

TechnoTalk

The TASC Newsletter



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Editorial

Every day in the office I see or hear of examples of how the use of assistive technology can improve or enhance the participation or quality of life of people with a disability. There is an increasing awareness of assistive technology and on a daily basis we are receiving phone call or emails requesting information and advice. These questions often form the ideas or themes for TechnoTalk articles.

One area of interest is in the area of powered mobility alternate controllers. With different products on the market it is good to remind ourselves of the basics, including terminology when exploring different devices. This month we provide an overview of proportional control systems as a snapshot of what's currently available.

We are often asked about assessment tools for assistive technology. The speech pathologists have recently reviewed the Test of Aided-Communication Symbol Performance (TASP). While it is not an assistive technology assessment it does provide a great tool to assess what level a person understands information presented to them. This is useful information when exploring high technology communication options.

Don't forget to go to www.arata.org.au to find out how to become a member of ARATA (Australian Rehabilitation and Assistive Technology Association).

Happy reading.

Jo

News...

Are you are working with or using assistive technology?

Or do you have a general interest in the use of assistive technology for people with disabilities?



Then why not consider joining ARATA (Australian Rehabilitation and Assistive Technology Association).

ARATA is a national association whose purpose is to serve as a forum for issues in rehabilitation and assistive technology.

Membership is at very reasonable rates:

\$75.00 for new membership \$50.00 for renewal

Once you have joined you will receive:

- a newsletter four times a year
- reduced rate at the biannual conference, (with Tasmania the destination in 2010)
- you will also join the list serve where you have access to the wealth of knowledge and experience in assistive technology world in Australia and overseas

Check out the website www.e-bility.com/arata/join.php for more information and membership application forms

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We welcome any feedback, good or bad, that you may have on our service. Please feel free to contact us by phone on 02 9975 8469, email tasc@tascnsw.org.au or by writing to The Spastic Centre PO Box 184 Brookvale NSW 2100

TechnoTalk Newsletter is free and available from www.thespasticcentre.com.au/news/technotalk/

Main Story:

POWERED MOBILITY – alternate controls explained

by Natalie Carden, Occupational Therapist, TASC Seating Consultant

The standard way to control a powered wheelchair is with a joystick, which most of us will be familiar with. The joystick is an example of a 'proportional control' unit. **Proportional control** offers direct 360° control, that is, the ability to move in any direction and to change direction instantly. Proportional control also provides direct control of speed, meaning that the further from the centre the joystick is pushed/deflected, the faster the wheelchair will go (to a pre-set maximum).

When a wheelchair user cannot use a joystick with the hand, an alternate access method or site must be found. Some alternate control systems will be discussed over the next two issues of TechnoTalk. We will start with proportional control systems and continue with non-proportional control systems in the next issue.

Proportional control options

Before eliminating the joystick from consideration, think about the position of the joystick. Consider whether the wheelchair user would be more able to use the joystick (remote joystick module 'RJM' pictured) if it were positioned in a different location.

Alternate positions for the standard joystick could be;

- **The Chin** – an RJM can be mounted in front and below the user's chin with a cup-shaped knob instead of a ball. It has been effective for many wheelchair users, although it can be difficult to control over rough terrain. (Lange, 1999)
www.dynamiccontrols.com/index.cfm/1,92.html



- **The Foot** - the RJM can be placed on the footplate to enable use of the foot/toes/shoe. An alternate way to mount the joystick is a commercial mount, such as, the ASL foot driving platform.

The ASL **foot driving platform** can accommodate Invacare, Penny & Giles or Dynamic joysticks, which fit beneath the platform. The platform provides wheelchair control through plantar and dorsiflexion combined with inversion and eversion.

www.asl-inc.com/Catalog/Index.asp?categoryid=&pagenumber=4



The following products come ready to use, incorporating a joystick

- The mini joystick can be positioned just below the chin, inside the shirt, using the collar pictured.
www.stealthproducts.com/catalog/hm-sbm.php



- The mushroom joystick is a proportional control unit, designed for users with a limited range of motion (in the wrists, hands and/or fingers) or weak or inadequate grasp. The mushroom joystick requires minimal force/range of motion for peak response.



www.stealthproducts.com/catalog/hm-sbm.php

- The 'RIM' or halo control (head control unit), has a small joystick behind a semi-circular head support, operated proportionally using flexion, extension, rotation and lateral flexion of the cervical spine.

www.wheelchair.ca/drives.php



The website gives the following explanation, "The user pushes the headrest left to go left, right to go right and back to go forward. One drawback of this system is the user can't actually use the headrest, as a headrest, unless power to the chair is turned off. Another drawback of this set up is that, to back up the user must activate a switch to be able to move backwards. The user must activate the switch again to move forward. Normally this is not a serious drawback, "...except when..."the user is in a situation where several back and forward movements are needed to get through a doorway or enter an elevator, etc".

Other forms of Proportional Control

- The **finger steering control** is a proportional control that requires no force to operate. This may be a good alternative for users who have difficulty grasping or operating a standard joystick.

www.dynamiccontrols.com/index.cfm/1,92.html



The position of the user's finger is detected, as if it were a joystick shaft. If the user's finger is in the centre of the control, the wheelchair will be stationary. The wheelchair will then move in the direction that the finger moves.

The Finger Steering Control has a "Mode" touch button. A light touch to the inside floor of the unit toggles between Standby and Active modes, while a long touch moves to the next mode profile, i.e. speeds.

The unit can be mounted at any angle or location to suit the user.

New proportional control units of interest online, NOT seen in Australia yet

- The **Tablet Control (or touch pad)** is a unique proportional drive unit. It is reported to be similar to a touch pad control on a laptop computer.

www.permobilusa.com/accessories.php?id=65



A finger or thumb would be used to control the wheelchair in a similar manner to that used in the finger steering unit above. The finger would be moved further from centre to increase the speed proportionally and in a circular motion to change direction within the 360°. A touch pad drive could be mounted in various places on the wheelchair depending on the ability of the user to access it. The touch pad (pictured right) is an EasyCat.

www.wheelchair.ca/drives.php



- **Magitek Lautzenhiser drive control** by Magitek www.magitek.com is a proportional control system with a miniature tilt-sensor that can be worn on the head, hand, finger or foot, providing access to wheelchair drive controls and seat functions.

www.rehabengineer.homestead.com/techwatch062001.html



The Magitek system would be best applied to users with sufficient stability and control of the head or limbs and limited distal dexterity. As it is a proportional system, the user would use small head (or hand, foot) movements to choose direction, moving further from centre to increase speed. Position would need to be maintained to continue travelling in a chosen direction. We will keep an eye out for when this product becomes available in Australia.

Summary

Proportional control is a user-friendly, direct method for controlling a powered wheelchair plus seat functions for users with the ability to maintain position and to make fine adjustments.

The impact of high or low muscle tone, primitive reflexes, contractures or excessive movement may present difficulty for some people with cerebral palsy to use proportional control. It is, however, worth noting that a significant number of users thought not to be suitable, including those with spasticity, athetosis and dystonia, have demonstrated the ability, with or without adaptation, to successfully use proportional control. Some of the more successful proportional methods used by TASC clients have been; chin control, joystick on tray with hand stabiliser, foot control. For people who are not able to use proportional control, non-proportional control units can be considered. This will be covered in the next issue of TechnoTalk.



My-Pals – Email group for adults

My-Pals email group was formed by a small group of adults with a disability who wanted to be able to access social communication with each other, whenever they had the time to do so.

The online group is facilitated by two staff members at The Spastic Centre. A third staff member, in conjunction with volunteers, provides some technical/educational support.

It is a safe closed Google group. Topics of conversation can be as wide as the members wish them to be. They might include travel, politics, sport, work, leisure activities, issues around disability or ability, family and current affairs etc.

Topics may be of interest to everyone or some members. So as many or as few as want can join in around a particular theme. The Spastic Centre would also like to offer a forum through this site for parents who have cerebral palsy to connect with other parents who have cerebral palsy. At the moment, here appears very little opportunity available for parents who have cerebral palsy to connect with each other.

To join, you need a computer and access to email service. If you are interested in linking up with other adults, we would love to hear from you. Feel free to contact Judy or Paul below.

Contact:

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Test of Aided-Communication Symbol Performance (TASP)

We are surrounded by symbols every day but not everyone understands them the same way. They may require the information or symbol to be represented in a different way.

Sometimes it can be quite a tricky business trying to figure out at what level a person understands information that is presented to them. When looking into assistive technology it is often important to know:

Do they understand what an object, photo, symbol or text represents?

How many symbols on a page can they process at the one time?

Can they combine multiple symbols together to express a message?

Where do we begin when we want to find out the answers to these questions in a consistent and comprehensive way?

We have recently come across the **Test of Aided-Communication Symbol Performance (TASP)** which is an easy-to-use tool for assessing symbolic skills.

This assessment tool is designed to assist in making decisions about:

- designing a communication board/book
- selecting an appropriate device page set
- establishing appropriate AAC intervention goals for symbolic and syntactic development

Why was it developed?

It was developed due to the absence of formal “tools” for assessment of symbolic skills.

What does it consist of?

There are four main step-by-step tests that look at determining a client’s strengths and weaknesses in using symbols to communicate.

Subtests, which can be administered over a period of sessions, are:

1. Symbol Size and Number – looking at maximum number of symbols a client can select from.
2. Grammatical Encoding – determining what symbols the client knows and understands. Different verbs, nouns, adjectives and location words are tested.
3. Categorisation – tests client’s knowledge at grouping/categorising words and if the client can understand topical or grammatical page sets.
4. Syntactic Performance – combining symbols to produce sentences.

Who can I use it with and how long will it take?

It can be used with children through to adults. They require the physical ability of functional pointing. They need to be able to attend to task and administration time is 10 to 20 minutes. This can take place over several sessions, although it is recommended for it all to occur in one session.

It’s not appropriate for clients who are at a concrete object level, have limited fine motor skills or severe auditory processing difficulties.

Are there any limitations?

The major limitation is that it requires the client to be able to have the physical ability to point, therefore modifications would need to be made for clients with physical disabilities.

