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## Train the brain for successful soccer

### Ability to 'read the game' seems to be in the mind, not the eyes.

Charlotte Schubert

Many legendary football players have been hailed for their ability to 'read the game', showing an uncanny ability to predict where the ball will turn up as play unfolds. But that's not just a turn of phrase, say brain experts: top players' brains really do work differently to those of the rest of us.

"There is a certain amount of genius about the great players, and I mean that as an intelligence thing," says Michael Shadlen, a neuroscientist at the University of Washington, Seattle. He studies decision-making but he's perhaps best known for jokily handing out soccer-style cautionary yellow cards to his colleagues when debate heats up at scientific meetings.

Coaches haven't quite caught on to the power of the mind, instead focusing on visual skills such as seeing a ball in peripheral vision, says Paul Ward, a psychologist at Florida State University in Tallahassee. "People try to train players' eyes as opposed to their brains."

It has become fashionable among progressive coaches to subject players to a barrage of spatial-awareness tasks, much as fighter pilots are trained to hone their visual skills. But Ward says that they might be better off getting players simply to focus on mental improvement.

#### Eyes down

Currently, psychologists test players' reactions to the ball and eye movements using virtual-reality systems or giant video screens hooked up to joysticks. Such studies suggest that visual skills account for only a small fraction of the difference between expert football players and novices, says Ward.

What's more, elite players are no better than beginners at predicting the trajectory of a fast-spinning ball<sup>1</sup>, reports Cathy Craig at Queens University in Belfast, Northern Ireland, who has studied players at AC Milan and other clubs.

Modern professional footballers have uniformly high levels of fitness, so in physical terms, very little differentiates the absolute elite players from their slightly less accomplished counterparts.

Instead, the very best players have "enhanced perceptual cognitive skills", says Ward. In footballing parlance, they read the game well. These star players use the same amount of their brain for these tasks as a novice; but they use it better, for instance by perceiving the field as a unit or by looking at key body parts to anticipate an opponent's moves. So much of what we recognize as footballing talent is down to the brain rather than the body, says Ward.

Some psychologists compare the skills to that of chess. And the key to being a master? You guessed it: practice. In a study at the British football academies that nurture talent for the country's top clubs, Ward has found only one major difference between players who advance and those who fail to make the grade. "They put in extra hours," says Ward. A novice professional has had an estimated 10,000 hours of practice



Zinedine Zidane: a footballing genius.

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before even signing for a club.

Perceptual cognitive skills can keep a player in the game as he ages and loses speed; one example is Paolo Maldini, a 37-year-old Italian defender known for his elegant and astute play. And they can give a young player an edge, as in the case of Wayne Rooney, the 21-year-old English striker, says Ward.

Shadlen, meanwhile, pinpoints French midfield maestro Zinedine Zidane as the most intelligent footballer, whereas Craig hails the brain of the Ukrainian Andriy Shevchenko: "He's always in the right place at the right time."

### Looking the wrong way

Ward admits that some vision experts will disagree with him and say that visual perception is crucial to the sport. And coaches at the highest levels persist in hiring visual specialists. "Some of the devices used for improving visual skills are really strange: beads on a string, rotating wheels and that type of stuff," he says.

Psychologists such as Ward and Craig suggest another approach. They have found that players can improve with the help of simulations that boost perceptual cognitive skills associated with the game. But such approaches are viewed with suspicion, says Craig, "You tend to get coaches who think this is all gobbledegook."

And trainers might also do well to consider whether Albert Einstein and David Beckham might have more in common than their famous hairstyles. "The greatest scientists focus on the right questions, in the same way that the great soccer players focus on the right manoeuvres and tactics," says Shadlen.

If that's the case, then why can't scientists transfer their skills at the bench to the football field?

"That's a question I ask myself every weekend," Shadlen says.

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