Jocks beat bookworms on brain test

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Russell Wilson of the Seattle Seahawks escapes the tackle of Kroy Biermann of the Atlanta Falcons during an NFC Divisional playoff Game at Georgia Dome in Atlanta, Georgia on January 13, 2013. Professional athletes learn quicker than university students to unravel complex visual data, said a study Thursday that challenges the age-old brains-vs-brawn cliche.

English Premier League soccer players, NHL hockey players, France's Top 14 club rugby players, and even elite amateur athletes have better developed cognitive functions than the average university student, according to a perception study undertaken by Professor Jocelyn Faubert

of the University of Montreal's School of Optometry.

The study demonstrates a possible outcome of the increased cortical thickness that has been found in areas of trained athletes' brains. It also offers researchers new avenues for exploring the treatment of people who have issues with attention, such as the elderly.

"Study participants were asked to describe a series of simulated objects moving through three dimensions. Although the context had nothing to do with any specific sport, we found that professional athletes were able to process the visual scenes much better than amateur athletes who were in turn better than the students," Faubert explained. The cognitive requirements for correctly interpreting the abstract moving scenes parallel situations such as driving, crossing the street or, case in point, performing sport. "It would appear that athletes are able to hyper-focus their attention to enhance learning, which is key to their abilities."

The researcher worked with 102 professional players from the groups mentioned above, 173 elite amateur athletes – who were recruited from the NCAA American university sports program and a European Olympic training centre, and 33 non-athlete university students. The participants undertook the "3D-MOT" task fifteen times to evaluate several skills that scientists believe are critical to visual perceptual and cognitive abilities when viewing complex scenes: distribution of attention between a number of moving targets amongst distracters, large field of vision, maximum speed of objects that one is able to follow, and the ability to perceive depth. The scene is "neutral", meaning that sport specific familiarity such as play knowledge or experience will not influence the score as the movements and interactions are totally random. The 3D-MOT task was in fact developed by Professor Faubert and can be evaluated by using a graphical simulation machine he invented, known as the Neurotracker, and it has been used by teams such as Manchester United and teams in the NFL and NHL.

The tests revealed that the professional athletes were able to learn how to track fast moving objects at a much superior rate than the other groups, although all three groups improved their score over the 15 training sessions. "Clearly, mental processing and learning skills are key to the excellent performance of the professional athletes. However, it is unclear whether this superior learning ability is unique to professional athletes, and moreover whether these are innate skills that led them to be selected by these teams, or whether these skills have been acquired through extensive training," Faubert said. "It will therefore be interesting to see how individuals of all athletic abilities improve their perception score as they train with this system."

The study has been published in the journal *Scientific Reports*.

Provided by University of Montreal