

## 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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# 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

Emilie Leblong\* (1), Bastien Fraudet (1,2), Louise Devigne (3), Marie Babel (3), François Pasteau (3), Benoit Nicolas (1), Philippe Gallien (1) <sup>1)</sup> Pôle Saint-Hélier (Rennes) 2) Living Lab ISAR, 54 rue St Hélier, 35043 Rennes Cedex 3) INSA Rennes, Inria, Irisa-UMR6074, France.



- 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,







<ul> <li>54.7% of subjects reported having had at least 1 accident in the last 3 years (Chen 2011).</li> <li>OBJECTIVES</li> </ul>			a prototype anti-collision system based on Infra Red technology and algorythms for a low cost solution	
i	Power Wheelchair (PWC) with driving assistance	Comparison of driving performances	Reduce the of collisions	number
) ((((+))))	module	Number of collisions Time to completion	Increase driv safety	ving
MATERIALS AND METHODS				
PROSPE	CTIVE MONOCENTRIC	CONTROLLED	RANDOMIZED	<b>SINGLE-BLIND</b>
6	Conditions circuits of increasing complexity	(C1, C2, C3).	<image/>	
	<b>23 patients with neurol</b>	ogical disabilities who usually i	JSE PWC Exa 3D	mple of circuit 3 : map, representation and

picture

# RESULTS



**– DISCUSSION - CONCLUSION** 

- 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

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