

## Is Handicap Rating in Golf an Appropriate Measure of Putting Expertise?

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### **Purpose**

Within golf putting literature, expertise is often assumed from handicap status in advance of data collection. Our aim was to profile putting kinematics and putting performance in a low handicap golf population and then contrast this information with tour level data so that an expertise based understanding of low handicap putting status could be assessed.

### **Method**

Fourteen golfers, comprised of 5 professional (Age  $M = 34.4$ ,  $SD = 5.2$ ) and 9 elite amateurs (Age  $M = 24.1$ ,  $SD = 7.5$ ), handicap range -2 to +5, ( $M = +1.3$ ,  $SD = 1.9$ ) participated in this study. Participants completed 64 putts; eight straight putts and eight sloped putts (four L-R, four R-L) from four distances (3ft, 8ft, 15ft and 25ft) on an indoor artificial surface with a Stimpmeter rating of 10.2. Putting sequence was incompletely counterbalanced across participants. Kinematic variables captured by SAM PuttLab technology (Marquardt, 2009) included clubface angle at impact, clubface angle rotation during the forward swing, and timing. All participants used their own putter and Srixon AD333 Tour golf balls. Participants were assigned to Lower Variability (LV) or Higher Variability (HV) groups based on their consistency rating for clubface angle rotation (LV  $n = 11$  and HV  $n = 3$ ), impact spot (LV  $n = 8$  and HV  $n = 6$ ) and timing (LV  $n = 7$  and HV  $n = 7$  for each putt distance) for the first four straight putts at each distance. Participants were classified as LV for impact spot and clubface angle rotation consistency if they scored  $\geq 75\%$  and rated HV for consistency scores  $<75\%$  based on a SAM PuttLab guidance that a consistency rating of 75% indicates performance consistent with 50% of Tour players (Marquardt, 2009). For timing participants were assigned to HV or LV using a median split of their  $SD$  values of the ratio of Backswing : Time to Impact (forward swing) for each distance.

### **Analysis/Results**

One way repeated measures ANOVAs evaluating participants' clubface angle at impact and location of ball impact revealed no significant differences for either measure across putt distance. A repeated

measures ANOVA 4 (Putt distance) x 2 (Putt phase) revealed a significant Putt Distance x Timing interaction, Wilks' lambda = .114,  $F(3,11)=28.49$ ,  $p<0.01$ .

One-sample  $t$ -tests revealed that participants were not significantly different from Tour players for time to impact at any of the putt distances or for backswing time on 8ft putts (Marquardt, 2009). However, participants were significantly different from Tour players in backswing time at 3ft,  $t(13)=3.6$ ,  $p<0.01$  (mean difference -50.57, 95% CI: -80.50 to -20.70, eta squared =.009); 15ft,  $t(13)= 4.1$ ,  $p<.01$  (mean difference 61.2, 95% CI: 29.3 to 93.1, eta squared =.001) and 25ft,  $t(13)=5.9$ ,  $p<0.01$  (mean difference 81.6, 95% CI: 51.5 to 111.6, eta squared= 0.02: see Figure 1).

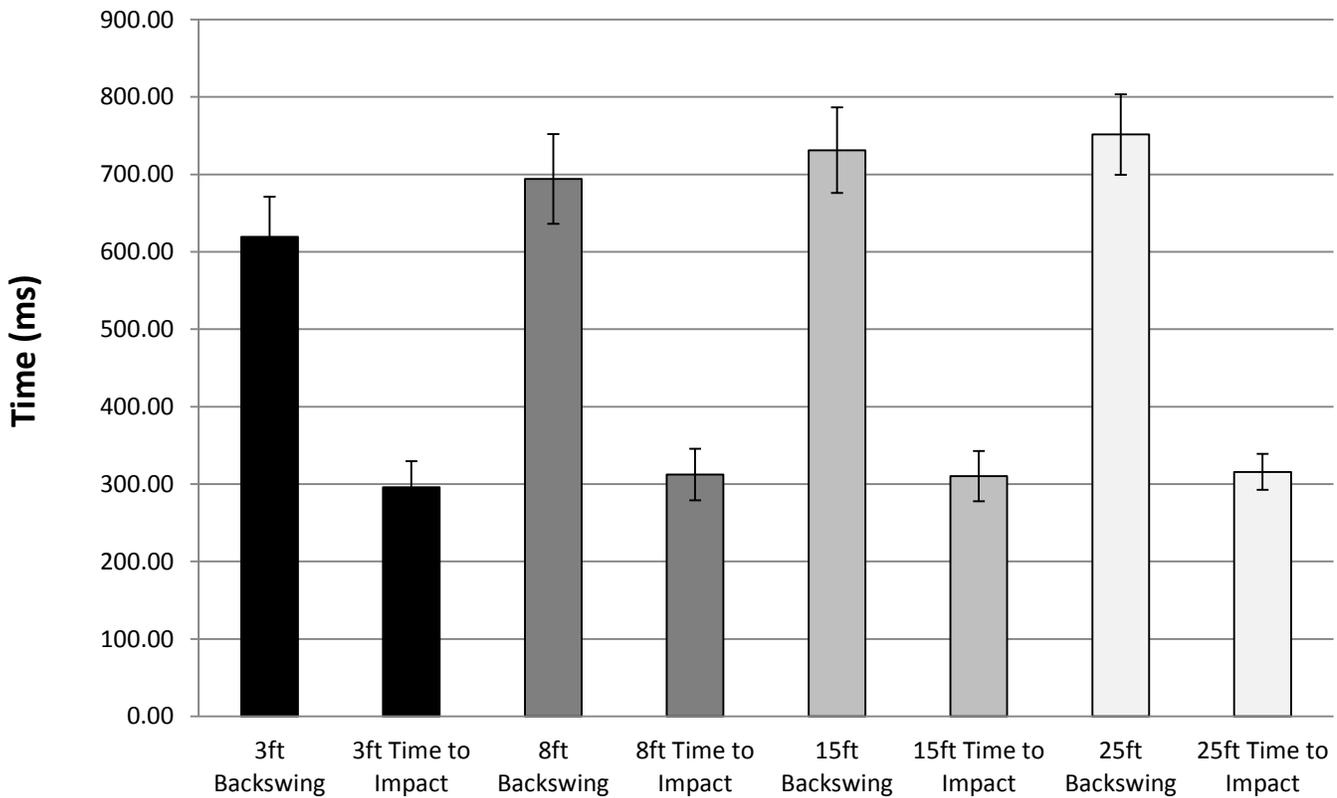


Figure 1: Mean backswing time and time to impact (ms) across the four putt distances, with SD error bars.

There was no significant difference between the professional and elite amateur players in the number of putts holed in the 16 or 64-putt tests. Analysis of HV and LV groups' success rates in the 64-putt test revealed that higher consistency for clubface angle rotation holed significantly more putts than the group with lower consistency ( $p<.01$ ) and the group with higher consistency for impact spot holed significantly

more putts than the group with lower consistency ( $p < .01$ ; Figure 3). Consistency of timing did not impact on putts holed.

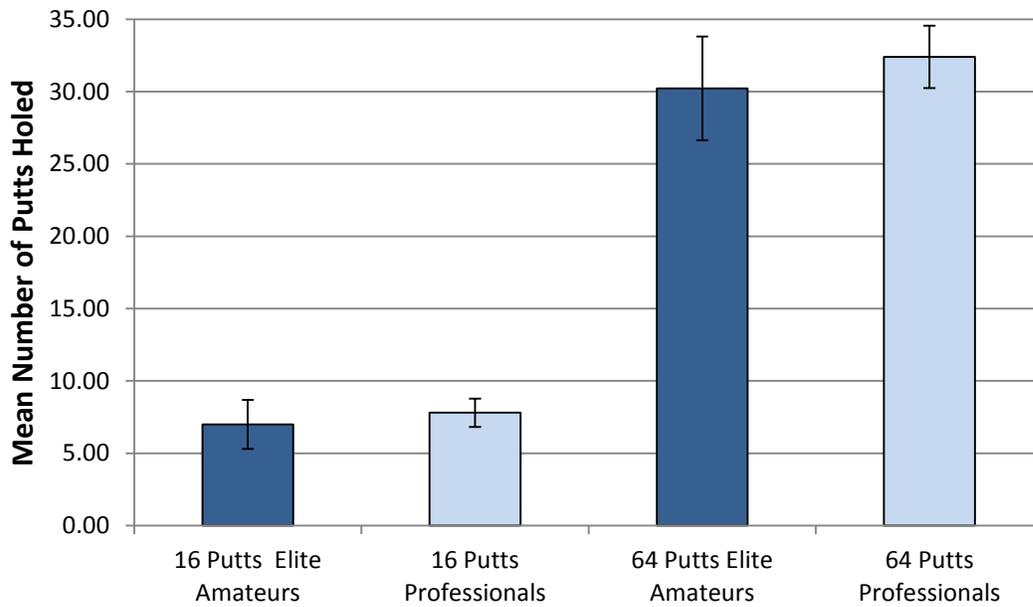


Figure 2. The mean number of putts holed ( $\pm SD$ ) for the 16 and 64 putt tests.

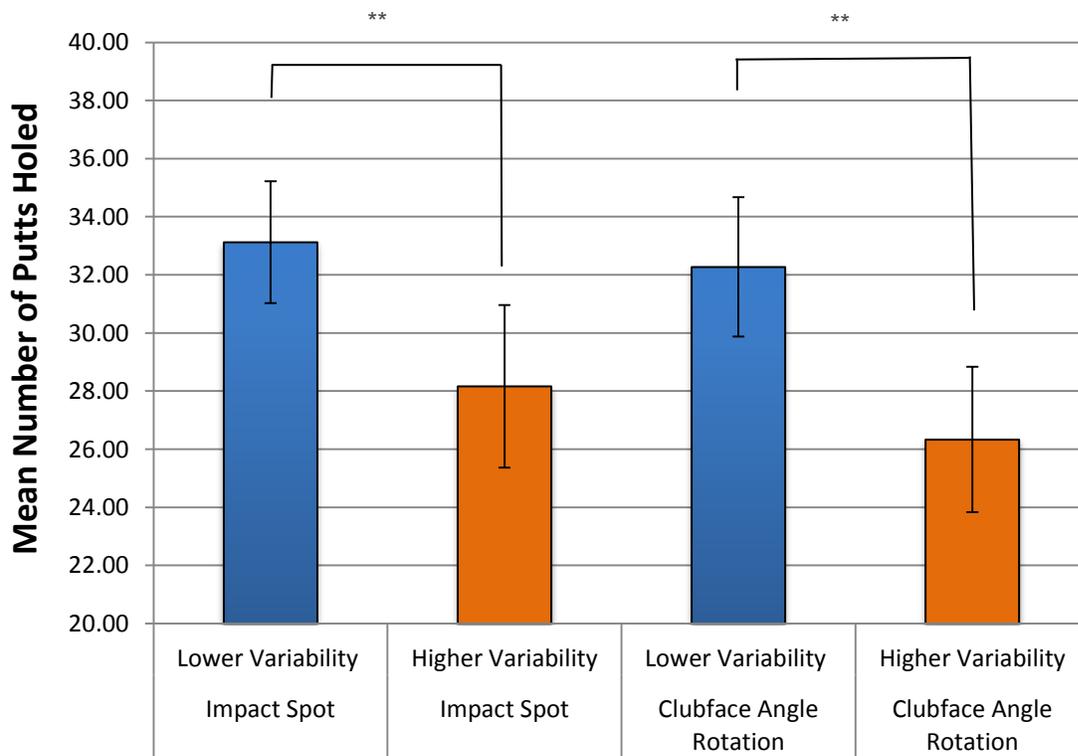


Figure 3: Mean number of putts holed ( $\pm SD$ ) in the 64-putt test by the HV and LV groups for impact spot and clubface angle rotation.

## **Conclusions**

Golf putting studies typically define participant expertise by golf handicap. The present study revealed no significant difference in putts holed between the elite amateur and professional golfers on a representative putting test. In contrast, golfers with putting strokes that were more consistent in terms of clubface angle rotation and impact spot holed more putts than golfers displaying greater variability on these measures. While we must be cautious in regard to sample sizes in the present study and the practical challenges regarding the availability of kinematic analysis, this suggests certain kinematic variables may provide a more sensitive measure of putting ability than golf handicap.

*Keywords* Putting, Expertise, Kinematics

## **References**

Marquardt, C. (2009). The SAM PuttLab: Concept and PGA Tour Data. *International Journal of Sports Science and Coaching*, 2, 101–120. <http://doi.org/10.1260/174795407789705479>

## **Biography**

Laura Carey works at the sportscotland institute of sport as a Performance Psychologist and is a doctoral student at Loughborough University. Steven Rosie has been a PGA Fellow Golf Professional for 19 years and coaches' elite Tour Level and junior amateur golfers. Robin Jackson is a Senior Lecturer in Sport Psychology at Loughborough University and is an Accredited Sport Psychologist. Malcolm Fairweather is Head of Science and Innovation at sportscotland institute of sport and a High Performance Sport Accredited practitioner in the Skill Acquisition area.