

# Bicycle helmet use and facial injuries

## Abstracted from

**Fitzpatrick DG, Goh M, Howlett DC, Williams M.**

Bicycle helmets are protective against facial injuries, including facial fractures: a meta-analysis.

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## Question: Does cycle helmet use reduce facial injuries?

**Data sources** PubMed/Medline, Google Scholar and Cochrane Library databases

**Study selection** Two reviewers independently selected studies.

Observational studies involving patients >16 years comparing facial injuries in those wearing and not wearing cycle helmets were included. Studies were excluded if they examined the effects of helmet legislation, reported facial injuries with other injuries, compared different types of helmet or were wholly paediatric studies.

**Data extraction and synthesis** Selection, reporting, attrition and detection bias of studies were assessed. Data were extracted on the incidence of all facial injuries reported in helmet users and non-helmet users by two reviewers independently. Odds ratios (OR) were extracted for facial injuries and facial fractures and meta-analysis conducted.

**Results** This review suggests that bicycle helmets may offer a protective benefit against facial fractures. However, it is noted that previous analyses have shown that this protection is not uniform across the face and that the upper and middle face may be protected.

**Conclusions** This review suggests that bicycle helmets may offer a protective benefit against facial fractures. However, it is noted that previous analyses have shown that this protection is not uniform across the face and that the upper and middle face may be protected.

## Commentary

Cycling is a popular activity that has many benefits for the individual and society. It provides low-cost transport reducing environmental impact while improving personal fitness. In the UK cycle use has increased most years since 2008 with approximately 17% of people over 16 in England cycling at least once a month, with the general risk of injury of any severity being 0.05 per 1000 hours of cycling ([www.cyclinguk.org](http://www.cyclinguk.org)). This review focuses on facial injuries although a number of previous reviews published since 1999 have assessed the impact of helmet wearing on injuries more broadly.<sup>1-3</sup>

The review authors have conducted a search of a good range of databases with all but one of the included studies being case-controlled studies. Case controlled studies are a good approach to gather data for this type of question comparing a group of cyclists crashing with facial injuries (cases) with a group of crashing cyclists without facial injuries (controls) and comparing them based on helmet use. Potential issues are related to missing data in relation to helmet wear and to other factors which may contribute to the injury eg age, riding experience, riding speed or being struck by a vehicle. These issues mean that case-controlled studies have more potential for bias and this needs to be taken into account when interpreting the findings.

The findings from this review show that the wearing of cycle helmets reduces the odds of both facial injuries and fractures. The review by Oliver et al.<sup>3</sup> also demonstrated reduced odds of head injury, serious head injury, facial injury and fatal head injury with the use of cycle helmets, as did the Høye review. Neither of the two broader reviews<sup>2,3</sup> found any association between neck injury and helmet use. The findings of the available reviews support recommendations for the use of cycle helmets to reduce injuries.

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