



Clinical Utility and Therapists' Perceptions of Shared Control for Powered Mobility Assessment and Training

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Assessing and Training for Powered Mobility is Challenging

- Assessment and training are risky
- Cognitive impairment may challenge learning
- Limited technology and tools available



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Shared control is...



- Secondary wheelchair control
 - Similar to attendant control, with more options
 - Simultaneous override
 - No mode change required
- Remote (wireless) joystick



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CoPILOT

Collaborative Power mobility Innovative Learning OpporTunity



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Objective

- Therapists' perception of
 - Shared control tele-operation device
 - Clinical utility of shared control for
 - PWC Assessment
 - PWC Training



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Methods

- Semi-structured interviews
- 15 clinicians
 - 14 OT
 - 3 male
 - 2-20+ years experience
- Idea generation and feedback on prototype
- Feedback on shared control utility and interface design



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Results

- Positive response for concept of shared control
- Refinements to interface design for clinical use
- 5 Themes



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1: Focus on skills, less on emotion



“...if you can help it to be more successful... it will at least bring their anxiety down, and that helps with learning because **if you're anxious and you're not having success, it's also difficult to learn...**”

~OT, Community



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2: Opportunities not otherwise afforded



“It may give me an opportunity to do some training with the person that I might just choose [currently] to stop at that point...”

~OT, Community



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3: Backing up my assessment



“It might be useful to see how many times I have to assume control. Then that could be useful especially in **justifying** to facilities that **this person ...can learn, can use their power wheelchair.**”

~OT, Community and Residential



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4: Focus on the client, not on the device



“I think I want it to be as intuitive as possible. I don’t want to be totally concentrating on this thing, because I want to concentrate on what’s going on with the client.”

~OT, Inpatient SCI



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5: You can't learn to play from a player piano



“I think for a learning experience the person in the chair needs to realize that there's been a correction, and why there's been that correction... if **the chair is taking over that, are they going to be aware?**”

~OT, Long Term Care



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Discussion

- Themes align well with Smart's multidimensional model of clinical utility (8)
 - Focus on appropriateness, practicability, and acceptability
 - No specific theme focused on accessibility
- Potential for positive psychological impact on learning
 - Reduction in anxiety
 - Improvement in confidence



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Conclusions

- Shared control is a promising development for clinical use
- Potential to use across diagnostic and functional groups
- Potential to be further explored through empirical research



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References

1. Lofqvist C, Pettersson C, Iwarsson S, Brandt A. Mobility and mobility-related participation outcomes of powered wheelchair and scooter interventions after 4-months and 1-year use. *Disabil Rehabil Assist Technol*. 2012;7(3):211-8.
2. Pettersson I, Törnquist K, Ahlström G. The effect of an outdoor powered wheelchair on activity and participation in users with stroke. *Disabil Rehabil Assist Technol [Internet]*. 2006 Jan [cited 2013 Dec 9];1(4):235-43.
3. Fomiatti R, Richmond J, Moir L, Millsteed J. A Systematic Review of the Impact of Powered Mobility Devices on Older Adults' Activity Engagement. *Phys Occup Ther Geriatr [Internet]*. 2013 Dec [cited 2014 Jan 30];31(4):297-309.
4. Brandt Å, Iwarsson S, Ståhle A. Older people's use of powered wheelchairs for activity and participation. *J Rehabil Med*. 2004 Mar 1;36(2):70-7.
5. Greer N, Brasure M, Wilt T. Wheeled mobility (wheelchair) service delivery: scope of the evidence. *Ann Intern Med [Internet]*. 2012 [cited 2014 Feb 3];156(2):141-6. A
6. Mortenson W, Clarke L, Best K. Prescribers' Experiences With Powered Mobility Prescription Among Older Adults. *Am J ... [Internet]*. 2013 [cited 2013 Dec 15];67(1):100-7.
7. Kirby RL. Wheelchair Skills Training Program Manual Version 4.2. 2013;
8. Smart A. A multi-dimensional model of clinical utility. *Int J Qual Health Care*. 2006;18(5):377-82.



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