

Get in Position to Communicate

seating, mounting, and physical access

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Today's agenda

- Seating and Positioning Basics - making AAC devices usable
- Positioning as it relates to AAC access
- Mounting - table vs. wheelchair vs. floor
- Mounting - in the home/work/community environment



What are the three most important factors for successful AAC use?

1. Position

2. Position

3. Position



Who cares about the user's position?

- Comfort - if the user is in pain or discomfort all areas of function are impacted
- Medical complications can be the result of poor positioning
- Interactions with the world are significantly impacted by position - if I can't see you, I may not think to talk with you.
- Ability to use a device is significantly impacted by position



Let gravity do the work



A small tilt engages gravity to rest the head against the head rest.

Keep relative upright position allows full interaction with the world.

Significantly decreases the work of the neck muscles.

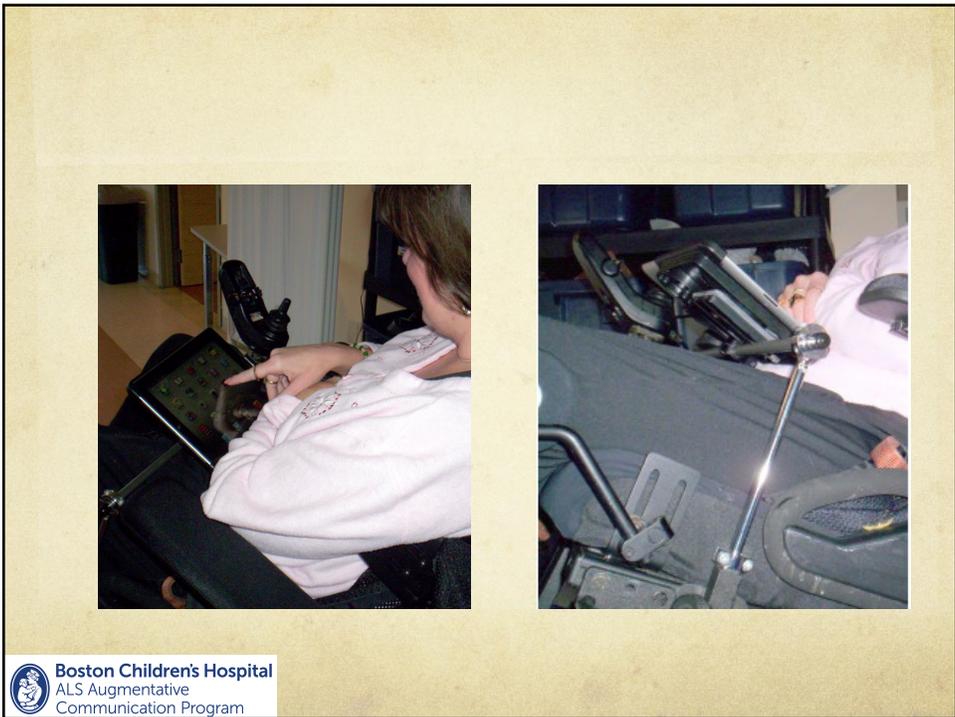
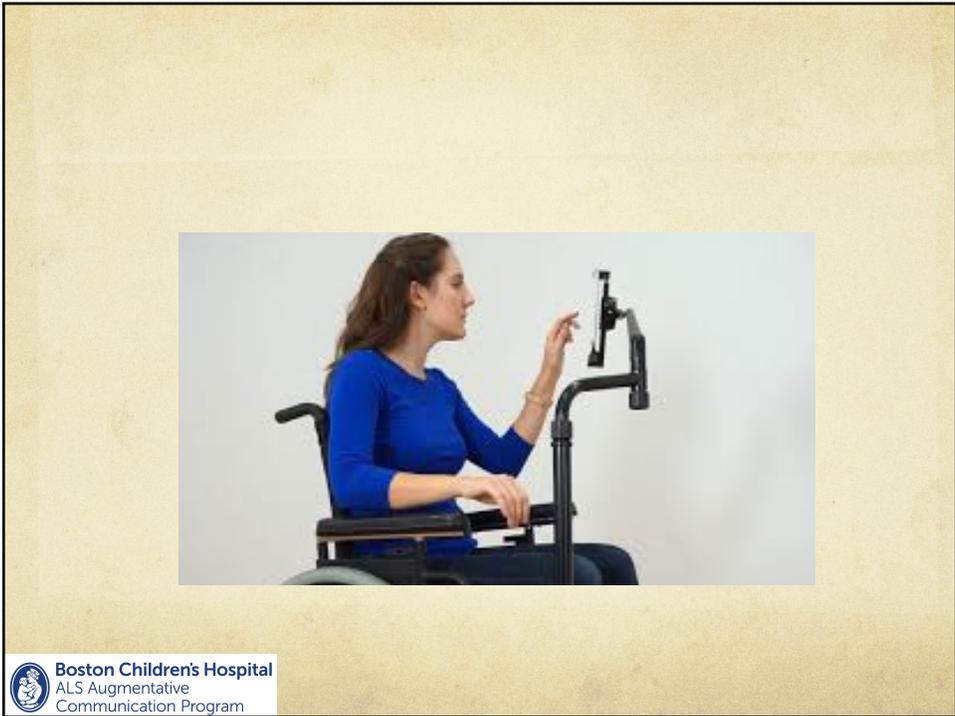
Same effect as positioning chair against the wall.

Position device at eye level

Within Reach – physical access

- The further away the access device is the harder it is to use.
 - You are requiring use of more muscle groups
 - Requires more strength
 - Requires more coordination
 - High risk of fatigue
 - High risk of inaccurate access





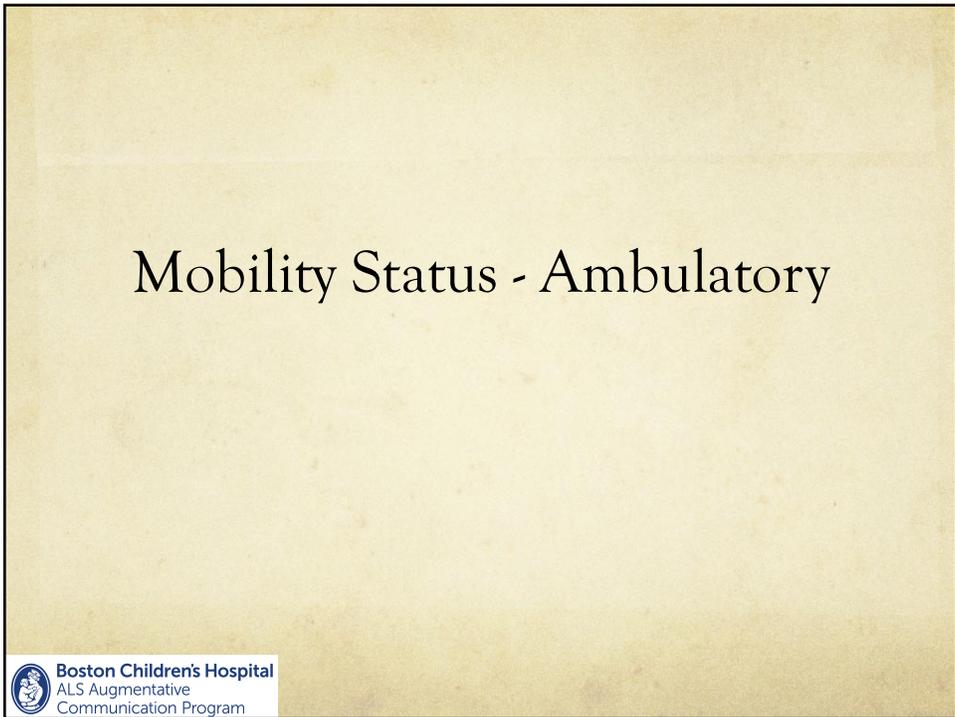
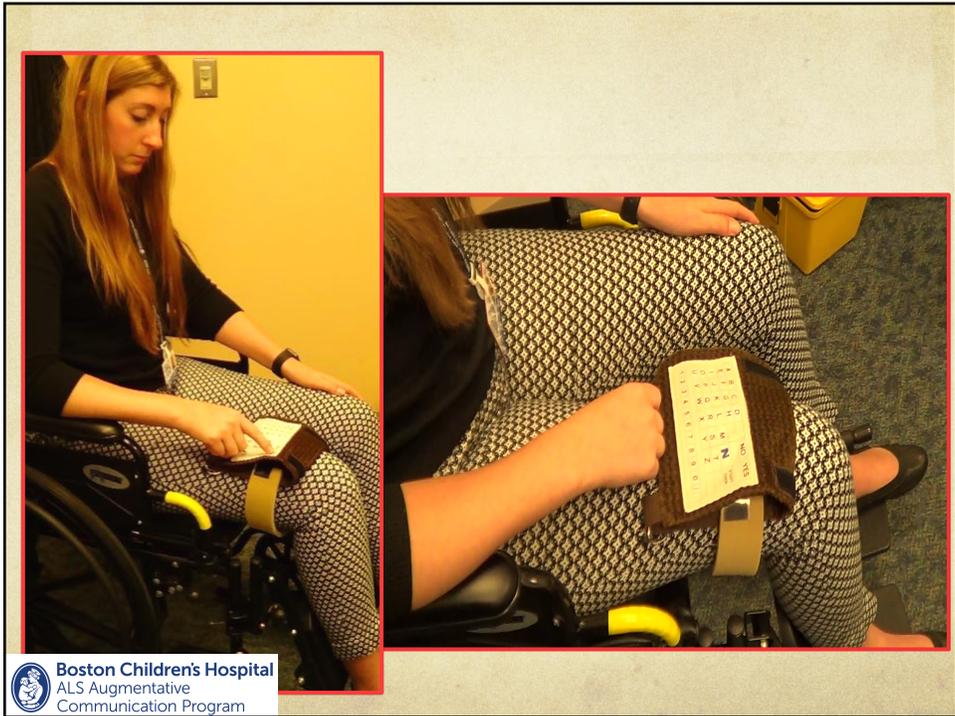


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Simple phone positioning options



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Initial considerations

- Independent or ambulating with a device
 - Small and mobile
 - Quick Access strategies
 - Tablet, iPad, iPad mini
 - Mounting?? If no use of hands
 - Severely limits where the device can be used
 - Table mount
 - Floor mount

Table Mounts

- Portable
- Used when person is not using a wheelchair
- Sits on top or clamps on to table



Lap desk



Bill

- Ambulatory - uses a cane
- Good use of right arm/poor strength in left arm
- Poor strength in left arm
- Poor speech
- Reports most difficulty communicating at work

- Ambulates without the cane in the shop, does not carry the iPad around
- Worked in machine shop -
 - Noisy
 - Co-workers were long time machine shop workers
 - Voice output not functional in this setting
- Walks over to desktop computer and types messages for communication partners to read (“The best thing about the computer is that it is always where it is supposed to be.”)
- Asked about communication breakdown - “It’s a pain to drag someone over to the computer to type.”

Barriers

- Use of quick access strategies (“point sheets”)
 - Had been given earlier. They are in the back seat of his car - he does not use them.
- Use of Phone to communicate?
 - Difficult to hold
 - Concerned that it is too heavy to keep holding
- Use of high tech system?
 - “You can’t teach an old dog new tricks.”



Wraps around his left forearm - does not need to hold it, or retrieve it

Uses right hand to spell out messages

Added numbers, / and decimal point because he needed to convey sizes uses these symbols

Made with printable fabric, D-ring straps



Mobility Status – Manual Wheelchair



Mobility status – manual wheelchair

- Needs to provide supportive seat and back
- One size does NOT fit all
- Feet should be supported on foot rest
- Tubing!



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Tilt-in-Space Frame mounting



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Tilt-in-Space Seat pan mount



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Mobility Status – Power Wheelchair

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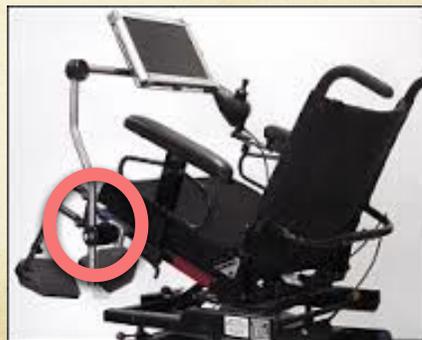
Mobility Status Power Chair

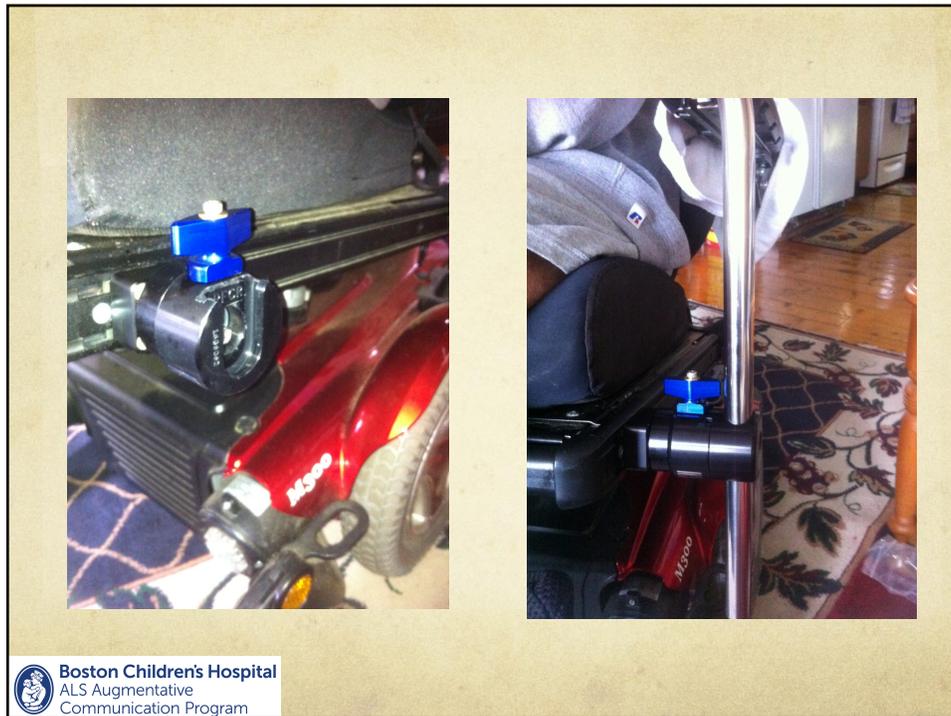
- Independent Mobility!!
- Needs to provide supportive seat and back
- Control options - joystick, foot control, head control
- One size does NOT fit all
- Seat pan!
- Challenge finding real estate



Wheelchair Mount

- Mount to seat pan or frame - not to foot rest!
- Base stays on chair, tubing is easily installed/removed
- Tubing and device can be a handful to carry around (suitcase anyone?)
- Provides consistent position





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Andrew

- Eye tracking user
- Wants to use the device for TV controls
- Placement of device cannot obstruct view of TV (or view of communication partners)
- Spends his day in a power wheelchair - received wheelchair mount with his device
- Fair head control - but can turn his head to the left

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Floor Mount

- Consider for Ambulatory Patients
- Consider for non-constant wheelchair use
- Consider for single-location use
- Consider for people who use a recliner as a primary seating option




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Floor Mount = large footprint

- Large footprint for stability
- In bed, in recliner, in wheelchair



Star-based = smaller footprint

- 25 pound weight for stability
- Easy to move around
- 25" diameter base
- Device does not go much beyond the base



Sarah

- ALS diagnosis six years ago
- Severe dysarthria
- No functional use of arms or hands
- Ambulatory – good lower extremity strength
- Rocks the eye tracking device in our clinic
- Provided with loaner device, rehadapt floor mount

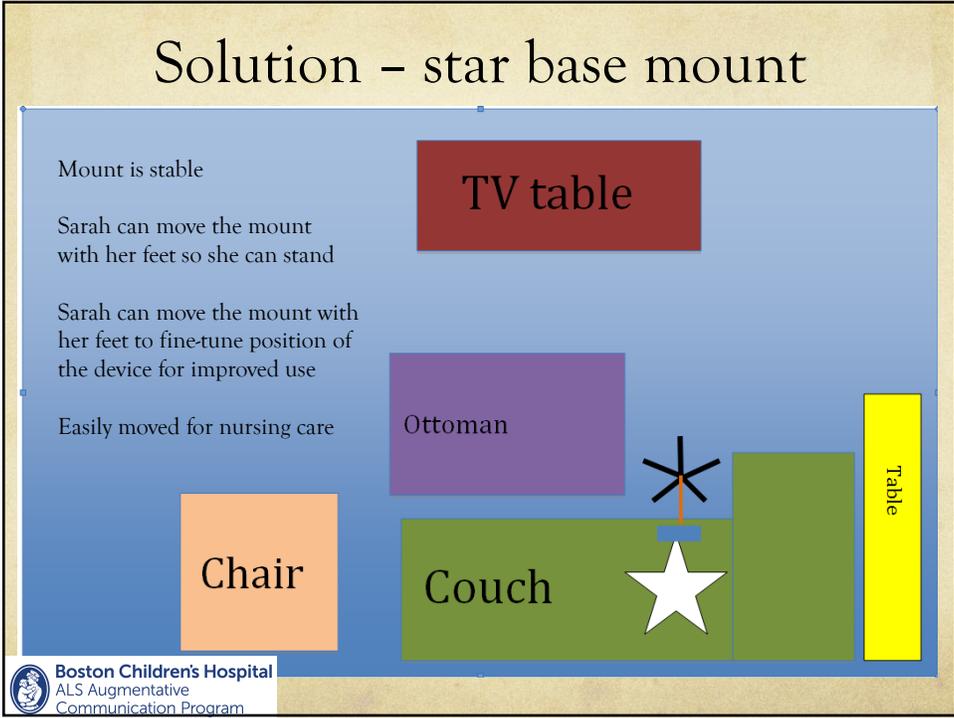
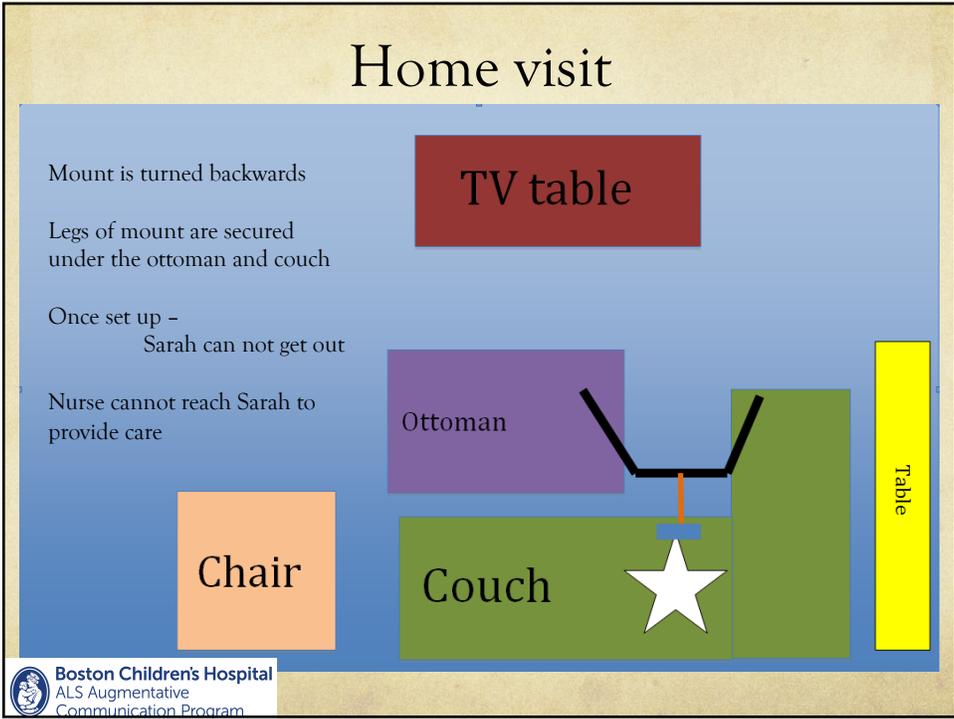
Sent home with:

In our clinic, Sarah was seated in an office chair. We positioned the AAC device at the correct height, distance, and angle. She was able to use eye tracking to spell out messages and participate in conversation.



Email follow up:

“We did find the technology to be very useful for Sarah but our only issue is the size of the base mount which is rather large for our living area and is rather cumbersome at times.”



Small footprint

She can use her feet to reposition the device or to move it entirely out of her way.

Lots of equipment for her care

Sarah is comfortable and supported leaning back against the couch



iPhone/iPad/Tablet

- Don't need a heavy duty mount
- Positioning device means you don't have to hold it
- Position to best advantage - supporting arm on armrest, for example



Steve

- Keeps breaking his cell phone because he drops it
- Finding it hard to hold the phone in his left hand for typing with his right hand
- Lives alone, part-time PCA's
- Independent transfer, uses power wheelchair within the home and community

First Draft

Clipped onto "handle bar"

Phone is Velcro'd to the mounting plate

Elbow supported by arm rest

Stylus - keeps hand away from touch screen

Can independently move the mount away to transfer



First Draft



Great access!



Next Draft

- Shorter lock line gives increased stability
- Elbow supported on arm rest
- Stylus
- Can move out of the way to transfer
- Clip positioned vertically to avoid adding width to the chair



Next draft



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Some Thoughts about Eye Tracking Devices

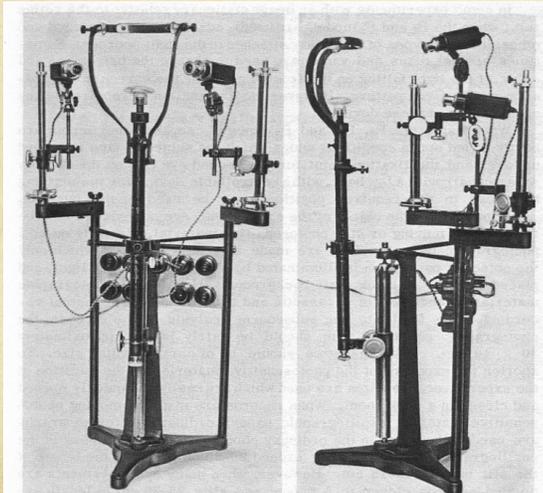


Fig. 21. The apparatus used in recording eye movements.

The three things you need for successful AAC device use:
Position
Position
Position

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Trouble Calibrating?

- Distance
- Height
- Angle
- Pay attention to the information that the device provides
- Small adjustments, even when the device is telling you it is well positioned, can change a fair calibration to a good calibration

Because the device often needs to be in front of the user's face, it can be difficult to replicate a friendly conversation.

Key clicks can be helpful in alerting communication partners that you are typing

All participants need to adjust to the slower pace

Communication partners should try to position themselves to be seen/to see the eye tracking user

For every plus there is a minus

- Because the eye tracking device often needs to be positioned in front of the user, mounting the device may compromise a person's ability to independently drive a power chair.

Switch Mounting



- Find the best switch site
- Reliable and Repeatable
- Consider fatigue
- Consider required pressure
- Consider both press and liftoff

Look Ma - No Hands




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Beth

- Eye tracking system funded by insurance
- Spends most time in her power wheelchair
Daessy wheelchair mount
- Using switch selection with eye tracking - specs switch
with her right hand




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Switch too hard to press

- Consider dwell clicking
- Foot movement reliable
- Unable to lift foot up, but can press down
- Successful with plate switch on the foot plate



No longer able to press with foot

- Consider dwell clicking
- Right finger can press on mouse button - if placed on the mouse and draped over the mouse buttons
- Beth is unable to lift her finger to release
- The tension of the mouse button lifts the button up to release the click
- Needs the positioning of the ergonomic mouse to generate finger flexion
- Cannot use mouse click in conjunction with eye tracking on this device - it's not the same as a switch click

- Mouse supported on lap desk
- P-switch (sensor switch) between her finger and the mouse button



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Thank you!!

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