

Biochemical Analysis of GEL Groove Technology

Undertaken by the Quintic Consultancy Ltd *

Objective

- To examine the effect that GEL Groove Technology has on the roll performance of a golf ball during putting by comparing it to other putters.

Method & Test Conditions

- Quintic undertook a set of experiments to test the ability of the GEL putter to impart early forward roll to the golf ball during the first 0.25m of a typical 20-foot straight putt.
- Video analysis at 250 frames per second (each frame = 0.004 seconds) was used to record distance travelled, ball rotation, club head and ball velocities during the initial stage of putts.
- Two GEL putters were tested alongside five well-known brands of putter (Titleist Scotty Cameron Newport Mid Slant – Pro Platinum, TaylorMade Rossa – Daytona 1cgb, PING CRAZ-E G2i, Odyssey White Hot & Yes! C-Groove Tiffany).
- All putters used were standard clubs & tested using a putting robotic arm.
- Ten putts per putter were analysed.
- High-speed footage (250Hz) recorded ball/putter contact and the first 0.25m of the path of the golf ball (on average 12 frames were digitised prior to impact (Average club head speed) and 17 frames after impact (Ball Speed & Rotation)).
- For each frame, the distance travelled and amount of rotation was recorded and impact velocity and resultant velocity calculated.

Statistical Analysis & Results

- Footage was analysed using Quintic 9.03 v 14 Biomechanics video analysis software.
- Table shows rotation (degrees) of the ball from impact (Frame 12), for the subsequent 17 frames of video recorded during the initial path of the ball roll (0.068 seconds). In the readings from 'Frame 29', the lower the degree recorded for each putter, the more topspin roll has been produced.

Video Analysis	GEL Emerald	GEL Diamond	Yes!	Taylor Made	PING	Odyssey	Titleist
Frame 1	180.00	180.00	180.00	180.00	180.00	180.00	180.00
Frame 12 IMPACT	179.23	180.02	180.18	179.81	180.20	179.77	179.80
Frame 29	101.85	137.09	139.78	141.72	151.35	151.78	162.71
Ranking	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th

Conclusion

The GEL Emerald and GEL Diamond Putters created the most forward roll on the golf ball after impact therefore outperforming the other putters used in the test.

* Quintic Consultancy Ltd is an independent consultancy that specialises in Premier Sports Video Analysis Software, Sports Biomechanics and Performance Analysis Consultancy (www.quintic.com)