

SWADAPT1 : ASSESSMENT ON STANDARDIZED CIRCUITS OF THE INTEREST OF AN ELECTRIC WHEELCHAIR DRIVING ROBOTIC MODULE: PILOT, PROSPECTIVE, CONTROLLED, RANDOMIZED STUDY

Emilie Leblong* (1), Bastien Fraudet (1,2), Louise Devigne (3), Marie Babel (3), François Pasteau (3), Benoit Nicolas (1), Philippe Gallien (1)

*Corresponding author : Pôle MPR St Hélier, 54 rue St Hélier, Rennes Cedex, 35043, France. *E-mail address: emilie.leblong@pole-sthelier.com*

- 1) Pôle MPR St Hélier, 54 rue St Hélier, 35043 Rennes Cedex
- 2) Living Lab ISAR, 54 rue St Hélier, 35043 Rennes Cedex
- 3) Univ Rennes, INSA Rennes, CNRS, Inria, Irisa-UMR6074, France.

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ABSTRACT

Objectives: The objective of this study is to highlight the interest of a robotic driver assistance module of Powered Wheelchair (PWC), using infrared sensors and accessorizing a commercial wheelchair, on the reduction of the number of collisions in circuit standardized, in a population with neurological disorders using an electric wheelchair, by comparing driving performance with and without assistance.

Methods: This is a prospective, single-center, controlled, randomized, single-blind pilot study including patients with neurological disabilities who are usual drivers of electric wheelchairs. The main criterion for evaluating the device is the number of collisions without and with the assistance of a prototype anti-collision system on 3 circuits of increasing complexity. Travel times, cognitive load, driving performance and user satisfaction are also analyzed.

Results: 23 patients completed the study. There is a statistically significant reduction in the number of collisions on the most complex circuit.

Conclusions: this study therefore concludes that the PWC driving assistance module is efficient in terms of safety without reducing the speed of movement in a population of people with disabilities who are habitual wheelchair drivers. The prospects are therefore to conduct tests on the target population with driving failure or difficulty who could benefit from this device in order to allow them to travel independently in safety.