Medical Xpress

E-wheelchair should weigh less

June 27 2016

Credit: University of Twente

Whilst the advantages of a wheelchair with auxiliary drive are self-evident, they do not always outweigh the disadvantages. The weight of the construction can pose a physical burden on a certain group of wheelchair users, according to research from the University of Twente in The Netherlands.

Mobility researcher Marieke Kloosterman investigated the effects of the WheelDrive, a wheelchair with electric-motor back up. Like an E-bike, this wheelchair should make the life of the user easier by means of an auxiliary engine. Many people in wheelchairs suffer as a result of overstraining the shoulder and other physical discomfort. Furthermore, they don't always have the strength to move their wheelchairs around by themselves. Accordingly an auxiliary drive can offer benefits.

Equal effort

Kloosterman tested the prototype of the WheelDrive amongst both non-disabled trial users and experienced wheelchair users. Results showed that shoulder joints were less strained due to the auxiliary drive. The trial users found it less onerous to move a wheelchair with powered support than an ordinary wheelchair. However, this did not involve any significant reduction of energy consumption. In other words, in either situation – with or without an auxiliary drive – wheelchair users exerted an equal effort. Based on this result, the WheelDrive has been made more powerful. The research revealed another disadvantage of the E-wheelchair: its weight.

Bigger target group

The auxiliary drive means that the wheelchair construction weighs 10 kilos more per wheel than an ordinary wheelchair. This makes it difficult, for example, for a wheelchair user to independently use a car or travel by public transport. Researcher Marieke Kloosterman concludes that certain groups certainly benefit from a wheelchair with an auxiliary engine: 'People with shoulder complaints or a progressive disability such as MS can benefit. It is easier for them to cover distances, which means they get back at least some of their independence. However, the construction needs to be lighter in order for it to be an

attractive proposition to a bigger target group.'

Provided by University of Twente