

## MEDIA RELEASE

13 January 2017

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### Link between rugby concussion and motor cortex function investigated

Newly published research has further investigated the long-term health impact of brain injury sustained through rugby.

The *New Zealand Medical Journal* paper compares corticomotor function (the function of neural pathways from the brain that control movement) between former rugby and non-contact sport players. Elite rugby players were found to have different corticomotor function, however the study found no evidence that this was related to previous concussions.

The research was part of the Rugby Health Study conducted by Auckland University of Technology (AUT), in partnership with New Zealand Rugby and World Rugby. It investigated brain excitability and inhibition in retired rugby players at elite and community level, in comparison to a control group of former non-contact sport players.

The research found evidence of altered corticomotor function in the retired elite rugby players compared to the non-contact sport control group. Resting motor threshold was elevated – reflecting reduced excitability, and long-interval intracortical inhibition (LICI) was increased – indicating enhanced inhibition, echoing some of the existing research on the impact of concussion on measures of motor cortex excitability. However, the study found these changes were not evident in those who had played club level rugby.

Both groups of retired rugby players had experienced more concussions than the non-contact sport group; 87% of elite level and 85% of community level players had experienced three or more concussions, versus 4% of non-contact sport players. Given the absence of altered corticomotor function among the community rugby players, the association between elite players' altered corticomotor function and previous concussions was found to be unclear.

Lead investigator, AUT Associate Professor Gwyn Lewis, says the larger build of the retired elite players may be a factor in the corticomotor performance differences identified. "The elite rugby participants were significantly taller and heavier than the non-contact sport players, and had a higher body mass index – characteristics that may have contributed to their increased resting motor threshold."

However, she underscores the need for additional research. "The study has established the need for further research into this aspect of rugby players' long-term health. There is a large number of elite level rugby players internationally. Current and future elite players would benefit from learning more about the differences in motor cortex function they may experience, which can impact the ability to learn and perform new motor skills," says Associate Professor Lewis.

ENDS.

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**For a copy of the paper (*New Zealand rugby health study: motor cortex excitability in retired elite and community level rugby players*), visit:**

<https://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2017/vol-130-no-1448-13-january-2017/7123>.