Written evidence submitted by Colin Clarke

Concussion in sport inquiry – mainly cycling related

Dear Committee

Over the years I have had research published regrading cycle helmets, see

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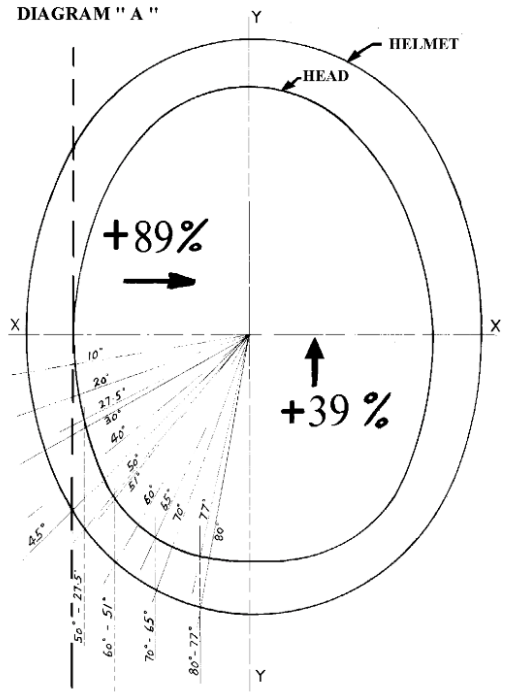
Abstract

The first step to reducing concussions is to avoid head impacts and in reducing accidents. Each sport needs to make every effort to minimise such events. Helmet use can have unexpected consequences and the negative aspects need to be fully assessed. The risk of extra impacts and their consequences, per million hours, needs to be considered against the level of risk without helmet use.

Brief details

It has become reasonably clear that helmet use increases the number of impacts compared with a bare head and evidence suggests the overall accident rate increases with helmet use in the case of cycling.



In a 2013 BMJ[i] editorial by Ben Goldacre and David Spiegelhalter stated,

'With regard to the use of bicycle helmets, science broadly tries to answer two main questions. At a societal level, "what is the effect of a public health policy that requires or promotes helmets?" and at an individual level, "what is the effect of wearing a helmet?" Both questions are methodologically challenging and contentious.

In 2020 a Canadian report[ii], 'Bicycling-related concussions leading to postconcussion syndrome in adults', details 'The mean duration of PCS for helmet wearers was 22.9 months, and 16.8 months for patients not wearing a helmet at the time of concussion (p=0.41)'. this suggests that helmet use may have long term unexpected consequences.

New Zealand with a helmet law has high levels of helmet wearing and details on hours cycled providing one of the most reliable sources of information. The accident rate per million hours cycled increased from pre law at 31.35 to 69.38 post law. This related to all accidents involving motor vehicles and for "other" reasons, probably mainly falls and riding into objects or stationary vehicles. For those involving only motor vehicles it did not change very much, roughly eight per million hours to seven per million hours. Accidents due to "other" increased substantially from approximately 23 to 63 per million hours. Data from NSW (Australia) is also important being based on the whole state and more than 121 survey sites. The equivalent number of injuries for pre-law number of cyclists increased from 1310 (384 head + 926 other injuries) in 1991 to 2083 (488 head + 1595 other injuries) in 1993, effectively an increase of 59%.

In 2019 Clarke and Gillham[iii] reported on the effects of bicycle helmet wearing on accident and injury rates and concluded *'Nevertheless, this study presents evidence that helmet use tends to increase the accident/injury rate per cyclist, potentially outweighing any head protection benefits'* and *'It appears that helmet use increases the accident rate by more than 40%.'*

And
'Accident data from Australia, the United States, Canada, the United Kingdom and New Zealand indicate the accident rate per hour cycled or per miles cycled has increased with greater helmet usage, most likely from a greater proportion and number of upper limb injuries.'

The first step to reducing concussions is to avoid head impacts and in reducing accidents. Each sport needs to make every effort to minimise such events. Helmet use can have unexpected consequences and the negative aspects need to be fully assessed. The risk of extra impacts and their consequences needs to be considered against the level of risk without helmet use.

[ii] Goldacre & Spiegelhalter in a BMJ editorial (BMJ 2013;346:f3817)

https://www.bmj.com/content/346/bmj.f3817.full

[ii] Moore C, Baharikhoob P, Khodadadi M*, et al*

Bicycling-related concussions leading to postconcussion syndrome in adults

BMJ Open Sport & Exercise Medicine 2020;**6:**e000746. doi: 10.1136/bmjsem-2020-000746

[iii] Effects of bicycle helmet wearing on accident and injury rates, GB National Road Safety Conference, November 2019

https://www.researchgate.net/publication/337367329_Effects_of_bicycle_helmet_wearing_on_accident_and_injury_rates