

What fits me?

“Tailoring” tricycles for people with disabilities, with activity and participation as the main goal.

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Objective:

Main goal

Promote cycling activity and participation for people with disabilities, by “tailoring” tricycles to each individual.

Sub-goals

1. Explore whether specific tests can predict which tricycle type fits best to which individual (paper I).
2. Generate knowledge about important factors for tricycle choice and for tricycle use (papers I and III).
3. Investigate if acquiring a tricycle leads to better cycling outcomes and increased activity level (papers II and III).
4. Use new knowledge from sub-goals 1-3 to suggest more accurate methods for testing and adapting tricycles to people with disabilities.
5. Communicate knowledge from sub-goal 4 to professionals whose task is to contribute to the testing and adaptation of tricycles in the specialist and municipal health services, as well as to those who benefit from cycling with a tricycle.

Design

The study applied an observational design. A part of the study divided the participants in two groups; those applying for an adapted tricycle during a rehabilitation stay at a Health Sports Centre and those applying via local therapists in the municipalities.

Subjects

Participants from the age of 5 years and older, who planned to apply for a leg-driven tricycle (not tandem) as an adapted activity equipment, were recruited at Beitostølen and Valnesfjord Health Sports Centres. In addition, participants were recruited from municipalities via NAV ATCs.

Outcome measures:

- Maximum power when cycling, measured with Vector 3 watt pedals (76).

- 6-min walk test (the distance the participants could walk on a 30 m flat floor in 6 min) (77).
- The Trunk Impairment Scale, Norwegian version. Tests dynamic sitting balance (78).
- The 30-s sit-to-stand test (the amount of times the participants could stand up from a chair and sit down in 30 seconds) (79).
- The Oxford Scale. Manual strength test of muscles in the lower extremities (80).
- Range of motion test of joints in upper and lower extremities with a goniometer (81, 82).
- The Children's Assessment of Participation and Enjoyment (CAPE) (56). Measures diversity, intensity, with whom, where and enjoyment, originally for 55 different activities. The use of CAPE was limited to the cycling activity.
- Canadian Occupational Performance Measure (COPM) (83). Measures importance of the activity, performance and satisfaction with their performance. The COPM was scored for the pre-defined activity cycling.
- The triaxial accelerometer ActiGraph GT3X (85). Measures steps and light, moderate and vigorous activity.
- Open-ended question in the questionnaire mainly used in paper II, where the participants could write comments regarding own cycling.

Results:

The first sub-goal was to explore whether specific tests can predict which tricycle type fits best to which individual. Tests performed at Beitostølen and Valnesfjord Healthsports Centres show that none of the included specific tests could predict an exact tricycle. Still age and sex could to some extent specify tricycle category (regular or recumbent).

The second sub-goal was to generate knowledge about important factors for tricycle choice and for tricycle use. Participants reported individual considerations that ensured safety, comfort and mastery to be important for tricycle choice. In total 94% of those applying for a "tailored" tricycle used their bike in their local community, hence, the cycling activity goal was reached for most participants. High score on how much the participants liked cycling affected cycling frequency positively.

The third sub-goal was to investigate if acquiring a tricycle leads to better cycling outcomes and increased activity level. Cycling performance scores increased after the participants got their adapted tricycle. They got the opportunity to participate in cycling activity, but, as discussed later, many adult participants cycled mostly alone. Also, even if the cycling activity increased, the participants' activity level did not increase on a group level.

Publications:

What fits me? Procurement of adapted tricycle for activity and participation
 Berit Gjessing, Reidun Jahnsen
 Disability and Rehabilitation: Assistive Technology 2021:1-9

Acquiring a tailor-made tricycle – implications for people with disabilities
Berit Gjessing, Astrid Nyquist, Reidun Jahnsen
Technology and Disability, 2022, vol.34, no.1, pp. 35-44

Exploring physical activity level after procurement of adapted tricycle; Quantity versus enjoyment.
Berit Gjessing, Astrid Nyquist, Reidun Jahnsen
European Journal of Adapted Physical Activity (accepted)