Considerations for Adapting Exercises for Clients with Stroke

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Action Potential Rehabilitation

1

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

2

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

3

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

4

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

5

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

6

Sit to Stand video LC

7

BL Forward Reach

8

BL Lateral Shift

9

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)

10

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

11

8. Stability

- Safety first
- Stability precedes mobility
- Perceptual safety

  Consider:

  External support (counter, chair, wall)
  Manual assistance / supervision
  Larger base for sitting, wider stance

12

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

13

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

14

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

15

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

16

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

17

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

18

15. Resistance

- Resistance to build strength

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

19

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

20

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

21

What are your “go -to” exercises?

- How can we adapt them?

22