



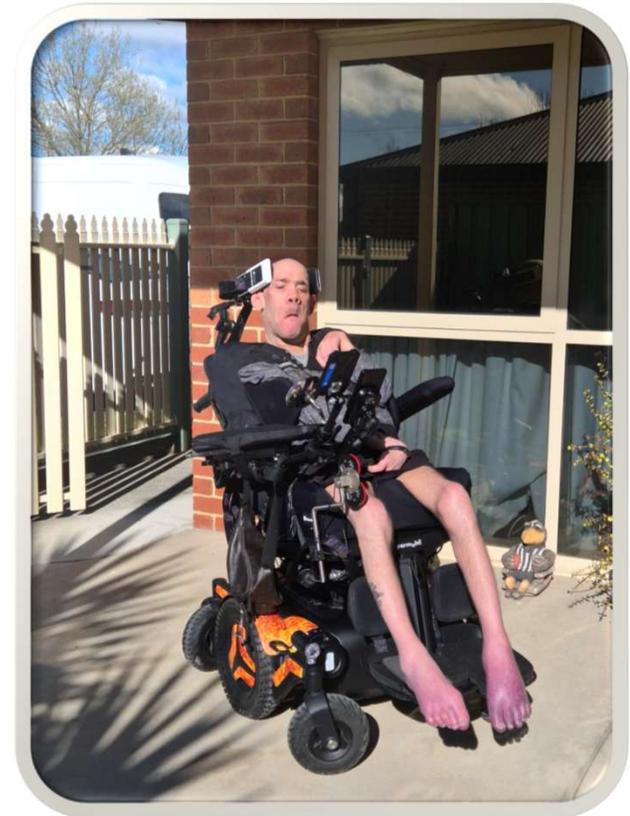
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Navigating Differently:

Lived Experiences of Alternative Wheelchair Access Solutions

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Medifab
Product Consultant / Power Chair Expert



Learning Objectives

- Reviewing the clinical reasoning and additional assessment considerations for alternate drive controls
- Review current available systems
- Real Life in focus
 - Review 3 case studies exploring outcomes, lessons/ challenges and client-centered process



Why consider alternate control systems:

- Have exhausted all adjustability features on standard controller / mounting options of controller
- Lost of ability to use a standard joystick
- Improve access and positioning



"A thorough and holistic assessment lays the foundation for optimal use of their wheelchair and drive controls, which in turn empowers the individuals to achieve their fullest potential."

Every clinical educator; Always

Additional Assessment Considerations:

- Physical:
 - Optimal seating
 - Most consistent movements available
 - Factors that impact on these movements
- Cognitive and perceptual skills:
 - Ability to learn / adapt
 - Expectations + flexibility of thought
 - Problem solving skills
 - Ability to teach / pass on information



(Lange, 2025; Pellichero et al, 2023)

Assessment Considerations:

In-depth analysis of environmental obstacles

- Indoor vs outdoor terrains
- Translational movements impacts
- Mounting systems and footprint



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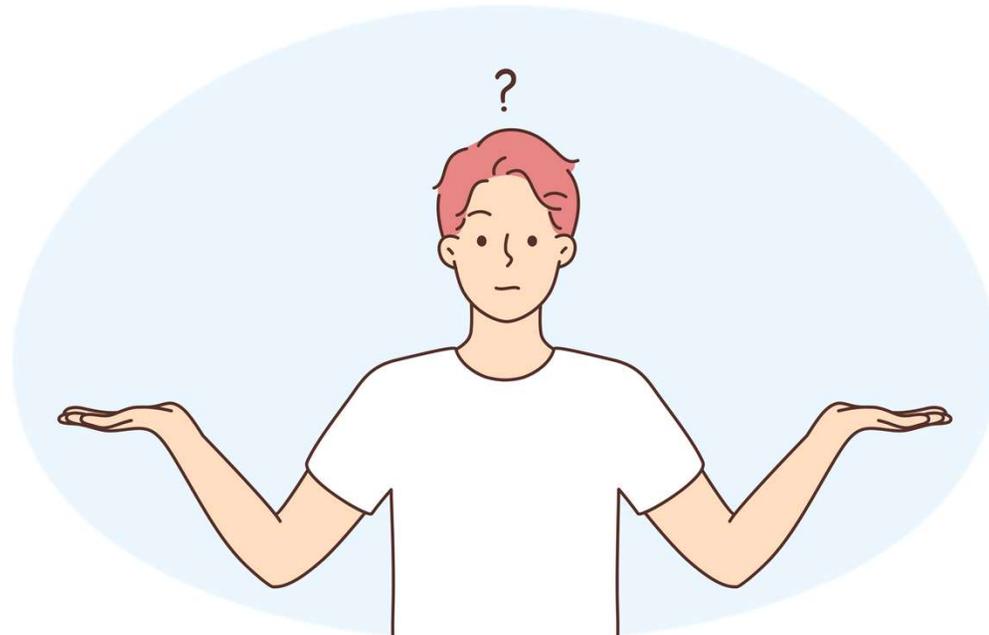
Assessment Process Considerations:

Complexity of trials:

- Set up time
 - Potential need for multiple trials
- Trial and error approach
- Considering longer trials
- On site custom programming



Current Available Options



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Proportional vs Switch control

Proportional Driving

- Proportional control of driving direction
- Has better level of control and precision
- More intuitive
- Requires cognitive skills and sustained movement

Switch Driving

- On / off inputs
- Simpler to understand and control
- Good accessibility with wide range of placements
- Can be custom / used in conjunction in different body parts



Good Gross Motor; Limited Fine Motor

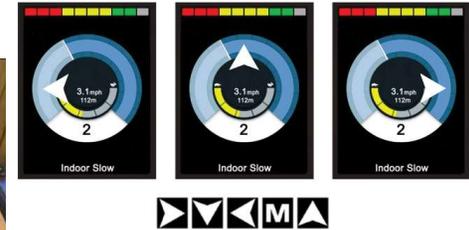
- Switch (4) / Foot or Arm Control
- Single Switch scanning (single body site)



JSC for foot drive (FCMH)



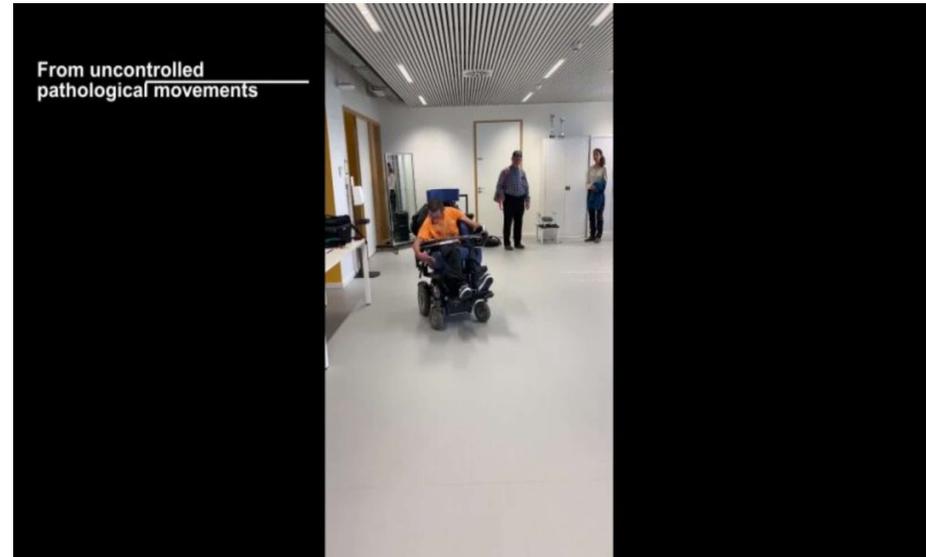
JSC for arm drive (ACMH)



<https://www.youtube.com/watch?v=UAudjSUYDo>

Good Gross Motor; Limited Fine Motor

- CoMove It



Good Fine motor; Limited Gross Motor

Mini and Micro- Switches

- Significantly lesser amount of force for displacement (~10-50g)
- Proportional control



<https://www.mo-vis.com/products/special-controls/micro-joystick>
<https://www.mo-vis.com/products/special-controls/multi-joystick>

Poor Gross motor, good Fine motor

Mini and Micro- Switches

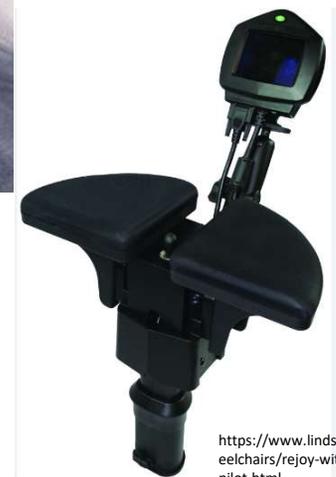
- Multiple mounting options
- Use of different body parts for driving



<https://www.sunrisemedical.com/power-wheelchairs/switch-it-electronics/joysticks/microguide>



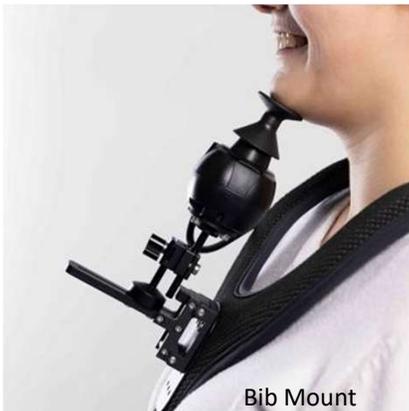
<https://www.movis.com/products/special-controls/micro-joystick>



<https://www.lindsrehab.com.au/wheelchairs/rejoy-with-switch-it-micro-pilot.html>

Good Head Control with limited / no UL movements

1. Chin control (micro switches)
2. Gyro systems (Vigo and Munevo Glasses)
3. Head Controls (proportional vs Head array)



Bib Mount
Moivs



Chin Boom Mount
<https://www.sunrisemedical.eu/powerd-wheelchairs/switch-it/mounting-systems/chin-boom-mounting-system>



Center Mount
<https://youtu.be/firIoDn-hRs>

Good Head Control with limited / no UL movements

1. Chin control (micro switches)
2. Gyro systems (**Vigo and Munevo Glasses**)
3. Head Controls (proportional vs Head array)



<https://www.sunrisemedical.com/power-wheelchairs/switch-it-electronics/head-controls/vigo>



<https://munevo.com/en>



Good Head Control with limited / no UL movements

1. Chin control (micro switches)
2. Gyro systems (Vigo and Munevo Glasses)
3. **Head Controls (proportional vs Head array)**



Fair Head Control

- 1) Sip- Puff / Combination
- 2) Eye Gaze



Case Studies



Danny- CoMove It

Enhancing Daily Living:
Independent Mobility and
Home Access



Mandu

Maintain Access and Ease
of Use



Steve's Case study

Briefly elaborate on what
you want to discuss.



Case Study 1

Danny – Enhancing Daily Living: Independent Mobility and Home Access

Danny

40+ year old gentleman

Dyskinetic CP GMFCS 5

PmHX: 2 hip replacements, cervical fusion surgery

Lives in an SDA , in his own unit

Good level cognition and vision + perception

Previous / Current AT:

Powered wheelchair with Right foot proportional control (only outdoor mobility) - Became fully dependent on carers

Current access his computer with track ball using his right feet/ toe

Dependent on carers for all mobility/ postural needs and accessing immediate environment





Danny

Reason for trial:

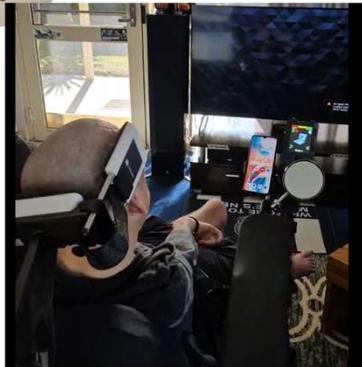
To increase independence with mobility and access environmental controls + AAC

Trialed: CoMove It on Current wheelchair

Assessment process and outcomes:

- Total: 2 x trials, each lasting ~1.5 hrs
- Challenges: Ensuring appropriate head support
- CoMove It Plug and play system – reduced time for set up
- Chair was scripted post weekend trial and has since been funded / delivered

Danny – 6 months post delivery



Outcomes / ongoing changes:

- Danny has mastered the use of his controls and now independently controls his wheelchair indoors and outdoors
 - Spends times around in community
 - Able to access home environment / computer independently
- Challenges: Head rest positioning, interfacing controller to daily object



Case Study 2

Mandy: Maintaining Ease of Access and Use



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Mandy



- **44 Years old**
- **Athetoid Cerebral Palsy**
- **Lives at home with mother**
- **Seizures**
- **Sitting 12+ hours / day**
- **Works part time for Talklink to support new complex communication technology users**

Mandy's Story



“I was born in 1981 and in 1982 my parents were told that was born with Athetoid Cerebral Palsy and that would never walk, talk or be able to look after my personal needs”

- **First trial of mobility aged $\frac{3}{4}$ years**

Mandy's Story



- Aged 8, school exploration of powered mobility
- Trial of head controlled switching
- lots of foam padding and straps!!
- ***“IT WAS GREAT. I had so much fun. They finally came up with this chair”.***

Mandy's Story



- The primary challenge I've faced is accessing the switches.
- The reed switch was the least effective.

“Its flexibility caused issues when going over bumps; the reed switch would bounce, leading to the chair turning off or changing direction depending on which side bounced”

Mandy's Story



- Chair needed to be easier to drive
- ASL Proximity
- Ended up wearing out on headrest pads
- Lots of repairs and replacement \$
- Moisture made the chair unsafe
- Able to self programme PWC settings

Mandy's Story



- **New Joystick trial**
- **Benefits:**
 - lighter
 - water resistant
 - More control being proportional

“It works really well. Its much lighter than the previous one and I know that I’m ok when I use when it gets wet so I’m not afraid to go out and about on my own or with my friends and family”

Mandy's Setup



- Proportional head controls
- Linx electronics
- Dynavox for communication
- Iphone for texting etc
- Centre wheel drive TDX



“Ok the Doc was right. I have never walked but I sure know how to get around. Thanks to all those wonderful people that have helped me to be mobile and independent” Mandy



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Case Study 3

Clayton: Ongoing exploration journey

Clayton



Hawke's Bay mountain biker who lay paralysed on track for hours wants riders to consider neck braces



By **Jack Riddell**

Multimedia journalist · Hawkes Bay Today · 11 May, 2025 05:00 AM ⌚ 6 mins to read



Clayton



- Mountain biking accident
- Classified as C4 ASIA B tetraplegic
- Spinal unit for rehab
- Keen to go home as an independent powerchair user

Clayton

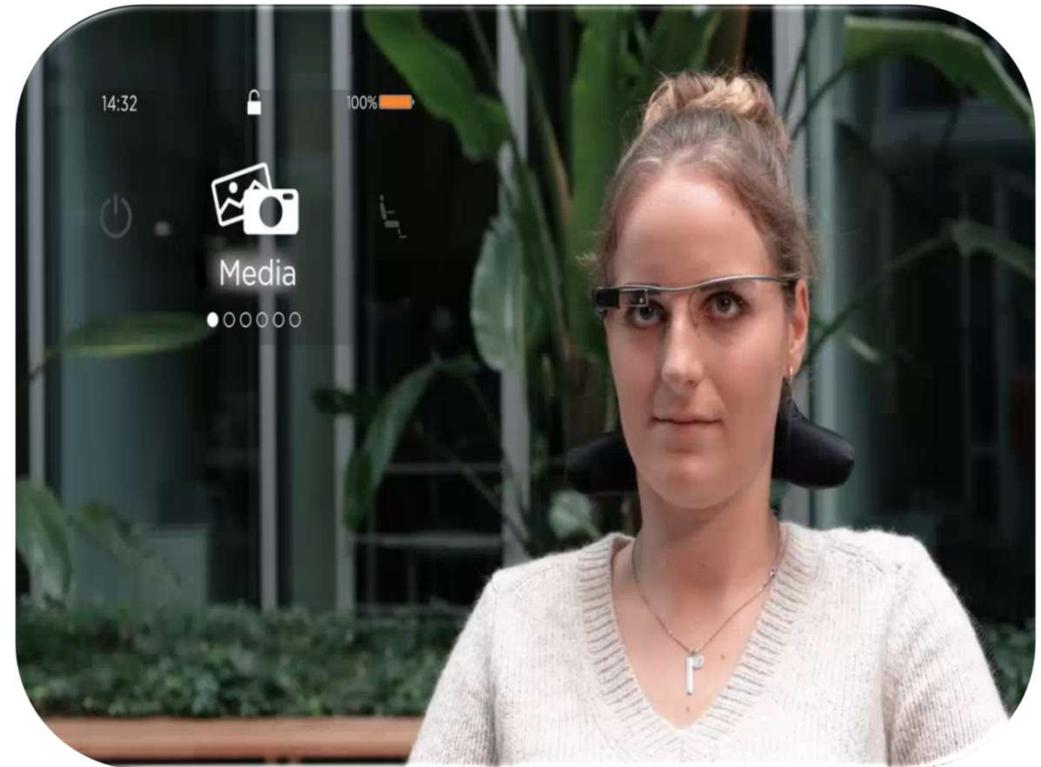


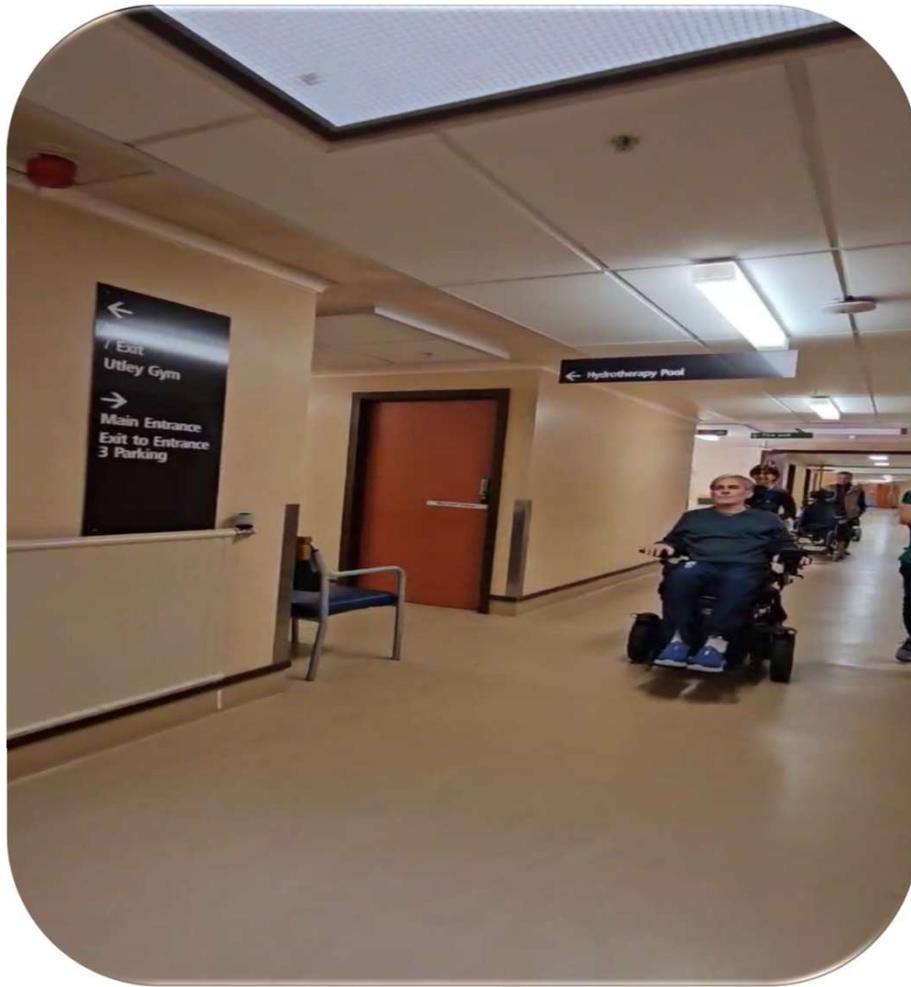
Trial :

- Chair Q700F Front Wheel Drive
- Omni Display R-net
- Munevo Glasses
- Tilt, Recline, power elevating legs

Munevo Drive

- Control your wheelchair using simple head movements.
- Head control can be used in all sitting positions. By calibration you adjust the starting position and are ready to go again.
- munevo DRIVE can also be used on unpaved ground without any problems.
- You can expand the basic munevo DRIVE system with add-ons, e.g. to take and send photos or to control a robotic arm.





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Where to from here....



- Clay is set to return home in late August
- Home mods- Ramps
- Power wheelchair with alternative controls
- Full time care team
- Trial of Magic 360 for outdoor use
- Trial of other driving devices
Vigo gyro head controls

Switch It Vigo

Wireless proportional
head control using
intuitive head
movements



Switch It Vigo



DISCREET & WIRELESS
FEATURING BLUETOOTH TECHNOLOGY



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Thank you!

Any questions?

Come visit us on the Medifab Stand to
trial these systems!



Reference:

Lange, M. (2025). Power mobility: Driving Methods. In Lange, M.L & Minkel, J.L. Seating and Wheeled Mobility: A Clinical Resource Guide (pp.391-408). (2025)

Pellichero A, Routhier F, Sorita É, Archambault PS, Demers L, Best KL. Consensus for a power wheelchair training approach for people with cognitive impairments. Disabil Rehabil Assist Technol. 2023 Jan;18(1):109-117. doi: 10.1080/17483107.2022.2120100. Epub 2022 Oct 20. PMID: 36264670.



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