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ON SPORTS**Making the First Three Seconds Count****College Football Deploys High-Tech Aids for QBs; The \$50,000 Simulator**
 By JON WEINBACH
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College football teams are rethinking the way they train their quarterbacks.

As the 2007 season begins, nearly every top program has adopted elements of a swarming offense designed to boost scoring by speeding up the tempo, flooding the field with as many as five receivers and crossing up the defense. Coaches, who have to teach quarterbacks to make intelligent decisions in less than three seconds, are turning to an array of high-tech tools for help.



Vanderbilt Athletics


Vanderbilt QB Chris Nickson uses high-tech visual training.

Georgia Tech's quarterbacks put on infrared goggles to operate a program meant to strengthen their eyes. Maryland has invested more than \$50,000 on a videogame system that helps quarterbacks master the team's playbook. Arizona has installed a studio where players dressed in motion-capture outfits compete against life-size computer-generated opponents.

To generate more realistic film for his team to study, Tennessee coach Phil Fulmer now records every practice with seven digital cameras, including one attached to a pole and positioned directly behind the quarterback's head. "Anything you can do to find an edge," he says.

To "read" receivers and defenders quickly at the margins of the field, quarterbacks must work on peripheral vision and convergence -- or the way both eyes work together as an object comes closer. Larry Lampert, an optometrist in Boca Raton, Fla., who's worked with several college and pro players, says the best passers can track multiple targets without shifting their heads from side to side. "You want to be able to gather more information with less eye movement," he says.

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Keeping it all straight can be daunting. Purdue quarterback Curtis Painter says he has to be able to recall about 50 plays, each of which involves at least four receivers and can be run from six different formations. At the line, he has to scan the defense for hints of its plans (an extra linebacker on one side, for instance) and if necessary, change the play by shouting out a precise series of coded commands. Once the play begins, Mr. Painter knows that his coach expects him to read every receiver's position, keep tabs on the entire defense, make a smart decision and release the ball -- all in no more than 2.7 seconds. "It gets confusing," Mr. Painter says. "Sometimes you're standing back there wondering when you're going to get hit."



Air Force Academy Athletics

The eye speed concentration trainer used by athletes at the Air Force Academy.

While there is no solid proof these methods work, they are being adopted at a time of increasing prosperity for college athletic programs. Over the past decade, athletic-department budgets at Division I schools have increased 8% to 12%, according to the NCAA -- outpacing overall school budgets. Ohio State's sports budget, the nation's largest, now tops \$100 million. As new NCAA rules have limited practice times, technology is also giving players a way to work on their skills when they're not suited up.

Latest Wrinkle

THE "PRO SIMULATOR"



Photos from Pro Simulator by GridIron Technologies

The latest tactical wrinkle in college football, known as the spread offense, came into vogue in recent years as teams with middling talent such as Hawaii and Texas Tech began setting offensive records -- catching the attention of coaches across the country.

A traditional college offense has two receivers, a tight end and a quarterback who lines up directly behind the center to receive the ball and then backpedal into throwing position. Spread offenses try to challenge opponents by speeding up the pace -- doing away with huddles, having quarterbacks take the snap from the "shotgun" position on every down and executing plays in just a few seconds. The goal is to weaken the defense by spreading its players over a larger area.

On a humid day in Knoxville, Brian Gearity, assistant strength and conditioning coach at Tennessee, sits at a table in the varsity weight room with four computers and a few pairs of 3-D glasses. The gear is for the "Vizual Edge Performance Trainer," a software program developed by Barry Seiller, a Chicago ophthalmologist

The "Pro Simulator" is a software program that uses video game-style graphics and controllers to help players learn playbooks and opposing defenses.

who's worked with elite athletes in several sports. Tennessee is one of just three Division I football teams using the software.

Mr. Gearity cues up an exercise meant to sharpen visual convergence. In it, users are asked to identify the position of a three-dimensional diamond on a fuzzy reddish background -- toward the left, the right, up or down. With each correct answer, the diamond gets smaller and harder to identify. In another drill to strengthen visual recognition and quicken reaction times, players observe a series of arrows on the screen and have to reproduce the sequence.

Erik Ainge, Tennessee's starting quarterback, says the program can be just as beneficial as film study. "It's another way to help you focus," Mr. Ainge says. "The faster you can get your brain and your eyes to work together, the better off you'll be."

Vanderbilt quarterback Chris Nickson, who has used the software for about six months, says it has helped him improve his peripheral vision. During a recent practice, he says he could "feel" a cornerback blitz coming without turning his head. "I was like, 'dang, that machine is pretty good.'"

This season, quarterbacks from 15 schools -- including Maryland, Oklahoma State and Washington State -- will play virtual games on the "Pro Simulator," a system introduced last year by GridIron Technologies of Scottsdale, Ariz. While its controllers and graphics are similar to those of popular videogame consoles, the system allows teams to upload their playbooks and enter scouting information about their opponents.



Nebraska's interactive digital playbook

The "Huddle" program is a digital playbook created for the University of Nebraska.

Toggleing a Controller

When Maryland's quarterbacks gather on Friday nights to work on the simulator, they're actually reviewing the plays and defensive formations they're likely to see the next day. By toggling the controller during a play, a quarterback can move his virtual line of sight to indicate which receiver reads he is making. In "study" mode, pop quizzes about formations and passing routes appear on the screen. The results of these exercises are tallied up and emailed to coaches.

Quarterback Riley Skinner of Wake Forest, who began working with the program last year, says it has helped him learn enough about an opponent's defense that, "it becomes second nature by game time."

Since the mid-1990s, the Air Force Academy has been putting football players through vision drills that are also used to train pilots. In one exercise, they jump on a trampoline while trying to read two different eye charts -- one that's just inches from their face and another that's 20 feet away.

Al Wile, assistant director of the school's Human Performance Laboratory, says the idea is to help them focus simultaneously on immediate threats and downfield targets. "It's amazing how many messages the eyes can send to the brain," he says.

There have been few formal studies on whether these tools and techniques actually improve football performance. Sports administrators at several schools say they may be most useful as recruiting tools to impress teenage athletes. "The six-plays-to-a-page playbook just doesn't work anymore," says Jason Graff, a former Nebraska graduate student who created an interactive digital playbook for the school's football team. "You've got to match what college kids are used to."

The NFL Stands Pat

For its part, the NFL hasn't changed the way it evaluates the visual skills of college prospects. While teams will sometimes run their own tests, players invited to the league's annual scouting combine are given nothing more than a generic eye exam.

Whether or not these technologies are doing anything to improve their numbers, quarterbacks are, for the most part, offering no resistance. One reason: The new tools are turning an activity they already do for fun into something productive. "Everyone likes videogames," says Tennessee's Mr. Ainge.

Write to Jon Weinbach at jonathan.weinbach@wsj.com¹

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(1) <mailto:jonathan.weinbach@wsj.com>

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