spin rate (means and (standard deviations)) for each grip position

Grip Position	Attack Angle (degree)	Dynamic Loft (degree)	Vertical Launch Angle (degree)	Spin Rate (rpm)
-30°	0.03 (3.78)	14.13 (5.09)	12.35 (4.50)	2425.2 (949)
-15°	-0.27 (3.65)	15.15 (4.94)	13.10 (4.41)	2695.1 (1060)
0°	-0.24 (3.85)	14.96 (4.95)	12.84 (4.29)	2769 (1187)
15°	-0.72 (3.32)	17.32 (5.20)	14.43 (4.49)	3564.1 (1263)
30°	-1.41 (3.58)	20.09 (5.87)	16.54 (5.28)	4221.6 (1308)

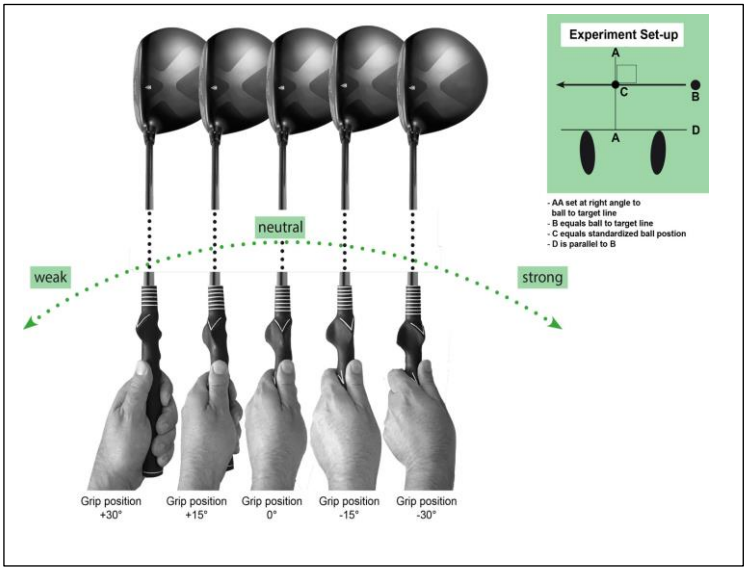

Figure 1. Grip positions and experimental set-up.

The repeated-measures analyses produced significant main effects for all four dependent variables tested: *attack angle*: $F(4, 104) = 6.464$, $p < .001$, $\eta p2 = .199$; *dynamic loft*: $F(4, 108) = 31.437$, $p < .001$, $\eta p2 = .538$; *vertical launch angle*: $F(2.884, 77.86) = 20.074$, $p < .001$, $\eta p2 = .426$; *spin rate*: $F(2.265, 31.708) = 15.912$, $p < .001$, $\eta p2 = .532$. Pairwise comparison showed an asymmetrical effect produced by symmetrical manipulation of GP. The descriptive results showed that the strongest GP (−30°) produced a mean AA 1.43 degrees more positive (up), a mean DL 5.96 degrees less than, a VLA that was 4.1 degrees lower than and an average spin rate (SR) that was 1797 rpm less than its weak GP counterpart (+30°). These results suggest that amateur recreational golfers may be using a GP that does not optimise their launch angle to spin rate relationship (Tuxen, 2008). Our results further suggest that in the case of players with identical clubhead speeds, the player with a stronger GP should select a driver with less loft than players using a weaker grip to achieve optimal distance performance.

References

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