
Oceania Seating Symposium 2017
POSTER SESSIONS

P1: Thermography Measurement to assess Wheelchair Cushion Heat Absorption and Decay

Angela Rowe, PT
Kim Vien, OT
Bill Contoyannis
Catherine Young, OT
A/Prof Leigh Johnston
Melissa Munanto
Naomi Sutanto

Learning Objectives:

1. Understand the current evidence around the impact of thermal characteristics on pressure injuries
2. Understand that different thermal characteristics of pressure cushion materials
3. Application of knowledge to clinical reasoning in the prescription of pressure cushions

Session description:

The poster will outline the research carried out. The following is a summary of the research.

Objective:

To determine the thermal characteristics of commonly used cushions and materials in order to make better clinical decisions for cases where temperature is an issue.

Abstract:

Thermography has been used to assess how quickly a number of commonly used wheelchair cushion (and materials) absorb heat when used conventionally. This research uses a thermal camera to view cushion temperatures following use and define both the time and decay profile of the temperature cushions when the heat source (the seated patient) was removed.

The cushions which were trailed were:

- Foam Cushion (Foam)
- Roho High Profile® Single Compartment (Roho)
- Supracor Stimulite® Slimline™ XS Cushion (Supracor)
- Vicair Academy Adjuster 10 (Vicair)
- Action Pilot™ Cushion (Gel)

Temperature decay and pressure temperature correlations were analysed on the cushions. The effect of applied pressure on skin temperature was also tracked.

Results:

All cushions heat up and cool down at different rates. From these findings, recommendations for potential clinical applications and further studies were made. Comprehensive graphs of the thermal properties of the cushions above will be presented.

Summary:

While clinical reasoning regarding the thermal effects of wheelchair cushions are considered by clinician, there are few guidelines regarding what temperatures and temperature variations. All of the cushions both heat up and cool down at different rates. A definition of these characteristics which has a direct clinical application is required.

Content references:

1. Ferrarin, M & Ludwig, N 2000, 'Analysis of thermal properties of wheelchair cushions with thermography.', *Medical & biological engineering & computing*, vol. 38, no. 1, pp. 31–34.
2. Merla, a., Iodice, P, Tangherlini, a., Michele, G De, Romualdo, S Di, Saggini, R & Romani, GL 2005, 'Monitoring skin temperature in trained and untrained subjects throughout thermal video', 2005 IEEE Engineering in Medicine and Biology 27th Annual Conference, no. November, pp. 1684–1686.
3. Newman, P & Davis, NH 1981, 'Thermography as a predictor of sacral pressure sores.', *Age and ageing*, vol. 10, no. 1, pp. 14–18
4. Seymour, RJ & Lacefield, WE 1985, 'Wheelchair Cushion Effect on Pressure and Skin Temperature', *Archives of Physical Medicine and Rehabilitation*, vol. 66, no. 2, pp. 103–108, accessed from <papers2://publication/uuid/6C72F003-63A5-4B52-AABB-0DEC00C7EF18>

P2: Development and Evaluation of a ‘Smartphone-delivered Peer Physical Activity Counselling’ Program for Manual Wheelchair Users

Krista Best
Francois Routhier
Shane Sweet
Kelly Arbour-Nicitopoulos
Jaimie Borisoff
Luc Noreau
Kathleen Martin Ginis

Learning Objectives:

1. Describe the amplified importance of physical activity for individuals with spinal cord injury who use manual wheelchair users.
2. Explain how a Smartphone and a peer-trainer can be used to implement important psychological variables (i.e., autonomy, motivation, self-efficacy) in a physical activity intervention.
3. Discuss the perceived pros and cons for a Smartphone-delivered peer-led physical activity program for manual wheelchair users with spinal cord injury.

Session description:

Background: The importance of physical activity (PA) is amplified for manual wheelchair (MWC) users who have spinal cord injury (SCI), yet participation is rarely sufficient to elicit health benefits.¹ Existing community-based PA programs for MWC users appear to work, but adherence is low.^{2,3} The proposed

Smartphone Peer Physical Activity Counselling (SPPAC) program targets behaviour change through theoretical psychosocial precursors to PA,⁴ the use of peers, and the application of technology.

Objectives: According to the first 3 steps of the Medical Research Council framework,⁵ describe the protocol (development, refinement, and evaluation) for the SPPAC program.

Methods: **1. Pre-clinical (Development):** Systematic reviews will identify barriers and facilitators to PA, important psychological factors for predicting PA, use

of peers for community-based interventions, and use of smartphone for delivering health programs. **2.**

Modelling (Refinement): Focus groups and subsequent Delphi surveys with experts (SCI clinicians, knowledge users, MWC users with SCI) will discuss and attain consensus on content, delivery method, and perceived barriers of the SPPAC program.

Thematic analyses from focus groups will create the Delphi surveys, and then experts will rate their level of agreement with statements regarding the SPPAC program (>70% agreement). **3. Exploratory trial (Pilot evaluation):** A pre-post design with n=12 individual with SCI who use MWCs will be used to explore the feasibility and influence of the SPPAC on PA, MWC skill, self-efficacy for PA and MWC use, perceived autonomy, and motivation.

Clinical Significance: If feasible, SPPAC may offer a PA program that can reduce burden on health care professionals, overcome the barriers of inaccessible physical environments and transportation, provide of social supports for participants, and potential cost-savings. The minimal expenses required to deliver SPPAC may allow for application to a large number individuals with SCI and other diagnoses.

Funded by the Craig H Neilsen Foundation, Fonds de Recherche du Québec – Santé (FRQS), and the Canadian Disability Participation Project (CDPP).

Content references:

1. Rocchi M, Routhier F, Latimer-Cheung AE, Martin Ginis KA, Noreau L, Sweet SN. Are adults with spinal cord injury meeting the spinal cord injury-specific physical activity guidelines? A look at a sample from a Canadian Province. *Spinal Cord* 2017. doi: 10.1038/sc.2016.181 (e-pub ahead of print)
2. Arbour-Nicitopoulos KP, Tomasone JR, Latimer-Cheung AE, Martin Ginis KA. Get In Motion: An evaluation of the reach and effectiveness of a physical activity telephone counseling service for Canadians living with spinal cord injury. *Arch Phys Med Rehabil* 2014;6(12):1088-96.
3. Froehlich-Grobe K, Lee J, Aaronson L, Nary DE, Washburn RA, Little TA. Exercise for everyone: A randomized controlled trial of project workout on wheels in promoting exercise among wheelchair users. *Arch Phys Med Rehabil* 2014;95:20-8.
4. Fortier MS, Hogg W, O’Sullivan TL, Blanchard C, Reid RD, Sigal RJ, Boulay P, Doucet E, Sweet

S, Bisson E, Beaulac J. The physical activity (PAC) randomized controlled trial: rationale, methods and interventions. *Appl Physiol Nutr Metab* 2007;32(6):1170-85.

5. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M, Medical Research Council Guidance. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;337:a1655.

P3: Service experience of using the Wheelchair Outcome Measure (WhOM) over a six month period

Ying Yang, NZROT

Learning objectives:

1. To demonstrate how the WhOM will guide our intervention provision and determine the success of intervention.
2. To demonstrate the experience that therapists gained of how to improve clinical utility of the WhOM.
3. To advocate the use of the WhOM.

Session description:

Provision of wheelchairs and seating can have a large influence on quality of lives as they may improve comfort level of individuals in wheelchairs, enable independent mobility and participation in meaningful occupations. However, it is difficult for practitioners to evaluate whether the interventions that they provide have met clients' needs as there were no existing measuring tools to capture the efficacy of interventions. Therefore, the Wheelchair Outcome Measure (WhOM) was created to provide individualised goal –orientated measure of outcome after wheelchair and seating provision. As the WhOM has not yet been well known to New Zealand, there are very few practitioners using the WhOM and using it effectively. There are areas that the author intends to explore, such as when to best administer and re-administer the WhOM as well as how to interpret the scores. As one of the specialised complex wheelchair and seating assessment services in New Zealand, Mobility Solutions has gradually incorporated the WhOM into their clinical practice from the beginning of 2017. In this study, twenty cases where the WhOM has been used will be randomly selected over a six month period of time. Data will be collected on when in the clinical journey the WhOM was administered and re-administered, the scores from the two administrations, how the scores have influenced intervention provided and the challenges and positive experience by therapists using the WhOM. Data will be presented in text description, photos, tables and diagrams in the poster to meet the three objectives that listed above.

Content references:

1. DAVIES, A., SOUZA, L. H. D., & FRANK, A. O. (2003). Changes in the quality of life in severely disabled people following provision of powered indoor/outdoor chairs. *Disability and Rehabilitation*, 25(6), 286–290. doi:10.1080/0963828021000043734
2. Miller, W. C. (2016, April 7). The Wheelchair Outcome Measure (WhOM). Retrieved March 31, 2017, from The University of British Columbia , <http://millerresearch.osot.ubc.ca/tools/mobility-outcome-tools-2/the-wheelchair-outcome-measure-whom/>
3. Mortenson, W. B., Miller, W. C., & Miller-Pogar, J. (2007). Measuring wheelchair intervention outcomes: Development of the wheelchair outcome measure. *Disability and Rehabilitation: Assistive Technology*, 2(5), 275–285. doi:10.1080/1748310070147586

P4: Using Multifunction Power Wheelchairs in Aotearoa

Maria Whitcombe-Shingler, MOccTher
Sian Griffiths, MSc

Learning objectives:

To enable users' voices to be heard by providing detailed description of their day to day experiences and perspectives of multifunction power wheelchairs.

Session description:

Method: Participants: A convenience sample of 10 adults (being over 16 years old, with long term physical disability and fulltime use of a multifunction power wheelchair for longer than 6 months). Data collection: Individual semi structured interviews (Northern X Regional Ethics Committee Approved). Participants included 5 males and 5 females with a range of diagnoses: amputation, neuromuscular, MS, polio, CVA, SCI (tetraplegia). Qualitative descriptive methodology (Ontology: relativism; epistemology: social constructionism) provided the focus for understanding the participants' perspectives and the meaning and context in which they used their wheelchairs. Thematic analysis found repeated, meaningful patterns descriptive of users' perspectives and experiences: *Power mobility* was the basis for getting to where the living is, However, the *environment* can be a facilitator or an inhibitor to mobility and engagement in living, so this was the next consideration. Thirdly, the *functionality* of power wheelchairs enabled people to engage in the occupations of daily living once the user is able to access the relevant environment. Fourthly, *independence in meaningful occupations "well-doing"* made possible by the improved mobility and functionality was highlighted as important by all participants. This included social independence. However, there were barriers to independence identified. Fifthly, the impact on *personal and social identity* was an important consideration. Finally, the culmination for participants, of having an effective multifunction power wheelchair available for use within an inclusive environment was *"well-living"* the sixth theme. These themes flowed from power mobility to the actualisation of *"well-living."*

Results Practice Implication: The literature and results show that individuals with significant physical impairments can benefit greatly from multifunction power wheelchair use. Therefore the criterion for provision needs to be broad because of the benefits and potential they offer individuals. Enhanced person centred practice that incorporates person centred outcome measures and increased collaboration challenging practice norms. User empowerment through transparent debate including the use of public funding for access to technology, and inclusive environments are essential. Addressing issues such as repairability, affordability and future proofing solutions through closer independent appraisal of new equipment and technology, including increasing the number of backup power wheelchairs available need to be addressed.

Conclusion: This study goes some way to capturing the voice of people who represent users of power wheelchairs, whose lives may be either enhanced or limited by the type of mobility solution provided and the environment they live in. The value of multifunction power wheelchair use cannot be ignored because of the potential for increased independence and occupational engagement.

P5: 24hour posture positioning & wheelchair-seating intervention and technology procurement: evidence-based intervention effectiveness

Rachael Schmidt

Learning objectives:

1. Evaluate 24hr PPw-S intervention effectiveness according to Evidence Alert Traffic Light System
2. Develop evidence-based 24hr PPw-S best practice principles as a service provider (clinical/technical)
3. Justify funding 24hr PPw-S intervention effectiveness best on evidence-based data

Session description:

Introduction: An evolving approach to combined person-directed 24 hour Posture, Positioning management with wheelchair-seating procurement is designed to promote health and wellness for people living with complex disabilities (Coyne, 2016).

Combining 24hour Posture, Positioning and Seating management with wheelchair-seating (24hr PPw-S) technology solutions involves multiple stakeholders, working collaboratively with expert service providers (clinicians/vendors), empowered consumers/care providers and informed funding agencies.

Comprehensive 24hr PPw-S management and technology procurement is complex. It requires a multi-modal, multi-disciplinary approach and management success is linked to effective person-centred collaborations, information exchange that empowers confident personalised decision making (Dolan, 2013; Eggers et al., 2009; Schmidt, 2015).

Aim: The poster describes the essential components for empowering person-directed selection of appropriate 24hour posture, positioning and wheelchair-seating solutions (intervention and technology) for complex disabilities.

Method: A combined data analysis of two recent research activities informs the content. The first, findings from an in-depth case study of Australian wheelchair-seating service and procurement. The case study findings were augmented with a data analysis of available evidence pertaining to 24 hour Posture

Positioning & (wheelchair) seating assistive technology, management, programme and intervention. Combining case study findings with data analysis exposed essential evidence-based facts that influence person-centred service provision and decision making during selection of positioning-postural and wheelchair-seating intervention, procurement and service provision practices.

Findings: Available data pertaining to current 24hr PPw-S interventions were graded for effectiveness using an Evidence Alert Traffic Light System (Novak et al., 2013). This grades intervention effectiveness by traffic lights: e.g. GREEN for 'GO' intervention supported by sound evidence; AMBER for 'MEASURE INTERVENTION' ongoing effectiveness due to inadequate evidential support and RED to 'STOP' intervention with poor evidential support.

Conclusion: Poster critiques current 24hr PPw-S management and technology procurement according to Evidence Alert Traffic Light System. Understanding the effectiveness of current 24hr PPw-S evidence-based interventions ensures ongoing evidence-based clinical/technical best practice and intervention appraisal.

Content references:

1. Coyne, D. (2016). *24 hour Positioning (including Seating and Wheeled Mobility) Practice Guide V 1*. (AH16/7251). Family & Community Services (FACS),: NSW Government.
2. Dolan, M. J. (2013). Clinical standards for National Health Service wheelchair and seating services in Scotland. *Disability Rehabilitation: Assistive Technology*, 8(5), 363-372. doi:10.3109/17483107.2012.744103
3. Eggers, S. L., Myaskovsky, L., Burkitt, K. H., Tolerico, M., Switzer, G. E., Fine, M. J., & Boninger, M. L. (2009). A Preliminary Model of Wheelchair Service Delivery. *Archives of Physical and Medical Rehabilitation*, 90(6), 1030-1038.
4. Novak, I., McIntyre, S., Morgan, C., Campbell, L., Dark, L., Morton, L., . . . Goldsmith, S. (2013). A systematic review of interventions for children with cerebral palsy: state of the evidence. *Developmental Medicine & Child Neurology*, 55(10), 885-910. doi:10.1111/dmnc.12246

-
5. 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>

P6: Geographic Information Science (GIS): An Important Tool in Making the World More Accessible

Steven Escobar, MS

Learning objectives:

Upon reviewing the poster, participants will be able to:

1. Describe how Geographic Information Systems (GIS) is used to enhance individual's mobility and accessibility, and be able to give specific examples.
2. Discuss how GIS can help with city planning as it pertains to accessibility and mobility challenges and used to create innovative solutions.
3. Identify resources using GIS (e.g., websites, programs, apps) that allow everyday errands, tasks, and travel more convenient and accessible for someone with hearing, visual, or mobility challenges.

Session description:

Geographic Information Science (GIS) is a powerful digital tool that allows users to collect, analyse, and present spatial and geographic data. For people with mobility challenges, GIS can be used to effectively identify the most efficient and accessible route from one location to another. GIS can map out geographical barriers such as the how steep a slope (DEM) is, the type of surface the street is made of (e.g., cobblestone, brick, asphalt), and the location of street curbs (e.g., with and without ramp availability) (2,3). Individuals can access GIS applications to personalize their route based on preferences and limitations, thereby reducing the stress of exploring a city or new location.

GIS is being used in many cities worldwide to help with their city planning and accessibility endeavours. For example, GIS can be used to identify locations where curbs need to be fixed/ installed and to position accessible public transportation near important locations such as hospitals (1). Cities can use GIS information to develop apps that can identify the most accessible routes, to visually showing problematic access issues for the mobility challenged. Additionally, GIS can be used to visually communicate

ideas to policymakers and the public, thereby enabling them to review, analyse, and understand patterns and relationships more efficiently in hopes of making more educated decisions on accessibility and inclusion for people of all abilities(4).

GIS programs, interactive maps, and apps range from free open-source apps to expensive proprietary programs. I will identify various current products and how they can be used and their limitations. I will also provide information on several free interactive accessibility mapping apps, some of which are used to improve accessibility and decrease stress for travellers.

Content references:

1. Baumann J. Using GIS to meet ADA accessibility requirements; how one city is using a geodatabase to update/install 15,000 curb ramps by 2017. *Public Works Magazine*. 2012. http://www.pwmag.com/administration/gis-asset-management/using-gis-to-meet-ada-accessibility-requirements_o
2. Beale L, Field K, Briggs D, Picton P, Matthews H. Mapping for wheelchair users: route navigation in urban spaces. *The Cartographic Journal*. 2013; 68-81.
3. Kasemsuppakorn P, Karimi H, Ding D, Ojeda M. Understanding route choices for wheelchair navigation. *Disability and Rehabilitation: Assistive Technology*. 2014; 198-210.
4. Raiees-Dana D, "Navigation and accessibility for persons with disabilities: an anthropological study using GIS on the University of Arkansas Campus. Thesis and Dissertation. 2012; 427.

P7: In Sickness and in Health

Sam Macadaan, OT

Learning objectives:

1. To provide a personal perspective from a member of the ageing population of life at home.
2. To allow for reflection on how we can provide opportunities for the elderly to maintain independence at home without compromising their safety.
3. To empower the elderly by creating a partnership that will support their sense of wellbeing and retain control over their lives.

Session description:

New Zealand's older population is increasing. Over the last three decades, our over 65+ population have nearly doubled.

With the ever increase in numbers, our Ministry of Social development has come up with the New Zealand Positive Ageing Strategy where it promotes the value and participation of older people in communities. One of its policies is to provide opportunities for older people to participate in and contribute to family, whanau, and community.

This poster will be shedding light from a positive viewpoint, displaying a successful case of a 95 year old gentleman who still cares for his wife within his own home, with the help of his wheelchair; showcasing independence, participation, nurture, and family.

This poster will challenge some of the assumptions made by New Zealanders that our older population ought to live in Residential care.

It will include information gathered from the client by way of in-depth interview and photographs depicting his routine, his challenges, his life, his story.

References:

1. Wiles, J.L., Allen, R.E.S., Palmer, A.J., Hayman, K.J., Keeling, S., Kerse, N. (2008). Older people and their social spaces: *A study of well-being and attachment to place in Aotearoa, New Zealand*, 68(4), 664-671.

2. Statistics New Zealand (2007). *New Zealand's 65+ population: A Statistical Volume*, Wellington.
3. Clowes, A. C. (2016). *Absolutely Positively Ageing: positive ageing and volunteering in Wellington, Aotearoa New Zealand*. Victoria, University of Wellington.

P8: Upping the Anti (tips) – An Evaluation of the Effectiveness of Peer Mentored Wheelchair Skills Groups for Adults

Helen Khouri, OT
Debbie Wilson, OT

Learning objectives:

Upon viewing this poster, participants will:

1. Identify 3 features of peer led wheelchair skills groups that contribute to their success
2. Understand how wheelchair configuration can limit or enhance the development of skills
3. Understand how the Wheelchair Skills Test can be used to measure a change in skill level in adults.

Session description:

In 2013, Seating To Go introduced peer led wheelchair skills groups modelled on the Wheelchair Skills Programme developed by the Wheelchair Research team at Dalhousie University, Canada.

The initial pilot in 2013 was evaluated by administering the Wheelchair Skills Test pre and post attendance, and a post group survey. The use of wheelchair users as training mentors was rated as the most important factor in the success of the groups during the pilot.

In 2016, we reviewed the literature and re-evaluated the impact of peer led wheelchair skills groups with adults. The poster outlines the outcomes achieved and survey feedback from 10 adults participating in 2 x 2hr group sessions.

Content references:

1. Best KL, Miller WC, Huston G, Routhier F, Eng JJ. Pilot study of a peer-led wheelchair training program to improve self-efficacy using a manual wheelchair: A randomized controlled trial. *Archives of physical medicine and rehabilitation*. 2016 Jan 31;97(1):37-44.
2. Worobey LA, Kirby RL, Heinemann AW, Krobot EA, Dyson-Hudson TA, Cowan R, Pedersen J, Shea M, Boninger ML. Effectiveness of Group Wheelchair Skills Training for People with

Spinal Cord Injury: A Randomized Control Trial. *Archives of Physical Medicine and Rehabilitation*. 2016 May 3

3. Kirby RL, Miller WC, Routhier F, Demers L, Mihailidis A, Polgar JM, Rushton PW, Titus L, Smith C, Mcallister M, Theriault C, Thompson K, Sawatzky B. Effectiveness of a Wheelchair Skills Training Program for Powered Wheelchair Users: A Randomised Controlled Trial. *Archives of Physical Medicine and Rehabilitation*. 2015 Nov;96(11): 2017-2026.e3
4. Dalhousie University. (n.d.) *Wheelchair Skills Program*. Retrieved from <http://www.wheelchairskillsprogram.ca/eng/index.php>

P9: Stand up to pain: A single case study on the multiple and far reaching benefits of using a standing wheelchair for a client with SMA and chronic pain

Claire Grey, OT

Learning objectives:

1. To inform and educate participants of the potential benefits of standing wheelchairs
2. To encourage dialogue and reflection on the often unexplored gain areas for individuals when using standing wheelchairs
3. To support participants to “think out of the box” when it comes to pain management and maintaining range

Session description:

Background: Engel Et al (2009) concluded in a study on pain in youths with neuromuscular disease “Pain is a commonly experienced symptom in youths with NMD. Over 70% of parents reported chronic pain in their children with NMD and more than half of the youths self-reported chronic pain...the loss of mobility and physical function is likely playing a major role in the experience and processing of pain in youths with NMD... optimal treatment would likely be multimodal, involving not only pharmaceutical agents but also physical rehabilitation and psychosocial interventions.”

S is a 17 year old young woman with a diagnosis of Spinal muscular atrophy (type 3). S had chronic muscle pain previously managed by the pain service and by high levels of pharmaceuticals. As a result of chronic pain client often missed school, social events and required 24hr care and support. S had chronic constipation resulting in hospital admissions.

Pain alleviated when in standing frame, however x2 assistance and high dose of pain medication required before being able to transfer S into frame, as a result frame only used at home.

Therapy MDT priority to maintain hip and knee ROM. Hip and knee contractors already evident.

Client’s self-confidence and mood were described by mum as “very low.”

Some benefits of levo use include:

- Client stopped taking several pain medications by the second week of the trial. Initially client’s pain was self-rated at mean scores of 6-9. 3 months post levo provision rated as 0.
- Client is able to make herself food and drink independently.
- Mum went out and left daughter alone in the house for the first time in 16 years!
- Client has attended and remained in class for the full class duration at school
- Hip range increased by 5° and knee range by 8° in 4 months.

Poster: Photographs, pain charts, client quotes and dialogue boxes will be used to show change and impact of Levo.

Content references:

1. Nordstrom B, Nyberg L, Ekenberg L, Naslund A, (2014) The Psychosocial impact on Standing Devices. Disability and Rehabilitation, 9 (4):299-306
2. Engel JM, Kartin D, Carter GT, et al. (2009) Pain in youths with neuromuscular disease. American Journal of Hospital Palliative Medicine, 26:405-12
3. Myer A, (2010) the necessity of Standing: There is no alternative. Rehab and community care Medicine, 9-13

P10: Effects of "Tilt" and "Recline" on Pressure Distribution for People with Tetraplegia

Luma Carolina Câmara Gradim
Daniel Marinho Cezar da Cruz
Ana Luiza Allegretti, PhD, ATP, OTR

Learning objectives:

1. To evaluate the pressure redistribution in buttock/cushion interface in areas susceptible to pressure injuries (sacrum, ischial tuberosities) for the positions of tilt and recline in the wheelchair, in people with tetraplegia by spinal cord injury;
2. To compare the effects of nine positions at different angles (10 °, 20 °, 30 ° tilt and 100 ° and 120 ° recline) on the seat pressure redistribution of a wheelchair simulator in people with tetraplegia;
3. Analyze the pressure average in buttock/cushion interface with respect to the positioning performed, the contact area, the peak pressure and Peak Pressure Index maximum (PPIm) for the ischial tuberosities;

Session description:

Introduction: The development of pressure ulcers (PU) in people with spinal cord injury (SCI) is a relevant factor and directly affects their health. Several preventive methods in a wheelchair have been researched for pressure relief, health promotion and disease prevention, such as PU. Some methods such as seating positioning system, different cushions and variable positions as tilt and recline seating systems, are most commonly used to relieve the pressure, and have been studied and achieved significant results for people with SCI in wheelchair (SPRIGLE; SONENBLUM, 2011; GEFEN, 2014).

Tilting and reclining periodically in a wheelchair favors the reperfusion of ischemic tissues in the buttocks, pressure distribution between the seat and backrest of the wheelchair, decrease of stress at pressure points and allow changes to occur in the position of users to suit the activity in their context (DICCIANO et al, 2009; FUJITA et al, 2010; HARRAND; BANNIGAN, 2014).

Objectives: To evaluate the pressure redistribution in buttock/cushion interface in areas susceptible to UP (sacrum, ischia) for the positions of tilt and recline in people with tetraplegia.

Methods: there were 5 participants in the study. Their level of injury was tetraplegia, and they were between 18 and 60 years. Data was collected using a wheelchair simulator, ROHO[®] High Profile Quadro Select[™] cushion and a pressure mapping system.

Results: The pressure relief in the buttocks was better in higher angles, such as 10° tilt with 120° of recline, 20° tilt with 120° of recline and 30° tilt with 120° recline. But, even the smaller angulation positions resulted in pressure relief.

Conclusions: Our results indicate that a greater angle of tilt and recline is needed to improve pressure redistribution compared to smaller angles. A position of 30° tilt with 120° recline is effective in relieving pressure on the ischial tuberosities and the buttocks.

Content references:

1. DICIANNO, B. E.; LIEBERMAN, J.; SCHMELER, M. R.; SOUZA, A.; COOPER, R.; LANGE, M., et al. Rehabilitation Engineering and Assistive Technology Society of North America's Position on the Application of Tilt, Recline, and Elevating Legrests. Developed through RESNA's Special Interest Group in Seating and Wheeled Mobility (SIG-09). 2009.
2. FUJITA, D.; MORI, A.; CLEMINSON, T., et al. Using Seating Techniques as a Preventative Measure against Lower Limb Edema-The Effect of Combining Tilt Angle and Reclining Mechanisms on Wheelchairs. *Journal of Physical Therapy Science*, v. 22, p.:437-441. 2010.
3. GEFEN, A. Tissue changes in patients following spinal cord injury and implications for wheelchair cushions and tissue loading: a literature review. *Ostomy Wound Manage*, v. 60, p.: 34–45. 2014.
4. HARRAND, J.; BANNIGAN, K. Do tilt-in-space wheelchairs increase occupational engagement: a critical literature review. *Disabil Rehabil Assist Technol.*, v. 27, p.:1-10. 2014.
5. SPRIGLE, S.; SONENBLUM, S. Assessing evidence supporting redistribution of pressure

for pressure ulcer prevention: A review.
JRRD., v. 48, n. 3. 2011.

P11: “Let’s talk about Stress, Sanity & Survival” – How stress affects stakeholders in WC clinic settings

Elaine Vivianne Toskos MAOTR/L, ATP/SMS

Learning objectives:

1. List two elements of best practice impeded by clinician stress & burnout.
2. State three aspects of health which are impacted by stress & burnout.
3. Be aware of at least one example demonstrating burnout prevention in ATPs.

Session description:

It is a well-known fact that *work* is very important for the *self & society*. When the *work* is treating or caring for individuals that are injured, chronically ill or disabled, this fundamental feature of *identity* can clash against normal day work challenges, with devastating effects.

Simply put, *work overload* contributes to stress. Prolonged stress leads to *burnout*.

Both of these factors intimidate the core values of everyone involved in a care profession; specifically those of wheelchair service delivery & outcomes.

This module through analysis of a survey, the Maslach Burnout Inventory (MBI) given to assistive technology professionals (ATP) & focused discussion will explore how stress affects the patient, caregivers & care team in WC clinic settings and bring attention to a serious issue that is not new, but rarely highlighted.

The wellbeing of *all* involved is threatened. We need to talk!

Content references:

1. Spinelli WM¹, Fernstrom KM, Britt H, Pratt R., "Seeing the Patient Is the Joy:" A Focus Group Analysis of Burnout in Outpatient Providers, *Family Medicine*, Apr. 2016, vol. 48(4), pages 273-8.
2. Hakanen JJ, Bakker AB., Born and Bred to Burn out: A Life-Course View and Reflections on Job Burnout., *Journal of Occupational*

Health Psychology, Oct 10 2016, Epub ahead of print

3. Spataro BM^{1,2}, Tilstra SA¹, Rubio DM¹, McNeil MA¹, The Toxicity of Self-Blame: Sex Differences in Burnout and Coping in Internal Medicine Trainees., *Journal of Womens Health*, Oct. 12 2016, [Epub ahead of print]
4. Austin CL, Saylor R, Finley PJ., Moral Distress in Physicians and Nurses: Impact on Professional Quality of Life and Turnover., *Psychology Trauma*, Oct.31 2016, [Epub ahead of print]

P12: Collaboration in Design – A Person Centred Experience to Enabling Mobility through 3D Printing

Tracee-lee Maginnity

Session description:

This session will look at a recent initiative that used a collaborative client centred approach to enabling the occupation of driving an already prescribed mobility base. Abandonment of AT is an ongoing issue and more likely when AT is not meeting needs. A Client /person centred approach is not a new concept however it needs to be more than just goal orientated practice. By truly putting the person at the centre of the process and enabling them to actively participate in the process will facilitate functional goals and outcomes.

Ability Mate is a for purpose enterprise working towards a future where custom designed products can be accessed affordably and timely by people with disabilities. Ability Mates vision statement is that it is their “mission is to find ways of making the world inclusive for and with people of all abilities!” As part of Ability Mates start up initiatives they developed a program called a make-a-thon. This session will look at one of these makers days; the Toggle-a-Thon held in Sydney.

Following an open invitation to any powerchair user that was struggling to operate their wheelchair due to interface access issues, Ability Mate hosted a day at a Makers space in Sydney. Others invited to the day included family, friends, carers , designers, 3d Printers and allied health professionals all in a voluntary capacity.

The goal of the day was that each wheelchair user would leave with a customised joystick, The users were central to the process, articulating issues they had and guiding the team towards the solution. A potential solution was made in moulding clay for further input before printing for trial. Modifications and further changes were made to the prototype design following the trial prior to the final result being printed.

Content references:

1. Descriptive study about congruence in wheelchair prescription article (PDF Available) in European journal of physical and rehabilitation medicine 48(2):217-22 · June 2011
<http://www.r2d2.uwm.edu/atoms/archive/technicalreports/tr-discontinuance.html>
2. The role of choice in Assistive Technology provision in Europe Conference Paper (PDF Available) in Assistive technology research series 29:IOS Press-1232 · January 2011
3. *Measuring Assistive Technology Outcomes: A User Centered Approach* Assistive Technology Outcomes and Benefits Volume 10, Summer 2016, Volume 1 pp 94-110
https://www.atia.org/wp-content/uploads/2016/11/ATOB1V10_ART6.pdf

P13: Power or Push on? A review of wheelchair provision for MND clients within the ADHB wheelchair service

Claire Grey, OT

Learning objectives:

4. To explore optimum wheelchair prescription for MND clients
5. To define best practice pathways using current evidence of outcomes
6. To streamline funding approval timelines

Session description:

Using data from Mobility Solutions, Auckland wheelchair service collated between 2007-2010 and 2014-2017 to compare how wheelchair prescription has changed and identify any trends in equipment and timeframes. If any changes are evident to explore why and the implications relating to service delivery and evidence based practice. Studies in the UK (Rolfe, 2012) on 62 patients concluded a timeline could be used by wheelchair services to map resources required for the MND population. Ward et al (2010) found in a USA based study of 32 patient found that 66% felt the chair prescribed was timed correctly, 19% wished they started sooner. All clients exhibited high user satisfaction scores. Looking at these studies I will be relating these to the New Zealand population and practices, using both quantitative and qualitative data including case studies.

Some assumptions and hypothesis that will be robustly evaluated include:

- That rapid service provision is essential for safety and wellbeing of clients with MND.
 - Based on the progression of MND are we in time or out of time with our wheelchair prescription?
- Are clients' needs best met if their changing needs are anticipated and "future proofed"
 - We can use the data to explore the requested versus the provided equipment, asking ourselves do we under or over prescribe?

- That there are themes and consistency between clients experiences in postural needs and comfort.
 - As in the UK can we complete a pathway for our service? If so, how do we best do this? Or does this limit us seeing the client group as individuals

Content references:

5. Metha S (2015) Wheelchairs for Motor Neurone Disease: When speed is of the essence. *British Journal of Neuroscience Nursing*, Vol II (2) 58
6. Rudunovic A, Matsumoto H, Leigh P.N (2007) Clinical care of patients with Amyotrophic Lateral Sclerosis. *Lancet, Neurological*; 6:913-25
7. Rolfe J (2012) Planning wheelchair service provision in Motor Neurone Disease: The implications for service delivery and commissioning. *British Journal of Occupational Therapy*, 75 (5) 217-222
8. Ward A, Sanjak M, Duffy K, Braver E, Williams N, Nichols M, Brooks B (2012) Power wheelchair prescription, utilisation, satisfaction and cost for patients with ALS: Preliminary data for evidence-based guidelines. *Archives of Physical Medicine and Rehabilitation*, 91 (2), 268-72

P14: Motivation Australia: 10 years of strengthening Mobility Device Services in the Pacific

Lauren Flaherty, OT
Ray Mines

Learning objectives:

4. Share key learning points from developing integrated mobility device services in the Pacific Region.
5. Reflect on the evolution of the mobility device service provision sector in developing countries, and the impact of global processes and partnerships.
6. Reflect on how the change in approach, guidelines and training have improved best practice in mobility device service provision in international development.

Session description:

Many lessons have been learned since the foundation of Motivation UK in 1991, and Motivation Australia (MA) in 2007 through working with a variety of Pacific Region and global partners.

In that time we have seen the gradual shift to people with disabilities being at the centre of the process, having an active role in advocating for their right to mobility (20, CRPD), health (25, CRPD), rehabilitation (26, CRPD), rather than being treated as the passive recipients of welfare and charity. Consensus of the international community has created global guidelines and standards relating to services in developing countries including: Convention on the Rights of Persons with Disabilities (CRPD, 2006); WHO Consensus Conference On Wheelchair Provision (2006); WHO Guidelines on the Provision of Manual Wheelchairs in Less Resourced Settings (2008); Joint Position Paper On The Provision Of Mobility Devices In Less-Resourced Settings (2011); WHO Wheelchair Service Training Packages (2012-2017); and the push towards increasing use of AT through the WHO's Global Cooperation on Assistive Technology (GATE) project.

In the next decade, countries will be caught in the rising tide of diabetes and other non-communicable diseases that is sweeping through our region. Pacific

nations with scarce resources are already struggling to meet the health / rehabilitation needs of their small island populations.

MA in collaboration with our local partners, continue to work towards integrating the provision of wheelchairs, walking aids, prosthetics and orthotics by trained personnel, as an appropriate, cost effective, sustainable response to the Pacific context. MA is strategically expanding our scope to integrate Assistive Technology more broadly into our programmes.

Building the capacity of the workforce using sector standards for training and education from WHO and ISPO is a more sustainable pathway to improved Assistive Technology services and better outcomes for people with disabilities, NCDs and the frail aged.

Content references:

5. United Nations (2006) Convention on the Rights of Persons with Disabilities (UNCRPD). www.un.org
6. World Health Organization (2008). Guidelines On The Provision Of Manual Wheelchairs In Less Resourced Settings. Geneva
7. World Health Organization (2011). Joint position paper on the provision of mobility devices in less-resourced settings. Geneva
8. World Health Organization (2012 / 2013 / 2015 / 2017), Wheelchair Service Training Packages (basic / intermediate / managers / stakeholders / training of trainers). Geneva.