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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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).

**OBJECTIVES**

- Reduce the number of collisions
- Increase driving safety

**MATERIALS AND METHODS**

**PROSPECTIVE**

- Conditions
  - 3 circuits of increasing complexity (C1, C2, C3).

**MONOCENTRIC**

- Population
  - 23 patients with neurological disabilities who usually use PWC

**CONTROLLED**

- Randomized
  - Example of circuit 3: map, 3D representation and picture

**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

**DISCUSSION - CONCLUSION**