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WHEELCHAIR SEATING ASSESSMENT

Michelle L. Lange, OTR/L, ABDA, ATP/SMS

What we are Covering

• The evaluation team
• Evaluation of current posture and equipment
• Seating Assessment
  • Mat Exam
Learning Objectives:

The participant will be able to:
1. Identify three components of a mat exam.
2. Recognize the appropriate steps in assessing available hip and knee flexion for a seated posture.
3. Recognize a client’s posture in their wheelchair seating system.

The Evaluation Team

- Client
- Caregivers
- Clinician(s)
  - Occupational Therapist
  - Physical Therapist
- Supplier
- Manufacturer’s representative
- Others
Scope of Service

- Wheelchair seating falls under the area of Complex Rehab Equipment
- Clinicians need to understand the importance of appropriate positioning
- Clinicians need to recognize when a seating system is not meeting a client’s needs
- Assessment for wheelchair seating requires additional training

Specialized Training

- Clinicians who perform seating assessments for complex rehab equipment typically have additional training, experience and may be certified in this area
- RESNA
  - Assistive Technology Professional - ATP
  - Seating and Mobility Specialist - SMS
Specialized Training

- The equipment supplier working with complex rehab equipment should have specialized training, experience and certification, as well
  - NRRTS
    - Certified Complex Rehabilitation Technology Supplier - CRTS
  - RESNA
    - Assistive Technology Professional - ATP

Clinician Goals

- Correct the flexible, accommodate the fixed
- Skeletal alignment/symmetry
- Improve postural control
- Normalize muscle tone
- Inhibit abnormal or primitive reflexes
- Proximal stability for distal control/function
- Pressure relief and comfort
Seating Assessment

- Intake
- Assessment of current posture/equipment
- Mat Exam
- Simulation
- Equipment Trials
- Fabrication/Fitting
- Follow-up

Intake

- Intake is more than just gathering information and demographics
- Intake provides critical information to develop client parameters that will then be matched to appropriate equipment
- Intake provides context and direction
Intake: Goals

- Client
- Caregiver(s)
- Short and long term
- For different environments
- For different tasks
- Building consensus

Intake: Home Accessibility

- Type of residence
- Own or rent
- Lives alone or with others
  - Hours without caregiver
- Entrance accessibility
- Number of floors
- Bedroom accessibility
- Bathroom accessibility
Intake: Vehicle Accessibility

- Vehicle type
  - School bus
  - Public transport
- Vehicle adaptations
- Tie downs
- Does client ride in the wheelchair or transfer?
- Does client drive?

Intake: Other Medical

- Vision
- Hearing
- Communication
- Sensation
- Skin status
Intake: ADLs

• Dressing
• Eating
• Bathing
• Toileting
  • Continence
• Meal Prep

Intake: Current Equipment

• Seating
  • Include all components
  • Describe current posture
• Mobility Base
• ADL equipment
• Other AT
Assessment of Current Posture

• What is the client’s posture in the current equipment?
  • Describe position of the pelvis
  • Describe position of the trunk
  • Describe position of the neck
  • Describe position of the extremities

Current Equipment

• Describe current equipment
  • Seating system
  • Mobility base
  • Age of equipment
  • Condition of equipment
Intake: Wheelchair Skills

- Transfers
- Balance
  - Sitting, standing
- Mobility
  - Ambulation
  - Dependent, independent in mobility base
  - Mobility Base

Mat Exam
Mat Exam

• The purpose of the mat exam is:
  • To determine available range for a seated posture
  • To determine where support surfaces are required
  • To determine seated angles
  • What we can support with our hands, the seating system can also support

Mat Evaluation

• Describe reflexes and influence on body movements and posture
• Describe muscle tone and influence on body movements and posture
• Note any range of motion limitations
• Look for causes, not just symptoms
Mat Evaluation

- In sitting on edge of mat table, note:
  - Position of head
  - Neck control
  - Influence of tone/reflexes
  - Support required

Mat Evaluation

- In sitting on edge of mat table, note:
  - Position of shoulders/upper extremities
  - Functional control
  - Range of motion
  - Influence of tone/reflexes
  - Condition of shoulder girdle
  - Fisting
  - Support required
Mat Evaluation

• In sitting on edge of mat table, note:
  • Position of trunk
    • Anterior/posterior
    • Left/Right
    • Rotation
    • Fixed or flexible
  • Functional trunk control
  • Support required
Mat Evaluation

• In sitting on edge of mat table, note:
  • Position of hips
    • Neutral
    • Abducted
    • Adducted
    • Windswept
  • Range of Motion
  • Support required
Mat Evaluation

- In Supine, note:
  - ROM
  - Tone
  - Flexibility
  - Alignment

Mat Evaluation

- Can the pelvis be placed in neutral?
- With the knees at 90 degrees?
- Without undesirable spinal changes?
Measurements

• The measurements are often done by the supplier, as they are ultimately responsible for any error in final seating system dimensions

Mat Evaluation

• Measurements in Sitting:
  • Shoulder width
  • Chest width
  • Chest depth
  • Hip width
  • Between knees
  • Upper leg length
  • Lower leg length
  • Foot length
Mat Evaluation

- Measurements in Sitting:
  - Seat to:
    - Top of head
    - Occiput
    - Axilla
    - Top of shoulder
    - Acromion process
    - Inferior angle of scapula
    - Elbow
    - Iliac crest

Measurement Tools

- Measuring Tape
- Calipers

ChairSquare
Calipers
Simulation

- The mat exam determines roughly the available range, where support is required and at what angles
- Simulation lets us try this out before making final equipment recommendations
- Simulation frees up our hands, allows for fine tuning and trial in functional activities
  - i.e. eating while seated
- Justification: take photos of the client in their current seating equipment and in the simulation to educate and justify recommendations

Simulation

- Adds gravity and support surfaces
Simulation

• Linear options
• Prairie Seating
• Determines where primary and secondary supports are required and at what angles
• Information can then be applied to multiple seating systems

Simulation

• Pressure Mapping
  • 3 pressure readings per second in millimeters of mercury (mmHg)
• Can use in current seating
• Can use in simulator
• Can use on many cushions
Simulation

• Molded Options
• May be used for evaluation
• May be used for shape capture

Prairie Seating

Molding

• When a molded seat and/or back are indicated, the molding may take place prior to funding approval
• Team approach
• Molding is a process and evaluation/problem solving is still occurring
Molded Seating

- Taylor
  - Not happy, but positioned much better…
Equipment Trials

- Highly customized seating interventions can be hard to simulate, let alone trial for extended time periods
- Trials of cushions may be indicated to ensure that there are not pressure issues over time or with a variety of activities, transfers, etc.

Fabrication and Fitting

- Some seating interventions require fabrication or modification
- The fitting is an extension of the evaluation, as some aspects may not work out as well as anticipated
- Changes may need to be made during the fitting as a result, or as a result of growth or other client changes since the evaluation
Follow Up

- All that hard work should not go to waste!
- Important to follow up and ensure that the seating intervention continues to meet the client’s needs
- Outcome measures

Positioning Outcomes

- Outcomes can keep you out of a rut
- Outcomes can help with funding of services and equipment
- Track percentage of successful intervention
- Track "failures" to increase your percentage and use as a learning tool
- Surveys

OUTCOMES
Referral

• How do I know if a Seating Assessment is required?
• How do I know seating is inappropriate?

Seating Need

• The client may need modifications to or replacement of a seating system if:
  • The system is outgrown
  • Children grow
  • Adults can grow also – just in other directions
Seating Need

- If the seat depth is too short
  - Inadequate support under distal thighs
- If the footplates are too high
  - Increased pressure over ITs
- If the back height is too short
  - Anterior trunk supports may push down on shoulders
- If the seat width is too narrow
  - Pressure against lateral hips, rubbing on tires

The client may need modifications to or replacement of a seating system if:
- The client has had body shape changes
- Spinal curvatures
- Trunk distortions
- The client’s body shape may no longer match the seating system contours
Seating Need

• The client may need modifications to or replacement of a seating system if:
  • The client is not receiving adequate postural support
  • Can lead to orthopedic changes
  • Can impede function

Seating Need

• The client may need modifications to or replacement of a seating system if:
  • The client is developing pressure issues
  • Pressure distribution
  • Pressure relief
  • More in our next course…
Seating Need

- The client may need modifications to or replacement of a seating system if:
  - The client is not as functional as they could be
  - Stability is key to promote isolated control elsewhere

Take Home Message:

- Clinicians need to understand the importance of appropriate positioning
- Clinicians need to recognize when a seating system is not meeting a client’s needs
- Assessment for wheelchair seating requires additional training
Next in the Series:

- Seating Interventions
- Seating: matching client need to product
- Special Populations

Resources

- RESNA Wheelchair Service Provision Guide
  - www.RESNA.org
- Positioning Chart
  - www.atilange.com, under Resources
- Sample Evaluation form
  - http://www.hfs.illinois.gov/assets/060806_3701h.pdf
Hands-on Activity

• Contact a Seating and Mobility Clinic in your area
• Arrange to observe a mat exam
• Grab a colleague and practice doing mat exams on each other!

Activity Time!

Thank You!
Contact Information

• www.OccupationalTherapy.com
• 866-782-9924

• Michelle L. Lange, OTR/L, ABDA, ATP/SMS
• MichelleLange@msn.com
• www.atilange.com

Wheelchair Seating: Back to the Basics
http://www.occupationaltherapy.com/general/assistive-technology-series

Virtual Conference Presenter
Michelle Lange, OTR, ABDA, ATP/SMS

Mon 6/1  Wheelchair Seating Assessment
Tues 6/2  Seating Interventions
Wed 6/3  Seating: Matching Client Needs to Products
Thur 6/4  Seating for Special Populations: Pediatric, Geriatric, Bariatric, and Degenerative