**Introduction**

Head injury severity after a bicycle crash can be reduced by a bicycle helmet (Elvik, 2013; Olivier & Creighton, 2016; Olofsson, Bunketorp, & Andersson, 2017), however not many Dutch cyclists wear a helmet. Currently, there is little public support for mandatory helmet use (Aarts, Eenink, Weijermars, Knapper, & Schagen, 2014). It is argued that making bicycle helmets compulsory, makes cycling less attractive and as a result it is expected that people will cycle less. Another argument against helmet use is based on the idea of risk compensation. Helmeted cyclists might compensate the perceived safety of the helmet and demonstrate riskier behaviour, such as cycling faster.

Nearly one third of all severely injured cyclists sustains a head and/or brain injury after a bicycle crash.

Research on risk compensation of helmeted cyclists shows mixed results. In a study of Philips et al (2001) experienced and inexperienced helmet wearers cycled 0.4 km downhill, once with and once without a helmet. Regular helmet users reported increased perceived risk when cycling without helmet and cycled slower. Cycling with or without a helmet had no effect on risk perception or cycling speed in the group of unexperienced helmet users. Another Norwegian study (Fyhri et al, 2012) questioned 1500 cyclists about helmet use, bicycle equipment use, accident involvement, cycling behaviour and risk perception. They found that cyclists riding in a risky manner do wear helmets and other equipment to be able to ride fast and not the other way around. In this case the causal effect is reversed. A recent German study (Schleinitz et al, 2017) on naturalistic cycling showed similar results. Cyclists that were aware of their increased risk of higher cycling speeds, wore helmets.

To our knowledge, no studies on bicycle helmet use and its effects have been performed in the Netherlands. This study contributes to this knowledge gap. The goal of this article is to investigate if helmeted Dutch cyclists show risk compensation during cycling.

We have invited bicycle commuters and equipped their bicycles with a GPS tracker that recorded cycling speed and location during three weeks of normal cycling. All participants cycled a minimum of 5 kilometres per trip at least 3 times a week. For two weeks participants wore a helmet on every trip and one week without a helmet. They filled questionnaires before, during (after every week) and after the study.