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GOLF'S BEST-KEPT SECRET

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ZenoLink's emphasis on core separation and coordination is among Sean Foley's (right) coda.

One of the biggest storylines of what passes for golf's off-season will now center around what Tiger Woods' newest teacher, Sean Foley, tells him; how well Woods listens; and just how much of Foley's eclectic gospel Woods converts into swing religion by 2011.

But to whom does Foley, the intriguing Canadian, listen? Just who are his influences?

Actually, lots of people. The list notably includes a little-known biomechanical engineer from rural New York named Chris Welch and a Greek philosopher named Zeno, who preached, among other things, that motion was impossible.

"I would love to sit there with him for two months every single day and shadow him," Foley says of Welch. "That would be the ultimate."

But the story gets ahead of itself ...



Turns out the significant answer to the question: "What do Woods, Greg Norman and Anthony Kim have in common?" is not the one you might have imagined.

The significant answer has nothing to do with dalliances, nightlife or social transgressions, perceived or otherwise. It has everything to do with getting better at golf, inarguably a much more difficult sporting pursuit.

Facilitating that pursuit is the goal of a high-tech, low-profile, 3D motion-capture company/concept called ZenoLink that is poised on the game's biomechanical cutting edge and ready to add a different layer to golf's conventional wisdom.

ZenoLink, says teaching pro Adam Schriber, whose students include Kim and Morgan Pressel, "is one of the best-kept secrets in the business." ▶

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"We are kind of in an open field right now," adds Welch, ZenoLink's creator. "Kind of, first to market." But he is not going unnoticed by the sport's learning pioneers unafraid to use the words "science" and "golf" in the same sentence.

Historically, maximizing golf potential at any age or on any stage has always been daunting. But these days, keeping up with the relevant technological advances important to that end is downright dizzying. The scolds and purists, meanwhile, have typically scoffed at anything new in golf learning that doesn't directly trace its roots to traditionally comforting names such as Ben Hogan, Harry Vardon, Percy Boomer, Harvey Penick or the non-related Joneses – Bobby and Ernest. To be sure, Butch Harmon probably never uttered the phrase "clinical application."

Into this historically rich but notoriously parochial and crowded climate comes ZenoLink. The company is based in the small, south-central New York village of Endicott, not far from

where "Twilight Zone" creator Rod Serling was born. So cue the spooky background music, because ZenoLink's proponents swear its principles are scary good.

ZenoLink 101: A Primer

So how does ZenoLink work? How and what exactly does it "measure?"

With the use of a 3D motion capture platform, the golfer, unencumbered by motion sensors or any other body attachments, is videotaped hitting four shots, two drivers and two irons. That's it. The video is uploaded to a server in New York and evaluated at the ZenoLink performance lab in Endicott using biomechanical measurements that include kinetic linking, joint range of motion, body segment coordination and outcome parameters.

The subject/player then receives a detailed explanation of the data via an e-mail link. It is

Crystal Mountain's Brad Dean (right) films a student using ZenoLink's 3D motion capture platform.

"It's a big part," says Schriber, "of how I built Anthony Kim's swing."

Foley has voraciously read up on all the classic golf teachings. And he embraces them. But the mind of the game's most sought-after young teacher is also wide open to new ideas and fearless of future shock. Which is why Foley currently numbers himself among ZenoLink's vanguard. Almost certainly you will soon be hearing more about all of this – especially if Foley fully convinces Woods, his prize pupil, of ZenoLink's complex methodology but basic premise.

Which is...?

In its most elemental form, says Welch, ZenoLink is a "measurement." Its role, he says, is to "facilitate."

"It's not a swing philosophy," Welch emphasizes. Rather, it is a data-measurement system that not only seeks to help a golfer improve his or her core stability, it also promises to aid in the coordination of that stability with strength and speed. Without the kind of 3D measurement ZenoLink can provide, Welch adds, even the best players in

the world are just doing guesswork.

"It's like trying to build a house without a plumb-bob," says Welch. "You're going to have a cockeyed house." Welch isn't the first to rely on "motion capture" to provide swing and body data. But he is the first to simplify it for instructors (see story below).

According to one source, ZenoLink played a key role in Norman's preparation for the 2008 Open Championship at Royal Birkdale where Norman was the 54-hole leader at age 53. Welch declines direct credit for that remarkable Norman week. But he says he first measured Norman with ZenoLink in 1995 at Norman's Medalist Club in Florida and again prior to the U.S. Open at Congressional in 1997. Not surprisingly the data showed Norman to be freakishly fit and flexible.

Norman was still in his prime then and, says Welch, "He had one of the most efficient kinetic links I had ever tested for a golfer." Working closely with Norman's trainer, Pete Draovitch, Welch says they developed a specific regimen, "way before anyone considered this kind of training for golfers." ▶

narrated by ZenoLink founder Chris Welch and it breaks down the player's golf thumbprint into five categories, viewable online, that include a performance profile, a kinetic link analysis, a stability analysis, a muscular loading analysis and a club dynamics analysis. Also posted under each individual's online account is a series of exercise drills to begin ZenoLink's Progressive Skills Training Program.

The results and prescribed drills are highly personalized with the goal being a stronger, more coordinated set of core muscles.

"At first," says Welch, "a lot of the pros and

teachers looked at us and said, 'Oh, you're just going to tell people how to swing mechanically.' Now they realize it is a tool for them to use."

For a first-person account of how ZenoLink's measuring procedure helped one elite player, see the story on page 6.

"ZenoLink," says teaching pro Jeff Hay, "bridges the gap between physical trainers and golf teachers." Hay is a colleague of instructor Sean Foley, Tiger Woods' current coach, at the Core Golf Junior Academy at Orange County National Golf Club in Orlando. [FIND A ZENOLINK PARTNER](#)

Brian Hewitt



Anthony Kim (left) is shown here working under the watchful eye of his instructor, Adam Schriber.

Now, more than 15 years later, ZenoLink is dipping its toes into the mainstream. Its technology also has served as the basis for the swing mechanics that have allowed Kim to become, when healthy, one of the world's most confident top players. And few who know him will not be surprised anytime soon if Foley convinces Woods this stuff can help him return to his No. 1 perch.

Welch, has been moving quietly in and around golf's inner circles for close to 20 years. Sources also say he has, more recently, obtained new backing, added financing and a fresh marketing outlook. Schriber figures it's just a matter of time before Welch's ideas go viral.

ZenoLink is, among other things, the latest pure science application to show up, for public consumption, on the golf scene. And it is accompanied by the same basic 3D principles that drove millions of people into movie theaters this year to see a film called "Avatar."

The game's old guard – the scolds and the purists, too – might be happy to know one of the beauties of ZenoLink is this: It isn't trying to replace the *art* of teaching golf; it is trying to *enhance* it.

"A lot of it has to do with muscle learning and being able to fire in a certain pattern," says Foley. "Obviously, mechanics and technique have to be aligned so you're not expending or wasting energy."



ZenoLink founder Chris Welch demonstrates a golf-specific method for gaining core coordination.

For the record, neither Foley nor anyone else is getting paid to endorse ZenoLink.

But right about now you are excused if you are rolling your eyes. You have been told forever that nobody *owns* the golf swing. It has been handed down from on high that there is no "secret" to the game of golf even though dozens of writers have insisted Hogan found one. A perfectly straight shot, Hogan said, was an accident. There's nothing new under golf's sun. And yadda, yadda, yadda.

"I think he's legit," David Leadbetter says of Welch. "If I had to criticize anything about ZenoLink, it would be that it's more theoretical than practical. But Chris Welch is a stand-up guy. He knows his stuff and he's very good, especially in the area of how energy is sourced and delivered. He was one of the pioneers of biomechanics in golf."

Welch, Foley and a growing number of ZenoLink followers, including the instructors of at least one Advanced Nike Junior Golf Camp, aren't trying

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—SEAN FOLEY

to convince anybody that everybody else is wrong. And they don't consider themselves revolutionaries. They are just trying to show their methodology makes it easier to confirm what is right.

According to eyewitnesses, the top juniors at the Boyne Golf Academy in northern Michigan this summer were willing sponges when exposed to Welch's biomechanical approach. "They were very receptive and very much looking forward to starting their programs," said Brian O'Neill, the director of golf at Boyne.

Part of that receptivity owes to the simplicity of the testing. Advances in 3D now allow ZenoLink video to pick up a Z coordinate to go with the standard two-dimensional X and Y coordinates. That, in turn, allows six degrees of freedom (not to be confused with six degrees of Kevin Bacon). And simply put, it allows ZenoLink's cameras to film and digitize how the nervous system initiates muscle movement without having to attach sensors or wires to the golfer.

"AK doesn't even know I'm testing him for ZenoLink when the camera is running," says Schriber. "He just thinks I'm filming a few swings."

Pressed for specifics on individual players, many instructors are hesitant to share. Asked to target one area where ZenoLink measurements directly influenced Schriber's development of Kim, the teacher responded with one word: "sequencing."

Not all of this is new. TaylorMade's MAT-T club-fitting system has been using 3D technology for years (see story on p. 11). And the earliest 3D imaging of any kind dates back to 1807. ▶

But the buzz generated by “Avatar” and recent Masters and PGA Championship broadcasts, available on a limited basis in 3D, have greatly accelerated the interest curve. It was recently reported that by 2012 Sony, Samsung and Philips are projecting more than 50 percent of their new sales will be 3D TVs. The cutting edge, like a scalpel of progress, is about to surgically invade our living rooms.

Brad Dean, the director of instruction at Crystal Mountain Resort, in Thompsonville, Mich., learned about ZenoLink from Schriber. Dean quickly realized something radical was in the wind. “The golf instructor focuses on angle and plane,” Dean said. “There’s no set way we are taught how to teach how the body works. ZenoLink gives us the ability to change how the body works and integrate swing mechanics with body motion.”

If you are wondering why you have not seen a ZenoLink (which costs less than \$200 a customer) infomercial on TV yet, it is partly because Welch is more of a scientist than a marketer and partly because explaining ZenoLink doesn’t lend itself to catchy sound bites. But that has not stopped the word of mouth from spreading, particularly at the junior level. And that buzz doesn’t even begin to get into how far ZenoLink’s applications go beyond golf.

Consider the world’s fastest human, Usain Bolt. Or Washington National Stephen Strasburg, the baseball pitcher with arguably the world’s most “live” arm. To hear Foley and Welch tell it, neither Bolt’s records nor Strasburg’s injuries are accidents.

“Usain Bolt doesn’t get faster by practice,” Foley says. “He gets faster by applying.”

In August, Strasburg suffered what was described by his team as a “significant tear of his ulnar collateral ligament.”

It abruptly ended a spectacular rookie season during which he was blowing away major league hitters with numbing regu-

Zeno Finds My Missing Link

My introduction to collegiate golf was both long and painful. I competed in a 36-hole marathon at Olympia Fields Country Club in the Fighting Illini Invitational. Making my debut as a member of the Northwestern University golf team, I was out on the course by 8 a.m. and didn’t finish until sunset. My blistered feet and sore back taught me an important lesson that day: A sound swing can help you shoot low scores, but a fit body helps you last long enough to win a tournament.

At NU, we were instructed by top trainers and put through routines that were aimed at strengthening our core. We even took yoga classes in the winter to improve our flexibility. To this day, I still do the exercises and stretches I learned in college to keep myself in playing shape. And yet, while I undoubtedly continue to improve in those areas, there remains one part of me that lacks any signs of getting better – my back. Yes, even at the ripe old age of 23, I experience back pain after playing golf. And as I hang there every other afternoon on the pull-up bar trying to double my career high to two, I always feel that something is missing in my workouts. ZenoLink was able to find that missing

larity. In early September, Strasburg underwent “Tommy John” surgery and isn’t expected to return to the Nationals’ active roster until 2012.

“Can you throw at those velocities and not have severe arm damage?” Welch asks. “Yes. If you coordinate effectively, you can throw at those velocities and not completely destroy your arm. Efficiency in movement not only produces velocity, it minimizes the risk to joints.”

So where does the little-known Welch get off opining on baseball players. Well, for starters,

puzzle piece in a matter of two swings.

I believe ZenoLink works because it understands one vital concept: No two swings are the same because no two bodies are. I have always felt strongly about this idea, and not just because genetics saw fit to grace me with a 5-foot-9 frame (with spikes on). The way I swing the club causes me back pain, but I never knew why. That was until ZenoLink found that as I transition to my downswing, I have a loss in spine angle that not only costs me distance, but a healthy back, as well.

Not only did ZenoLink find my problem, it was able to prescribe a cure for it, and therein lies the beauty of this 3D technology. A day after my swing video was taken and analyzed, I was given a list of eight different exercises, all designed to specifically target and strengthen my lower back to help me retain my spine angle through impact.

The exercise I feel I got the most out of was “the core separation with a Swiss ball.” I place a medium-sized Swiss ball between my knees to help me feel a solid connection to the ground and really anchor my base. From there, I cross my arms and rotate back about half way, stretching my core all the while keeping my spine angle.

he is currently doing initial testing for the Detroit Tigers, who think enough of ZenoLink’s principles to use them to protect the arms of their best young talent.

And it turns out the 42-year-old Welch didn’t just fall off the golf turnip truck, either. He has spent significant time theorizing with Norman, Leadbetter and, as long ago as the mid-’90s, Raymond Floyd. He has also worked with the diving coach at Duke University integrating ZenoLink principles on that campus.



Former Northwestern University golfer and current GGP staffer Andy DeKeuster used ZenoLink to take pressure off his sore back.

The next step is to follow through to impact, contracting my core muscles instead of rotating my shoulders. Three sets of 10 reps, and it takes me a little longer to get out of bed in the morning. Weeks later, I am covering the ball better through impact and the pain in my back is slowly fading.

ZenoLink gave me a workout that promised and delivered results, and was thankfully pull-up free.

Andy DeKeuster

For his part, Foley is a big believer in incorporating knowledge from other disciplines into his golf teaching. In an interview for this story he referred to Welch with unmistakable respect and affection as a “mad scientist.”

“I would love to sit there with him for two months every single day and shadow him. That would be the ultimate.”

Meanwhile, inquiring minds want to know from Foley if Woods has undergone ZenoLinktesting. The answer: Not yet. ▶

"I haven't used it on my guys yet," says Foley, whose "guys" also include PGA Tour pros Hunter Mahan, Sean O'Hair and Justin Rose. "But that's a goal." Foley, himself, has been tested and so have many of his junior players.



Tiger Woods (left) and Foley review a swing sequence.

Basically, he says, it is hard to get the top players to sit still long enough (even though the testing doesn't take more than 30 minutes) to go through the process. "I would like to see it get to the point where the technology would be good enough that if you came for a lesson and we were working on the first part of a kinetic link and we were doing a drill – you could hit a shot and go right to the computer and see if it had changed. People want information right away."

Welch compares providing that kind of instant feedback to "taking an X-ray of a broken bone, then another one a few minutes later hoping to see it had healed." But, he adds, "We

do now have the ability to process the ZenoLink data exactly the way it is within 15 minutes and, if necessary upon request, we can process it during a lesson so the information can be used immediately."

Tiger, are you listening?

Meanwhile, to the uninitiated, eavesdropping on a conversation between Welch and Foley is a little like reading Lewis Carroll's poem, "The Jabberwocky," for the first time. The language is English, but many of the words and concepts are foreign. Fortunately, both Welch and Foley get that.

"We're not faking it," Foley says bluntly. What they are doing is exploring a frontier in the pursuit of better golf. What they are *not* doing, blessedly, is trying to convince and convert everybody that all the other existing methods are wrong while insisting theirs is the only true way.

"What we provide is objective, scientific information," Welch says. "But the application of that information is anything but black and white. It's very gray and it's very much an art form. Most of what's out there is research. Ours is truly clinical application biomechanics."

In other words: Welch and his small staff are providing the plumb-bobs. Golf's teaching professionals still have to build the houses.

And, Welch adds, the doubt in the teaching and medical communities is beginning to subside.

"Five to 10 years ago, resistance [to ZenoLink] came from pretty much everywhere because it was brand new and physical therapists and strength people saw it as an encroachment on their territory," he says. "For the most part today, we have acceptance across the board."

"It's just a matter of time now," Schriber says. "I've been teaching a lot of this stuff for 15 years and people thought I was on crack."

Now there are smart people in golf who are starting to think that ZenoLink may have, instead, begun to crack the code. ●



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