Revolutionary hamstring tester will keep more players on the paddock

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Dr Tony Shield, from QUT's School of Exercise and Nutrition Sciences, watches over Australian touch football player Ellen Nussey as she uses the 'Hammy Tester'.

Elite sporting stars can assess and reduce their risk of a hamstring injury thanks to a breakthrough made by QUT researchers.

The discovery could be worth a fortune to football codes, with hamstring strain injuries accounting for most non-contact injuries in Australian rules football, football and rugby union, as well as track events like sprinting.

Using an innovative field device, a research team led by Dr Anthony Shield, from QUT's School - Exercise and Nutrition Sciences, and former QUT PhD student, Dr David Opar, now at the Australian Catholic University, measured the eccentric hamstring strength of more than 200 AFL players from five professional clubs.

The in-demand device, the only portable 'machine' in the world capable of measuring strength during the Nordic hamstring curl, has attracted attention from some of the world's biggest sporting teams, including French football giants Paris Saint-Germain and several top English Premier League sides, and National Football League teams in the United States.

The researchers found that higher levels of eccentric hamstring strength in pre-season could dramatically reduce a player's chances of suffering a hamstring injury during the season.

The results have been e-published in leading sports medicine journal *Medicine & Science in Sports & Exercise* and accepted for publication in an upcoming print edition.

"We showed, for the first time, that hamstring injury risk can be quantified by measuring an athlete's hamstring strength when they're performing the Nordic hamstring curl exercise," Dr Shield said.

"The greater the athlete's hamstring strength, the less likely they were to injure their hamstring, with the probability of a hamstring strain injury dropping to less than 10 per cent in the strongest athletes.

"Improving hamstring strength by 10 Newtons decreased the risk of hamstring injury by approximately 9 per cent. This is a significant benefit and it is likely that players new to the exercise could improve hamstring strength by 30 Newtons in a month.

"This means it's possible to effectively counter the additional risk conferred by having a prior hamstring injury by improving the eccentric hamstring strength through exercises such as the Nordic curl.

"This is particularly important for athletes who are already at an increased risk of injury due to their age or because they have sustained a hamstring injury in the previous season."

Dr Shield said players considered to have weak hamstring in early pre-season testing were 2.7 times more at risk of a hamstring injury than stronger players.

The trial, which included players from five professional AFL clubs, is part of proof-of-concept study funded by QUT's innovation and knowledge transfer company qutbluebox (bluebox) to develop the patented device for the market.

Major sports clubs in Australia are already using prototypes of the device and the research team is also in the early stages of trials with rugby union, NRL, cricket and A-League clubs. Hockey Australia will also begin a trial shortly.

More information: "Eccentric Hamstring Strength and Hamstring Injury Risk in Australian Footballers." Opar, David A.; Williams, Morgan D.; Timmins, Ryan G.; Hickey, Jack; Duhig, Steven J.; Shield, Anthony J. *Medicine & Science in Sports & Exercise*: DOI: 10.1249/MSS.0000000000000465

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