

Brain Holds Key to Performance Edge in Elite Sports

It's always fascinated me just how much athletic skillsets vary dramatically from athlete to athlete, even at elite sports levels. An example is [Paul Scholes](#), one of the players I admired most throughout my time at [Manchester United](#). As the strength and conditioning coach, I can tell you his physical attributes gave him little advantage over his competitors. What he did have, however, was incredible mental abilities. This is why [Sir Alex Ferguson](#) called him: 'One of the [greatest football brains](#) Manchester United has ever had'.

The latest [sports science studies](#) show that when elite players are compared to sub-elite players, the differences in mental performance are huge. Reading and responding to game flow, predicting opponents and ball trajectories, and responding rapidly under pressure are key areas where elite performers gain a critical edge in competitive play. These factors are typically undertrained, yet the [brain's neuroplasticity](#) allows rapid performance gains, with long-lasting effects. The missing piece of the puzzle is utilizing the right techniques, which is where the latest training technologies like [NeuroTracker](#) come in. As the first ever coach to use this, and other cutting-edge training tools, I've never looked back. Here are three reasons why cognitive training tools like NeuroTracker can make a difference.

1. Attention is critical for decision-making

In order to excel on the field, awareness is fundamental. One of the biggest challenges is maintaining multi-focal attention on several moving targets at the same time. On the field this involves perceiving players moving around the athlete, identifying movement patterns in and out of vision, and predicting motion trajectories.

Rather than coaching athletes for specific plays or situations, ideally we want to [sharpen a player's cognitive abilities](#) in a way that can be applied to any game situation. It's a similar idea, for instance,

to doing squats to improve sprinting and jumping power. Attention-based training like NeuroTracker, benefits the all-important decision-making area of the brain. This is because the speed and quality of action-response choices rely heavily on awareness and reading the scene fluidly. The added factor here is that when a player's capacity of attention is overwhelmed by information or psychological pressure, or even fatigue, mental focus breaks down. Momentary attentional lapses often result in critical errors during intense moments of big games. For this reason, attention needs to be trained at very high levels, so that it becomes robust enough to withstand the pressures of competition.

2. Processing speed is Paramount

It's pretty easy to follow action when there is little movement, but when motion speeds up, the demands on the brain increase dramatically. Most sports demand following dynamic and rapidly moving scenes, with complex movement patterns. Top athletes need to not only process this, but to do so at an incredible speed. This is why training needs to condition mental focus at each athlete's processing speed threshold, otherwise it's going to be tough to keep on top of the action when it matters most. NeuroTracker is great example of how this can be done, as it pushes each athlete's speed processing limits every session. The training effects show this actually speeds up brain waves, associated with greater alertness and mental focus. More technologies should apply this conditioning principle.

3. Peripheral vision is Fundamental and Trainable

Vision dominates about 80% of the vast amount of sensory information we take in every second. [Mastering how to use vision](#) is a skill which separates the good from the best in team sports. The classic difference found between elites and amateurs, is that amateurs over scan for detail, darting their focus point around too much. Why is this a problem? It causes blurred vision in-between scan points, so if your eyes are constantly moving from point to point, most of the time the scene is blurred - compromising peripheral awareness. Elite athletes tend to scan much less frequently, focusing only on pertinent details. This allows them to spread their visual attention mentally to draw in as much information as possible.

It's not intuitive, so vision training is important, especially for younger athletes. A technique known as a 'visual pivot' is something which you anchor your focus point to, while actually paying attention

to action in the periphery. With NeuroTracker it involves tracking multiple moving targets. The task forces the athlete to process complex information across a wide field of view while looking towards the center of the scene.

In summary, cognitive training technologies can be great tools for improving athletes' skillsets in modern day sports. However, based on my experience, I've found that the tools that condition combined attention, processing speed, and visual awareness, are the most valuable.