
A6: Prescribing Power Standing Wheelchairs: Sharing our Experiences

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Learning objectives:

By the end of this session, participants will:

1. Understand the process of exploring the feasibility of a standing power wheelchair based on current evidence
2. Understand the potential risks involved in prescription and use of standing powered wheelchairs
3. Assess and Identify possible users of power standing wheelchairs
4. Identify the key criteria for prescribing power standing wheelchair
5. Understand the need for both occupational therapist and physiotherapist to be involved in prescription of standing wheelchair
6. List three goals for power standing wheelchair prescription

Session description:

As technology advances and powered devices become more accessible, the demand for power standing wheelchairs has increased. Currently there is limited information or guidelines on the prescription of these devices. In the space where the user forces us to go into the unknown, how do we go about prescribing technologies that explore the possibilities?

This presentation includes three case studies of the powered standing wheelchair prescription journey with three different users all with a diagnosis of Cerebral Palsy.

It describes:

- The actual benefits of power standing devices experience
- The physical, cognitive and functional considerations required
- The risks involved when prescribing
- How these factors can be integrated with wheelchair prescription

We also take a look at the relationship between the occupational therapy and physiotherapy roles and how the combined approach can maximise the user's experience from prescription to implementation.

We will outline assessment and prescription guidelines we have developed based on our learnings and the current evidence. This includes details of prescription process including assessment types and implementation strategies of a powered standing device.

Content references:

1. EnableNSW and Lifetime Care & Support Authority, *Guidelines for the prescription of a seated wheelchair Supplement 1: Wheelchair features – Standing wheelchair*. EnableNSW and LTCSA Editor, 2012, Sydney.
2. Ginny Paleg and Roslyn Livingstone. Systematic review and clinical recommendations for dosage of supported home-based standing programs for adults with stroke, spinal cord injury and other neurological conditions, *BMC Musculoskeletal Disorders* (2015) 16:358
3. RESNA Position on the Application of Wheelchair Standing Devices: 2013 Current State of the Literature; Rehabilitation Engineering and Assistive Technology Society of North America
4. Schmidt, R. E. (2015). *In-depth case study of Australian seating service experience*. (PhD), Deakin Waterfront Campus, Geelong. Retrieved from <http://dro.deakin.edu.au/view/DU:30074802>
5. Spinal Cord Injury Centre Physiotherapy Lead Clinicians United Kingdom and Ireland (2013). CLINICAL GUIDELINE FOR STANDING ADULTS FOLLOWING SPINAL CORD INJURY

A7: Benefits of a standing wheelchair on participation and quality of life for a young mum: a case study

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Learning objectives:

At the end of the session, the participant will have:

1. An understanding of the benefits of functional standing on participation and quality of life
2. An awareness that a standing wheelchair may have benefits beyond what is expected
3. An increased ability to identify clients who may benefit from a standing wheelchair

Session description:

Back ground

Multiple sclerosis is a progressive neurological condition and a common cause for decreased mobility in young adults. Within 15 years of diagnosis, about 25% of clients will depend on a wheelchair for their essential indoors mobility.

Evidence suggests that decreased mobility results in a significantly higher prevalence of neural pain, back pain and painful muscle spasms in clients with multiple sclerosis which may affect quality of life.

Method

This descriptive single case study reports the effects of having a standing mode on a power wheelchair for an active young mum on her ability to be the main carer for her 2 young children. Worsening pain levels and increased frequency of back pain and nerve pain resulted in her no longer being able to tolerate sitting in her existing powerchair for a whole day. The passive standing frame had become difficult to use independently due to pain and decreasing hip and knee range of movement.

A multifunction Levo C3 was prescribed to facilitate independent mobility and to benefit independent pain management. Funding was obtained based on the fact that it was thought that frequent standing would allow the client to better manage pain intensity and frequency.

Findings

During trial of a Levo C3 standing chair, it was found that pain was decreasing while in standing. After powered back recline was added to the Levo, the client reported that using frequent standing in combination with back recline whilst seated resulted in effective pain relief and no more pain medication was required.

The multifunction Levo powerchair was purchased and when the client was reviewed three months later, she had made significant gains with lower limb strength, range of movement and independent mobility. She was now able to stand with some upper limb support and walk very short distances with a gutter frame and light assistance. She reported an increase in participation in activities of daily family life and an improved quality of life. She no longer needs to lie down in the day for pain management and is able to stand holding the railing at the sports field to watch her son play soccer.

Discussion

This case study suggests that frequent, functional standing may be beneficial beyond managing pain and outweigh the benefits of passive standing frames in clients with multiple sclerosis. Further research to explore functional outcomes and quality of life for this client group is recommended.

Content references:

1. Arva, J., Paleg, G., Lange, M., Lieberman, J., Schmeler, M., Dicianno, B., and Rosen, L. (2009). RESNA position on the application of wheelchair standing devices. *Assistive Technology*, 21(3), 161-168.
2. Martinelli Boneschi, F., Colombo, B., Annovazzi, P., Martinelli, V., Bernasconi, C., Solaro, C. and Comi, G. Lifetime and actual prevalence of pain and headache in multiple sclerosis. *Multiple Sclerosis Journal*, 2008, 14(4): 514-521.
3. Nordstrom, B., Nyberg, L., Ekenberg, L. and Naslund, A. The psychological impact on standing devices. *Disabil Rehabil Assist Technol*, 2014; 9(4): 299-306.

A8: Therapeutic reflections – The Functional Effects of Introducing a Dynamic Lycra Splint as Part of Therapy

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Session description:

Objective: Clinical reflection on the expected and unexpected outcomes of introducing a dynamic splint in a community setting as part of therapy.

Design: Case report

Participants: 25 year old female with a diagnosis of Traumatic Brain Injury and severe orthopaedic injuries on the background of learning difficulties.

Findings: The subject is a 25yr old female with a background of Cerebral Palsy who suffered a Traumatic Brain Injury as well as serious orthopaedic injuries 3years prior. At the time of the accident, she was transitioning to living in her own flat with support from carers.

After reaching a plateau in therapy, introducing the provision of a dynamic splint was considered. The clinical rationale was to improve postural control through the use of the splint which would in turn influence her participation in functional tasks such as transfers and sit to stand.

Following the fitting of the dynamic splint, she had a period of 13, 1hr therapy sessions over an 8 week period. The sessions focussed on education and support to encourage garment wearing and practising functional tasks such as transfers, sit to stand, standing and reaching and indoor mobility.

At the conclusion of the programme we found “expected” and “unexpected” improvements. Expected improvements included: decreased time to transfer from 45.7s to 18.7s, increased number of repetitions of sit to stand from 5.3 to 9.6 per minute, decreased time in completing the TUAG (Time Up And Go Test) from 2’ 15” taking 10 steps to turn to 2’ 10” taking 8.5 steps. The introduction of supported standing and reaching during therapy for the first time.

Unexpected improvements as reported by mum: greater participation in conversation, increased concentration in topics discussed, generally more alert, more involved in organising her day.

Content references:

1. Blair E, Ballantyne J, Horsman S, Chauvel P. A study of a dynamic proximal stability splint in the management of children with cerebral palsy. *Developmental Medicine and Child Neurology*. 37 (1995) 544-554
2. Degelaen M, De Borre L, Buy R, Kerckhofs E, De Meirleir L, Dan Bernard. *Neurorehabilitation* 39 (2016) 175 - 181
3. Elliott C, Reid S, Hamer P, Alderson J, Elliott B; Lycra® arm splints improve movement fluency in children with cerebral palsy. *Gait and posture* (2010).doi:/jgaitpost.2010.11.008
4. Elliott C, Reid S, Hamer P, Alderson J, Elliott B; Lycra arm splints in conjunction with goal-directed training can improve movement in children with cerebral palsy. *Neurorehabilitation* 28 (2011) 47-54
5. Kerr A, Pomeroy V.P, Rowe P.J, Dall P, Rafferty D, *Gait and Posture* 37 (2013) 598-602