

TechnoTalk

The TASC Newsletter

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building futures



Editorial

by Jo Ford

This month our TechnoTalk theme is powered mobility from both the user and assessment perspectives.

Judith Geppert our talented Desktop Publisher has recently purchased a new hydraulic powered wheelchair that has given her a whole new view of the world. She saw this chair at the ARATA conference in 2004 and couldn't wait to get home to put in her order for one. Since the new chair arrived she has been very keen to share her experience with the TechnoTalk readers.

Catherine Webster continues with Part 2 of her article on Scripting Powered Wheelchairs. The table included provides a useful resource to be used when considering the features of powered chairs on the market and what may best meet your clients needs.

Peter Chapple, occupational therapist, has started in TASC Seating on a six month secondment from his position in our Adult Resource Program. This month we would like to welcome Peter to our team and introduce him to you.

Finally just a reminder that TechnoTalk will now be a bi-monthly publication so you will have to wait until September for our next information filled edition.

Happy reading until Spring!

Jo

A Chair With A View

Seeing Eye to Eye

Cerebral palsy certainly has not stopped Judith Geppert from getting the most out of life. She has scaled the heights of the Sydney Harbour Bridge, experienced the thrill of tandem skydiving and hot air ballooning, co-piloted a Ferrari racing car, notching up speeds of 200kph and on most Saturdays she is a solo sailor around Manly Cove.

Judith has always used a wheelchair for mobility, but being able to join in on conversations at eye level with her 'able-bodied' friends, work colleagues and family members have always eluded her.

Now in 2005 Judith has remedied this situation by purchasing a hydraulic wheelchair that can elevate the seat to a level where she can now chat with friends, order drinks at the bar and do her banking over the counter with just the flick of a button.

Judith tells us how her new chair has given her a new 'high' ...

"For over 50 years I have faced the world, in a wheelchair, looking at 'butts' and 'navels'. But not anymore... I have finally found the solution...I bought myself a new highly manoeuvrable wheelchair; with a cantilever lift system (12" vertical lift). It has a compact design superb for indoor use and a sport-trac suspension for a smooth and stable ride over challenging terrain. With the assistance from the highly skilled technicians at the TASC Workshop (The Spastic Centre), solutions were made for the mounting of the foot controller and a switching device which has given me the ability to operate this chair to its full potential.



Example of chair in elevated position.

Now, my environment has opened up – I can do so many things that many people take for granted. I can sit at a kitchen counter, reach the supermarket shelves, am able to see over people in crowds, at sporting events or rock concerts, access the high counters in banks and some government offices, reach for books and CDs at the library and most important have social contact with the general community at eye level.

This chair also affords me more independence, (which I cherish), to mix socially with friends or work colleagues for an after work 'happy hour' at the local bar".

And Judith's plans for the next 50 years? In her usual direct manner, Judith says there will be "no more being looked down on, no more being left out of conversations and no more eyeballing peoples' butts."

Judith currently is employed as a Desktop Publisher - (TechnoTalk) and an Information Officer in NSW – her position also entails visiting schools and motivational speaking. Judith lectures at The University of Sydney and does consultancy work for the government sector.



Catherine Webster

Scripting Power Wheelchairs Part 2

This article concludes the report of information provided in the May edition of TechnoTalk about considerations for scripting power wheelchairs, presented at the International Seating Symposium 2005. Part 1 of this article presented a new way of classifying power wheelchairs, according to the location of the drive wheel. It may be useful to refer to the May edition of TechnoTalk, for background reading and definitions of constructs discussed, however a brief description of the classification, as presented in Part 1 of the article, is as follows:

1. The term centre wheel drive replaced mid-wheel drive and instead of it applying to all wheelchairs where the drive wheel is located near the person's COG, it refers to powered wheelchairs configured with the drive wheel directly underneath the user's COG.
2. The term high ratio has been introduced to describe a FWD or RWD chair which would previously have been regarded as a MWD chair (because the drive wheel is located near the person's COG). The description 'high ratio' is used to impart that a large

percentage (eg. 85%) of the person's weight/centre is 'on' the main driving wheel of the chair (this is usually because the drive wheel is located just in front or just behind the person's centre of gravity).

3. The term low ratio describes FWD or RWD wheelchairs with the main drive wheel located a further distance away from the user's COG (i.e. either right at the front or at the rear of the chair). It was estimated that approximately 60% of the weight is on the drive wheel in these circumstances.

Listed below are tables depicting the general findings that were presented in the workshop, relating to indoor and outdoor performance of chairs, based on their drive wheel location. It is important to note that there are a number of other factors that can affect wheelchair performance (including power, power delivery and individual characteristics, skills and abilities of the user). However, the information may provide some ideas when you are next scripting a power chair for someone, after you have assessed their individual needs and environment.

INDOOR PERFORMANCE ANALYSIS

Action Analysed	Rating (best to worst)	Consider
Rate of turn (turning speed)	<ol style="list-style-type: none"> 1. High ratio RWD 2. CWD (a close second) 3. Low ratio RWD 4. High ratio FWD 5. Low ratio FWD 	A chair will turn between its drive wheels.
Turning radius	<ol style="list-style-type: none"> 1. CWD and high ratio FWD 2. High ratio RWD 3. Low ratio FWD 4. Low ratio RWD 	You can estimate the turning radius by measuring between the middle of the drive wheels and the point of the chair that is the most far away (eg. front casters, footplates, rear casters).
Space required to complete a 3 point turn	<ol style="list-style-type: none"> 1. CWD 2. High ratio FWD (very close second) 3. Low ratio FWD, high ratio RWD and low ratio RWD 	The distance between the front of the drive wheel on one side of the chair to the front of the opposite caster will give you an indication of the radius involved.
Shape of space required in front of chair to turn	<ol style="list-style-type: none"> 1. Low ratio FWD 2. High ratio FWD 3. CWD 4. High ratio RWD 5. Low ratio RWD 	FWD chairs require <i>less</i> space in front when turning, but more space behind them. RWD chairs require <i>more</i> space in front of them when turning, but less space behind them.
Corridors and doors	<p>Travelling down a corridor and turning into a doorway (90°):</p> <ol style="list-style-type: none"> 1. The low ratio FWD chair was the only one that could complete this task in one movement. The others demonstrated difficulty in the following order (easiest to hardest): 2. High ratio FWD 3. CWD 4. High ratio RWD 5. Low ratio RWD 	This order is reversed when the chair attempts to travel back through the door and into the corridor (ie. the low ratio RWD was able to complete the task in one movement and some high ratio RWD could do it). The other chairs would need to reverse to get through the doorway successfully.

Action Analysed	Rating (best to worst)	Consider
Visual cues and ease of learning (eg. when going through doorways)	The drive wheel needs to be in front of the door jam to successfully proceed through the doorway. If the user needs to see the drive wheels, in order to judge this, a low ratio FWD chair may be most suitable.	Different chairs need to be at varying distances from the wall before beginning to turn, due to the shape of space required for their turning radius (eg. RWD chairs need to be far away from the wall where the door is located to ensure there is enough space in front for the chair to turn). The ability to learn these skills will vary from person to person.

OUTDOOR PERFORMANCE ANALYSIS

Action Analysed	Outcome	Consider
Curb Cuts	Best performers were high ratio RWD and high ratio FWD.	Positioning of footplates in relation to the ground and drive wheels.
Hills – relative angle for maximum traction	Low ratio RWD – best up small inclines High ratio RWD – best up larger inclines CWD – best on flat surface High ratio FWD – best going down larger incline Low ratio FWD – best going down small inclines	Maximum traction is achieved when the vertical centre of gravity is directly over the drive wheels.
Straight Line Tracking	The low ratio RWD performed best. The low ratio FWD performed worst.	Chairs are better able to track in a straight line when the casters are located at front of the chair and are not heavily 'loaded' (i.e. when weight is not over the casters).
Side Slope Tracking	On a side slope the RWD chairs (especially low ratio) tended to turn downwards. FWD chairs (especially low ratio) tended to turn upwards. CWD chairs steered neutral.	This can sometimes be modified by programming.
Uneven Terrain Tracking	High ratio and CWD chairs performed best.	Performance can be improved if weight is on or close to the main drive wheels.
Changing Directions	RWD chairs tended to under-steer (keep going straight). CWD chairs tended to steer neutrally. FWD chairs tended to over-steer.	This can be modified by weight and programming. Over-steering may impact physically upon the person, depending on the driver control used and their needs.

SUMMARY

There are many variables, which can impact on the way a chair performs in different circumstances. A complete assessment needs to be performed, in order to identify the client's needs and skills, as well as the environmental and task demands that exist. Once this is completed, the powered wheelchair scripting considerations discussed can be used as a general guide for therapists aiming to identify suitable types of powered wheelchairs. As wheelchairs can be adjusted, modified, configured and programmed in so many different ways, it is highly recommended that wheelchair trials and discussion with product specialists and suppliers be carried out, to ensure optimal results in each individual case.

REFERENCE

'Power Wheelchairs A New Definition', G.F. Strong Rehab Centre. Workshop material presented at the International Seating Symposium, Orlando, Florida, January 2005.



Low Cost Internet Service for Aged Veterans and People with Disabilities

About 250,000 aged, veterans and people with disabilities throughout Australia will have access to a low cost Internet service thanks to a partnership arrangement negotiated by Technical Aid to the Disabled Australia with internet provider ISPOne. This will enable people who possess a Disability Service Pension, Aged Pension or DVA Entitlement Card to go online at a reduced cost of \$5.50 per month, including:

- Unlimited Downloads
- No Set Up Fees
- No Annual Fee
- Local Call anywhere in Australia
- Flexible Contract period

See TAD website for details: <http://www.tadaustconnect.org.au/>



Hi, my name is Peter Chapple and I have been employed as the new OT, Seating Consultant at TASC. This is a secondment position and I will be working three days a week, Monday – Wednesday until December 2005. I will be continuing my role as OT in the Adult Resource Program (ARP) in the North and East Region of The Spastic Centre, Thursday and Friday.

I graduated in 2003 and immediately after university worked in a private rehabilitation hospital the areas of Neurology and Orthopaedics. This practical experience introduced me to the areas of Cardiac Rehabilitation, Access consultancy, Mental Health and Aged Care.

I started in the ARP at The Spastic Centre in 2004 and this role has given me considerable experience in the area of seating and wheelchair prescription, frequently involving me with the existing TASC consultants! I am thoroughly looking forward to taking my skills and knowledge to the next level, and working with other therapists to provide advice and support on seating and wheelchairs.

SeatSafe Focus Group Meeting

The first SeatSafe meeting for the year is to be held soon. SeatSafe consists of a group of therapists and other professionals with an interest in seating and related issues. Everyone with an interest in seating is welcome to attend the meetings, where different topics are presented and discussed. If you would like more information about these meetings, please feel free to contact one of the TASC Seating Consultants on 9972 8114.

Details of the next meeting are as follows:

- Date:** Tuesday, 9 August 2005
Time: 4:30pm - 7:00pm
Topic: Mat Evaluations and Seating Measurements
Revisited Clarified and Demystified!!
Venue: The Northcott Building,
No. 1 Fennell Street, Parramatta 2150

NB: The SEATAFE focus group meetings are offered free of charge to SPOT on DD members. Costs (such as payment of speakers and venue) of the meetings are met by SPOT on DD and participants are therefore expected to be members. Participants who are not SPOT members will be asked to pay \$10 each meeting attended.



We welcome any feedback, good or bad, that you have on our service. Please feel free to contact us by phone on 02 9972 8183, email at tasc@tscnsw.org.au or in writing at the address below.

TechnoTalk is available free from www.thespasticcentre.com.au/technotalk or by subscription for \$27.50 (GST \$2.50 incl)