

WHEELCHAIR SEATING ASSESSMENT

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What we are Covering

- The evaluation team
- Evaluation of current posture and equipment
- Seating Assessment
 - Mat Exam

Learning Objectives:

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

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

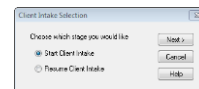


Seating Assessment

- 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



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Intake: Vehicle Accessibility

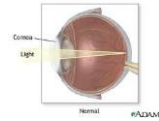
- Vehicle type
 - School bus
 - Public transport
- Vehicle adaptations
- Tie downs
- Does client ride in the wheelchair or transfer?
- Does client drive?



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Intake: Other Medical

- Vision
- Hearing
- Communication
- Sensation
- Skin status



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Intake: ADLs

- Dressing
- Eating
- Bathing
- Toileting
 - Continence
- Meal Prep



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Intake: Current Equipment

- Seating
 - Include all components →
 - Describe current posture →
- Mobility Base
- ADL equipment
- Other AT



Cindy Smith

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



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Intake: Wheelchair Skills

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



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Mat Exam



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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



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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



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Mat Evaluation

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



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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



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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



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Mat Evaluation

- In sitting on edge of mat table, note:
 - Position of pelvis
 - Anterior/posterior
 - Obliquity
 - Rotation
 - Fixed or flexible
 - Functional pelvic control
 - Support required



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Mat Evaluation

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



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Mat Evaluation

- In sitting on edge of mat table, note:
 - Position of knees and ankles
 - Within functional limits
 - limitations
 - Range of Motion
 - Support required
 - Atypical footrest placement
 - Atypical footplate placement



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Mat Evaluation

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



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Mat Evaluation

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



Measurements

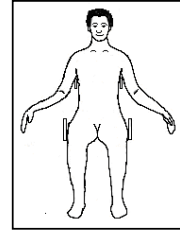
- The measurements are often done by the supplier, as they are ultimately responsible for any error in final seating system dimensions



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

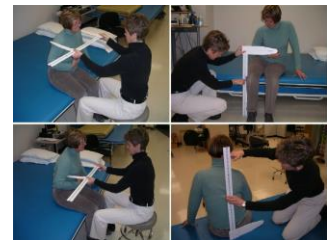
- Measurements in Sitting:

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



Measurement Tools

- Measuring Tape
- Calipers



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



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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



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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



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Simulation

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



Prairie Seating

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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...



Molded Seating

- Taylor
 - Not happy, but positioned much better...



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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.



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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



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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



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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



Seating Need

- 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

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