SWADAPT1: Evaluation on standardised circuits of the interest of a robotic module for assisting the driver of an electric wheelchair: pilot, prospective, controlled, randomised study

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To cite this version:
Emilie Leblong, Bastien Fraudet, Louise Devigne, Marie Babel, François Pasteau, et al.. SWADAPT1: Evaluation on standardised circuits of the interest of a robotic module for assisting the driver of an electric wheelchair: pilot, prospective, controlled, randomised study. ISPRM 2020 - 14th World Congress of the Society of Physical & Rehabilitation Medicine, Mar 2020, Orlando, United States. hal-02735967

HAL Id: hal-02735967
https://inria.hal.science/hal-02735967
Submitted on 5 Feb 2021

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Most people with disabilities require assistance and often use a technical mobility aid.

Prevalence of people using wheelchairs = increase with an estimate ranging from 60 to 200 per 10,000 inhabitants (Vignier 2008).

10% of wheelchair users use electric models (Kaye 2002; Vignier 2008).

25% of accidents with Power Wheelchair (PWC) (Kirby 1995).

100,000 accidents involving wheelchair users in the United States in 2006.

54.7% of subjects reported having had at least 1 accident in the last 3 years (Chen 2011).

Power Wheelchair (PWC) with driving assistance module

Comparison of driving performances

- Number of collisions
- Time to completion

OBJECTIVES

Reduce the number of collisions
Increase driving safety

MATERIALS AND METHODS

PROSPECTIVE

MONOCENTRIC

Circuits of increasing complexity (C1, C2, C3)

23 patients with neurological disabilities who usually use PWC

RESULTS

- Statistically significant reduction in the number of collisions on the most complex circuit (13 versus 46)
- Significant slowdown due to the activation of the driver assistance module but a real increase of safety.

Efficiency of the PWC driver assistance module in terms of safety without reducing travel speed in a population of people with disabilities who are usual wheelchair drivers.

Future trials: tests on the target population in failure or driving difficulties

Bibliography
