



Motivating through Movement: A NDT Perspective

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> 1,500,000

People in Canada are living with a brain injury

\$3 Billion

The annual cost of ABI in Canada

150,000+

Canadians experience a serious brain injury every year

Tens of thousands

Become partially or permanently disabled

Rehabilitation

“A progressive, dynamic, goal-oriented process aimed at enabling a person with impairment to achieve their pre-stroke level of physical and social functioning”

Canadian Stroke Best Practice Recommendations, 2019



Research indicates early rehab intervention, and then intense neurorehabilitation in a rehab facility, promotes positive functional outcomes in individuals with moderate to severe TBI or stroke



Moderate to severe stroke



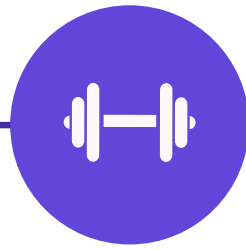
- **Recovery may be incomplete and take years**
- **Improvement in activity and participation is possible at any time**

Key concepts of Neuro-Developmental Treatment (NDT)



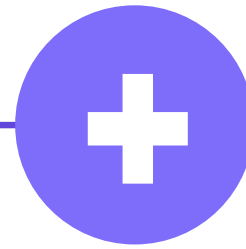
Expect recovery

Incorporate current/evolving research to drive neuroplasticity



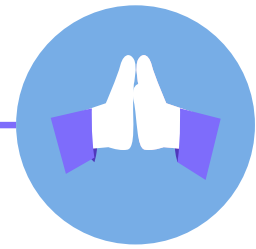
Work in function

Use functional tasks/sub tasks within therapy



Remediation vs compensation

Incorporate the affected/more involved limbs



Use hands therapeutically

Therapists use sensory information to modify motor behaviours

Recovery vs compensation



Compensation provides short term gain but leads to disuse of the affected side



Compensation limits recovery - strive for the least compensatory strategy



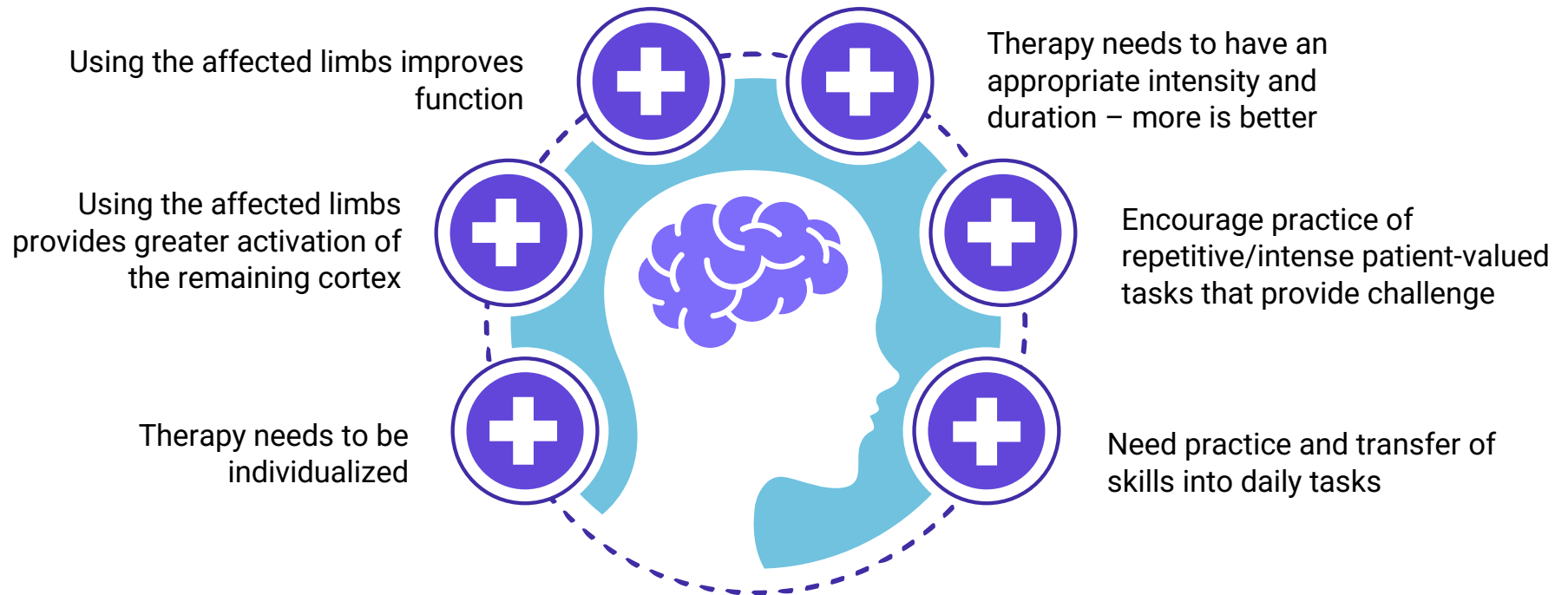
Early rehab capitalizes on a dynamic period of brain remodeling and counters suboptimal reorganizational patterns from compensation



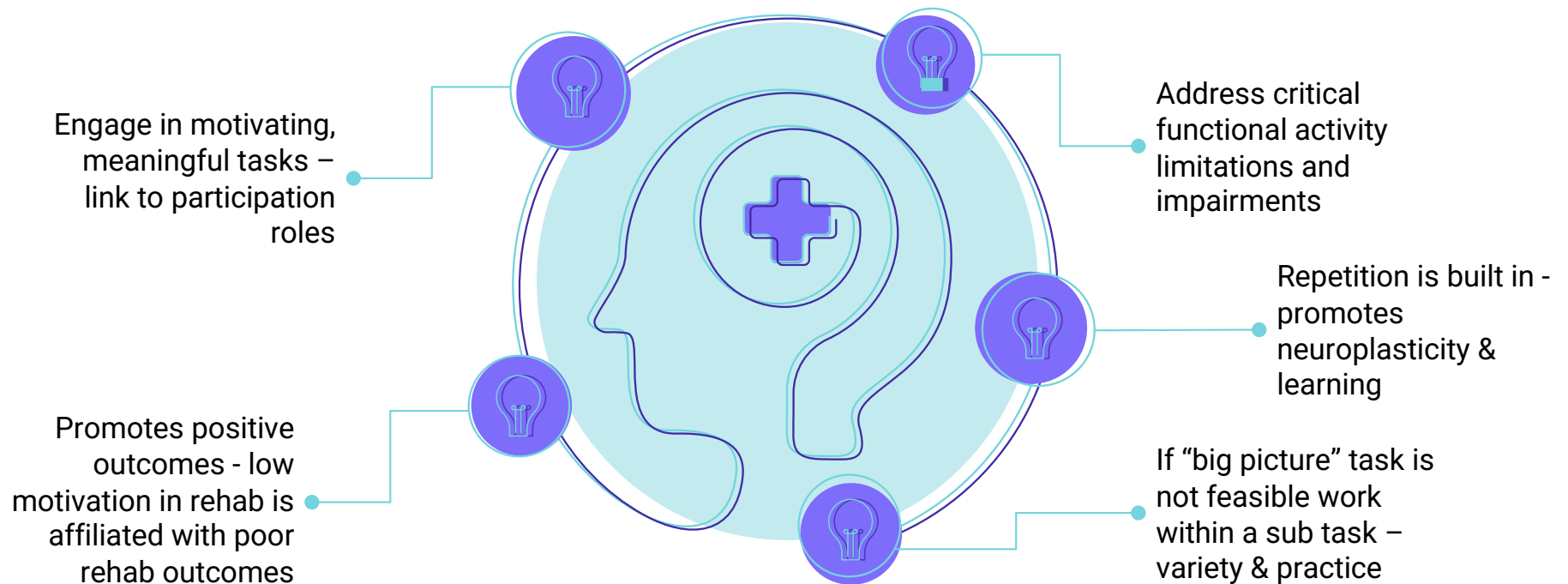
Functional improvements and positive neurological changes are possible



Critical research that guides clinical practice



Working within a task



Your patient wants to play golf again



Consider all the small functional activities that are necessary in order to play golf

- Swinging a club
- Putt a ball
- Pick up the ball from the ground
- Carrying the golf bag or pulling the golf bag
- Getting golf clubs or other equipment in/out of the bag
- Walking on grass, parking lot (pavement), in/out of home
- Walking up/down a curb, uneven ground
- Climbing into/out of the golf cart
- Squatting to place a tee/ball on the ground
- Getting into/out of a car
- Walking down stairs at home – inside or outside
- Getting dressed, showering, eating
- Putting golf bag into car
- Etc....

Can you engage your patient in a sub task of the motivating activity within your session?

Treatment considerations



✓ **Closed – modified - open chain**

The affected limbs start closed chain – weight bearing – easiest to elicit a contraction

✓ **Symmetrical**

Use equipment/set up to encourage weight bearing through the affected side

✓ **Facilitate**

Use your hands/body to encourage activation through the affected side

✗ **Inhibit**

Use your hands/body to stop movements that you don't want – monitor the less affected side

✓ **Challenge**

Working at higher levels of challenge in therapy will assist with other functional activities

✓ **Practice**

Provide practice opportunities in/out of therapy to increase repetitions – entire team is key

Challenge and practice

We can challenge and provide practice to the trunk and affected limbs within a sub task by manipulating the base of support (BOS)



Usually begin with patient in sitting (hips higher than knees)



Progress to high sitting, perched to standing



Focus on moving the least important part of the BOS first



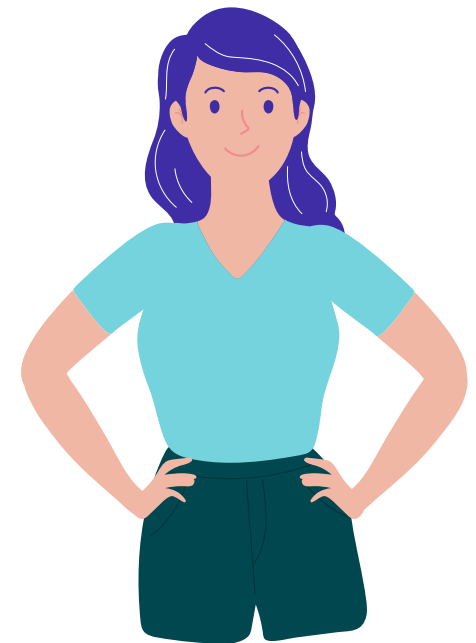
Moving the less involved LE to more unstable surfaces places demand for stability



Engage the less involved UE in reaching activities prior to moving the LE



Movement is not perfect – learning requires error and challenge



Practice is critical

OT & PT work together to address impairments in the trunk, upper and lower extremity by incorporating meaningful and motivating activities into therapy

OT

Focus on the UE in support, developing reach/arm function in sitting, standing & within functional activities – ADL's, IADL's



PT

Engage the UE in sitting, standing while challenging the LE & working towards activities in gait

Both disciplines need to treat the whole body

Patient Treatment Demonstrations

A variety of treatment videos and photos

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