Golf's Digital Divide

The new tools of the game: $50,000 simulators and $4,500 sensor vests. How technology is driving a wedge between haves and have-nots.

By Reed Albergotti

ON THE FAIRWAY of the 17th hole, S. Hubert Humphrey swings his five-iron and hits a straight shot to the green with the help of a strong tailwind. He's not actually at the fabled Plantation Course at the Kapalua Resort in Hawaii—he's in his house, practicing for an upcoming match with colleagues on his $50,000 simulator. "It certainly gives me an advantage," says the 64-year-old entrepreneur.

Golf already has an elitist reputation, but a new generation of expensive high-tech tools is stoking a costly arms race among players looking for an edge. Pricey golf simulators can now be rigged to play matches over the Internet, while an increasing number of weekend duffers are investing in $3,000 "launch monitors" that use infrared beams to measure a ball's angle, speed and backspin. At the renowned David Leadbetter Golf Academy near Orlando,

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Illustration by Mick Coulas

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Fla., two-day courses in a new biometrics lab, where sensors attached to various muscles detect swing flaws, will cost $7,500—compared with the $3,000 tab for three days of old-fashioned instruction. And gearing up for tournaments from this weekend's Masters in Augusta, Ga., to the U.S. Amateur Championship, players are turning to laptop computers and digital video cameras to help hone their swings.

The result is a widening digital divide that's drawing new lines in the golf world. Traditional equipment makers are squaring off against upstart high-tech companies that hail from the world of Hollywood special effects. Courses are split on whether to take the high-tech route to woo new golfers or hew to more time-honored ways. And golfers who say the sport is founded on basics like practice and focus worry that turning golf into a kind of rocket science could ruin it.

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Ex-PGA star Ken Venturi on golf's best books

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"You turn your shoulders and you hit the ball," says Tom Nieporte of a game he says hasn't changed much since he turned pro in 1953. As the head golf pro at Winged Foot Golf Club in Mamaroneck, N.Y., Mr. Nieporte doesn't use any high-tech tools because, he says, it just confuses his students.

All of this poses some risk for an industry that has seen little growth in recent years: The number of golfers has stayed at about 28 million since 2001, according to the National Golf Foundation, a trade group. With more complicated tools flooding the market, newcomers may wind up feeling that the sport takes too much time to master even before they get on a course.

For Pat McNabb, a visit to the pro shop for a set of new clubs at the Reynolds Plantation golf club in Greensboro, Ga., turned into a 2½-hour session after the staff suggested he try out their new MATT System. After being strapped with dozens of tiny sensors and filmed by nine cameras that projected a computer-animated image of his body, the beginning golfer says he "felt like a Christmas tree." By the time it was all over—at a cost of $300—the computer prescribed about $2,000 worth of special clubs to help compensate for his flaws.

Equipment and training-aid makers say these products work. In a study of several thousand golfers with an average handicap of 15, iClub, an equipment maker with a new swing-analysis device that attaches to the top of a club, says 53% were able to cure their hook or slice within four weeks. (They practiced with the device 10 minutes a day, four times a week.) Anecdotally, many players who've tried range finders, sensor vests and other gizmos say they've had good results.

But industry experts say much of this stuff tends to help experienced golfers far more than beginners. While overall spending on training and equipment hit $2.6 billion last year, up 73% from 1994, according to the National Sporting Goods Manufacturing Association, a trade group, average scores and handicaps have remained fairly flat over the last decade. "A better club will help Tiger Woods more than it helps me," says Marty Parks, a spokesman for the U.S. Golf Association.

At its first "Better Golf Through Technology" conference this past February, the Massachusetts Institute of Technology's Center for Sports Innovation brought together instructors to discuss how to get newcomers to adopt often intimidating high-tech tools. Among the seminars: "Analysis of Face Angle and Ball Flight." The goal, says Kim Blair, director of the center, is to start designing these tools "in a way that the average golfer can benefit."

One example is the Body Motion System from iClub, one of the sponsors of the conference at MIT. A vest detects body movement and wirelessly sends data to a laptop computer to analyze a golfer's swing. But the data is so complicated—like hip angle and swing plane—instructors go through a two-hour training session just to learn how to use the software and put the $4,500 vest on properly. Satayan Mahajan, chief executive of iClub, says he's working on new, simpler products for non-pros: "When you don't get good at something quickly, you tend to give up."

Rae Ouzts, a former staffer at a driving range in a hotel in Reno, Nev., recalls frustrated beginners throwing balls at the video screen of a simulator. While more experienced players knew how to adjust their game for the machine, beginners were easily distracted by video projections of famous courses—then hit poorly. One golfer once got so mad "he let go of his club in the back swing and it went flying across the room," says Ms. Ouzts. "And it wasn't by accident."

Golf is legendary for the bills it can quickly rack up, with avid players sinking thousands into custom-fit clubs and more than $200,000 for memberships at elite courses. But the new technology is not only pushing the costs to ever more exorbitant heights, it's also changing how the game is learned and played. Full Swing Golf, which makes $55,000 golf simulators, says its fastest-growing market is home users. This year it plans to install 100 in-home machines, up from 10 five years local and regional tournaments.

"This is a big step forward," says Rob Werling, a 23-year-old graduate student at the University of Kansas who plans to play in 10 tournaments around the state this summer. He says a range finder will save him the trouble of finding sprinkler heads with yardage markers and measuring distances by counting paces to the target.

Part of the expansion is being driven by companies outside the golf world that see an opportunity to deploy their technology in new applications. To develop its MATT System, for example, golf equipment maker TaylorMade contracted MRI Technologies, a special-effects company that worked on "The Lord of the Rings." Vicon Peak, whose motion-capture technology has been used in movies such as "The Polar Express," recently rolled out a system that uses up to 12 cameras and dozens of sensors to detect golfers' movements and improve their swing.

Even academic institutions are looking to profit from the game. The University of Pittsburgh sunk more than $250,000 into its Golf Fitness Laboratory, where it charges $850 for a 2½-hour session with a physical therapist who will assign exercises based on the data gathered.

Courses, meanwhile, are increasingly keen on updating their facilities with the latest innovations. When its new high-tech studio is completed this year, Hagin Oaks Golf Complex in Sacramento, Calif., will have spent $50,000 to $100,000 in equipment, including two new launch monitors and video swing-analysis programs. It's the course's largest investment in golf technology. "We want to stay on the cutting edge," says Ken Morton Jr., director of retail sales.

Before she hits the links, Marlo Stil clips on a fingertip pulse sensor and connects to her laptop to see whether she's causing the biofeedback bars to blaze red; if she is, she does extra breathing exercises before the first tee. The 48-year-old from San Diego says she's managed to control her emotions with the software program from Heart Math, which has also helped drastically lower her handicap in the past four years. "The whole premise," she says, "is to go to your heart and create feelings of love for where you are."

—Ellen Gamerman contributed to this article.

The Latest on the Links

A look at some of the many high-tech tools designed to help players smooth out their swings, lengthen their drives and sharpen their accuracy.

On the Course and Range

SkyCaddie by SkyHawke Technologies, *$349.95*
GPS measuring tool has distance coordinates for about 10,000 courses. Golfers trained by PGA Tour player Fred Funk's caddie program them in.
Bottom Line: *Accurate, but since it doesn't include contours, you still have to survey the course to get the full picture.*

iClub by iClub, *$600*
Small device fits atop a club, records data on velocity and swing plane, then downloads details to a laptop.
Bottom Line: *Instructors say it adds 2.5 inches to the length of the club, which can be distracting for some people.*

PinSeeker 1500 Slope Edition by Bushnell, *$449.95*
This laser range finder judges distance and elevation, but only if there's a direct line of sight to the target.
Bottom Line: *The USGA doesn't allow this model in tournament play because of the slope feature, but some players use it to survey the course in advance.*

Vector Pro Launch Monitor System by Accusport, *$2,995*
Uses infrared light and two cameras to detect ball spin and speed.
Bottom Line: *An improvement from the previous version, which used a strobe flash golfers said was distracting.*

Swing Analysis

MATT System by TaylorMade Performance Lab
Golfers take swings wearing a neoprene outfit with reflective balls that are tracked by infrared cameras. Instructors use the computer-generated images to correct swings and fit clubs.
Bottom Line: *Not for sale to home users, but golfers say it's worth the roughly $350 it costs to use one at a course—so long as the instructor is well-versed in how to read the data.*

MX40 Motion Capture System by Vicon Peak, *$50,000-$150,000*
Tracks players' swings with dozens of sensors on the body.
Bottom Line: *Pros say the data can be overkill for the average golfer. Vicon says it will roll out a version for less than $5,000 with fewer cameras.*

K-VEST by Bentley Kinetics, *$2,995*
Equipped with gyros and accelerometers, the vest measures swing data, then beams information to a laptop.
Bottom Line: *Players say the vest can interfere with their swing; company says it hasn't had complaints.*

Simulators

Indoor Resort by TruGolf, *$35,000-$45,000*
Simulator takes into account wind speed and barometric pressure at 56 courses, including Pebble Beach and St. Andrews, and can double as a home theater.
Bottom line: *Golfers say it's helpful—except on the short game, when it's hard to judge distance. The company says new software lets players skip the putts.*

TourLinks putting green by Creative Sport Concepts, *$299-$10,000*
Instead of cement, the green is made of laser-cut styrofoam and plastic that can be positioned to simulate almost any putting situation.
Bottom Line: *A good deal unless you start customizing with bumps and turns, which can push the price tag up to $10,000.*

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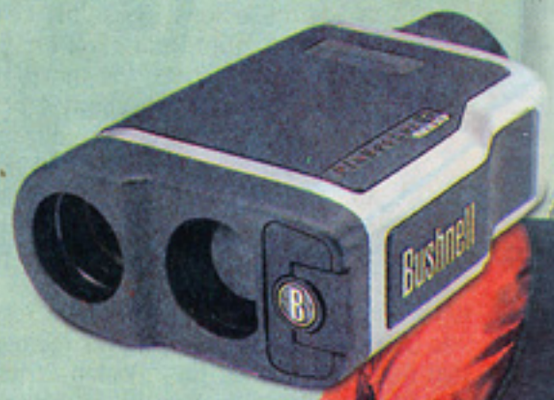

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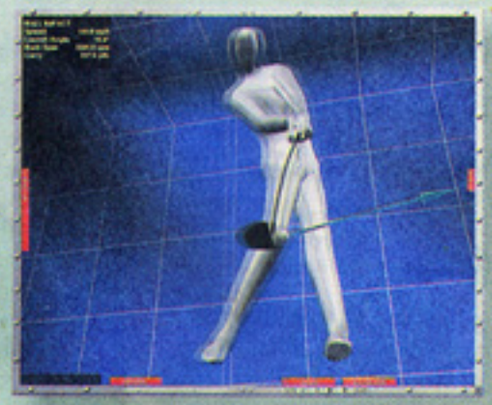

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