

Power Functions that Create Unique Client Centered Solutions



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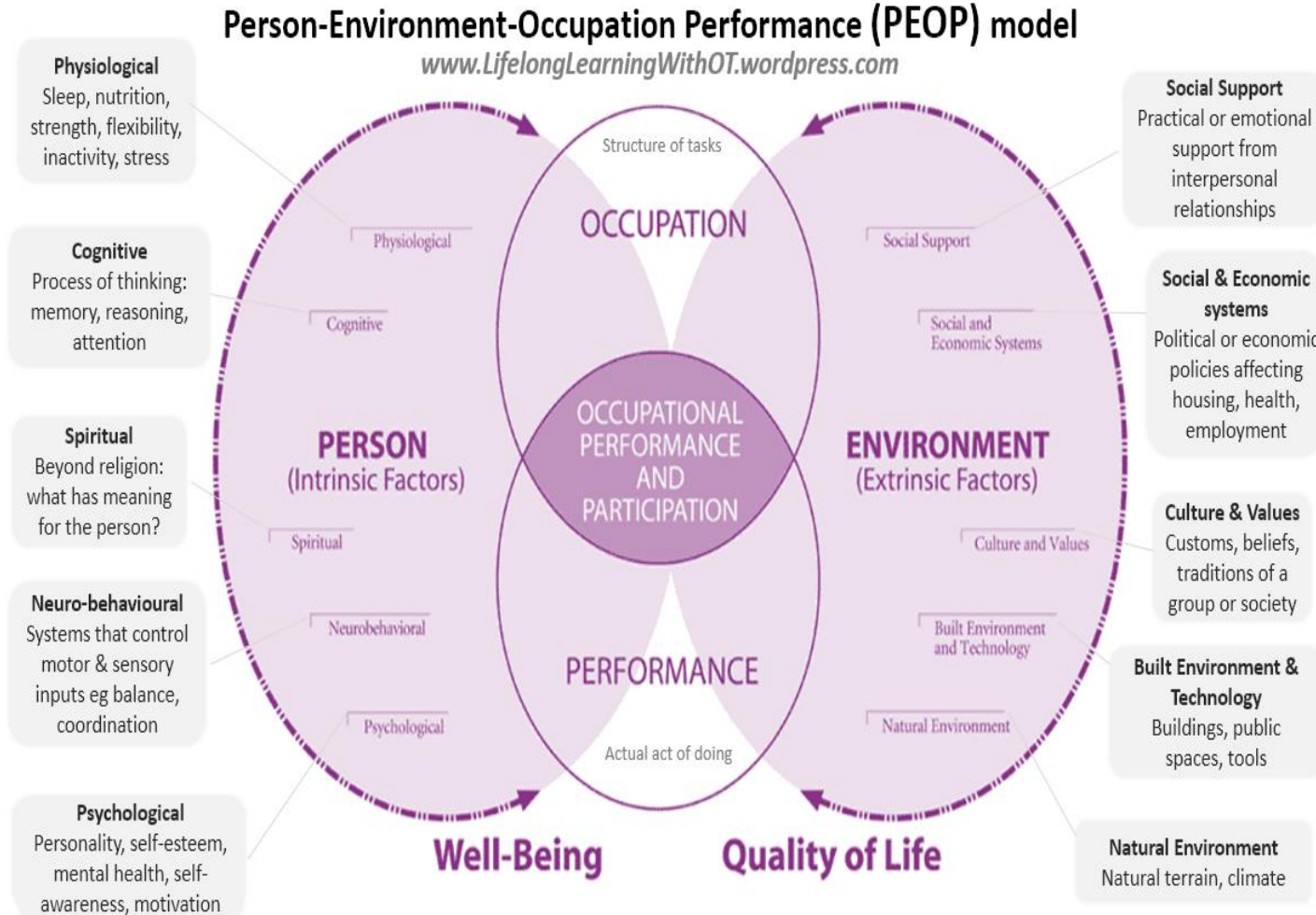


Learning Objectives:

- Brief introduction to prescribing power wheelchairs and the assessment processes required to set functional outcome goals
- Explore the range of power features that contribute to dynamic functional solutions
- Discuss the necessity of mapping the pelvis and postural assessments as essential prescription components when exploring multiple features
- Gain a better understanding of unique power wheelchair features to assist in refining prescription processes to assist in reaching therapeutic outcomes
- Develop clinical pathways to ensure we are not “over prescribing”



Brief overview on assessments for power wheelchair prescription



References: Christiansen CH, Baum CM & Bass-Haugen J. (2005). *Occupational therapy: Performance, participation and well-being* (3rd ed). Thorofare NJ: SLACK Incorporated
Duncan EES (2012) *Foundations for Practice in Occupational Therapy* (5th Ed) Edinburgh: Churchill Livingstone

- Standard comprehensive occupational therapy assessment will explore the intrinsic/extrinsic factors to identify occupational performance issues for individuals within our models of theory
- This allows us to produce a comprehensive client profile.

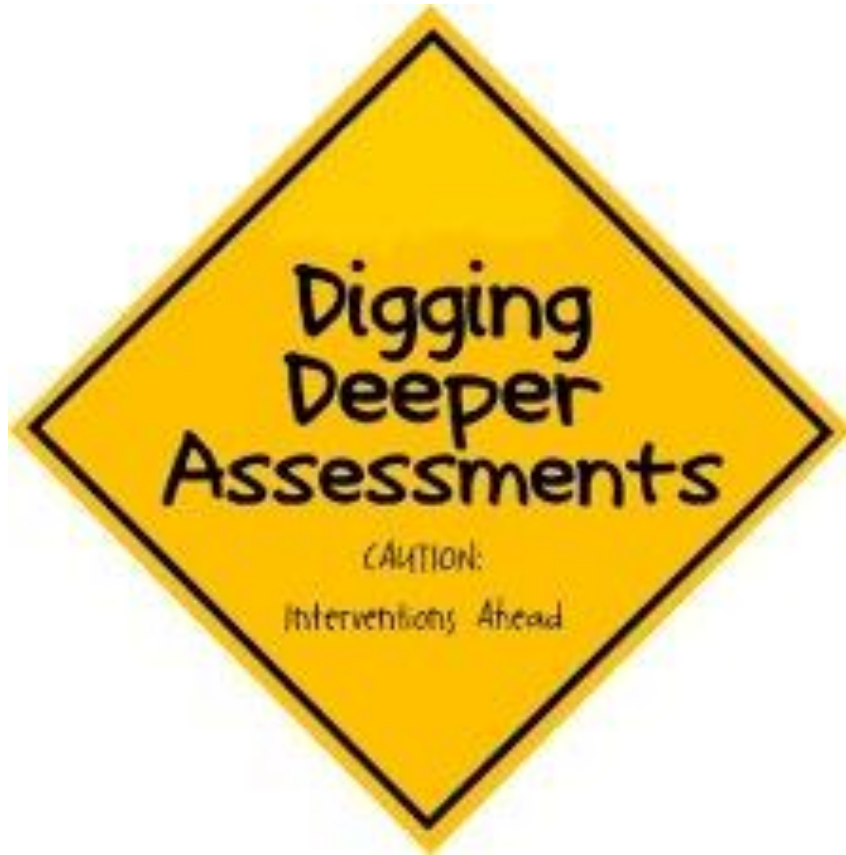
Standard initial assessment practices help to identify:

- Medical Hx (clinical condition, comorbidities, acute, progressive or palliative)
- Physical and cognitive symptoms
- Level of independence (pre-morbid, current, foreseeable)
- Other assistive technology used
- Their life roles and responsibilities
- The environments they frequently interactive in

You will already be starting to put this information into context of what type of mobility is going to be the most suitable from the information you have gathered in this process



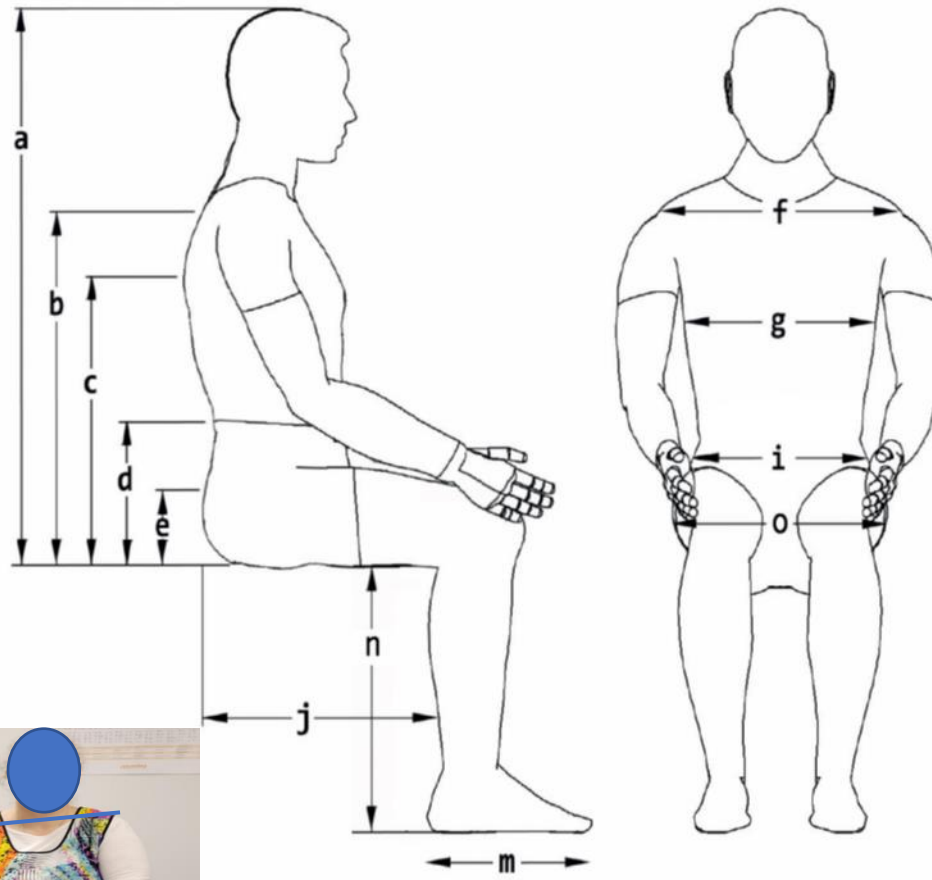
Other assessments specific to wheelchair prescriptions



- Wheelchair assessment proforma
- MAT (mechanical assessment tool) evaluation for complex clients
- Pressure risk tools
- Cognitive screen
- Wheelchair skill specific

Wheelchair assessment proforma

- a) Top of head to seat
- b) Top of shoulder to seat
- c) Underarm to seat
- d) Elbow to seat
- e) Top of pelvis to seat
- f) Shoulder width
- g) Trunk width
- i) Hip width
- j) Actual sitting depth (shorter)
- m) Foot length
- n) Lower leg length
- o) Actual seat width (wider)



Permission to take photos



Record Weight and Height!

- Capturing further detailed information specific to prescribing wheelchairs
- Capture functional capacity in relation to physical control
- Go into details of intended use
- Capture anthropometric measurements, joint range of motion and muscle tone specific to seated function, skin integrity details...
- Describe the relationship between the equipment and the environment in more detail (circulation space available for wheelchair footprint, narrow access, transfer equipment, furniture access)
- Wheelchair transportation and storage
- Explore current independent functions of the user in the wheelchair and what will they need assistance with from others
- Capture 24hr positioning profile

What are we looking to capture?



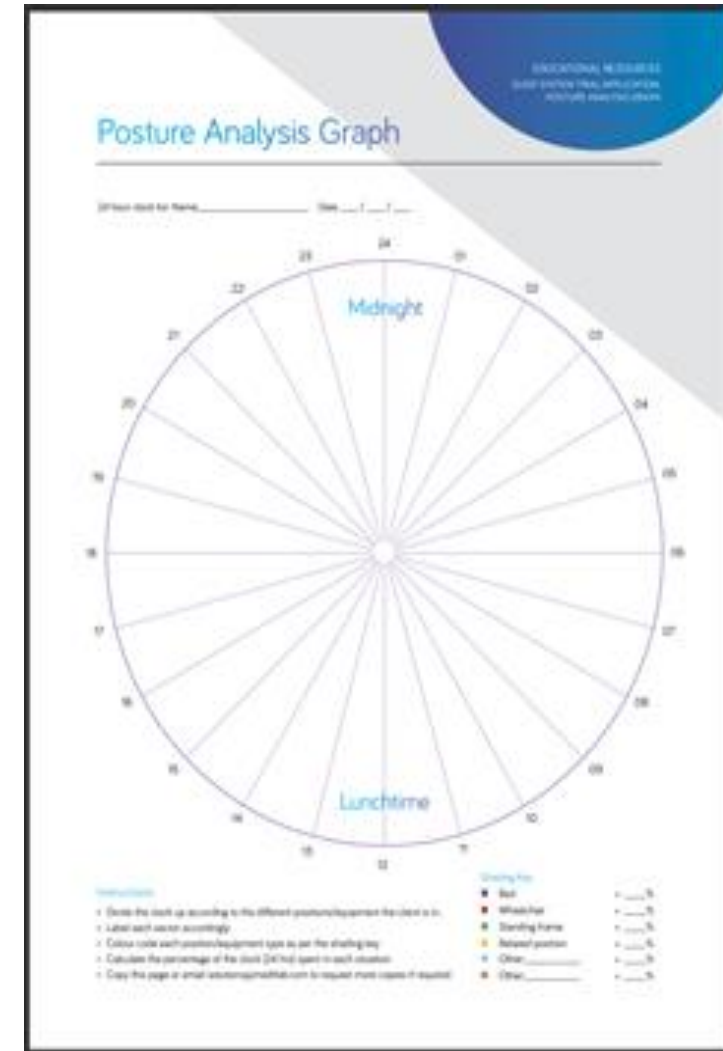
Positioning from transfer



Position before transferring out of
the wheelchair

Being the Fly on the Wall

- Visual 24hr positioning clock from Medifab
- Recording document that captures time of transfer and wheelchair feature use over the course of the day
- Analyse photos/videos of wheelchair use and ADL participation
 - provide direction e.g. capture positioning during T.V viewing time, capture participation during meal time and positioning post meal
- Record how many times a client is repositioned in a day, how and why??



Why do MAT Evaluations ?

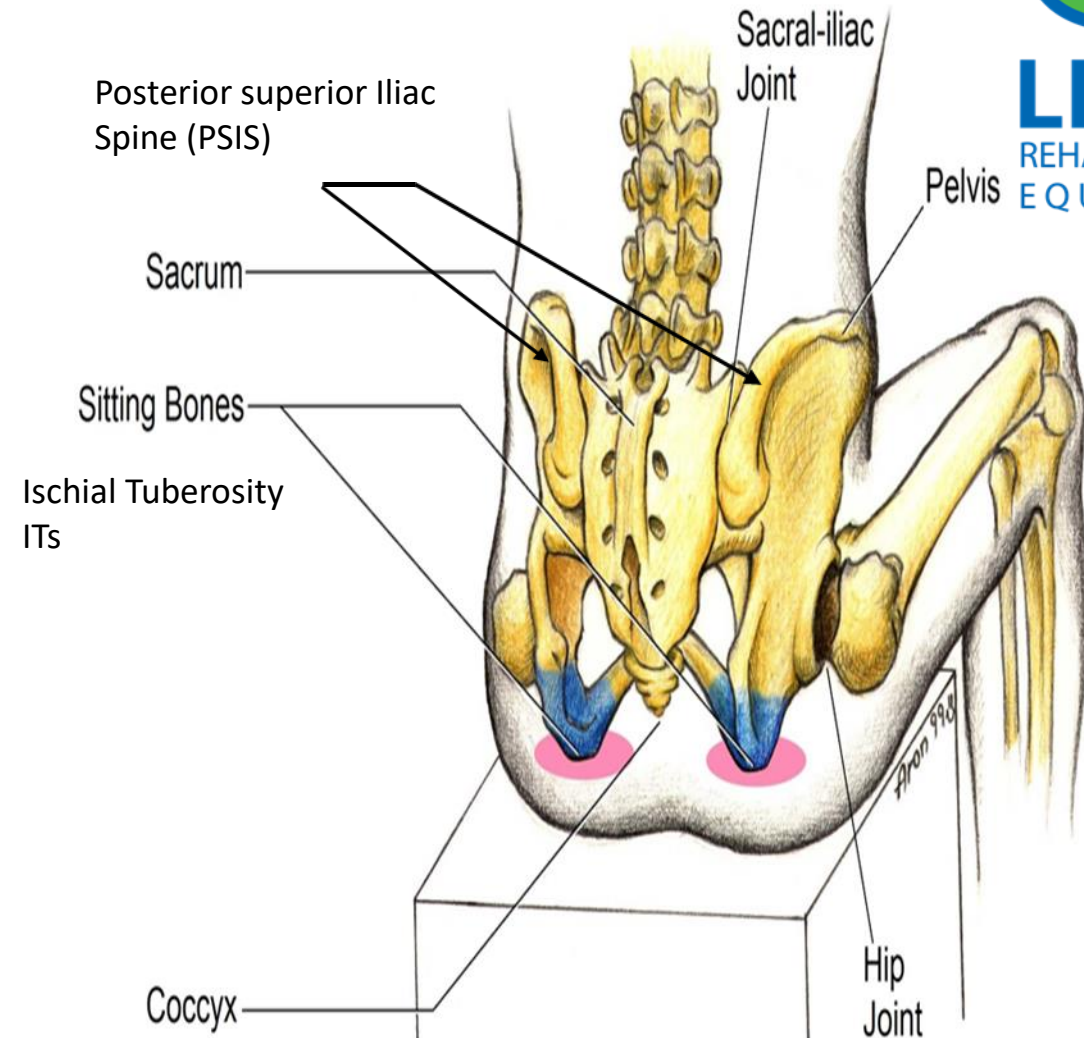
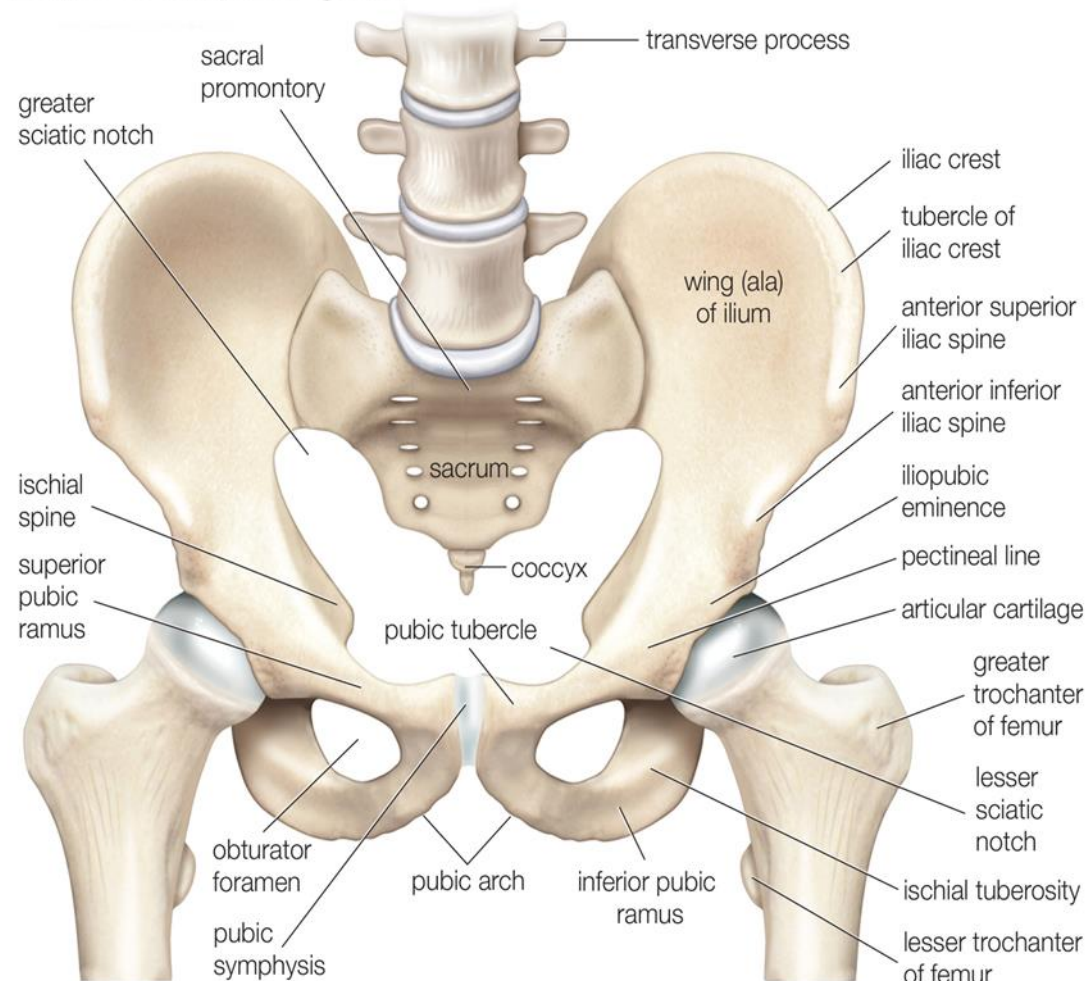
- To gain a deeper understanding of why the wheelchair user sits the way they do, to understand their full potential to participate in physical tasks, to safely use power seat functions, and to complete the client profile of biomechanical assessment and physical examination.
- Only then can we truly develop client centered goals with meaningful pathways of interventions. It can't be all about the equipment!
- It leads us on a journey of history about current and previous equipment, postural changes, skin integrity and pressure care management. It is the catalyse that helps us to dig deeper about sitting balance, functioning from the wheelchair and 24hr postural management.
- As a “rule of thumb” map everyone’s pelvis



Get to know the boney prominences

- Pelvis and hips

Bones of the pelvic girdle



Assessments of Function

- How do you assess the wheelchair users ability to move with or within their wheelchair set-up?
- What is their capacity for movement out of midline and to return to their “base of support”?
- How does this movement translate into function?
- What supports are required to produce functional output?
- Can functional output be increased by altering the availability of supports?



Goal Setting



- Collaboration between therapist/s & consumer/their support network
- Mobility status (independent or assisted or combination)?
- How long is the end user seated in the seating system?
(Tolerance, posture management and skin integrity)
- What are the Activities of Daily Living performed from the wheelchair independently or assisted?
- What are the environments the wheelchair most frequently interacts with? Any occasional or spontaneous environments?
- How is the wheelchair transported and is the occupant transported in the wheelchair?
- What goals will be set for the trial vs long terms post prescription

Configuration – Power Rehab Options



TILT



**VERTICAL
LIFT**



**RECLINE AND
ELEVATING/EXTENDING/
ARTICULATING LEGRESTS**



Configuration – Special Functions

- **Anterior Tilt** – supports functional reach; standing transfers; standing machine transfers and anterior pressure relief
- **Anterior lift and reach** – combines elevation with anterior tilt to increase functional access
- **Transfer Tilt** – Combines anterior tilt with an articulating foot plate flush to the ground to eliminate moving the foot plate out of the way
- **Standing** – provides many physiological benefits which support maintenance of current levels of function through musculoskeletal health, organ tissue oxygenation reducing the impact of further disability from continued wheelchair use; supports functional reach and social interactions.





Configuration – Special Functions

- **Lateral Tilt** – changes the orientation of the seat pan laterally (left to right; right to left) to correct fixed postures supporting airways and swallowing; remove the effects of gravity to assist in correcting low tone postures; its an active seating solution allowing for pressure management changes
- **Latitude System** – features 14" of forward travel and a 5" seat to floor height from the pan to the ground for a sit-floor transfers and floor positioning for functional engagement
- **Power Flip-up Foot Platform** – to support independent transfers and improve access around tight corners and into benches
- **Power Swing Away Elevating Legrest** - to support independent transfers and improve access around tight corners and into benches
- **Alternative Drive Controls** – to increase independent mobility goals and/or access to independent power functions

Case Study – Lateral Tilt



Clinical indicators for trial

- Asymmetry on the frontal plane
- Increased force
- Increased risk of compromised airways and swallowing

Case Study – Lateral Tilt



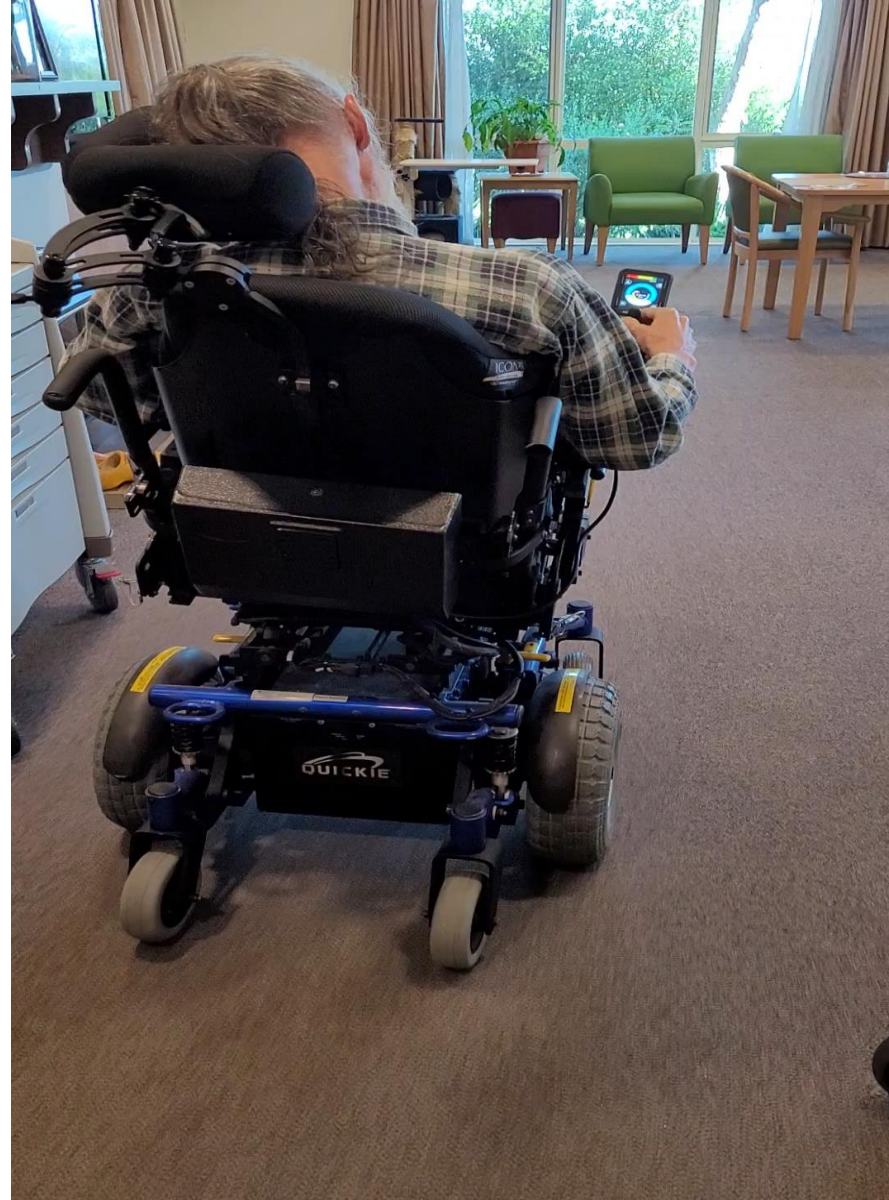
Clinical Outcomes

- Reduced and supported asymmetrical posture on the front plane
- Reduced high tone response
- Provided a position out of gravity to assist in improving head positioning
- Improved visual field and increased concentration

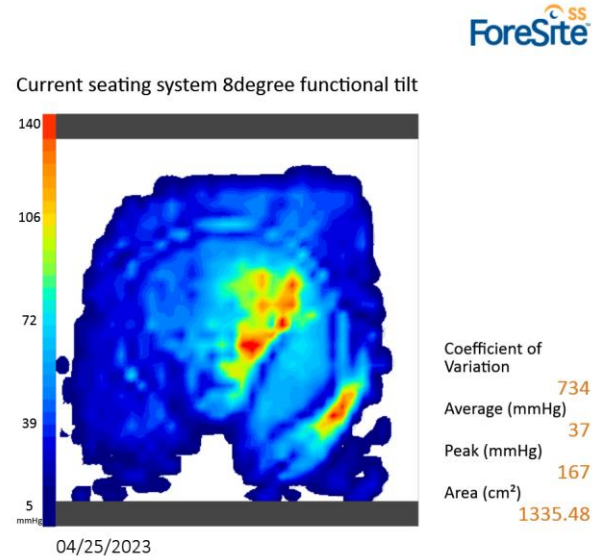
Case Study – Lateral Tilt

Clinical Considerations

- Training and education on combined features – memory settings
- Application of positions within a 24hr positioning model



Case Study – Lateral Tilt



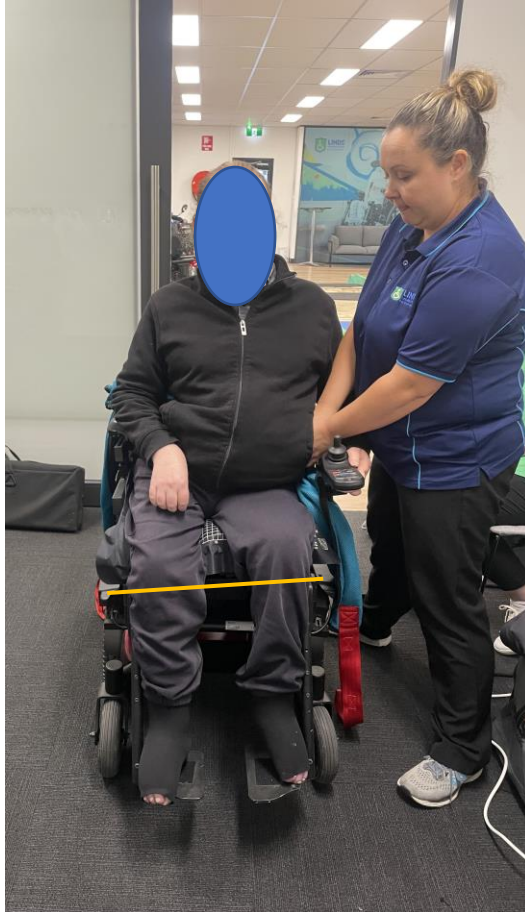
Seat Front

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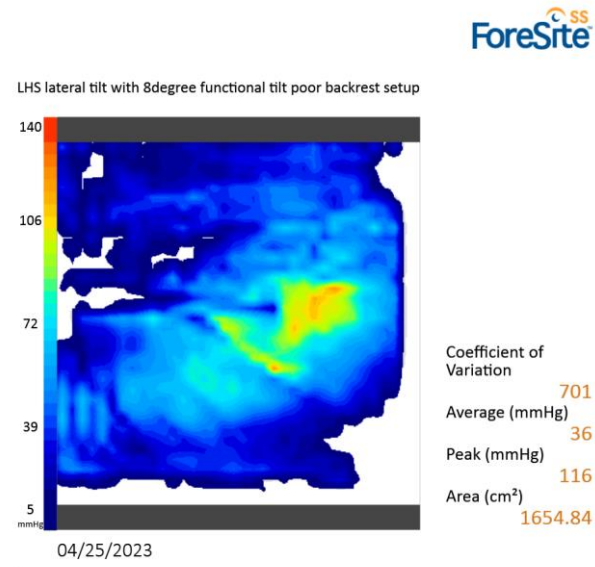
Clinical indicators for trial

- Asymmetry on the frontal plane
- Increased mechanical loading
- Increased abdominal pressure

Case Study – Lateral Tilt



Seat
Front

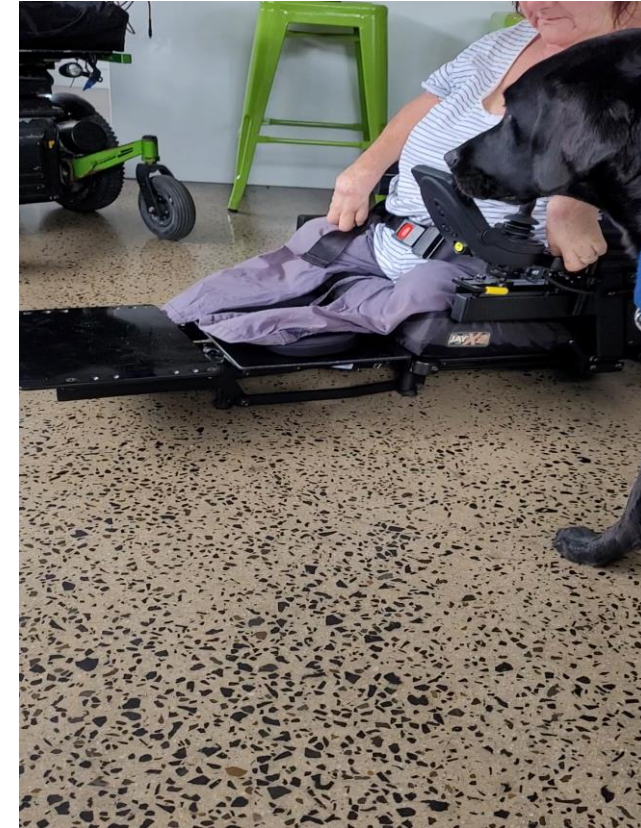
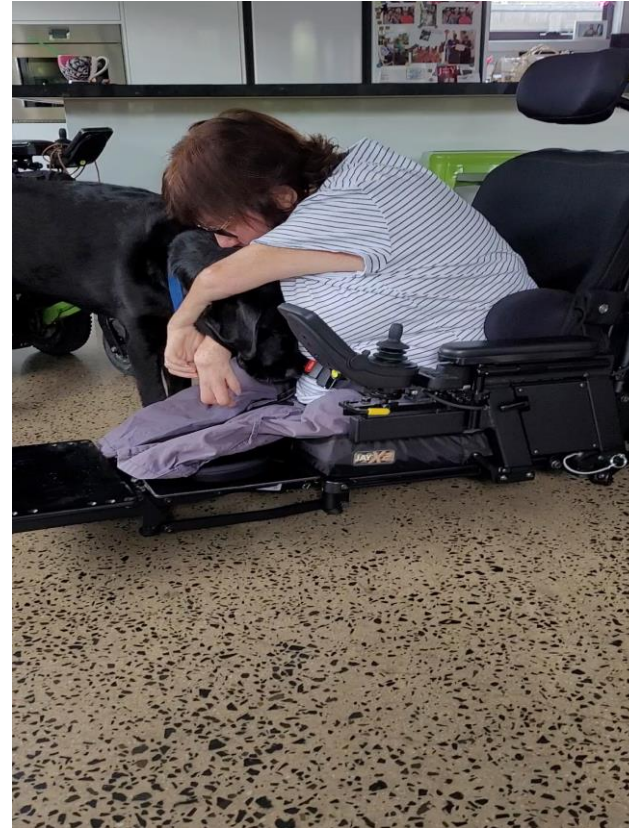


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Clinical Outcomes

- Reduced asymmetrical posture on frontal plane
- Reduced mechanical pressure
- Increased pressure distribution
- Continue to work of seating system to provide upper body supports

Case Study – Latitude



Clinical indicators for trial

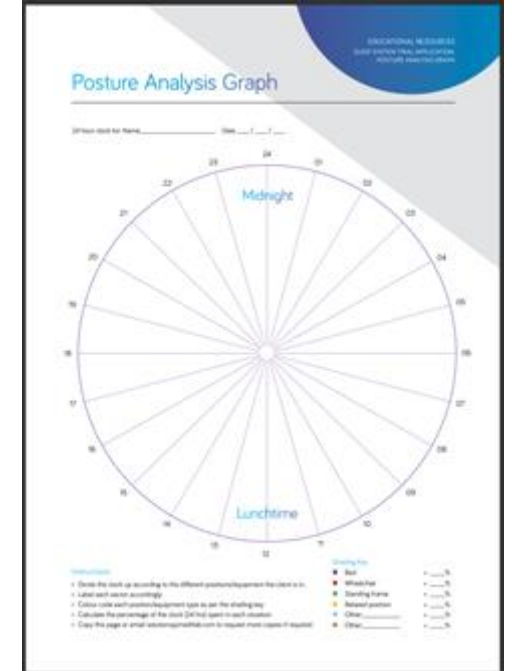
- Client initiated for floor access
 - Independent transfer
 - Engagement with service dogs

Clinical Considerations

- Aeroplane transportation impacted by feature design
- Consultation with manufacturer for platform footplate

Implementation – Intervention Plan

- Memory seating – functional labelling
- 24hr positioning portfolio – labelling dynamic positioning using rehab seat functions
- Intervention plan template and wheelchair document with directional instructions
- ADL task related



Conclusion...

- Creating a comprehensive client profile is required for successful power wheelchair feature prescription
- Unique custom power wheelchair features and solutions can create client centred outcomes
- Be prepared to implement an intervention plan to ensure the longevity of prescription
- Accepting the parameters of clinical considerations will strength continued use and end user outcomes



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References / Supporting Documentation

- AmySystems Alltrack Series Website: <https://amylor.com/>
 - Make sure you visit the Canadian Site for full access to the Ascent documentation
- Functioning Everyday with a Wheelchair
- NSW Health; *Guidelines for the prescription of a seated wheelchair or mobility scooter for people with a traumatic brain injury or spinal cord injury*;
https://www.aci.health.nsw.gov.au/data/assets/pdf_file/0003/167286/Guidelines-on-Wheelchair-Prescription.pdf ; Accessed 23rd August 2021
- Owens, J; Davis, D.D; (2022); *Seating And Wheelchair Evaluation*.
<https://www.ncbi.nlm.nih.gov/books/NBK559231/> Accessed via PubMed May 2023.
- RESNA Position Papers <https://www.resna.org/>
- RESNA Position on the Application of Tilt, Recline, and Elevating Legrests for Wheelchairs;
Rehabilitation Engineering & Assistive Technology Society of North America Brad E. Dicianno, MD;
Elizabeth Margaria, BS; Juliana Arva, MS, ATP; Jenny M. Lieberman, MS, OTR/L, ATP; Mark R.
Schmeler, PhD, OTR/L, ATP; Ana Souza, MS, PT; Kevin Phillips, CRTS; Michelle Lange, OTR, ABDA, ATP;
Rosemarie Cooper, MPT, ATP; Kim Davis MS, PT, ATP; and Kendra L. Betz, MSPT, ATP
[http://www.rstce.pitt.edu/RSTCE Resources/Resna Position on Tilt Recline Elevat Legrest.pdf](http://www.rstce.pitt.edu/RSTCE%20Resources/Resna%20Position%20on%20Tilt%20Recline%20Elevat%20Legrest.pdf)
- State Spinal Cord Injury Service NSW has developed an online Spinal Seating Education Modules;
<https://aci.health.nsw.gov.au/networks/spinal-cord-injury/spinal-seating>