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THE JOURNAL REPORT: GOLF

Swinging in Cyberspace

New software can analyze your every move. Does it help?

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 Staff Reporter of THE WALL STREET JOURNAL
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It used to be that bad swings were over and done with as soon as you sliced a golf ball onto the next fairway.

But in these high-tech times, you can't whiff a ball without it being captured in cyberspace forever. And you can analyze it, compare it, measure it and even get instant reads on improper trajectories and flawed impact with just a mouse click.

THE JOURNAL REPORT



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 See the complete [Golf report](#)².

Welcome to the new world of swing-analysis technology, which has become commonplace on the golf course and an expected part of any serious golfer's arsenal. Since starting out as a pricey perk less than a decade ago via elaborate and complicated systems, the use of digital technology to improve a person's game has been growing and morphing quickly, as the ability to digitally chronicle every aspect of your game gets

even more prevalent and ever cheaper.

"These technologies have become such a plug-and-play product," says Gary Palis, a vice president at Interactive Frontiers Inc., the Livonia, Mich., maker of V1 Golf, one of the most popular swing-analysis technologies in the U.S. "More than anything, people want to see themselves at play, and now as tech has improved, it is so simple to do that in a lot of different ways."

While crude and unhelpful videotaping used to be about the only way to get a handle on your slice, there are now all kinds of new-tech ways to analyze your swing to help get it right. These include more souped-up but simpler-to-use motion-capture technologies, a club with newfangled circuits running through it, devices that put you right into a virtual golf course and a vest that tracks your body's every movement. Even the gaming industry has gotten into the act, with games that get a player off the couch and onto a virtual fairway with the use of actual clubs and balls.

"Until recently, the problem has been putting it all together," says Holt Hackney, spokesman for SmartSwing Inc., the Austin, Texas, maker of the wired golf club, referring to being able to track your swing digitally. "Now, you don't have to even be a geek to have a high-tech golf experience -- you just have to know how to turn on a computer."

SWINGING SOFTWARE

The most common method used these days by both avid amateurs and pros to view and analyze a swing is a software program used in conjunction with a digital video camera and a computer.

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The **P3ProSwing** system (above) gives a detailed look at your swing through the impact zone (below)



using lines and circles to illustrate where a swing went wrong. Images of swings also can be burned onto a CD and even e-mailed to your own pro for evaluation.

"You don't have to have a perfect swing if you understand what an effective swing is," says Mr. Webster. "If you can see that and study that, it goes a long way."

Larger companies like Interactive Frontiers, which has dominated the market for swing-analysis software used by professionals, also have entered the market for recreational golfers in recent years.

While the V1 professional software, which has copious bells and whistles, such as an ability to keep a history of student swings, costs about \$900 and is used by teaching professionals, the V1 consumer software is quite robust too, although it costs only about \$90. Among the features: the ability to make a split-screen comparison; a zoom function, which allows you a close-up view of, say, the grip on a club; and video overlay, where you can place a picture of your swing on top of another person's -- a pro doing a perfect swing, for example -- and compare the two. You also can peruse swing libraries for comparison, employ drawing tools, watch instructional information, get tips and store information or e-mail it for further analysis by pros.

An even more stripped-down version of the V1 software is available for about \$40 and through trial downloads on many instructional Web sites. At PGA.com, you can download the basic V1 software for as low as \$35, and the site currently offers a seven-day free trial.

Mr. Palis says Interactive Frontiers sells thousands of various software packages, and cheaper programs at places like PGA.com garner upward of 45,000 downloads a year. "It's really getting so much less intimidating that it becomes just like having the latest putter or other equipment," he says.

With vast changes in the design and use of software over the past several years, swing-analysis programs are now as easy to install on a computer as any videogame or office suite. And while some programs can still cost up to \$25,000, there are now a host of new programs for do-it-yourselfers that go for less than \$1,000.

In addition, most swing-analysis software sold today can be downloaded over high-speed Internet connections. That gives a leg up to small companies like cSwing LLC, which don't have big marketing budgets or are too small to have distribution relationships with big retailers.

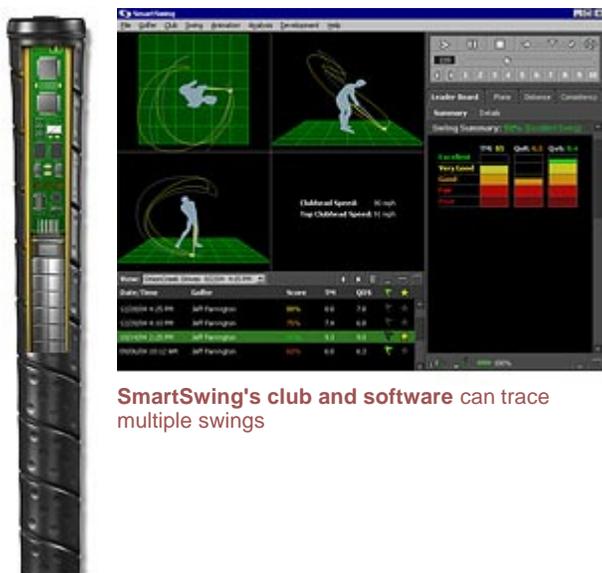
"Until recently, very little has been do-it-yourself," says Phil Webster, founder of cSwing, an El Paso, Texas, start-up that makes inexpensive swing-analysis software for use with digital cameras, or Web cams and computers. "Now, given the kind of computing power everyone has in their homes, it's hard not to aim at that market."

The cSwing program was launched by Mr. Webster in 2002, in an attempt to combine "my love of computers with my passion for golf," he says. "CSwing has enjoyed success globally because of the Internet." The company has sold 5,000 programs, including a \$99 version over the Web as well as more expensive versions on CDs that come with a library of pro swings and more features, such as allowing a user to employ multiple cameras to look at a swing.

Like many software programs on the market, cSwing allows users to tape a swing and download the image onto a computer, where it is then analyzed in windows with overlays of what good swings look like. And there are tools that allow the player to draw and edit right on the screen

YOUR CLUB IS WATCHING

Swing-analysis software also has joined forces with high-tech equipment to take swing improvement one step further. One pioneer in the area, SmartSwing, recently completed a deal with Interactive Frontiers in which V1 software is used to process and analyze data downloaded from SmartSwing's "intelligent golf club."



SmartSwing's club and software can trace multiple swings

What exactly is a smart golf club? Simply put, circuitry embedded in the clubs -- specifically, infrared trackers, gyroscopes and accelerometers -- allows the software to track swings from backswing to follow-through. The club's memory stores information on as many as 100 swings, which it sends wirelessly to your PC for processing by V1's or SmartSwing's own software. The software can then spit back a range of statistics, from club-head speed to tempo; compare your swing to a reference swing; and offer tips to correct mistakes. For instance, it can tell whether your tempo is too fast or your release too early.

SmartSwing offers a driver, a three wood and a six iron -- all ranging in price from \$650 to \$800 -- and will soon come out with a putter. In addition, says SmartSwing's Mr. Hackney, outfitters given detailed information by the company can embed the circuitry in your own clubs.

"You can imagine this kind of sensor-rich equipment with a lot of applications in a wide range of sports," says Mr. Hackney, adding that the company currently has no plans to expand the technology. "Pretty much anything can be wired."

WHAT YOU WEAR COUNTS

At Bentley Kinetics of Manchester, N.H., the focus is on a wireless sensor motion-analysis system called biomechanical technologies, which it has been working on for 15 years. In essence, the technology uses a vest worn by the player to monitor the body. The recently introduced K-Vest is made in two parts and has sensors on it that measure the movements of various body parts, such as the shoulders and hips, during a swing. That information can then be sent by wireless transmitters to your PC for analysis by the company's software, with no need for a camera.

Bentley is aiming to sell its products more to golf pros and physical therapists than to recreational golfers. The system is priced at \$1,595 for a student version and \$1,995 for an instructor version, which has more ability to analyze the data. Adding a high-speed video camera and laptop to the K-Vest kit in a more complete K-Lab brings the total price to \$4,995.

The company also offers a much more expensive K-Center, which is a permanent installation for places like colleges and pro golf training facilities using their biomechanical technologies on a larger scale.

LIKE THE REAL THING

Sensors are at the heart of Sports Vision Technologies' P3ProSwing, a swing analyzer and golf simulator priced between \$570 and \$3,000 depending on the features. The system consists of a 9-by-14-inch flat box with synthetic turf, and embedded in the turf are 65 infrared sensors that capture information from a club as a user swings it over the turf. A reflective tape you place on the bottom of the club sets off the sensors.

Data collected includes club-face angles, angle of attack, speed and even whether you hit on the sweet spot or not.

As in other swing-analysis systems, after the data are transmitted to a computer, the statistics and other information can be crunched to judge problems.

"We're not trying to replace the pro," says Doug Chamberlain, vice president of sales and marketing at Sports Vision Technologies, Bethel, Maine, which has sold about 3,000 units since the beginning of 2004. "But very few pros can even see every problem there might be with a swing, and this gives them and the golfer a leg up."

Mr. Chamberlain says a user can hit real balls into a catch net or use the foam balls provided, so they can use the system at home and indoors. In addition, a projection screen can be used to do three-dimensional golf simulations on various courses. (The \$3,000 version includes a full-size virtual hitting bay with a projection screen.)

"We want people to feel like they are on a course rather than just in some kind of science experiment," he says. "Learning should be fun."

A NEW LEVEL OF FUN

Having fun is the focus of two companies that use swing analysis more as entertainment. QMotions Inc. of Riverside, Calif., and Electric-Spin Corp. of Woodbridge, Ontario, are seeking to replace the joystick and mouse with actual clubs and balls when playing golf on computers or major game machines.

This kind of full-motion action has been called "exergaming," which essentially means getting game players off the couch and moving, while presumably giving users a more realistic experience indoors with their own clubs. Both employ already-popular games like **Electronic Arts** Inc.'s annual Tiger Woods PGA Tour, and essentially play on top of it using optical sensors connected to a tethered ball that can measure things like swing speed and impact as well as allow you to play the game virtually.

"We're in the market of adding entertainment more than anything else," says Amro Albanna, president and CEO of QMotions. "And you get your swing analyzed while having fun." The company's Golf Active Game Controller, which includes the EA Woods game, has been around for about a year and costs \$179.

QMotions uses a plastic ball attached to a basic swing arm in its device, a technology that is not new. To bolster it, there are sensors in the cylinder to give the user information about the full-motion swing and its impact on the game being played. This data are then sent to a PC or to a television with a game player.

Electric-Spin's Golf Launchpad is a bit more robust and technologically innovative. With a price of \$229, it also includes the Woods game as well as hundreds of other virtual golf courses in its database.

Using a regulation ball on a tether attached to a pivot, rather than a swing arm, along with realistic turf, the Launchpad gives an experience more akin to hitting the real thing. And a computer is under the turf, which is embedded with sensors to track the swing.

But while the sensors will give you a host of information about your swing, it won't analyze it or give you tips, says Shawn Clement, sales manager at Electric-Spin. For that, you need to take the data to a pro.

"There are way too many reasons why someone slices a ball," says Mr. Clement, who was a pro for many years. "That's why no matter how cool the technology, you'll always need a person to help you."

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