CASE STUDY

Carl – Maintaining Position through Dynamic Seating

Client: Carl

PT/OT/Supplier: Doug Cobbs, ATP, CRTS

Vice President, Healthcare Equipment, Inc.

Location: Durham, North Carolina

Carl is a 44 year old man with the diagnosis of cerebral palsy. He drives a power wheelchair with a head array and has accessed a computer keyboard using a head pointer. He is verbal, though is difficult to understand. Carl manages the website for HandyCapable Network, a group which refurbishes donated computers and then offers these at a low cost to seniors and low-income families. He is also a part of Bell campus which is an "arts and technology community with the goal of improving the quality of life for "differently-abled" participants and the aging." Carl works with Doug Cobbs, ATP, CRTS of Healthcare Equipment, Inc. in North Carolina.

Positioning Challenges

Carl has a lot of tone and extraneous movement. When he extends, his pelvis slides forward into a significant posterior tilt. When this occurs, Carl is no longer in alignment with his seating system or the head array that he drives with. Despite his significant tone, Carl can consistently drop his head forward to stop the wheelchair when driving.

Carl had a Permobil M3 power wheelchair with power tilt, as well as the head array. He had an OBSS molded seat and back. He experiences leg cramps and relieves these by pulling his legs upward. As a result, he does not have any strapping over his feet. A recline was not used as opening the seat to back angle increases his overall extension and he would lose his positioning upon return to upright. He does sit with a very open seat to back angle due to range limitations.

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"Even though my current seating system was custom molded to assist me with keeping a good posture, I still have challenges with keeping my hips back in the chair. No matter how many times I tilt the chair back in a short amount of time to allow gravity to help get my hips back, I lose the posture I need to make contact with the side pads on my head array to turn [the power wheelchair]. I also have a lot of tone in my upper body. So, if I get excited when communicating with someone, my body tightens up which causes me to slide even more. I guess because there's no 'give' in the back I currently have."

Watch a video of Carl in this seating system and mobility base here.

Quick Notes

Challenges:

- ✓ Increased muscle tone
- ✓ Extraneous movement
- ✓ Loss of position
- ✓ Decreased function

Areas affected:

- ✓ Back

Equipment Used:

- ✓ Dynamic Rocker Back
- ✓ Dynamic Footrests
- ✓ Static Footrests
- ✓ Dynamic Head Support
- ✓ Static Head Support

The Solution

Carl recently received a Permobil M1 power wheelchair with a Contour U custom molded seat and back. He also has a power tilt and head array. This time, the wheelchair also includes a Dynamic Back.

The goal of the dynamic seating was to provide movement to maintain postural alignment and reduce overall extension. Per Carl, *"My hopes in having a dynamic back are being able to have more support for my upper body and my lower back when I hyper-extend and not feel like I'm sliding down due to my hips not being able to bend at 90 degrees. So, I'm hoping that the dynamic back will assist me with positioning."*

Results

Since receiving the Dynamic Back, Carl's posture is much improved. He is more comfortable and feels better than when sitting in the prior base. His body is much calmer with less extension and movement. Watch a video here of Carl in the new system.

Now that he is no longer sliding forward, he can readily access the head array for driving. Carl explains the difference in his driving between the two systems here. Carl demonstrates his current driving here. He is not only more independent in driving, but he can now control his computer from a seated position. He used to lay down on his stomach on a mat to use the computer keyboard via a head stick. He can now use the head array to control the computer using the built-in Bluetooth of the power wheelchair electronics. Watch him using the computer here. This greatly increases his independence, as he can simply drive up to his computer and get to work!

Carl originally used the default elastomer in the dynamic back (Medium). After using this, Doug Cobbs noted that Carl sometimes fully compressed the elastomer with his significant force. Doug replaced the elastomer with a firmer option which still moves with Carl to absorb force, but not to the full extent of this component. In the videos, Carl does not appear to move the back to a large degree, however enough movement occurs to diffuse his extension, allowing him to be well positioned and more functional. Along with dynamic seating, the newly molded seating system facilitates position and function, as well.

The Future

Carl hopes to finish earning a certificate in Web Development. He wants to move to a larger city which has more services and opportunities for people with disabilities.

We thank Carl for not only filming these video clips, but also adding captioning. You are amazing!

Doug Cobbs, ATP, CRTS
Vice President
Healthcare Equipment, Inc.
Durham, North Carolina

"We need a paradigm shift – conventional wisdom about seating and mobility changes and needs to change. The equipment must accommodate the individual, not the other way around."

About the Author

Michelle Lange is an occupational therapist with 30 years of experience and has been in private practice, Access to Independence, for over 10 years. She is a well-respected lecturer, both nationally and internationally and has authored numerous texts, chapters, and articles. She is the co-editor of Seating and Wheeled Mobility: a clinical resource guide, editor of Fundamentals in Assistive Technology, 4th ed., NRRTS Continuing Education Curriculum Coordinator and Clinical Editor of Directions magazine. Michelle is a RESNA Fellow and member of the Clinician Task Force. Michelle is a certified ATP, certified SMS and is a Senior Disability Analyst of the ABDA