The lifetime risk of developing motor neurone disease (MND) is around 1 in 300. The exact cause of the disease remains unknown and funding for research to understand this and ultimately develop treatments is much needed. The MND Association is committed to the care of people living with and affected by MND and, through our research funding, to a world free of MND.

Previous studies have tried to determine if exercise or head impact from contact sports have caused increased risk of neurological diseases such as Alzheimer's disease, MND and chronic traumatic encephalopathy (CTE). In the past decade, some evidence has emerged suggesting a potential link between contact sport participation, including football and American Football (NFL), and an increased risk of neurodegenerative disease.

Findings have suggested people who play football at a professional level have an increased risk of neurodegenerative disease, with a few of these studies suggesting that being a professional footballer increases a person's risk of developing MND (Chio et al 2005: Chio et al 2009). Another study (Russell et al 2022) concluded that former Scottish international rugby union players had an increased risk of developing MND compared to the general population.

There are also a small number of research findings which suggest that an increased susceptibility to MND is associated with some professional sports, and sports prone to repetitive concussive head and cervical spinal trauma (Blecher et al 2019).

Of course, this research is of great interest to us at the MND Association, and public attention regarding the risk of contact sports and neurodegenerative disease is increasing.

While these studies carried out to date suggest a correlation between these professional sports and MND they don't demonstrate causation – so they recognise that professional footballers and rugby players are more likely to develop MND but they don't suggest that playing football professionally, or any particular aspect of doing that, directly leads to a person developing MND.

It is also important to keep in mind the number of reported MND cases in these studies is still relatively low, and so concluding there is a definite increased risk could be misinterpreted if this is simply a cluster due to random chance.

While there is a growing movement within sport to understand, recognise and, where necessary, mitigate against negative long-term effects, it is also clear that a lot more research is needed. We recognise this and are working with researchers and institutions to facilitate MND research.

We have collaborated with charities MND Scotland and My Name'5 Doddie Foundation to fund new research looking into whether traumatic brain injuries can lead to an increase in the risk of developing MND. The study, traumatic brain injury and motor neurone disease (T-MND), is led by Professor William Stewart and his team at the University of Glasgow.

We are also part of an MND and Sport Expert Working Group, which works to explore the potential link between sport and MND. The group includes representatives from the MND Association, MND Scotland and My Name'5 Doddie as well as people living with MND, and is in response to a number of scientific publications which indicate there may be an increased risk of developing MND among

people who participate in elite-level sport, including football and rugby. The group includes experts in sport and MND from around the world. It will seek to better understand the possible link, determine what research questions need to be asked in order to identify any underlying causes, as well as determine what resources are available, or required, to answer them.

It is one of our frustrations as an Association that we haven't yet pinpointed all of the causes of MND. We continue to fund research which we hope will lead to answers. A combination of environmental and lifestyle factors likely act together with specific genes to predispose people to get MND. What we don't know is the exact recipe of these factors that triggers onset of the disease.

Scientific research costs money and, sadly, there is a limit to the budgets available to us. We would urge organisations with an interest in this work to consider research funding to boost what is possible.

Dr Nicholas Cole
Head of Research, Motor Neurone Disease Association
June 2024

Further reading:

Professional football and MND - looking at the evidence - MND Research Blog

Neurodegenerative disease risk among former international rugby union players | Journal of Neurology, Neurosurgery & Psychiatry (bmj.com)

ALS in Italian professional soccer players: The risk is still present and could be soccer-specific: Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration: Vol 10 , No 4 - Get Access (tandfonline.com)

Severely increased risk of amyotrophic lateral sclerosis among Italian professional football players | Brain | Oxford Academic (oup.com)