ADAPTIVE SWITCH LABORATORIES
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OBJECTIVES

• Apply the basic principals of seating for access

• Recognize the role of powered mobility in determining access for involved clients

• Describe and identify at least 2 forms of alternative access for powered mobility, computers, or AAC devices

• Give examples of alternative access without powered mobility

• Recognize the importance of programming chairs

• Identify and justify the components needed to connect clients computer or AAC device to their wheelchair.
Seating Lab

• Work in groups of three
• follow instructions on lab sheet
• write observations on sheet
Seating History

• Seating was designed for support, containment and Control of a patient.

• It was started by Orthotists, and Rehab Engineers, who only used Anatomy and skeletal systems.

• For persons with CP the goal was to break tone. So we designed 90/90/90 seating. That was a position of rest.

• Supporting someone with Quadriplegia we used long seats reclined tall backs and extended leg rests to maximize pressure distribution.

• When we asked clients to do something from this seating it failed. So we added more barriers.

• We did studies on pressure relief shear contact and distribution for skin integrity.

• Then we applied the same principles to all seating and diagnoses.
Seating for Function

• What does this mean (Seating for function).

• Seating is not just Anatomy it is Physiology and Neurophysiology it is everything about our bodies and our Sensory motor system is how we function.

• It is not static. It is an action once we loose the ability to move or change position we loose function. we have to know how we can support this with seating

• Seating is a process it is a understanding of the Patient and their needs and wants.

• We need to support a patient with a system that works to support their needs both medically, physically and functionally.

• Seating has to start with the Patient not with the products.

• When you start with the patient it will lead you to the product
Body Postures

• Rest - as human beings how does or position in space effect how we function

• Work - When we need to do a task what positions help us perform the best.

• Eat - What position helps us eat or drink

• What does our sensory motor system have to do with seating.

• The worst thing we can do is only give someone one position to do all of these things.
Understanding the problems of Disabilities

• We look at a disability and understand a pathology.

• Identify by looking at a skeletal system and seeing what to prop or fix is seating 101.

• Understanding the layers of problems is much harder to diagnose.

• What is the problem we are trying to identify? What is the goal we are trying to achieve?

• What is the barrier for the client getting to the goal?

• Are the mistakes they are making Motor mistakes or Mental mistakes?

• STOP TESTING AND START TEACHING!
Izaac

Seating

- Understanding how the sensory motor system effects seating
- What role does Visual, Tactal, Processing play
- Powered mobility plays a huge role in figuring out seating and switch sites.
Izaac's seating
Deseree

- CP Seat - Anti thrust cushion, symmetrical hip guides, Abductor, shoe holders, curved lateral supports, tall back, chest harness, 70 degree foot rests.

- Buddy button on Bogan arm for access
Seating to support medical needs and functional needs

- Fabian
CP Seat
Considerations for Mobility

• Cognition - How do we judge this with someone who has never had experience?

• Age - At what age does someone start gaining motor experience?

• Vision - Does client have visual processing concerns or are they blind?

• Safety - How will we ensure safety?

• What roll does powered mobility play in teaching skills?
Where to start with Belief Assessment/Training/Education

- Corinne
- 10 years old
- CVI
- Seizures
Age for Mobility

• What age do children start learning and developing

• What happens when independent mobility is impaired or compromised.

• What do we understand about development.

• We do understand that for a child to grow and learn they must have experiences and manipulate objects

• Children who because of their disabilities miss acquiring foundational skills do not develop a foundation for achieving higher level functions and learning higher level concepts. (Tech for Tots 2000)

• This creates motor pathways and a Synapses. Synapses enable different parts of the brain to talk.
Ian
15 months
March 2005
MECHANICAL SWITCHES

ASL 300 Egg switch

ASL 314 ULTRALIGHT

ASL 304B WOBBLE

ASL 305 BUTTON

ASL 308 PNEUMATIC

ASL 301 LIP

ASL 309 TREDLITE
GRETCHESEN’S ACCESS
Electronic Switches

204  Proximity Sensor

208 Adjustable Proximity Sensor

203/202 Fiber optics

215 5V Round Proximity Sensor (Water Resistant)

209 Photo Electric
ATOM Headarray

- Interface in headrest one Atom fits all wheelchair electronics
- LED directional indicator
- Adjustable switch trimmer
- On/OFF switch/User On/Off
- Adjustable auditory feature
- Switch setting for F/Rev toggle
- User switch port
- Connection indicator
Headarray’s

104 ATOM  ASL 104 Proton  ASL 104 Element
who is a headarray designed for
ATOM Accessories

ASL557-2

ASL 557-3

ASL 558
ATOM BT Accessories

ASL557-2

ASL 557-3

ASL 558

TECLA 2 with bluetooth to ATOM
CHEENU

• Diagnosis is CP 22 years old

• Che has very high Tone

• Lives in a group home (Nice Place but minimal help)

• Had no access or AAC (He just received his device but it is never mounted to his chair or charged)

• No computer access

• Breaks all equipment

• Wants most of all to have a JOB (He would like to mow lawns)

• He speaks 2 languages English and Hmong
Clinical Needs

• Current equipment

• Chair Permobil /R-Net

• Drive control headarray was Permobil’s now ATOM

• AAC device - Tablet with SD Pro

• Computer - He uses the staff computer for internet searches of lawn mowing, and van lifts. His favorite you tube videos

• Needs access to seat functions.

• Wants phone access for texting

• Has had equipment failures consistently. He breaks a lot of equipment

• Staff education is minimal and changes a lot. Headarray was broken for 6 months
Mounting and programming

- Mounting of Che’s equipment

- Wobble switch on the right armrest is for mode change and access to the R-Net menu.

- Egg switch on the left side for the ATOM user menu to turn his Headarray off and on and to get to the wireless mode

- Display is on the left

- Dassey mount for his tablet AAC device
Integration Problem

• Getting between Drive/ Communication/ and Computer

• IOM has one port

• Bluetooth does not scan only mouse

• Bluetooth mouse in three switch. He cannot do quick tap to change directions

• He cannot navigate the menu without making a mistake and getting to the wrong function

• Solution he uses the ATOM wireless output for Mouse function and for two switch assess for his communication device.

• Right now he has to use the ATOM for both devices because he cannot navigate the menu

• Change the menu order to seating first so he does not have to navigate the menu.

• It is important where you mount the display because this electronics is visually display dependent

• I try to mount it on the activation side so clients do not accidentally change the seat function.
Access beyond Power Wheelchairs

- Through Headarray
- Computer Access ATOM Mouse
- AAC access Atom Two Switch and IOM with Cable
- Work on computer skills so he can get a Job.
- Teach staff how to use his equipment.
Che’s Equipment
ALEX
How to start and be successful at young ages and and inexperience
ALEX
How to start and be successful at young ages and and inexperience
106 Proximity Tray Array
New ATOM Version
Magglio
ASL 101 Single Switch Scanner
Fiber Optics Atom

Illumination Box

Palm Tray

S&P Attachment

Large Fiber Optic Cable

Small Fiber Optic Cable

Two Switch Fiber Optic

Four Switch Fiber Optic
Sophia

ASL 108  4 Switch
Fiber Optic Array
Mounting dilemmas determining whether to mount the drive control to the patient or to the chair
Mary Kate Today
Mary Kate
Play station
Mod through IOM
I Phone access Wireless through ATOM
ASL 107 Two Switch Fiber Optic Array
TK Fiber Optic Mount
TK TECLA IOS

TECLA Bluetooth Interface

IVC AUX Module
ALTERNATIVE Joysticks

ASL 135 Mushroom Joystick
ASL 134 Compact Joystick Dual
ASL 133 Compact Joystick Single
ASL 132 Pediatric Compact Joystick
ASL 129/130 Micro Extremity Control (MEC)
ASL 136 Micro Mini Proportional
ASL 138 Extremity control
JJ’s Joystick

ASL 130 MEC
ASL MEC VERSIONS

ASL MEC

ASL 129

ASL 130

Protective Cover
ASL DIGITAL/PROPORTIONAL

ASL 111 Proportional Digital

Proportional forward and reverse
Digital left and right

ASL S&P HEADARRAY
Any puff is forward
Any sip is reverse
Headarray is left and right
Wheelchairs and Electronics

- Permobil
- ROVI
- Sunrise
- Amy
- R-Net
- R-Net
- Pride
- Curtis
- Otto Bock
- Curtis
- Invacare
- MK6i
Amanda - the value of expandable electronics
MALIA PROGRAMMING
Diagnosis (SMA)

Spinal Muscular Atrophy

• Visual impairments/ Considered legally blind

• On 2 liters of O2

• He has a Vent, Humidifier, Suction, and a pump for Feeding and medication.

• Uses PMJ joystick to drive and a ultra lite switch for tilt

• He uses a Tobii for work to access his software and word processing.
• He relies on Auditory cues to know where he is in the system.

• He works all day so needs to have O2 for up to 6 hours.

• His Respiratory and Medical needs require a lot of power so a third battery is required.

• His Joystick is getting harder to use had he is considering trying Fiber optics, He wants to work into them

• Everyone assumed that because he used a Tobii he used Eye gaze to control it. (remember he is Blind) when asked how he controlled his Tobii he said by scanning.
• Michaels Permobil chair was ordered and on the way.

• We were asked to help with the technology part of his chair.

• Michael was told that he could have a different auditory cue on R-Net for each function at the time this was not true; seating is not designated by a specific sound.

• He wanted the Display in the back so he could get closer to things he needed to see and to not hit it on doorways or walls.

• He was told that the bluetooth module would let him access his Tobii wirelessly. Although this was technically true it will not allow him to scan his device only to mouse emulate it. (Not helpful to someone that cannot see)

• When we discovered the issues with the electronics that he would have to overcome his chair was cancelled and a new TDX was ordered.

• Everyone wants to do the right thing When you find solutions for Patients.
Curtis - Settings

- **Program Adjustments**
- **Mode Options** Drive, Seat program, Aux Program, Rest, Disable
- **Drive P1 P2 P3 P4 P5**
  - Speed settings Speed Turn Rate
- **Active Device** Three switch Head for Headarray Drivers if not seating is an issue
- **Back Toggle** Disabled
- **Toggle while driving** Off

- **Device Options Folder**
  - Device Double command Disabled

- **Three switch head folder**
  - Mode Jack switch type Toggle
MK 6 COMPONENTS

- Visual Display
- Multi Power Interface Box
- S&P Di module
- AUX 1 - 2
- MK6 Programmer/SD card
MK6

- Standard Program MEC all ASL Joysticks
- Important settings Traction, Trimmer dampening, G-trac for joystick smoothness.
- 4 completely separate drives,
- No drive
- Rim Control Makes reset a mode not a condition of a switch activation
- Torque by drive
- G-track by drive
- Auditory different for every mode
- Two ECU outputs
- Digital interface being separate Not in the Display which causes funding issues
R-NET COMPONENTS

- ONMI
- IOM/ Input Output Module
- Controller
- 7 Button LCD Joystick
- Seat function Module
- Program Key
R-Net Settings

- Joystick through
- In Omni with ASL Sleep 12 V needs to be on or headarray won't power up when chair goes to sleep
- Port 1 is the best port for switch access most of the time
- SID Three Switch Headarray if you want reverse
- User switch NO
- F/R toggle Off
- Actuator selection SID
- Actuator Axis L/R or R/L Headarray
- Speeds Must set Max and Min
- Profiles On or Off must be on to get into the profile
- Modes each profile which functions you want on in each profile including programming
- Input Device / Input Type Universal or Onmi
- Latch only adjustable to 250 seconds
- If reset doesn't check D Bounce and change setting 50 or 100
wireless technology

- Types of wireless Signals- Bluetooth- Radio Frequency, X-Bee and Infrared
- Types of Bluetooth - How does it connect? Modules, Paring.
- What is being connected to? (Computer, Communication, I Pad, Phone)
- What is the client using as an access method. (Joystick, Headarray, Fiber Optics, Scanner)
- How is the patient accessing the devices? (Mouse Emulation, Scanning What type Single or Dual switch, Eye Gaze)
- How many devices are needing to be accessed and in how many locations?
- How can we combine technology?
- How is it funded? Insurance, Private Pay, Funding source
Computer access and software

• Does the software support alternative mouse movement?
• Does it require left and right click?
• Is it scanning software?
• Is dwell a click option?
• Can I have a dedicated switch for click?
• Can I Connect to multiple computers?
• What is a patient needing to access.

• What support do we need to give for access. Is their head, hand, leg, or foot better. with movement why is head access not a good idea from the start

• What are they trying to access Power chair driving, seat functions, computer, phone, communication.

• How much support is too much and inhibits movement. Does a padded headrest inhibit rotation? Do contours or thigh channels inhibit lateral movement.

• How can we build a system that can change with a patient, quickly that can support all the needs.

• What components need to be on the chair to achieve all these goals. Modular systems with adjustable shear and multiple access methods.

• With progression how can I still access my environment , what if I just want powered seating, and access to communication.

• Many clients end up sleeping in their chairs that needs to be planned for.
ALS PACKAGE

ALS PACKAGE INFORMATION
Amyotrophic Lateral Sclerosis (ALS):
Clients who are diagnosed with ALS have rapidly changing needs. We feel that it is very important for these clients to stay connected with mobility, seating, computer and communication from their wheelchair, or even while in bed. Below is one of the products that we recommend for clients with the diagnosis of ALS.

INDIVIDUAL PRODUCT DETAILS:

1. Zen Headrest with Proximity Sensors installed in Lateral Pads which will swing away

2. Sensor Connection Cable

3. Zen Headrest Mounting

4. Cable for any Sensor to become Single Switch Scan

5. ATOM Interface with Wireless Output

6. Two (2) Additional Switches for Multiple Site Options: Lower Extremity (knees) OR Upper Extremity (hand or elbow)

ATOM ACCESSORIES
* Must be Purchased Separately

- ASL 557-2 ATOM Wireless Dual Switch Receiver
- ASL 557-3 ATOM Wireless Triple Switch Receiver
- ASL 558 ATOM Wireless Mouse Emulator

Adaptive Switch Laboratories, Inc. 1-800-626-8698 Visit us at: www.asl-inc.com
AAC Device connections and Access

Accent 1400

PRC, Dynavox, and Tobii Devices have Blue tooth
You can Connect with the wheelchair.
How it works is the Issue
Components

Q-Logic
Enhanced Display

R-Net
Omni

MK6i
Mouse Module

ASL/ATOM

Quantum Joystick

Bluetooth Module

Mouse Module

Tecla

557-2

557-3

558 Mouse Module
Output modules

MK6i AUX
R-NET IOM
Q-Logic ECU
Zach - Integration of Technology
Royal

ASL 105 Headarray

AS 554 Wireless Mouse Emulator
Marcus
Johnny’s Mouse: Simple things can be a challenge
Equipment and Access Needs

- Torque
- MK6i Electronics
- Fiber Optics

She wants the display to be mounted in back and as little as possible to be up front.

- Owns TECLA wants phone access at all times - chair and when in bed

- I Phone mounted on wheelchair.

- She has accessibility set to scan
Noteworthy new products

• New TECLA Shield Coming soon

• Mealtime Partners Mounts and feeding devices

• CP Now book

• Hip Screen App to help decide when surgery.

• Ergo Joystick Panther, Stingray, Aero Leg bag holder

• pathways.org Free literature on development for families or anyone.
Thank you for Attending 2017

Chris  Codie  Michele  Lisa  Byron  Brendon  Joe  Trey  James