

# BEYOND BASIC MOBILITY: COMPREHENSIVE ASSESSMENT OF WHEELCHAIR DRIVING SKILLS IN CHILDREN

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## Background and Aims

Children using wheelchairs require efficient driving skills to enhance their functioning and participation in daily activities, including engagement in traffic. Currently available assessment tools lack sufficient focus on these specific skills. Therefore, we developed a new comprehensive test to evaluate wheelchair driving abilities in pediatric populations.

## Methods

We designed a test comprising four subscales with 32 items for active wheelchair (AW) users—managing wheelchair, basic and advanced driving skills, skilful driving, and traffic—with an additional subscale for electric-powered wheelchair (EPW) users. Each item was evaluated on a 4-point scale. For pilot testing, we recruited children referred to our pediatric department between July 2019 and September 2024. Following assessment, selected participants underwent a 10-day specific training program targeting identified skill deficits.

## Results

The study included 100 children (68 boys), with a mean age of 8.3 years; 55 used AW and 45 used EPW. Vast majority of children were with cerebral palsy (90 %), others with neuromuscular diseases. None were excluded from the study. Children using EPW scored significantly lower than those using AW across all four subscales ( $p < 0.001$ ). On average, children demonstrated greatest difficulty in wheelchair management and advanced driving skills, achieving only 43.5% and 46.2% of the maximum possible score for AW users (15.2% and 45.7% for EPW users, respectively). Twenty children participated in the targeted training program, resulting in mean total improvements of 2.5 points for the AW group ( $n=8$ ) and 3.2 points for the EPW group ( $n=12$ ).

## Conclusion

The developed assessment tool effectively identifies specific wheelchair driving skills requiring improvement and clearly differentiates between AW and EPW users' abilities. The test demonstrated adequate sensitivity to detect modest improvements following a focused training intervention. Future research will focus on establishing the psychometric properties of this assessment tool to validate its use in clinical practice.

**Keywords:** child, wheelchair, skills, test