ABSTRACTS

Thursday 7th April 2022

PLENARY:
Mobility Equity

Jean L. Minkel, PT, ATP

Learning objectives:

Upon completion of this session, participants will be able to:

1. Describe the role of self-generated mobility on a child's cognitive, social and language development.

2. Describe how medical necessity (the medical model) and prior authorizations influences full participation for persons with a long term mobility disability.

3. Describe the 4 points of Stephenson's model to impact systems of injustice.

Presentation description:

I became a therapist because I enjoy working with people and was lucky enough to find a professional passion in working people with long-term mobility disabilities. During my professional career, I (hopefully) have grown and evolved from 'rookie', to 'expert', to 'partner' and now to 'ally'.

During the last two decades, I the privilege of running a wheelchair service designed to meet the needs of persons with mobility disabilities in New York City. Very quickly, I learned I had to listen more and talk less. Through listening, I discovered what people really needed, which is not always what the system was providing. We built a system to provide mobility equity. Mobility equity started by treating our clients as consumers. Our clinic is set up as a showroom, you roll through before you get to a treatment mat. Testing driving and safe spaces to say, 'I don't like it' became common practices. We began a 'back-up' chair program; supporting the repair needs or both a primary and a back-up chair (of any type). If you don't have room to store a back-up in your NYC apartment, we supported a loaner chair program.

In 2019, the state decided we were a 'boutique' program. (A boutique for the poorest, disabled citizens in NYC). Our program was folded into a much larger corporation. Despite being poor and having very little power, our clients fought for the wheelchair service. We were allowed to contract with the corporation and we soon discovered what oppression feels like.

This talk will use Bryan Stevenson's four ways to move toward justice, as a framework to work toward mobility equity. We will examine our clinical practices, public policies, research agendas and technology offerings to uncover systemic inequities toward persons with mobility disabilities. Hopefully, you too, will become not just a caring professional; but a motivated ally.

Content references:

1) Stevenson, B. "Four Ways to Help Bend the Moral Arc of the Universe toward Justice, (Jan., 2017). https://www.educationpioneers.org/blog/four-ways-help-bend-moral-arc-universe-toward-justice (Accessed April 2, 2021).

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infants. *Intel Serv Robotics* **1,** 123–134 (2008).

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Presenter biography:

Ms. Minkel is a physical therapist and master clinician well recognized for her work in Assistive Technology. She is currently the Senior Vice President at ICS - Independence Care System, a not for profit, care management agency for persons living with a physical disability in New York City; where she also leads the, *On A Roll* seating clinic. Jean has been an invited keynote speaker at conferences in the US, Canada, Australia, New Zealand and Japan. She is a published author, including many peer reviewed journal articles and most recently, she co-edited, with Michelle Lange, the newly published textbook, Seating and Wheeled Mobility – a Clinical Resource Guide. The A.T. community has recognized Jean for her contributions by awarding to her, the RESNA Fellow award in 1995 and the Sam McFarland Mentor Award in 2012.

A15: Sunrise Medical Gold Sponsor's session:

Quickie Q500 M Mini - Come learn about the ultra-compact power wheelchair that's packed with BIG performance.

Amy Bjornson
Clinical Director
Sunrise Medical, Sydney, Australia

We expect a lot out of our power wheelchairs: driving performance, diverse terrain navigation and comfortable ride - all while being manoeuvrable and easy to drive. The Quickie Q500 M Mini does all this and more. Join us to hear about all its features and clinical applications.

Presenter biography

Amy Bjornson trained as a Physical Therapist in the United States, Amy has over 20 years' experience working with adult and pediatric neurologic populations, with specialties in the treatment of spinal cord injury, and provision of assistive technology for clients with physical challenges.

Based in Sydney, Amy currently develops and implements national and international training programs on using Assistive Technology to enhance inclusion, health and well-being in those with physical disabilities. She also serves a product improvement and development role for Sunrise Medical, Australia.

Amy is a dynamic speaker who has lectured extensively on seating and mobility. She has also traveled to several developing countries, learning and sharing information with their medical communities.

Amy received her ATP certification in 1995, SMS certification in 2015 and Australian Physiotherapy certification in 2018. She is an active member of Wheelchairs for Humanity, Health Volunteers Overseas and offers technology support to Hidden Treasures Home, Fuzhou China

B13: An overview of wheelchair provision education in Canadian occupational therapy programs

Paula Rushton[1], Ed Giesbrecht[2]
[1]University of Montreal, University of Montreal, Canada. [2]University of Manitoba, Manitoba, Canada
Paula Rushton, Associate Professor
Ed Giesbrecht, Associate Professor

Learning objectives

On completion of the presentation, participants will be able to:

1. describe wheelchair education content provided in Canadian university OT programs
2. identify how Canadian curricula maps against the WHO 8-step process
3. discuss strategies to enhance wheelchair-related content in university programs

Abstract

In Canada, occupational therapists (OTs) play a central role in wheelchair service provision. Inadequate training during entry-to-practice professional education has been identified as a major concern worldwide in delivering proper wheelchair service (Fung et al., 2020; Giesbrecht et al., 2021). A survey of 21 Canadian OT and physiotherapy (PT) university programs reported marked variability in delivery of wheelchair skills education to students (Best et al., 2015). To address this issue, we undertook a project to develop a national profile of wheelchair education provision in Canadian university OT curricula and a strategy for addressing identified gaps. Educators from each OT program were invited to participate in the study. Educators from participating universities completed a single site-specific online survey regarding wheelchair service provision education in their curriculum. Survey data were mapped according to the WHO 8-step wheelchair provision process and time committed to teaching each step. Semi-structured interviews were then conducted with participants to confirm and complete the program-specific mapping. Twenty-eight educators from 13 of the 14 Canadian OT programs (93%) were enrolled. Participants ranged in age from 31 to 63 years (48 ± 8 years) and were mostly women (n=23) with full-time faculty member positions (n=15). Only the *Assessment* (mean = 7.2 hours) and *Prescription* (5.7 hours) steps were covered in all programs and were the most comprehensive. *Funding/Ordering* (n=12, 1.4 hours) and *Fitting/Adjusting* (n=11, 1.9 hours) steps were addressed in most programs, but with more limited coverage. About 75% of programs included *Referral* (n=10, 0.9 hours) and *Training* (n=10, 3.8 hours) steps, while just over half incorporated *Product Preparation* (n=7, 1.8 hours) and *Follow-up/Maintenance* (n=7, 1.1 hours) steps. There is considerable variability in the number of curriculum hours, methods of delivery, and methods of evaluation in Canadian OT curricula. Educators articulate multiple barriers to making and implementing curriculum improvements.

Content references:

1) Best KL, Miller WC, Routhier F. A description of manual wheelchair skills training curriculum in entry-to-practice occupational and physical therapy programs in Canada. Disabil Rehabil Assist Technol. 2015; 10(5):401-406.
2) Fung K, Miller T, Rushton PW, et al. Integration of wheelchair service provision education: current situation, facilitators and barriers for academic rehabilitation programs worldwide. Disabil Rehabil Assist Technol. 2020; 15(5):553-562.
3) Giesbrecht E, Carreiro N, Mack C. Improvement and retention of wheelchair skills training for students in entry-level occupational therapy education. Am J Occup Ther. 2021 Jan-Feb;75(1):1-9.

Presenter biography

Ed Giesbrecht began working as an occupational therapist in 1994, developing a particular interest in assistive technology and wheeled mobility, serving as clinical specialist in an Assistive Technology clinic in Winnipeg, Canada. His research interest drew him to academia to pursue a master's and PhD degree. He is an Associate Professor in the department of Occupational Therapy at the University of Manitoba. His research focuses on strategies to address wheelchair mobility skills and training, improving entry-to-practice education, and winter mobility.

Paula Rushton is an Associate Professor in the School of Rehabilitation, Occupational Therapy Program at the University of Montréal and a researcher at the CHU Ste-Justine Research Center. Her research is focused on measurement, intervention, knowledge translation and education related to improving the wheeled mobility of both adults and children through an improved wheelchair service provision process. From the measurement, intervention and knowledge translation perspective, Rushton's expertise lies in the domains of wheelchair skills and wheelchair confidence. From the education perspective, Rushton has been working with the International Society of Wheelchair Professionals to enhance wheelchair content in health care professional university curricula globally.

B14: The design requirements of telehealth wheelchair and seating assessment service for Aotearoa: A mixed methods analysis of stakeholder views.

Dr Fiona Graham[1], Dr Pauline Boland[2], Ms Sally Wallace[1], Ms Bernadette Jones[1], A/Prof Will Taylor[1]
[1]University of Otago, Wellington, New Zealand. [2]University of Limerick, Limerick, Ireland
Dr Fiona Graham, Senior Lecturer
Dr Pauline Bolan, Lecturer
Ms Bernadette Jones, Lecturer
A/Prof Will Taylor, Lecturer

Learning objectives

1. Learners will appreciate the socio-technical and technology acceptance factors influencing uptake of telehealth service design for wheelchair and seating assessment.
2. Learners will gain insight into the perspectives of wheelchair users on current in person wheelchair assessment services in New Zealand and of the potential for telehealth service delivery.
3. Learners will reflect on their own potential use of telehealth, in their current roles as wheelchair user, assessor, manager or service funder.

Abstract

Telehealth is often proposed as a means to improve equity of access to services for those living rurally, and those with complex health or disability needs [1]. COVID19 has seen an unprecedented shift to the use of telehealth internationally. However research evidence on the effectiveness of telehealth remains minimal, particularly for those with complex disability and rehabilitation needs. The presentation demonstrates a robust analysis of the design requirements of a telehealth service from the perspective of multiple stakeholders viewpoint, particularly wheelchair users, and Māori [3,4].

Purpose: To determine the design requirements of a tele-health wheelchair assessment service for key stakeholders in complex wheelchair and seating assessment, with particular attention for Māori.

Methods: Mixed methods using electronic survey, followed by interview and focus groups.

Results: Surveys were completed by 114 stakeholders including wheelchair users, their family members, assessors, technicians and managers. Twenty three assessors and 19 wheelchair users took part in a combination of interviews and focus groups. Telehealth assessment was anticipated to improve service quality, particularly the timeliness of services (52/92, 57%) and prioritisation of the urgency of assessment (71/92, 77%). Māori wheelchair users largely had infrastructure in place for telehealth assessment (10/11, 91%) and held positive expectations of it. Focus groups and interviews with assessors and wheelchair users indicated eight themes highlighting issues with current in-person service delivery, the potential and pitfalls of tele-delivery.

Conclusion: Substantial dissatisfaction with current wheelchair assessment services among wheelchair-users provides context to the successful design of a telehealth assessment service. Training in conducting telehealth wheelchair assessment is needed that incorporates culturally safe communication practices and support of wheelchair-user autonomy while identifying solutions that achieve wheelchair-user goals.

Content references:

1) Sittig DF, Belmont E, Singh H. Improving the safety of health information technology requires shared responsibility: It is time we all step up [Article]. Healthcare. 2018;6(1):7-12.

2) Graham, F., Boland, P., Grainger, R., & Wallace, S. (2019). Telehealth delivery of remote assessment of wheelchair and seating needs for adults and children: A scoping review *Disability and Rehabilitation*. doi:10.1080/09638288.2019.1595180
3) Graham F, Boland P, Jones B, et al. Socio-technical design requirements of a telehealth wheelchair and seating assessment service: A quantitative analysis of stakeholder perspectives. New Zealand Journal of Physiotherapy. in press.
4) Graham, F., Boland, P., Jones, B., Wallace, S., Taylor, W., Desha, L., . . . Grainger, R. (under review). Socio-technical design requirements of a telehealth wheelchair and seating assessment service: A qualitative analysis of stakeholder perspectives. *Disability and Rehabilitation*.

Presenter biography

Fiona Graham is a Senior Lecturer with the University of Otago teaching postgraduate interprofessional rehabilitation. Her research areas include telehealth in rehabilitation, knowledge translation and participation focused interventions, particularly for paediatric populations. She resides in Christchurch, New Zealand.

C15: Postural asymmetries, pain, and ability to change position of children with cerebral palsy

Mrs Jackie Casey[1,2], Dr Andreas Rosenblad[3], Associate Professor Elisabet Rodby-Bousquet[1,4]
[1]Lund University, Lund, Sweden. [2]Belfast Health & Social Care Trust, Belfast, United Kingdom. [3]Uppsala University, Uppsala, Sweden. [4]Centre for Clinical Research, Västerås, Sweden
Mrs Jackie Casey, Advanced Practitioner Occupational Therapist
Dr Andreas Rosenblad , Statistician
Associate Professor Elisabet Rodby-Bousquet, Physiotherapist

Learning objectives

Upon completion of this presentation, participants will be able to:

1. Identify how postural asymmetries are present in children with cerebral palsy across all levels of gross motor skills
2. Describe the associations between having postural asymmetries and the ability to change position in sitting and supine
3. Report the prevalence of pain experienced by these children with cerebral palsy
4. Describe the relationship between having postural asymmetries and having pain

Abstract

Purpose: To examine any associations between postural asymmetries, postural ability, and pain for children with cerebral palsy in sitting and supine positions.

Methods: A cross-sectional study of 2,735 children with cerebral palsy, 0-18years old, reported into the Swedish CPUP registry. Postural asymmetries, postural ability, the gross motor function classification system levels I–V, sex, age and report of pain were used to determine any relationship between these variables.

Results: Over half the children had postural asymmetries in sitting (n= 1,646; 60.2%) or supine (n=1,467; 53.6%) as reported on the Posture and Postural Ability Scale. These increased with age and as motor function decreased. Children were twice as likely to have pain if they had an asymmetric posture (OR 2.1–2.7), regardless of age, sex and motor function. Children unable to maintain or change position independently were at higher risk for postural asymmetries in both supine (OR 2.6–7.8) and sitting positions (OR 1.5–4.2).

Conclusions: An association was found between having an asymmetric posture and ability to change position in sitting and/or lying; and with pain. The results indicate the need to assess posture and provide interventions to address asymmetric posture and pain.

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5) Westbom L, Rimstedt A, Nordmark E. Assessments of pain in children and adolescents with cerebral palsy: a retrospective population-based registry study. Dev Med Child Neurol. 2017;59(8):858–863.

Presenter biography

Jackie Casey works as an Advanced Practitioner Occupational Therapist in specialised seating in the Rehabilitation Engineering Centre, a regional service for Northern Ireland. Employed 3 days per week in this service by Belfast Health & Social Care Trust. Here I guide local therapists into interpreting postural assessments into optimal wheelchair seating systems that enable persons with complex physical disabilities and their families (where appropriate) to optimise their ability to independently function, engage in everyday life, and have fun.

Currently studying 2 days/ week on PhD with Department of Clinical Medicine – Orthopaedics, Lund University. Undertaking registry-based research with a population of Swedish children with cerebral palsy (CP) aged birth to 18 years. Primary focus of my research is an exploration of the relationship between postural asymmetries, deformities and contractures, pain, and ability to change position upon supine lying, sitting and independent wheelchair mobility of these children.

C16: Their voices: What caregivers say about sleep systems for their children

Ms Jane Hamer
Rehabilitation Teaching and Research Unit (RTRU), Otago University, Wellington, New Zealand. Waitemata District Health Board (WDHB), Auckland, New Zealand, Paediatric Physiotherapist and Clinical Leader of Physiotherapy, WDHB

Learning objectives

1. Identify 4 themes emerging from the study regarding caregivers experience of implementing sleep positioning systems in children with neurodevelopmental disabilities
2. Identify 2 facilitators to successful use of sleep systems
3. Identify 2 barriers to successful use of sleep systems

Abstract

Neurodisability is defined as 'a group of congenital or acquired long-term conditions attributed to impairment of the brain and/or neuromuscular system that create functional limitations' (1). Muscle imbalance, weakness, and spasticity impact gross motor ability, may cause asymmetry leading to hip displacement, scoliosis and contractures which impact on pain, sleep, participation, activity and functional aspects of everyday life for both the child and their family (2). 24hr postural management (24hr PMP) is an intervention used to support children with complex neurodisability address body positions across their whole day, typically with equipment in sitting, standing, walking and lying, but also includes surgery, medication, Botox, splinting, and active exercise (3). Sleep systems are one aspect of 24hr PMP, and are individualised high or low tech lying equipment aimed at supporting the body in neutral lying positions. Some International Guidelines have influenced the adoption of 24hr PMP (4,5,6), with research on this intervention focused mainly on musculoskeletal alignment (7,8). However, there is limited evidence into the effectiveness of sleep systems and little on the families experience (9, 10, 11), and despite the practice recommendations, clinical experience indicates variance in caregivers' engagement with and adherence to this approach.

Method: A Masters by Thesis is currently being undertaken to explore caregivers experience of implementing sleep systems, and identify barriers and enablers to use. Using Interpretive Descriptive methodology, purposive sampling recruited eight caregivers from the wider Auckland region (New Zealand), with semi-structured interviews undertaken. Data is being analysed with themes emerging of caregivers experience of implementing sleep positioning systems

Results: Emerging themes, and barriers and facilitators to the use of sleep systems will be described. This study aims to contribute to the body of knowledge in the field of night-time postural care as this may help inform clinical practice and improve care for this population.

Content references:

1) Morris C, Janssen A, Tomlinson R, et al. (2013) Towards a definition of neurodisability: A Delphi survey. Developmental Medicine and Child Neurology 55(12): 1103–1108
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Presenter biography

Jane Hamer is a paediatric physiotherapist and also the Clinical Leader of Physiotherapy (part-time), for WDHB (West Auckland and North Shore of Auckland). She has worked with children for 25+years, and is currently undertaking a Masters in Rehabilitation at Otago University.

D18: Choosing cushion protection over skin protection?!

Carlos Kramer
Vicair, Wormer, Netherlands
International Educator

Learning objectives

1. Upon completion of this session, attendees will be able to understand that moisture at the skin cushion interface affects both the barrier function and inflammatory response of loaded skin, making is more vulnerable to PU occurrence
2. Upon completion of this session, attendees will be able to understand that support surfaces with a microclimate management function show significant lower skin hydration levels compared with support surfaces without a microclimate management function
3. Upon completion of this session, attendees will be able to understand that the focus should be shifted from protecting the cushion against moisture to protecting the patient against moisture to prevent MASD and PU development

Abstract

The skin performs a variety of important physiological roles including protection from environmental exposure, preservation of internal homeostasis and thermoregulation. The moisture barrier is an essential component of this function. Moisture-Associated Skin Damage (MASD) pathophysiology is related to both recurrent chemical and physical irritation to the skin barrier, triggering inflammation and subsequent skin damage. The association between prolonged exposure to skin surface moisture and irritants to changes of mechanical skin properties of the skin and underlying tissue is linked with the risk of pressure ulcer development with the increase of the coefficient of friction and tissue stiffness changes. Moisture at the skin cushion interface affects both the barrier function and inflammatory response of loaded skin, making it more vulnerable to PU occurrence.

Support surfaces with a microclimate management function show significant lower skin hydration levels compared with support surfaces without a microclimate management function. When cushions were tested with a cover, the moisture dissipation over time increased relative to a similar cushion due to the wicking properties of the cushion cover.

Prolonged contact between skin and the moisture leads to hyperhydration, erythema and even breakdown of the skin barrier, making the skin more vulnerable for MASD and PU development. Therefore, the focus should be shifted from protecting the cushion against moisture to protecting the patient against moisture to prevent MASD and PU development.

Content references:

1) Guideline, T. I. (2019). *Prevention and Treatment of Pressure Ulcers / Injuries : Clinical Practice Guideline The International Guideline*.
2) Beeckman, D. (2017). A decade of research on Incontinence-Associated Dermatitis (IAD): Evidence, knowledge gaps and next steps. *Journal of Tissue Viability*, *26*(1), 47–56. https://doi.org/10.1016/j.jtv.2016.02.004
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Presenter biography

Carlos Kramer specialised himself in seating and positioning through gaining practical experience whilst working for long term care centres, rehabilitation centres and rehab vendors. His educational background is in physics and before pursuing his passion in the industry, he spent 7 years teaching in schools on all levels. He expanded his knowledge of seating and positioning through his close relations and now colleagues Sharon Sutherland-Pratt, Bengt Engström and Bart Van der Heijden. Carlos is the head of education at Vicair since 2012 and continues to combine his expertise in teaching and passion for seating to provide high quality education in the field worldwide.

D19: COVIDisruption: evolving home-based MWC skills training to full telerehabilitation delivery

Ed Giesbrecht[1], Dr. Krista Best[2], Dr. Francois Routhier[2], Dr. Celine Faure[2], Dr. Julie Faieta[2]
[1]University of Manitoba, Winnipeg, Canada.
[2]Université Laval, Quebec, Canada
Ed Giesbrecht, Associate Professor

Learning objectives

On completion of the workshop, participants will be able to:

1. describe factors that create barriers to wheelchair skills training ;
2. identify benefits of peer trainer and eHealth approaches to skills training;
3. discuss how an eHealth training intervention can be effective in a mid/post-COVID context.

Abstract

Many individuals receive a manual wheelchair (MWC) to address mobility impairment, yet they experience restricted social participation and mobility because they lack *skills* to independently, safely, and effectively use their MWC (Smith et al., 2016). Access to comprehensive *MWC training* is constrained by expense and limited availability of skilled therapists, demands of patient or clinician travel, and lack of community-based training opportunities, particularly in rural areas (Best et al., 2016). Alternative and disruptive rehabilitation approaches are required that are clinically effective, cost-effective, and sustainable (Giesbrecht & Miller, 2017). Two strategies have demonstrated the potential to reduce burden on the healthcare system: delivery in the community via a mobile device training app and use of peer trainers. These approaches are compatible and synergistic to ameliorate training issues among MWC users in a way that is cost-effective; delivered in an optimal time and context; and in a sustainable way. *Training to Enhance Adaptation and Management for Wheelchair users* (TEAMWheels) was initially developed as a 4-week, community-based program integrating in-person peer-led and independent eHealth home training components. Our purpose was to *evaluate the effect* of TEAM Wheels on participation, MWC skill capacity, self-efficacy and quality of life in an RCT design. Shortly before implementation, the COVID-19 pandemic created conditions where in-person training and data collection became impossible. In response, our team rapidly reconfigured TEAM Wheels to be delivered entirely via eHealth. The peer-training component was modified to be delivered using a secure teleconferencing application using the same computer tablet as the home training application. Data collection was adapted with a variety of online, telephone and secure teleconferencing options to meet specific participant needs. This presentation will describe the TEAM Wheels intervention elements, detail the strategies employed to adapt the intervention mid-course into eHealth delivery (while respecting COVID-19 precautions), and provide preliminary study findings.

Content references:

1) Smith EM, Giesbrecht EM, Mortenson WB, Miller WC. Prevalence of wheelchair and scooter use among community-dwelling Canadians. Phys Ther. 2016 Aug;96(8):1135–42.
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3) Giesbrecht EM, Miller WC. A randomized control trial feasibility evaluation of an mHealth intervention for wheelchair skill training among middle-aged and older adults. PeerJ. 2017 Oct 5;5:e3879.

Presenter biographies

Ed Giesbrecht began working as an occupational therapist in 1994, developing a particular interest in assistive technology and wheeled mobility, serving as clinical specialist in an Assistive Technology clinic in Winnipeg, Canada. His research interest drew him to academia to pursue a master's and PhD degree. He is an Associate Professor in the department of Occupational Therapy at the University of Manitoba. His research focuses on strategies to address wheelchair mobility skills and training, improving entry-to-practice education, and winter mobility.

Dr. Krista Best is an Assistant Professor in the Faculty of Medicine at Université Laval and a Quebec Health Research Foundation Junior 1 Scholar at the Centre for Interdisciplinary Research in Rehabilitation and Social Integration in Quebec, Canada. She dedicates 90% of her time to her research in mobility, social participation and adapted physical activity. Dr. Best has expertise in developing and evaluating community-based wheelchair skills training programs for manual and power wheelchairs, including clinician-led, peer-led and mHealth approaches to training. As a Canada Vanier Scholar during her PhD, she published the first evidence for peer-led approaches to wheelchair training. While most of her research has focused on adults, she has recently begun to investigate best practices in children and youth. A member of the Wheelchair Skills Program editorial committee since 2001, Dr. Best continues to inform the evolution of the Wheelchair Skills Program.

A16: Using power mobility as a therapeutic intervention to support development and learning across the lifespan

Dr Lisbeth Nilsson[1], Dr Lisa Kenyon[2]
[1]Associated to Health Science Centre, Lund University, Lund, Sweden. [2]Grand Valley State University, Grand Rapids, Michigan, USA
Dr Lisbeth Nilsson, researcher and occupational therapist
Dr Lisa Kenyon, Professor

Learning objectives

1. Explain the value of the ALP in supporting power mobility interventions for infants and people with severe or profound cognitive impairments.
2. Discuss the value of using power mobility as a therapeutic intervention to facilitate development and tool use learning in infants and people with severe or profound cognitive impairments.
3. Connect early phases in the learning process to three specific sensorimotor/cognitive achievements attained through power mobility practice in infants and people with severe or profound cognitive impairments.

Abstract

Four decades have passed since powered mobility studies first documented the developmental and functional benefits of self-generated mobility for children with disabilities. But why are power mobility interventions still so rarely used with the youngest children, and almost entirely absent for people of all ages who have severe or profound cognitive impairments?

Infants and people with severe or profound cognitive impairments are typically unable to voice their needs or desires. Advocating is therefore a task that falls to stakeholders such as parents, relatives, therapists, and care staff who serve as their vicarious voices. Familiarity with an individual's needs and desires, and knowledge of the developmental and learning opportunities provided by powered mobility intervention, are prerequisites for effectively becoming this vicarious voice. To advocate effectively, the stakeholders themselves must be confident that the intervention will provide valuable and beneficial achievements.

Insights from research on infant development and tool use learning help to explain the importance of self-generated mobility for these individuals. We will highlight the developmental achievements and tool use learning that may be gained through therapeutic power mobility intervention with infants and people with severe or profound cognitive disabilities. Showcasing and detailing these valuable achievements that are inter-related and built on each other, may inspire and motivate stakeholders to advocate for therapeutic power mobility interventions for these vulnerable populations in need of unique approaches.

In addition, being able to recognize, track, interpret, and facilitate minor changes and achievements associated with becoming a power mobility tool user are important in cultivating stakeholders' motivation and persistence to engage in the intervention. The Assessment of Learning Powered mobility use (ALP) can be used to assess and facilitate necessary achievements, thereby supporting stakeholders' motivation to persist with practice over the prolonged periods of time needed to achieve desired outcomes in these focused populations.

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Presenter biography

Lisbeth Nilsson is a PhD and specialist in occupational therapy and associated researcher of Occupational Therapy and Occupational Science Group in Lund University, Sweden. She became an occupational therapist in 1974, earned a Master degree in 1996 and a Doctoral degree in 2007. She developed the intervention Driving to Learn in powered wheelchair for people with cognitive disabilities (1993-2007). Her special interests are tool use learning and assessment and facilitation of the learning process. She and her collaborator Durkin, PhD, UK, developed the Assessment of Learning Powered mobility use (ALP) (2009-2013). One of her current interests is what drives human development, learning and creates meaning-making in activity and participation.

Dr. Kenyon is a Professor in the Department of Physical Therapy at Grand Valley State University in Grand Rapids, Michigan. Dr. Kenyon heads the Grand Valley Power Mobility Project, an inter-professional research and service project that provides power mobility training for infants, toddlers, children and young adults who are not typically considered to be candidates for power mobility use. Dr. Kenyon presents nationally and internationally on topics related to pediatric physical therapist practice and has published multiple peer-reviewed journal articles and book chapters pertaining to power mobility and pediatric topics. Dr. Kenyon currently serves on the Editorial Committee for the Wheelchair Skills Program (Dalhousie University, Halifax, Nova Scotia, Canada) and on the Pediatric Specialty Council of the American Board of Physical Therapy Specialties.

B15: Wheelchair Educators' Package: a tool to enhance wheelchair education globally

Paula W Rushton, paula.rushton@umontreal.ca, Canada, Université de Montréal
Mary Goldberg, mgoldberg@pitt.edu, United States, University of Pittsburgh
Yohali Burrola-Mendez, anhue.yohali.burrola-mendez.hsj@ssss.gouv.qc.ca, Canada, Université de Montréal
Jon Pearlman, jpearlman@pitt.edu, United States, University of Pittsburgh
Debbie Wilson, deb@seatingtogo.co.nz, New Zealand, Seating to Go – Geneva Healthcare
Sara Munera, saram@wheelchairnetwork.net, Colombia, ISWP
Rosie Gowran, rosie.gowran@ul.ie, Ireland, University of Limerick

Keywords: wheelchair service provision, healthcare personnel, education, global, training

Presentation type: 90 minutes instructional session/workshop.
Presentation level: Beginner - Intermediate

Learning objectives
By the end of this workshop participants will be able to:

- describe the Wheelchair Educators' Package purpose and content;
- identify how the Wheelchair Educators' Package may be used to enhance the wheelchair education provided within their training programs; and
- to describe how at least 1 component of the Wheelchair Educators' Package may be useful for integrating or modifying wheelchair education in their context.

Abstract

It is estimated that 75 million people with disabilities around the world need wheelchairs in order to fulfill all human rights (WHO, 2018). Providing wheelchairs, and other assistive technology, can increase health and wellbeing of individuals and reduce social exclusion. It can also have important economic benefits for a person and a community (ATScale, 2020). Unfortunately, only between 5-15% of those in need of a wheelchair can access one (WHO, 2018). This increases inequity and limits the ability for countries to meet their obligations under the United Nations Convention on the Rights of Persons with Disabilities.

An increasingly recognized barrier to access appropriate wheelchairs is the lack of trained wheelchair personnel (Fung, 2017). Not all educational institutions teach wheelchair content, and there is great variability in what and how it is taught and evaluated. To support the integration of wheelchair content into universities and regional training centers globally, the Wheelchair Educators' Package has been developed by a diverse group of 30 people, with representation from different professions and economic settings, including technical experts, end-users, experts in assessing evidence and stakeholders. This package will enable programs to strengthen rehabilitation systems worldwide, through appropriately trained professionals in wheelchair service provision.

In this workshop, we will describe the participatory action research approach used to develop the Wheelchair Educators' Package and an overview of the content. Participants will have the opportunity to engage in simulated use of the Package in order to explore how it may be used to address training needs of wheelchair service providers in their contexts. Facilitated discussion will enable participants to provide feedback on how the Package could be improved to meet the education needs within their contexts. Post-conference, all participants will be notified of the Wheelchair Educators' Package launch.

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Presenter biographies

Paula Rushton is an Associate Professor in the School of Rehabilitation, Occupational Therapy Program at the University of Montréal and a researcher at the CHU Ste-Justine Research Center. Her research is focused on measurement, intervention, knowledge translation and education related to improving the wheeled mobility of both adults and children through an improved wheelchair service provision process. From the measurement, intervention and knowledge translation perspective, Rushton's expertise lies in the domains of wheelchair skills and wheelchair confidence. From the education perspective, Rushton has been working with the International Society of Wheelchair Professionals to enhance wheelchair content in health care professional university curricula globally.

Mary Goldberg is an Associate Professor in the School of Health and Rehabilitation Sciences and Education and Outreach Project Director at the Human Engineering Research Laboratories at the University of Pittsburgh. Goldberg focuses on developing and testing evidence-based online continuing education interventions for rehabilitation professionals. She is Project Co-Director for the International Society of Wheelchair Professionals grant sponsored by USAID and the NIDILRR Initiative to Mobilize Partnerships for Successful Assistive Technology Translation (IMPACT) Center. She teaches a rehabilitation engineering design course series and two Coursera Massive Open Online Courses (MOOC) on "idea 2 Impact" and "Disability Awareness and Supports".

Yohali Burrola-Mendez is a Postdoctoral fellow at the University of Montreal and the CHU Ste-Justine Research Center. Yohali received her BS and MS in Physical Therapy and her PhD in Rehabilitation Sciences. Her research is focused on the development and implementation of educational interventions related to improving wheelchair service provision competencies among rehabilitation professionals and lay health workers in low - to high income settings. Yohali has been working with the International Society of Wheelchair Professionals since 2015.

Jon Pearlman is an Associate Professor & Chair in the Department of Rehab Science & Technology, and the founding director of the International Society of Wheelchair Professionals. Jon received his BS and MS in Mechanical Engineering, and his PhD in Rehabilitation Science. Jon is a translational researcher focused on developing and improving technologies which support physical rehabilitation and improve the lives of people with disabilities.

Debbie Wilson is an Occupational Therapist with over 30 years clinical experience. She is the Service Manager and training facilitator of Seating To Go, part of the Geneva Healthcare Group and a leading wheelchair and seating assessment, training and repair service in New Zealand. In 2009, she helped develop the NZ Ministry of Health wheeled mobility and postural management credential for occupational therapists and physiotherapists. She is the NZ Chair for OSS and has contributed to capacity building in the Pacific Islands with Motivation Australia. Deb is currently a member of the ISWP Wheelchair Educators' Package Development Group.

Rosie Gowran is the Course Director of MSc Occupational Therapy (Professional Qualification) and Post-Graduate Certificate in Posture Seating and Wheelchair Mobility Across the Life Course, University of Limerick. She is an Implementation Scientist, Occupational Therapist and human rights

activist. She adopts a human security approach to support people with disabilities, particularly people who use wheelchairs, to address service system challenges and erosion of personhood. Building sustainable communities of practice in health and social care is the overarching theme that drives Rosie's research and education philosophy to advocate for appropriate person-centred service provision as a responsibility of the whole community. Her principal research interest is to investigate health and social care system infrastructure from a human rights and health promotion perspective. She uses participatory, stakeholder-centred inclusive mixed methodologies, towards collective development of sustainable policy, implementation and provision of appropriate services to meet peoples' needs throughout life.

Sara Munera, serves as technical coordinator of the International Society of Wheelchair Professionals. Sara has a BS in physiotherapy and MS in Rehab Science & Technology. Sara is from Colombia and is the founder of Whee, a company that supports assistive technology education in latinamerica.

C17: How Do People Actually Use Their Manual Wheelchairs, and What Really Matters?

Curt Prewitt, PT, MPT Deborah Pucci
Ki Mobility, LLC, Stevens Point, Wisconsin, USA
MS, PT, ATP Curt Prewitt, Director of Education
PT, MPT Deborah Pucci, Clinical Educator

Learning objectives

1. Following this presentation, participants will be able to cite 2 examples of how end users move about in wheelchairs during everyday life.
2. Following this presentation, participants will be able to describe 3 physical principles that impact propulsion efficiency of a manual wheelchair.
3. Following this presentation, participants will be able to describe 3 component selections that impact propulsion efficiency of a manual wheelchair.

Abstract

Every manual wheelchair user would like their chair to be a high-performance machine. Performance is impacted by principles involved in translating human movement into movement of a wheelchair and factors that contribute to energy loss. In order to help end users achieve maximum performance, persons involved in the wheelchair selection process need to have a fundamental understanding of how people use their wheelchairs, and how those wheelchairs function.

This presentation will examine the real-world behaviors of manual wheelchair users and discuss the mechanical principles and factors that affect propulsion efficiency. In addition to explaining some details of the science involved, we hope to inspire participants to think critically about their current understandings and beliefs on this topic.

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Presenter biography

Curt Prewitt is Director of Education for Ki Mobility. He has a BS in Exercise Physiology and an MS in Physical Therapy from the University of Colorado. He practiced as a physical therapist in a number of settings for a few years, most prominently in long term care, where he gained experience with seating and wheeled mobility. He transitioned from a practicing therapist to a manufacturer's representative, eventually moving into sales management and focusing on complex rehab technology. Throughout his tenure on the manufacturer's side in the complex rehab arena, he has dealt largely with pediatric positioning and mobility products. He has previously also served as a product trainer/product specialist, teaching product features and clinical application, as well as coordinating continuing education presentations, both credited and non-credited. He has presented continuing professional education courses across the US and internationally.

D20: Strategies for Online Training in Seating & Mobility Complimented with Telehealth

Dr. Mark Schmeler, Ms. Madelyn Betz
University of Pittsburgh, Pittsburgh, USA
Dr. Mark Schmeler, Associate Professor
Ms. Madelyn Betz, Research Assistant

Learning objectives

Upon attending this session learners will be able to:

1. List 3 findings of research studies related to the outcomes of telehealth services for seating and mobility.
2. Explain 3 factors that have contributed to the shift to online training.
3. Identify 3 strategies to support remote student clinical observations.

Abstract

The recent global pandemic created many challenges in the delivery of seating and mobility services and further impacted student clinical training. For years clinical researchers at the University of Pittsburgh and others have investigated the feasibility and effectiveness of telehealth strategies in the provision of seating and mobility. Likewise, many academic programs have been shifting to online education. This session will review recent research in telehealth as it applies to seating and mobility services as well as current trends for online clinical education. This session will then describe a new online/hybrid Master of Rehabilitation Technology degree program and how telehealth strategies were applied to address student clinical observations. Finally, the perspectives of a graduate student and clinical instructor in the program will be shared for discussion.

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Presenter biography

Mark Schmeler is an Associate Professor and Vice Chair for Education & Training in the Department of Rehabilitation Science & Technology at the University of Pittsburgh. He oversees all aspects of the graduate training curriculums and continuing education in the field of Assistive Technology. He is also an Occupational Therapist and Assistive Technology Professional with over 30 years of experience. He continues to practice part-time at the Center for Assistive Technology at the University of Pittsburgh Medical Center where he also serves as Interim Director. His area of research is focused on clinical outcomes and service delivery models to foster evidence-based practice and equitable policy for access to products and services. He has published several peer-reviewed articles and position papers related to tool

development, registries, telehealth, and best-practices in Assistive Technology.

Madelyn Betz is a graduate student in the Master of Rehabilitation Technology program at the University of Pittsburgh. She also works as a research assistant on a project related to the investigation of global policies related to wheelchair services to identify new models for implementation in the United States.

A17: Think Lego, a constructive approach for paediatric mobility

Allied Medical Sponsor session

Eric Van Olst
Karma Medical
Chief Innovation Officer

Presenter biography

With over 30 years of experience in the wheelchair market, Eric brings with him a wealth of knowledge and experience. Since joining the Karma company, Eric has already been involved in the design of many topline power wheelchairs, which benefit not just the users but also the therapists, family members and service engineers, including EVO Altus Power Standing Wheelchair 2018 Red Dot award, EVO Lectus Prescription Power Wheelchair 2015 iF Design award

B16: The Seat Cushion Micro Climate: Surface Temperature, Moisture and Humidity - Effects on Skin Integrity

Ms Amy Bjornson
Sunrise Medical, Wetherill Park, Australia, Clinical Director

Learning objectives

Upon completion of this course, the participant will:

1. Identify the primary mechanisms by which heat, moisture and humidity can negatively affect the skin's health and integrity
2. List 4 mechanisms of reducing the risk of tissue injury due to heat and moisture.
3. Identify strategies to assess a cushion's ability to protect skin from damage due to moisture, heat or humidity

Abstract

Historically, the term Microclimate has been used in a weather or topographical context, but as of late it has made its way into the complex rehab industry to describe the mini-atmosphere of increased skin temperature and moisture at the seating interface. Because of their limited mobility and sensation, wheelchair users are at risk for tissue injuries. We've known for decades that pressure and shear are clear culprits in these injuries, but continued research is determining that higher skin surface temperature and moisture are also contributing factors and management of this climate is also critical in healthy skin promotion.

This session will investigate the existing research on the contribution of temperature and moisture in pressure injuries, the body's response to heat stress in common mobility disorders and the overall effect on skin integrity. We will also discuss the research currently underway at Southern Cross University in Queensland, Australia. This study is investigating clients using several common wheelchair cushions. Performance parameters being investigated include cushion surface temperature, cushion humidity and client body temperature.

Content references:

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4) Microclimate: A critical review in the context of pressure ulcer prevention Jan Kottner, Joyce Black, Evan Call, Amit Gefen, Nick Santamaria; Clinical Biomechanics Volume 59, November 2018, 62-7

Presenter biography

Trained as a Physical Therapist in the United States, **Amy Bjornson** has over 20 years' experience working with adult and pediatric neurologic populations, with specialties in the treatment of spinal cord injury, and provision

of assistive technology for clients with physical challenges.

Based in Sydney, Amy currently develops and implements national and international training programs on using Assistive Technology to enhance inclusion, health and well-being in those with physical disabilities. She also serves a product improvement and development role for Sunrise Medical, Australia.

Amy is a dynamic speaker who has lectured extensively on seating and mobility. She has also traveled to several developing countries, learning and sharing information with their medical communities.

Amy received her ATP certification in 1995, SMS certification in 2015 and Australian Physiotherapy certification in 2018. She is an active member of Wheelchairs for Humanity, Health Volunteers Overseas and offers technology support to Hidden Treasures Home, Fuzhou China

C18: Vibration's Effect on a Manual Wheelchair User

Allied Medical sponsor session

Curt Prewitt
Director of Education
Ki Mobility. USA

Presenter biography

Curt Prewitt is Director of Education for Ki Mobility. He has a BS in Exercise Physiology and an MS in Physical Therapy from the University of Colorado.

He practiced as a physical therapist in a number of settings for a few years, most prominently in long term care, where he gained experience with seating and wheeled mobility. He transitioned from a practicing therapist to a manufacturer's representative, eventually moving into sales management and focusing on complex rehab technology. Throughout his tenure on the manufacturer's side in the complex rehab arena, he has dealt largely with pediatric positioning and mobility products. He has previously also served as a product trainer/product specialist, teaching product features and clinical application, as well as coordinating continuing education presentations, both credited and non-credited. He has presented continuing professional education courses across the US and internationally.

D21: Amplify the push – Using manual wheelchairs without strain and pain

Invacare sponsor session

Michael Urso
Senior Product Manager
Alber, Germany

Abstract

Permanent and frequent use of a manual wheelchair may often lead to problems regarding the musculoskeletal system resulting in pain and chronic pathologies. From a biological perspective the human upper body, especially shoulder and arms seem to not be designed to replace the legs in long term. However, the use of manual wheelchairs respectively the manual propulsion of such seems to also have a positive benefit for the wheelchair occupant compared to the use of pure electric wheelchairs that are controlled via joystick. In this context the use of a Pushrim-Activated Power Assisted Wheelchairs (PAPAW) that amplify the force of the occupant's push seems to be an interesting alternative.

During this presentation the concept of PAPAW will be introduced as well as several independent studies that have been carried out to examine the benefit of PAPAWs in comparison to the use of pure manual wheelchairs and electric joystick-controlled wheelchairs. In addition, some information will be given on how to find and setup the appropriate solution according to pathology and need of the wheelchair occupant.

Content References:

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Presenter biography

Michael Urso is senior product manager at Alber in Germany that is part of the Invacare Group. Alber is leading specialist for portable add-on drives for manual wheelchairs. Michael has been working for Alber for 15 years and is responsible for marketing and development of Aber's Pushrim-Activated Power Assisted Wheelchair (PAPAW) range such as the e-motion M25 and the twion T24. Michael has been active as speaker on several international conferences.

A18: Diversifying Standing Opportunities for Children: Clinically reasoning the options and justifying their funding

Mr Jamie Cockle
SWCO, Sydney, Australia
Product Specialist

Learning objectives

1. *To recognise the clinical application of four different styles of standing frame available to a child*
2. *Recognise five benefits of incorporating standing as part of a 24-hour positioning approach*
3. *Identify three barriers to establishing effective standing programs at home*

Abstract

Standing upright is widely recognised as one of the most important evolutionary changes in our history as a species. It is documented that prolonged periods of sitting can increase mortality and have detrimental impacts on our cardiovascular, metabolic, and mental health (1,2).

Prolonged sitting, such as office workplace environments, is regarded by many to be an emerging public health concern, with periods longer than 20-30 minutes considered to be clinically significant (3). Whilst the need for us to regularly move and change position throughout our day is now widely recognised, for those with a physical disability, access to positions such as standing or weight-bearing remains a big challenge.

To achieve optimum outcomes, selection of sufficient equipment based on individual characteristics is necessary (4). Seating assessment techniques among other assessment tools can provide a wealth of information relating to biomechanics and physical evaluation (5). The data gleaned from these assessments can further inform the selection of appropriate standing frames in relation to the function of the user. This data can also highlight contraindications to the use of particular devices for the individual.

How can we support clients with varying clinical presentations to achieve a common goal of weight-bearing and standing? How do we educate and nurture how standing is prioritised in a child's day to gain the understood benefits? How do we harness the clinical reasoning and understanding of these benefits to justify the required funding?

This workshop provides an introduction to the different styles of standing/weight-bearing that can be supported through equipment provision. The presenter will draw on case studies and clinical experience to explore these options and how one can promote optimum outcomes. We will discuss the barriers to why appropriate standing programs aren't followed and how we can understand these to improve compliance and tolerance.

Content references:

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Standing Programs to Promote Hip Flexibility in Children With Spastic Diplegic Cerebral Palsy. Pediatr Phys Ther. 2015 Fall;27(3):243-9
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Presenter biography

Jamie Cockle completed his training in Physiotherapy at Cardiff University, UK in 2015. He is passionate about Paediatrics and ensuring all children, no matter their ability have opportunities to be well supported as they grow and develop. He understands how comprehensive postural management can have a strong influence on functionality, health, and the ability to lead a positive lifestyle.

Jamie has gained extensive clinical experience during his work as an acute neurological and orthopaedic Paediatric Physiotherapist within the NHS with further roles within highly specialised community services for children with rare conditions. These experiences enabled him to work closely with a diverse range of clients understanding not only their needs but the families that support them as well.

Since arriving in Australia in 2019 Jamie has applied his acquired clinical knowledge and understanding in his work as a product specialist, working with a wide range of products and solutions, pairing up the right assistive technology with the right clients.

A19: Allied Medical Platinum Sponsor Session:

A New Frontier: Introducing the Quantum 4Front 2.

Jay Doherty (USA)

Presenter biography

Jay Doherty has 26 years of experience working in the assistive technology field with a concentration in complex rehab technology. As the director of clinical education at Quantum Rehab, Jay presents nationally and internationally on seating and wheeled mobility, focusing on evaluation and application of available technologies.

Before joining Quantum, Jay worked in both rehabilitation and assistive technology settings. His expertise ranges from pediatrics to adults. His presentations reflect a strong emphasis on different technology interventions. Jay currently sits on the Mobility Management Editorial Board and holds his ATP and SMS certifications from RESNA.

B17: Culturally Safe Practice in Aotearoa New Zealand as a Wheelchair and Seating Therapist

Miss Jazz Fox,
Wheelchair & Seating Therapist
Auckland District Health Board, Auckland, New Zealand
Mrs Liz Turnbull,
Service Manager
Geneva Healthcare – Seating To Go

Learning objectives

1. Understand wheelchair and seating practice in the context of Aotearoa, New Zealand and develop an appreciation of the Māori world view and how this complements holistic practice.
2. Be able to implement a theoretical model into their everyday practice based on Te Whare Tapa Whā but with a wheelchair and seating focus.
3. Become familiar with Te Waka Oranga as a goal setting and care planning tool that could add to their clinical tool kit.

Abstract

When working with clients who have complex postural management and mobility needs, wheelchair and seating practitioners are required to draw on all aspects of a person in order to provide the best and most suitable solution for them. Our organisation's values are Welcome (Haere Mai), Respect (Manaaki), Together (Tuhono) and Aim High (Angamua). These values underpin our service delivery and clinical practice.

As a Māori Occupational Therapist practicing in wheelchairs and seating, the development of a guiding model that merges Western and Māori perspectives is important. The model Te Whare Tapa Whā developed by Professor Sir Mason Durie identifies that the Māori world view has four key elements that require attention to achieve an optimal health outcome. Taha Whānau , Taha Wairua, Taha Tinana, Taha Hinengaro are the corner stones of wellbeing and offer a unified holistic theory of health. These four corner stones are represented by the four pillars of a wharenui. If one cornerstone does not have structural integrity, the building will collapse.

Using Te Whare Tapa Whā as a guide, a complementary model was developed that leads wheelchair and seating practitioners through their journey and experience with clients as they work towards a wheelchair and seating solution. The model encourages a depth of thinking that can lead to successful clinical outcomes for Māori and all of our clients.

A case study will be shared to introduce the model which is based on a broader representation of a house and how to develop an effective clinical relationship. The client and their whānau open their home to us both literally and figuratively. The therapist steps across the threshold and establishes whanaungatanga (a relationship, belonging and connection between people and communities) with the client. In addition a Māori world view goal setting model will be introduce as a complimentary tool.

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Presenter biography

Jazz Fox has been working at Mobility Solutions since graduating from AUT in 2018 as an Occupational Therapist. Jazz and her whānau are affiliated to the iwi - Te Aupōuri which is located in the far north of Aotearoa. While working at Mobility Solutions, she has gained a passion for wheelchair and seating and has developed an interest and strong commitment for improving Māori health outcomes.

Liz Turnbull was the Team Leader for Mobility Solutions, Wheelchair and Seating service for people with complex needs in the greater Auckland region prior to moving to a new role as Service Manager for Geneva Healthcare – Seating To Go. Liz graduated in 1997 and has worked in NZ and the UK in a number of different fields. She is a member of the national Enable Panel for the credentialing of therapists in Wheeled Mobility and Postural Management – Level 2 and complex custom fabrication. Liz joined the Mobility Solutions team in 2005 when her keen interest in working with people to achieve wheelchair and seating outcomes that support them to accomplish their goals was ignited. Since then she has worked clinically and in leadership, mentoring and supervising the team. She has been involved extensively in service development, working groups and professional forums with Auckland DHB, the Ministry of Health and Accessable.

B18: Can the prescription of a mobility device facilitate increased connection to one's community?

Ms Tracee-lee Maginnity
Permobil, Sydney, Australia
Clinical Education Specialist

Learning objectives

- By end of this session attendees will be able to identify at least 3 barriers to community access for wheelchair users
- Identify at least one feature of a mobility base that will enhance community access
- Compare at least two mobility base options in relation to community access

Abstract

Can the prescription of a mobility device facilitate increased connection to ones community? Access to the Urupa (burial ground) for a Kaumatua (Maori elder) enables participation in the conclusion of a tangi (funeral) and ongoing connection to tupuna (ancestors). In many areas the location of this sacred ground will involve traversing terrain beyond the capacity of a standard mobility base. There is an abundance of evidence in the literature that supports the importance of appropriate wheelchair configuration of the wheelchair to an individual's needs for increased functional and participation outcomes. Experience and critical analysis of the capacity of a wheeled mobility device also reveals the external environmental barriers that exist for wheelchair users. Whilst funding criteria is specific to a country or region, most models are based around ensuring access to essential mobility needs, a basic human right. Unfortunately, this sometimes means that a users primary mobility device will not enable them to access environments that may hold significant cultural or personal value.

This session will look at how we can identify and assess different mobility base options and configurations to enable users to access and connect with their community. We will highlight some of the mobility barriers identified by users in several studies found in the literature and explore ways we can addresses increased participation in meaningful activities and tasks with the support of appropriately matched mobility solutions.

Real life case studies where the users' mobility goals include remote and rural access to home and community will demonstrate some situations where an additional purpose specific feature add on or device has enabled meaningful participation.

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Menzies A, Mazan C, Borisoff JF, Mattie JL, Mortenson WB. Outdoor recreation among wheeled mobility users: perceived barriers and facilitators.Disabil Rehabil Assist Technol. 2020 Jan 15:1-7.

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Disabil Rehabil Assist Technol. 2015 Mar;10(2):102-7.

Presenter biography

Tracee-lee Maginnity joined Permobil Australia in July 2019, as a clinical education specialist. Originally from New Zealand, she graduated Auckland University of Technology with a BHSc (Occupational Therapy) in 2003 and has since worked in various roles related to seating and mobility including assessing, prescribing and educating. After gaining experience as an assessor and prescriber at Seating To Go / Wheelchair Solutions in prescribing for both disability and injury, she moved to Australia in 2011 to take on the Senior Occupational Therapist role in a custom moulded seating service. She then worked in clinical consulting and education roles until joining Permobil. Tracee-lee is passionate about maximising functional outcomes with end users and the importance of education within the industry. She has mentored many therapists interested in AT. Her experience includes working with complex postures to achieve custom outcomes.

C19: Balancing the options – Managing Pelvic Obliquity in Seating

Ms Angela Rowe[1], Ms Kim Vien[2]
[1]Melbourne Health, Melbourne, Australia.
[2]Melboure Health, Melbourne, Australia
Ms Angela Rowe, Physiotherapist
Ms Kim Vien, Occupational Therapist

Learning objectives

1. To be able to measure pelvic obliquity objectively both postural and pressure interface mapping perspectives
2. To identify the causes and evaluate the impact of pelvic obliquity
3. To identify strategies to manage pelvic obliquity in seating

Abstract

Have you ever followed the "recipe" and not got the desired outcome? Our definitions of fixed and flexible postures can often limit our thinking and problem solving when managing posture and setting up AT solutions in seating.

We will do a deep dive into the topic of pelvic obliquity including a discussion around the assessment process involving postural and pressure measures. We will examine the causes and impact of Pelvic Obliquity on pressure injury risk, postural changes, self-propulsion efficiency, and everyday function. We will demonstrate how we assess and clinically reason through a number of video case studies. A number individualised AT solutions and the evaluation of outcomes will be presented. This will spark a debate regarding the management posture vs pressure and expand on the traditional ideas of correction vs accommodation.

Angela (Physiotherapist) and Kim (Occupational Therapist) are part of a specialist multidisciplinary seating team as part of the Young Adults Transition clinic at Melbourne Health. Our model of service allows input from differing clinical perspectives that can allow for more developed AT solutions.

Content references:

1) Lange, M & Minkel, J (2018) *Seating and wheeled mobility: a clinical resource guide*
2) Thorofare, NJ: Slack Incorporated
3) Waugh, K. *A clinical application guide to standardized wheelchair seating measures of the body and seating support surfaces*. University of Colorado/Assistive Technology Partners. Denver, Colorado. Revised edition August 2013 https://www.ncart.us/uploads/userfiles/files/GuidetoSeatingMeasuresRevisedEdition.November2013.pdf
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Presenter biography

Angela Rowe is a physiotherapist with over 20 years of experience, predominantly in the fields of neurology and disability. She has completed post graduate studies in the field of Postural Management and worked as a Postural Management therapist at The Royal Hospital for Neuro-disability in London. Since returning to Melbourne, Angela has worked in two Wheelchair and Seating Services at The Royal Melbourne Hospital and Monash Health. Angela has co-authored a Wheelchair organisational standard at Monash Health and been involved in various research projects and conference presentations with her Wheelchair

and Seating clinic team. She has a particular passion for upskilling other therapists and has led training workshops and provided mentorship. Angela also has her own business Postural Innovations which provides bed positioning assessments, wheelchair consultations, and a product range of postural supports for 24 hour positioning.

Kim Vien is a Senior Occupational Therapist working in the disability sector specialising in the area of seating and equipment prescription. Having been in the disability sector for over 10 years, Kim has presented on the topic of seating at the 2017 & 2019 Oceania Seating Symposiums and at multiple ATSA daily living expos. Kim graduated in 2005 from the University of South Australia and completed honors in health sciences. With further studies in access consulting, she has expanded her skills to understand the built environments and how consumers and their technologies can interact more effectively. She has worked in both hospital and community settings and is now focused on improving services for adults with disabilities and their assistive technology needs.

C20: Making a Success of Custom Moulded Seating

Kate Pain
GTK, Sydney, Australia
Assistive Technology Consultant

Learning objectives

On completion of this workshop, participants will be able to:

1. Describe key factors in selecting custom moulded seating as the most suitable postural support option.
2. Demonstrate awareness of potential barriers to success with custom moulded seating.
3. List strategies to ensure optimal outcomes for postural support, function and pressure care.

Abstract

Custom moulded seating can be perceived as expensive, involving a complex production process, with little opportunity to modify the system to adapt to changes in the user's needs [1]. The risks associated with inappropriate moulded seating are significant and can lead to poor outcomes for the wheelchair user and their support network.

In this presentation, we will explore the decision-making process around choosing custom moulded seating, including best practice seating assessment [2,3]. We will discuss challenges that can arise during the casting, manufacturing and fitting process [1,4]. Strategies to ensure successful application of custom moulded seating will be explored, using case studies to illustrate these strategies, particularly in relation to achieving participation and functional goals.

Content references:

1) Dimiao, J.A. (2020). A Review of Factors, Seating Design, and Shape Capture Methods For Reducing Pressure Injury Risk (Unpublished doctoral dissertation). Virginia Commonwealth University, Richmond, Virginia.
2) Isaacson, M. (2011) Best Practices by Occupational and Physical Therapists Performing Seating and Mobility Evaluations, Assistive Technology, 23:1, 13-21, DOI: 10.1080/10400435.2010.541745
3) Minkel, J. (2018). Seating and Mobility Evaluations for Persons With Long-Term Disabilities: Focusing on the Client Assessment. In M. Lange & J. Minkel (Eds.), Seating and Wheeled Mobility: A Clinical Resource Guide (pp. 3–7). Slack.
4) Nace, S., Tiernan, J., & Ní Annaidh, A. (2019). Manufacturing custom-contoured wheelchair seating: A state-of-the-art review. Prosthetics and Orthotics International, 43(4), 382-395.

Presenter biography

Kate Pain is an Occupational Therapist, specialising in wheelchair seating and positioning, in her role as Assistive Technology Consultant with GTK (Sydney, Australia). Kate completed her Bachelor of Applied Science (Occupational Therapy) at the University of Sydney in 1999 and has gained experience in both Australia and the United Kingdom in a variety of settings including hospitals, rehabilitation units, community and private practice. Kate has focused on wheelchair seating and positioning for children and adults with complex postural support and pressure care requirements over the past decade.

D22: Understanding the lifespan postural issues of non-ambulant adults with CP, as measured with the Goldsmith Indices of Body Symmetry.

CHOLMES[1,2],
[1]Monash University, Peninsula Campus, Melbourne, Australia; [2]St. Vincent's Hospital Melbourne,
Melbourne, Australia

Learning objectives:

Upon completion of this session participants will be able to:

1. Understand the use of the Goldsmith Indices of Body Symmetry in the measurement of postural asymmetry of the thoracic cage, pelvis and hips
2. Identify postural deterioration using the GIofBS across the lifespan of non-ambulant adults living with CP
3. Identify pain behaviours and the contribution of postural asymmetry to pain in non-ambulant adults with cerebral palsy with cognitive and communication limitations

Abstract

Non-ambulant adults with CP often require customised seating and bed positioning systems to provide adequate postural support, maximise comfort and function and reduce the risk of pain and pressure injury. These postural interventions are readily available, yet adequate measurement of the complex three-dimensional rotary postural asymmetries experienced by many non-ambulant adults with CP, to guide and monitor prescription of such interventions has been lacking. The measurement, monitoring, and management of postural complications is critical given the impact on health and functioning inclusive of pain, quality of life, function, carer burden and life expectancy. A lack of consensus regarding appropriate clinical postural measurement in non-ambulant adults with CP has been identified alongside limitations due to patient complexity.
The GIofBS can be used to measure and monitor postural asymmetries of thorax, pelvis and hips, providing clinicians with relevant objective postural information upon which to base postural interventions.
Repeated and regular postural measurement using the GIofBS can demonstrate whether musculoskeletal asymmetries are static or changing in this population. This approach may be useful for screening for deterioration in musculoskeletal status or for assessing the longer-term outcomes of interventions to stabilise or improve postural asymmetries in lifespan management of this complex population.
The incidence and severity of pain in non-ambulatory adults with CP is high and may be associated with postural asymmetries. Proxy reporting, despite limitations, may remain the best option to assess pain in adults with significant cognitive and communication impairments and gain an understanding of the relationship between posture, as measured with the GIofBS, and pain.
This workshop will present data on the use of the GIofBS to monitor progression of postural asymmetry and describe the relationship between postural asymmetry and pain in a group of non-ambulant adults with cerebral palsy attending a tertiary multidisciplinary healthcare service.

Content references:

1) Tosi LL, Maher N, Moore DW, Goldstein M, Aisen ML. Adults with cerebral palsy: a workshop to define the challenges of treating and preventing secondary musculoskeletal and neuromuscular complications in this rapidly growing population. Dev Med Child Neurol. 2009;51(supplement):2-11.
2) Haak P, Lenski M, Cooley Hidecker M, Li M, Paneth N. Cerebral palsy and aging. Dev Med Child Neurol. 2009;51(04):16-23.

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5) Holmes C, Brock K, Morgan P. Postural asymmetry in non-ambulant adults with cerebral palsy: a scoping review. Disabil Rehabil. 2018;41(9):1-10.
6) Goldsmith E, R. G, R. G, W. M. A technique to measure windswept deformity. Physiotherapy. 1992;78(4):235-242.
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11) Rodby-Bousquet E, Czuba T, Hagglund G, Westbom L. Postural asymmetries in young adults with cerebral palsy. Developmental Medicine & Child Neurology. 2013;55(11):1009-15.
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Presenter biography

Carlee Holmes is the senior physiotherapist in the Young Adult Complex Disability Service (YACDS) at St. Vincent's Hospital Melbourne and also works in private neurological practice. The YACDS is a transition service from paediatric to adult healthcare for young adults with complex medico physical disabilities including cerebral palsy.
Carlee has a particular interest in the measurement of postural asymmetry in non-ambulant adults with cerebral palsy and is currently completing a PhD investigating "Assessment and Management of the common postural characteristics in young adults with Cerebral palsy". She has also gained additional certification in Postural Care and Measurement of Body Symmetry.
Carlee is a research associate for CP Achieve and involved in the consumer working group. She is also a member of the American Academy for Cerebral Palsy and Developmental Medicine Lifespan Care Committee

D23: Managing Forces in Active Bodies. Dynamic Seating from Theory to Practice.

Ms Amy Bjornson, Mr Robert Norman
Sunrise Medical, Sydney, Australia
Ms Amy Bjornson, Clinical Director
Mr Robert Norman, Product Specialist Clinical Hub

Learning objectives

1. State 3 clinical assessment findings for when dynamic seating should/shouldn't be considered.
2. Demonstrate at least 3 important components that can be prescribed for dynamic seating.
3. List 2 research findings that support dynamic seating which can be used for justification.

Abstract

Often clinicians experience difficulty keeping clients stable and safe in their wheelchairs if they have higher tone, dystonic movement patterns or behavioural episodes.

With this in mind, dynamic seating was developed. This type of seating provides movement within individual components of a wheelchair in efforts of allowing the client to "move" and then return to a good sitting posture. Components can include leg rests, headrest components, back rest assemblies or complete seating systems.

When the client moves, the dynamic seating components move with the client, maintaining client alignment within the seating system. These dynamic components absorb and spread the force, assisting with posture protection and safety of the client as well as protecting the wheelchair from potential damage. Research on these components has found that clients can experience a reduction in muscle tone, decrease in agitation and enhanced comfort.

This workshop will investigate the research that has led to component development, the clinical assessment process required for dynamic seating and how to utilize the components currently to increase sitting tolerance, function and client well-being.

Content references:

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2) Angsupaisal M, Maathuis C G B, Hassers-Algra M, Adaptive seating systems in children with severe cerebral palsy across International Classification of Functioning, Disability and Health for Children and Youth version domains: a systematic review, Dev Med Child Neurol 2015, 57:919-931
3) Crane, B. A., Holm, M. B., Hobson, D., Cooper, R. A., & Reed, M. P. (2007). A dynamic seating intervention for wheelchair seating discomfort. American Journal of Physical Medicine & Rehabilitation, 86(12), 988-993.

Presenter biography

Robert is a seating and mobility product specialist in Australia and is currently working in the Sunrise Medical Clinical Hub. Robert has 17 years of experience in seating and mobility industry in the UK as well as Australia for the last 5 years. His past experience is as a Technical Trainer at JCM seating in the UK, Pediatric Product Specialist for Hewerdines in the UK, working with a children's charity. Robert has also worked for equipment suppliers in Australia with his prior role as a senior AT Consultant. Robert has presented Nationally in Australia on various seating and mobility topics.

Amy trained as a Physical Therapist in the United States, Amy has over 20 years' experience working with adult and pediatric neurologic populations, with specialties in the treatment of spinal cord injury, and provision of assistive technology for clients with physical challenges.

Based in Sydney, Amy currently develops and implements national and international training programs on using Assistive Technology to enhance inclusion, health and well-being in those with physical disabilities. She also serves a product improvement and development role for Sunrise Medical, Australia.

Amy is a dynamic speaker who has lectured extensively on seating and mobility. She has also travelled to several developing countries, learning and sharing information with their medical communities.

Amy received her ATP certification in 1995, SMS certification in 2015 and Australian Physiotherapy certification in 2018. She is an active member of Wheelchairs for Humanity, Health Volunteers Overseas and offers technology support to Hidden Treasures Home, Fuzhou China

CLOSING KEYNOTE

Innovation or Improvement? What is the potential for the Fourth Industrial Revolution (Industry 4.0) to influence the lives of people living in wheelchairs?

Rachael McDonald
Co-Director, MedTech Vic
Professor and Chair, Department of Nursing and Allied Health
Swinburne University, Victoria, Australia

Learning outcomes:

1. Understand the role of industry 4.0 in wheelchair and technology design
2. Describe where user centred design fits within wheeled mobility and seating developments
3. Become excited by and engaged in how we can all be part of innovations in wheeled mobility and seating.

Industry 4.0 is the name for the 'Fourth Industrial Revolution". This represents a significant transformation in the way products are produced due to the digitalisation of manufacturing, and builds on the first (mechanisation through water and steam power), the second (mass production and assembly lines using electricity), the third (adoption of computers). Industry 4.0 extends these developments through the new technologies that have been made possible due to computing. Words such as 'artificial intelligence', 'machine learning', 'digital twinning' are all phrases discussed widely in the media as innovations, but what do they mean for people interested in wheelchairs?

According to the Harvard business review "Innovation is *the* buzzword. In fact, it has been the buzzword for so long, you could say we've developed a cult around it" (1). Innovation is a word that is overused and often also used incorrectly. It builds excitement and is synonymous with 'something cool'. At the same time, the design of the wheelchair has fundamentally not changed throughout the 20th and 21st centuries. That said, recently major improvements have been made such as the freewheel or smart drive, and this has often enhanced user experience (2).

However, many of these enhancements are inaccessible to the majority of the 131 million wheelchair users worldwide, and whilst improvements, are they innovation? What is it that is needed to be innovative in wheeled mobility and seating? And who does this? To be truly innovative, designing for and by people who use wheeled mobility is the most innovative, and the most difficult. Academics and practitioners have been writing about user centred design and disability since the early 1990's (3), yet it is still not commonplace.

This presentation will de-mystify some of the language around Industry 4.0 and demonstrate applications for wheelchairs and seating that are not only innovative, but are led by people who use wheelchairs, partnered with the people who can support that development.

References:

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2. Borisoff JF. Small markets in assistive technology: Obstacles and opportunities. In: Oishi MMK, Mitchell IM, Van der Loos HFM, editors. Design and Use of Assistive Technology: Social, Technical, Ethical, and Economic Challenges. Springer New York; 2010. p. 105.
3. Petrie, H. User centred design and evaluation of adaptive and assistive technology for disabled and elderly users. It- Information technology, 1997, 39(2): p7-12

Presenter Biography:

Rachael McDonald is clinical, teaching and research professor who aims to conduct research with people with disabilities to support and enable participation as well as educate the health professionals of the future. This is done by focussing on collaborative multidisciplinary research and teaching, concentrating on emerging areas of health, technology and emerging technologies and identifying, and addressing barriers.

They have over 100 publications, and attracted over $10million in research funding, and supervised 29 research students.