

Considerations for Adapting Exercises for Clients with Stroke

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1. Postural Control

- ▶ Arm and leg impairments most obvious
- ▶ Impairment postural control against gravity
- ▶ Spinal extension - ability to remain upright
- ▶ Impacts alignment of shoulder girdle

Consider:

Sit vs stand to do exercise
Remind / cue upright position

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2. Spasticity

- ▶ Tightness, increased muscle tone
- ▶ Velocity dependent - worse with fast movement

Consider:

Assist to open hand, move limb prior to activity
Slower movement
Monitor alignment

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3. Alignment

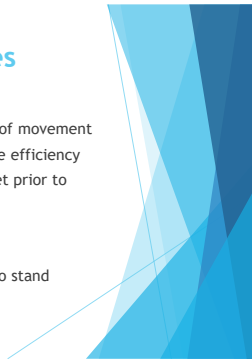
- ▶ Inefficient alignment due to
 - Muscle weakness and imbalance
 - Lack of awareness (proprioception)
 - Increased muscle tone (spasticity)
 - Impaired postural control
- ▶ Examples: shoulder internal rotation, pelvic alignment
 - Consider:
 - Remind / cue upright position
 - Alignment of base on chair
 - Assist manually or with equipment to re-align



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4. Anticipatory Strategies

- ▶ Automatic muscle activity prior to initiation of movement
- ▶ Provide stability, improve alignment, improve efficiency
- ▶ Examples: ER prior to abd shoulder, tuck feet prior to stand
 - Consider:
 - Remind / cue upright position
 - Monitor/assist/train foot position prior to stand
 - Alignment of limbs prior to movement



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5. Pain

- ▶ Co-morbidities (arthritis)
- ▶ Alignment (impingement syndromes)
 - Consider:
 - Exercise only in pain-free range
 - Shoulder ex's below shoulder height
 - Decrease reps, increase breaks especially initially



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Sit to Stand video LC



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BL Forward Reach



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BL Lateral Shift

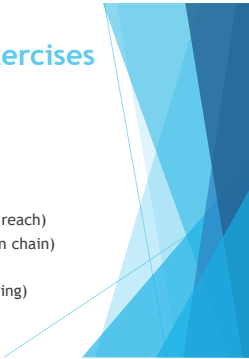


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6. Functional tasks vs exercises

- ▶ Clients often with multiple deficits
 - ▶ Integration of systems, motor planning
 - ▶ Communication / perceptual problems
- Consider:
Task-specific training (sit to stand, walk, reach)
Loaded (closed chain) vs Off-loaded (open chain)
Sequences (walk and carry task)
'Games' (red light/green light, head turning)



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7. Position

- ▶ Sit or Stand, Recline or Forward Lean, Higher or Lower
 - ▶ Starting position (postural control)
 - ▶ Change in position during activity (cat dish)
- Consider:
Daily life, most arm activities done in standing
Fatigue / balance
STS - higher starting point is easier
Challenge with different positions and transitions



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8. Stability

- ▶ Safety first
 - ▶ Stability precedes mobility
 - ▶ Perceptual safety
- Consider:
External support (counter, chair, wall)
Manual assistance / supervision
Larger base for sitting, wider stance



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9. Awareness of Movement

- ▶ Decreased proprioception
- ▶ Integration of multiple systems to increase awareness

Consider:

- Assistance to initiate movement
- Cue visual attention to task or limb
- Touch/tap affected limb
- Provide resistance



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10. Visual System

- ▶ May be impairments in integration of vision and movement
- ▶ Vision typically precedes movement

Consider:

- Cue visual attention to task or direction of movement
- Use of targets
- Challenge balance with change in visual attention



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11. Separation of Movement

- ▶ Often movement is re-learned 'en bloc'
- ▶ Arm from trunk, leg from pelvis, rotation

Consider:

- Instruction to focus movement
- Decrease effort
- Provide more stability



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12. Speed

- ▶ Some clients may need to use momentum
- ▶ Progress exercise by doing more slowly (stand to sit)
Consider:
 - Change speed to increase or decrease challenge
 - Monitor influence of speed on spasticity
 - Try same activities at different speeds
 - Metronome or music to change pace



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13. Task Breakdown

- ▶ Whole activity may be too complicated
- ▶ One part may be challenging
Consider:
 - Practice separate exercises from parts of task
 - Practice whole activity



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14. Repetition

- ▶ Consistency important for those with communication and perceptual impairments (predictability)
- ▶ Need repetition for motor learning
Consider:
 - Endurance vs strength
 - Increase frequency and reps before intensity



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15. Resistance

- ▶ Resistance to build strength

Consider:

May need to give assistance initially
Resistance increases awareness (proprioception)



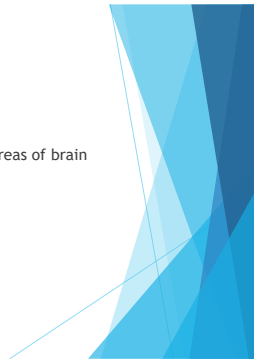
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16. Visualization

- ▶ Not as effective as doing exercise
- ▶ Evidence that visualization activates same areas of brain

Consider:

More reps with visualization
Need to be able to concentrate



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17. Feedback

- ▶ Feedback can be distracting as well as helpful

Consider:

Allow errors and time for self-correction
Learn by doing and feeling
Refinement over time



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What are your “go -to” exercises?

▶ How can we adapt them?



