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## Brain injury & Heading in Football, What Does the Evidence Say?

This document has been prepared to summarise the current evidence relating to the risks associated with heading and brain injury in football. In recent years, the short- and long-term consequences of both playing football and the effect of heading on brain structure and function have been debated.

### **Introduction**

New Zealand Football (NZF) is committed to ensuring the safety and welfare of our players, coaches and other stakeholders.

- NZF, through the ACC Sports Collaboration Group, was an active participant in the development of the ACC Sports Concussion Guidelines.
- The ACC Sports Concussion Guidelines were developed by a panel of international experts (including Neurologists and Sport and Exercise Physicians) from both New Zealand and overseas.
- NZF are actively monitoring research relating to head injuries, brain injury and concussion (as well as other injuries) and are looking for ways to reduce both the risk of all injuries – and the morbidity associated with these injuries.
- NZF is represented on the FIFA Medical Committee and through this channel has input into policy decisions relating to health matters in football including those relating to heading and brain injury.
- NZF has a clear position statement regarding concussion that outlines our position relating to the treatment of concussion. NZF provides concussion education workshops throughout NZ for our football communities to gain better understanding of concussion and the management of such injuries. This is managed by our Performance and Prevention team.

### **Heading vs. Concussion**

We are aware of the recent recommendations in England, Scotland and Northern Ireland relating to heading in youth football. We are also aware of the research relating to the increased risk of neurological conditions in former Scottish Professional football players.<sup>1,2</sup>

In most situations heading does not cause concussion. The most frequent causes of concussion in football are blows to the head and face following collisions with opponents (and not the ball). The concern about heading and football relates to the possible long-term consequences of repeated contacts to the head at a 'sub-concussive' threshold. This should be distinguished from players who sustain a concussion.

It is important to recognise the following:

A meta-analysis published in the British Journal of Sports Medicine reviewed and critically appraised all of the available literature relating to heading and brain injury.<sup>3</sup> The authors' conclusion, based on all available data at that time, was that there was no evidence that linked heading to long-term brain injury.



Ex-professional football players have a higher probability of being diagnosed with dementia (5%) than the general population (1.6%).<sup>1</sup> Outfield players, especially defenders, and those who have had longer careers were at the greatest risk. It has been suggested that this increased risk is due to an increased rate of headers and prolonged exposure.<sup>1,2</sup>

There are a very limited number of headers in youth football, with an average of less than nine total headers per match in Under-10 football.<sup>4</sup> In each game the majority of players perform less than two headers (44% perform zero headers while 33% perform 1-2 headers). The number of headers per game increases with age. Male players appear to perform more headers than female players.

It is likely that professional football players are a substantially different cohort to junior and youth football players. While it is possible that repeated head impacts and/or concussions can cause long-term neurological consequences for some players, no definitive cause and effect relationship has yet been demonstrated. The available evidence would suggest that any risk increases with the number of exposures.<sup>2</sup>

### **Heading & Rule Changes**

Based on the available evidence we do not believe that there is a need to ban heading or to alter the laws of the game with respect to heading.

NZF encourages a common-sense approach to heading in junior and youth football. Where possible, heading should be limited for players under the age of 12 and should be low priority in youth football.

We strongly support efforts to remove players who have sustained a concussion and will continue to advocate for rule changes to allow concussed players to be replaced and to give medical staff more time to assess players who have been injured. Through our NZF medical staff, our involvement with the ACC Sports Collaboration group and our relationship with FIFA we are actively reviewing new research and the need to change our position.

Our current efforts are directed towards improving the awareness of concussion and promoting a conservative treatment approach.

### **The Treatment of Concussion**

NZF has a clear concussion policy. With regard to NZF's approach to the assessment and treatment of concussion in football:

- NZF endorses the Consensus Statement on Concussion in Sport and its process relating to the assessment and management of concussion, including return to play.<sup>5</sup>
- Concussion is everyone's responsibility. Any player, at any level of play, who sustains a concussion should be removed from play.
- All players suspected of having a concussion should be assessed by a medical doctor and their treatment should be guided by a doctor experienced in managing concussion.



- Younger players may be at a greater risk of both sustaining a concussion and of having a more prolonged recovery. NZF recommends that any injuries in younger players are treated more conservatively – and that they should have a more conservative return to play programme.

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#### References

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4. Beaudouin F, Gioftsidou A, Larsen MN, et al. The UEFA Heading Study: Heading incidence in children's and youth' football (soccer) in eight European countries. *Scand J Med Sci Sports*. 2020 Aug;30(8):1506-1517.
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