

EXCLUSIVE: We proved that for most golfers, swing path matters more than clubhead speed



GOLF *Eric Alpenfels, a GOLF MAGAZINE Contributing Teacher, is director of Pinehurst Golf Advantage at Pinehurst Resort in North Carolina.*

New Golf Science: Another Path to Power

BY ERIC ALPENFELS WITH LORIN ANDERSON
PHOTOS BY LEONARD KAMSLER

● **EVER SINCE** golf began, power has been all about clubhead speed. Just turn back a few pages and check out Vijay Singh's whip through impact. But in a new study conducted for GOLF MAGAZINE at the Pinehurst Golf Advantage School, we found that drills that improved swing path led to a huge power boost—an even bigger boost than you'd get from trying to add speed.

- That's good news if you're among the legions of golfers who can't swing any faster without losing control.
- Working with 117 golfers, we tested nine drills, each focused on one or more key factors: clubhead speed, swing path, center-face contact and angle of attack. Eight of the nine drills led to a significant increase in carry distance.
- In fact, five added more than 10 yards—with a

6-iron! That could mean 25 yards with a driver.

- Then things got really interesting. We discovered that four of the drills that worked best had one thing in common: They improved swing path. Golfers who kept their swing paths on-line used their arms to extend the swing's arc, letting their forearms rotate naturally. Result: longer shots.
- For a new path to power, turn the page.



Set your feet together to make better contact and add yards.

THE TESTS THAT PROVED IT

In our study, two drills outperformed all others. If you're looking to add yards, give both of these a try. The drills on the next page also proved effective. Work on any of our top five drills and there's a good chance you'll soon be a club longer—we proved it! (All drills tested with a 6-iron; see the last page of this article for complete results.)

+ FEET TOGETHER

THE DRILL After taking your normal address, set your feet together and make swings without losing your balance.

RESULT A 13-yard average increase in carry distance.

HOW IT WORKS This drill boosts distance by improving the quality of impact. It also helps players avoid an out-to-in swing path, since it's hard to swing out-to-in from this position without falling over. Results showed a statistically insignificant increase in clubhead speed; it was improved path that contributed to more center-face hits and a better launch angle.



+ HIT THE TEE

THE DRILL Place a tee on the target line six inches in front of the ball. Clip the tee after hitting the ball.

RESULT A 13-yard average increase in carry distance.

HOW IT WORKS The only way to hit the forward tee is to extend your arms and swing along the target line through impact. This drill corrects two major flaws in most golfers' swings: incomplete extension and crooked swing path. The result is the biggest increase in clubhead speed (4.2 miles per hour on average) of the nine drills tested. But the added speed came from a better swing path, not more muscle.

THE RUNNERS-UP**SWING THE CLUBHEAD**

THE DRILL Swing as fast as you can, making the club "whoosh" through the air at the bottom of your swing. Don't worry about solid contact; just try to maximize clubhead speed.

RESULT An 11-yard average increase in carry distance.

HOW IT WORKS As expected, this exercise boosted clubhead speed (3.2 miles per hour on average). It appears from the data that the increase in speed is a result of an improved swing path, which also increases the number of center-face hits.



Fix your path with a cut-off finish.

SHORT FINISH

THE DRILL Take your normal address and swing, but shorten your follow-through, stopping the shaft when it reaches shoulder height. Keep your arms fully extended.

RESULT An 11-yard average increase in carry distance.

HOW IT WORKS This drill improved swing path and optimized launch angle. It boosted distance but not clubhead speed—further proof that swinging faster is not the only way to add power.



Step up and swing faster.

LEFT FOOT UP

THE DRILL Make full swings with your left foot on a range bucket.

RESULT An 11-yard average increase in carry distance.

HOW IT WORKS This is the only drill that caused the path to get steeper or more out to in. It made up for that weakness by boosting clubhead speed (3.4 miles per hour on average) and center-face hits.



Hear the "whoosh" to boost your distance.

THE ALSO-RANS

+ SWING THE HANDLE

THE DRILL Hold the club upside-down and grip it near the hosel. Swing the club to create a "whoosh" through the impact zone. Try to make the "whoosh" happen as late as you can.

RESULT A 5-yard average increase in carry distance

HOW IT WORKS All four key variables showed at least some improvement.

To maximize power, get your fast point right at impact.



+ MISS THE BUCKET

THE DRILL Place an ice bucket or headcover a few inches outside and behind the ball. From your normal address, hit balls without touching the bucket.

RESULT A 9-yard average increase in carry distance.

HOW IT WORKS This drill improved all four key variables and was the best drill of all for improving center-face contact.



+ HEAVYWEIGHT CLUB

THE DRILL Swing a club with a weight attached to the clubhead. Try to generate as much speed as possible.

RESULT A 6-yard average increase in carry distance.

HOW IT WORKS This drill added an average of 3.3 miles per hour of clubhead speed.



+ TOE UP

THE DRILL From a standard address, swing the club back to hip height. Check to see that the toe points to the sky. Swing through to hip height and again check that the toe is pointing up.

RESULT No increase in carry distance.

Swing Path-ology



The mark of an overly in-to-out, or shallow, path

● HOW DO YOU KNOW if your swing path is costing you yards? If it strays from the target line, you'll hit weak shots. Here's how to check.

On the range, place a club six inches outside your ball, parallel to the target line. Place a second club directly on the target line, 10 yards out. Set your clubface square and hit balls with a 5-iron, noting each shot's direction.

If the ball starts out more than a foot to the right of your target line, your path is too shallow. If it starts out more than a foot to the left, your path is too steep.

To confirm, check the angle of your divot (left). A divot that points to the right, as shown, is the sign of a too-shallow path. One that points to the left signifies a path that's too steep.

HOW WE DID IT

● Bob Christina, Ph.D., of the Pinhurst Golf Advantage School designed our study to evaluate the key variables that contribute to distance—clubhead speed, swing path, center-face contact and angle of attack—and compare drills commonly used to address them. He randomly assigned 117 experienced golfers to nine selected drills, keeping each group balanced in terms of age, handicap, gender and years playing golf.

After a warm-up, each participant was pretested with five swings on the Achiever Golf Analyzer launch monitor. All swings were made with a 6-iron.

Following the pretest, each participant made 54 swings using his or her assigned drill: two practice swings and one swing trying to apply the drill while hitting a ball. Each golfer completed that cycle, then took a three-minute break before beginning the next cycle. Then came another three-minute break, and then a final cycle of test swings.

A post-test after training with the drill was conducted in the same manner as the pretest.

▶ An Achiever Golf Analyzer captured five data points per swing.



PHOTO TOP BY GARY WOODS; LEFT COURTESY OF ACHIEVER GOLF

POWER DRILL RANKINGS

● Here's how the four power factors changed after the performance of each drill. Rankings are based on the average increase in carry distance (with a 6-iron) following training.

RANK	DRILL	CARRY (YARDS)	SPEED (MPH)	LAUNCH (DEGREES)	PATH (DEGREES)	CONTACT (PERCENT)
1 (tie)	Hit the Top Foot Together	+13	+4.2	+1.6	-1.6	+33
		+13	NSS	+1.1	-2.5	+15
3 (tie)	Short Finish	+11	NSS	+3.5	-1.3	+17
		+11	+3.2	NSS	-3.0	+20
		+11	+3.4	NSS	+1.2	+23
6	Miss the Bucket	+9	+2.2	+1.5	-1.6	+30
7	Weighted Club	+6	+3.3	-1.0	-2.0	NSS
8	Swing Handle	+5	+2.4	+1.6	-2.7	+24
9	Toe Up	NSS	NSS	NSS	NSS	NSS

▶ NOTES: For launch angle, (-) indicates a decrease in launch angle and (+) indicates an increase. For swing path, (-) indicates path became shallower and (+) indicates path became steeper. Contact shows percent increase of center-face hits. NSS indicates a result was not statistically significant.