

What Athletes See

Researchers studying the “quiet eye” technique argue that the visual trick is a key part of coordination.



The Los Angeles Clippers's DeAndre Jordan

USA Today Sports / Reuters

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Consider two very different basketball players. The Los Angeles Clippers star DeAndre Jordan, one of the strongest, quickest players in the NBA, nevertheless made only 39 percent of his free throws last year. Then there's his teammate, Jamal Crawford—not as fast or as strong as Jordan, but he makes 90 percent of the shots he takes from the foul line, a rate that's among the best in the league.

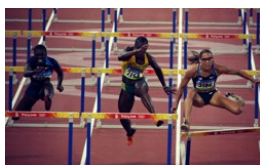
What makes one player a stellar shooter, while another has more trouble making a basket? As Jordan demonstrates, it's not just a question of sheer athleticism. The difference between athletes like him and athletes like Crawford may well come down to a concept known as “quiet eye”: a new way of understanding how people perform precise motor-skill tasks like shooting a basketball, flying a jet, or removing a brain tumor.

Until recently, most researchers viewed these skills in terms of coordination and reflex, believing that those who were better at making a free-throw or suturing a wound simply had had superior physical dexterity. But in the past few years, a small group of neuroscientists have identified a new way of understanding coordination, one that focuses on visual and cognitive skills over physical prowess.

The concept, known as the quiet-eye theory, is deceptively simple: Before you perform an action, you focus your gaze on the salient aspects of your goal—the rim, the catcher's mitt, the malignant tissue, and so on. In recent years, using eye-tracking technology, researchers have found that locking onto the relevant stimulus during the right time frame—typically the few hundred milliseconds before, during and after the movement—greatly improves your chances of success.

“When your eyes provide the data, your motor system just knows what to do,” says Joan Vickers, a cognitive psychologist at the University of Calgary and one of the originators of the quiet-eye theory. “Your brain is like a GPS system. It detects target, speed, intensity, and distance.”

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But quiet eye encompasses more than vision; it's about attention, too. The gaze is a key factor in the brain's ability to concentrate on the essential

details rather than ancillary noise. In a [study](#) published this spring by researchers at the University of Exeter in the U.K., the scientists found a clear link between a person's ability to store information in short-term memory—a good measure of the ability to focus—and their ability to use the quiet eye approach.

Some [evidence](#) indicates that the quiet-eye technique stimulates the dorsal area of the brain, which regulates focused, goal-directed attention. It may also suppress activity the ventral region, which oversees stimulus-driven attention—the kind that keeps track of a scattered, fluid set of variables. There's probably more to it, though: Mark Wilson, a psychology professor at Exeter who studies quiet eye, points out that training in the technique tends to change [a range of physiological measures](#), including heart rate and patterns of muscle movement.

All of this might seem obvious—after all, “keep your eye on the ball” isn't exactly a new idea. But it's only recently that scientists have had the technology to fully grasp the value of intense visual focus. And it turns out that locking on to the right visual variables is not so simple. “People often think they're looking somewhere, and they're wrong,” says the University of Exeter psychologist Sam Vine, who collaborates with Wilson. “Doing this right is not as easy as it may seem.” Often, he says, the difference in focus time between a beginner and an expert is as small as a fifth of a second.

While it may be difficult, quiet eye is a teachable skill. Vine and Wilson say that so far, their research has shown that quiet-eye exercises may improve performance in basketball shooting, golf, marksmanship, and surgery. Vine has trained professional golfers, Olympic athletes, and soldiers in the technique.

It may even help ease recess angst for uncoordinated kids. In May, Vine, Wilson and several colleagues published a [paper](#) showing that quiet-eye training can improve throwing and catching in children with

developmental-coordination disorder, a condition characterized by poor overall motor skills. For the study, the researchers asked 30 kids with the disorder to catch a tennis ball after throwing it against a wall. The subjects all received instructions for improving their throwing technique, and half were also given quiet-eye training to help them track the ball in flight. After the training, the members of the quiet-eye group made more catches. The technique-only kids, by contrast, caught *fewer* balls than before, possibly because they were paying more attention to their form and less to the ball itself.

Quiet eye could also help with another common motor-skill issue, the decline in performance as the stakes increase. (Crawford excels here too—he has a knack for making shots in crucial moments.) Quiet-eye scientists say choking occurs because pressure triggers anxiety, which degrades attention. The result: You don't look in the right place at the right time.

Quiet eye can help counter this tendency, Vine says. “We can definitely train people to get better at this,” he says. “It makes a real difference in how they perform.”

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