

PGA Pro *Martin Kaymer*

➤ TrackMan customer

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TRACKMAN TECHNOLOGY

TRACKMAN'S 10 FUNDAMENTALS

- TrackMan has discovered, confirmed, and/or quantified several golf swing and ball flight relations through cutting edge technology and analytics. We now have answers to some of the mysteries of golf, in particular, why the ball goes where it goes! This we call: TrackMan's 10 Fundamentals
- The ultimate purpose of the 10 Fundamentals is to help the golfing population understand why the ball does what it does. Among the core discoveries are the importance of Face Angle, Gear Effect and how you hit the ball straight (three different ways).

TrackMan's 10 Fundamentals

- 1 Maximizing Distance
- 2 Smash Factor
- 3 Spin Rate
- 4 Launch Angle
- 5 Launch Direction
- 6 Club Path
- 7 Spin Axis I
- 8 Spin Axis II
- 9 Straight Shot
- 10 Bounce & Roll

MAXIMIZING DISTANCE

TRACKMAN's 1st. FUNDAMENTAL

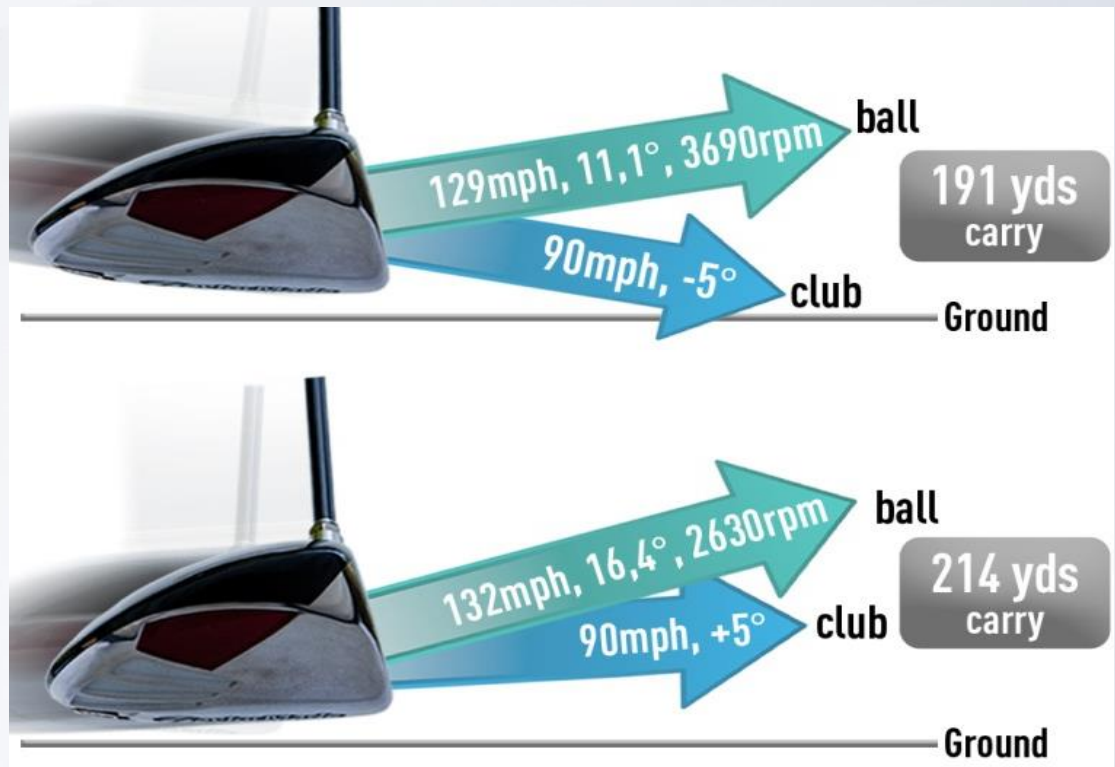
→ The optimal combination of Ball Speed, Launch Angle, and Spin Rate needed to maximize driving distance are primarily dictated by the golfer's Club Speed and Attack Angle.

→ *What determines distance?*

1. *Ball Speed*
2. *Launch Angle*
3. *Spin Rate*

How to optimize?

1. *Work on Club Speed*
2. *Work on Attack Angle*



SMASH FACTOR

TRACKMAN's 2st. FUNDAMENTAL

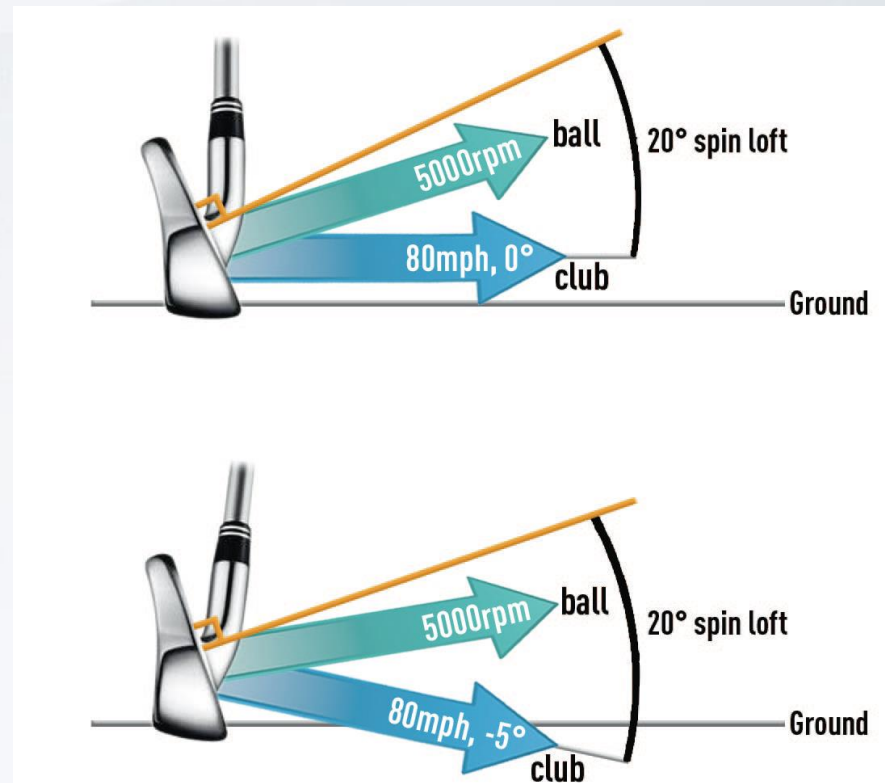
- Generally speaking:
To maximize ball speed it is more important to improve centeredness of impact than to increase club speed!
- 92 mph Club Speed and off-center impact → Ball Speed of 129 mph and 196 yards carry.
- 88 mph Club Speed and center impact → Ball Speed of 132 mph and 204 yards carry.



SPIN RATE

TRACKMAN's 3rd. FUNDAMENTAL

- Spin Rate is primarily generated by Spin Loft and Club Speed. Additionally, impact position on the club and friction between the club and the ball affect the amount of spin.
- *Hitting more down on the ball does not necessarily increase the Spin Rate!*
- *If you deloft the club, the Spin Loft may be unchanged → no change in Spin Rate - all other things equal.*

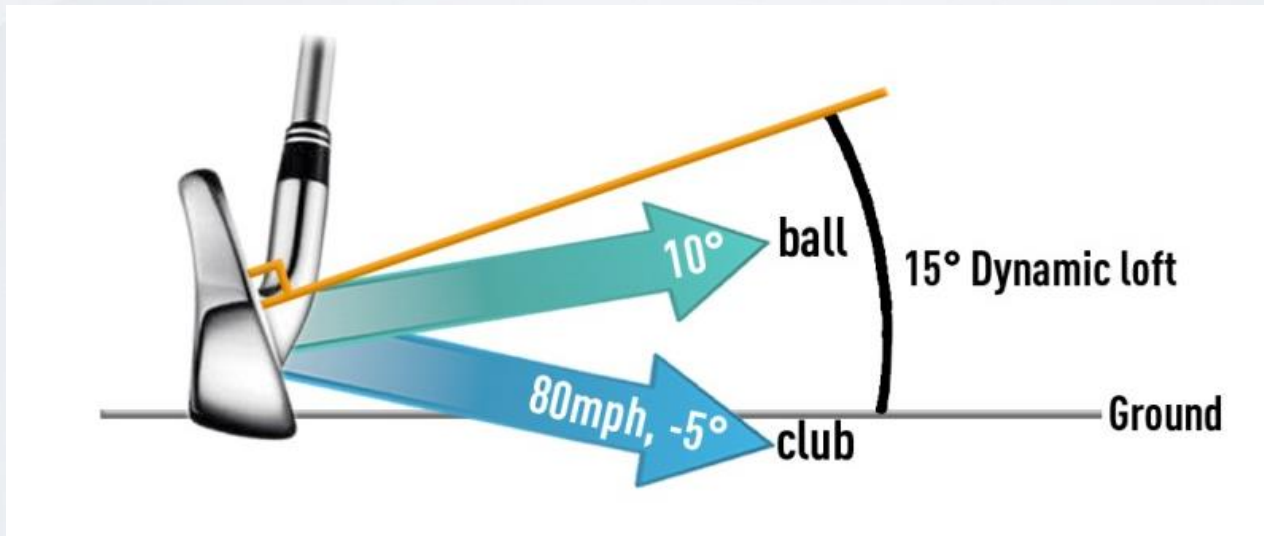


LAUNCH ANGLE

TRACKMAN's 4th. FUNDAMENTAL

→ Dynamic Loft has a greater impact than Attack Angle in determining the Launch Angle of a shot.

→ *Dynamic Loft is the effective loft of the club at impact, not to be confused with static loft.*

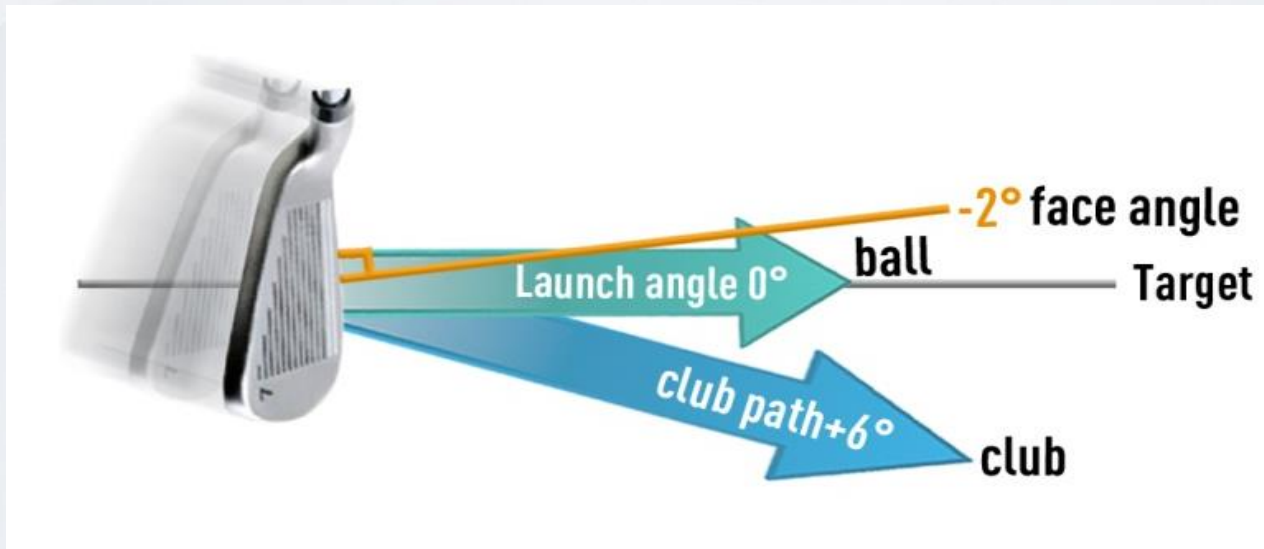


LAUNCH DIRECTION

TRACKMAN's 5th. FUNDAMENTAL

→ Face Angle has a greater impact than Club Path in determining the ball's Launch Direction.

→ *Off-center impact is therefore important not only for Face Angle but also for Launch Direction*

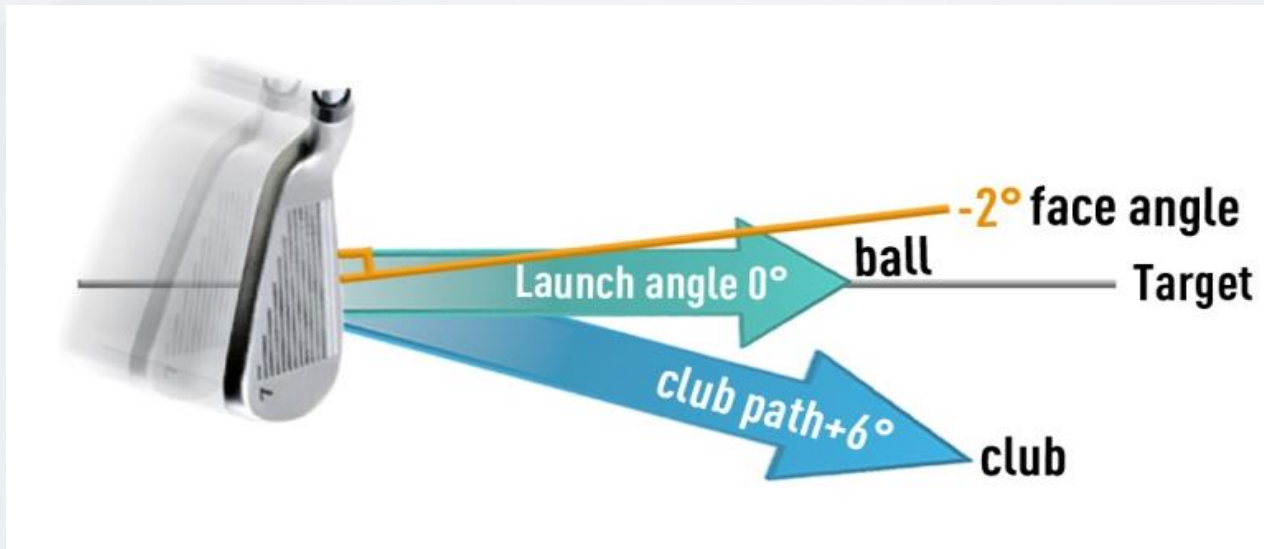


CLUB PATH

TRACKMAN's 6th. FUNDAMENTAL

→ To create a zero Club Path, the appropriate Swing Direction will depend on the golfer's Attack Angle.

→ *Hitting down on the ball you need a Swing Direction to the left to obtain zero Club Path, and visa versa.*

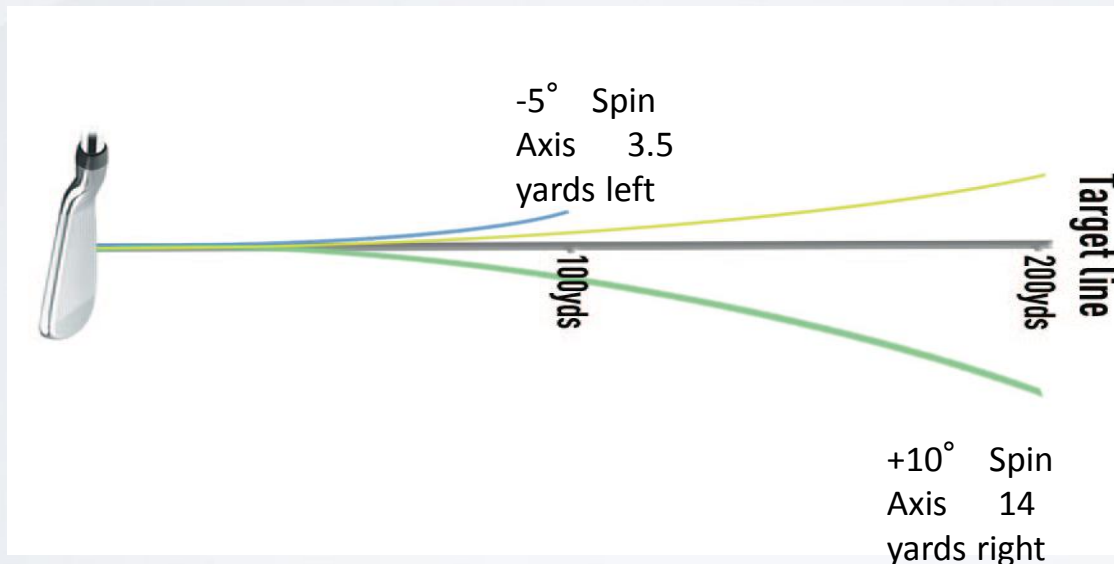


SPIN AXIS I

TRACKMAN's 7th. FUNDAMENTAL

→ The curvature of a shot is directly related to the tilt of the Spin Axis.

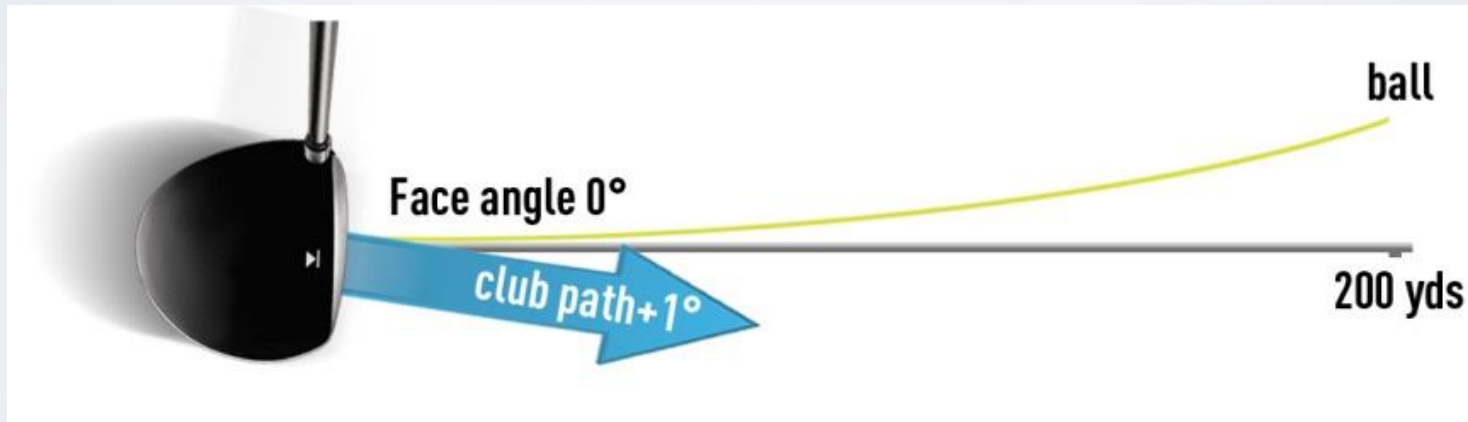
→ *There is physically no such thing as "side spin" - the golf ball rotates around one single spin axis.*



SPIN AXIS II

TRACKMAN's 8th. FUNDAMENTAL

- Spin Axis is tilted by a difference between Face Angle and Club Path. An off-center impact location can also tilt the Spin Axis for driver shots, and to a lesser degree for iron shots.
- *Impacting a driver with 0° Face Angle and $+1^\circ$ Club Path (Face to Path of -1°) produces a ball curve that lands 8 yards left of a target at 200 yards distance.*



STRAIGHT SHOT

TRACKMAN's 9th. FUNDAMENTAL

→ There are multiple ways to launch the ball such that it travels in a straight line towards the target.

→ However, a shot with 0° Club Path, 0° Face Angle, and center impact is definitively the most effective!

	Method 1 ("Classic")	Method 2	Method 3
Club Path	0 degrees	Positive (inside-out)	Negative (outside-in)
Face Angle	0 degrees	Negative (closed)	Positive (open)
Impact Location	Center	Heel	Toe
Carry Distance	Longest	Shortest	Short

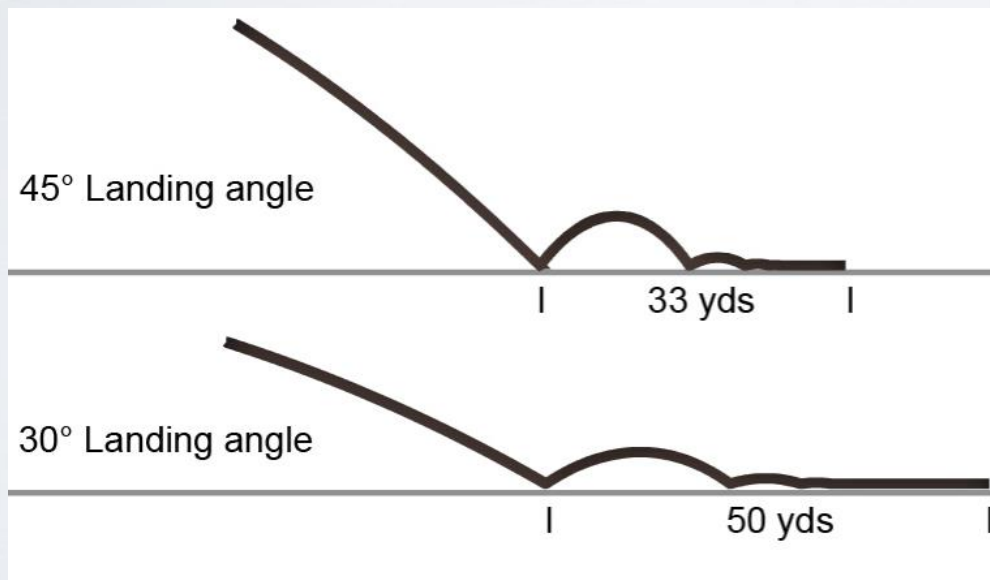
Note:
Assume right-handed player

BOUNCE & ROLL

TRACKMAN's 10th. FUNDAMENTAL

→ Bounce and Roll distance is determined primarily by landing Ball Speed, Landing Angle, and landing Spin Rate.

→ However, TrackMan has found landing Ball Speed to be relatively consistent for all full-swing shots.



Note:

To control Bounce & Roll, the golfer should focus on Landing Angle and Spin Rate.

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