Neurological rehabilitation

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Road map:

Clinical decision making

Rehabilitation framework

Therapeutic approaches

Introduction:

- Rehabilitation has an important role in reducing disability
- A coordinated interdisciplinary team:

❖Physician
❖ nurse
❖ physical therapist
❖ occupational therapist
❖ speech-language pathologist
❖ neuropsychologist
❖ nutritionist
❖The patient& family

❖ *Rehabilitation is an essential component of comprehensive care in neurological patients*

Introduction:

- Physical therapists play an integral role in the management of patients throughout the disease

- Clinical decision making

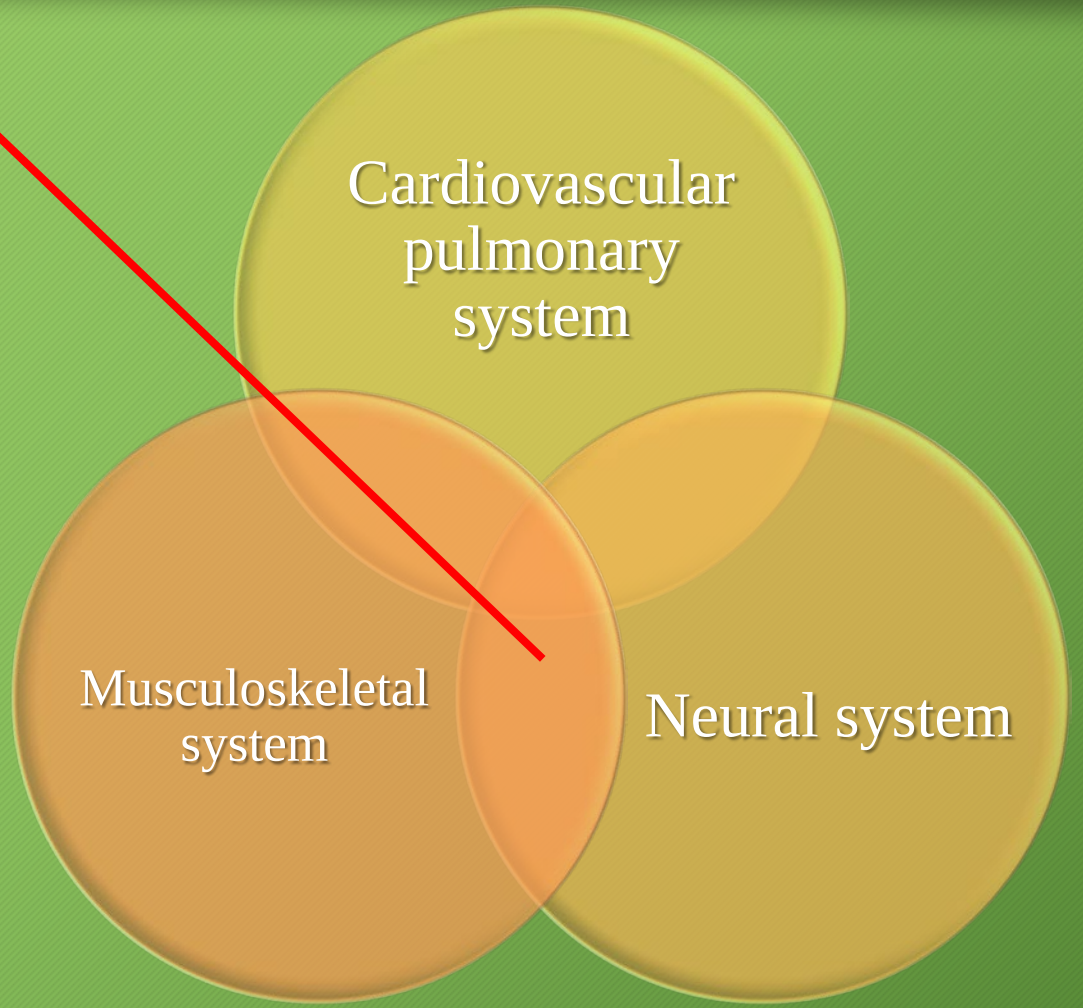
- Framework of rehabilitation:

Evaluation model

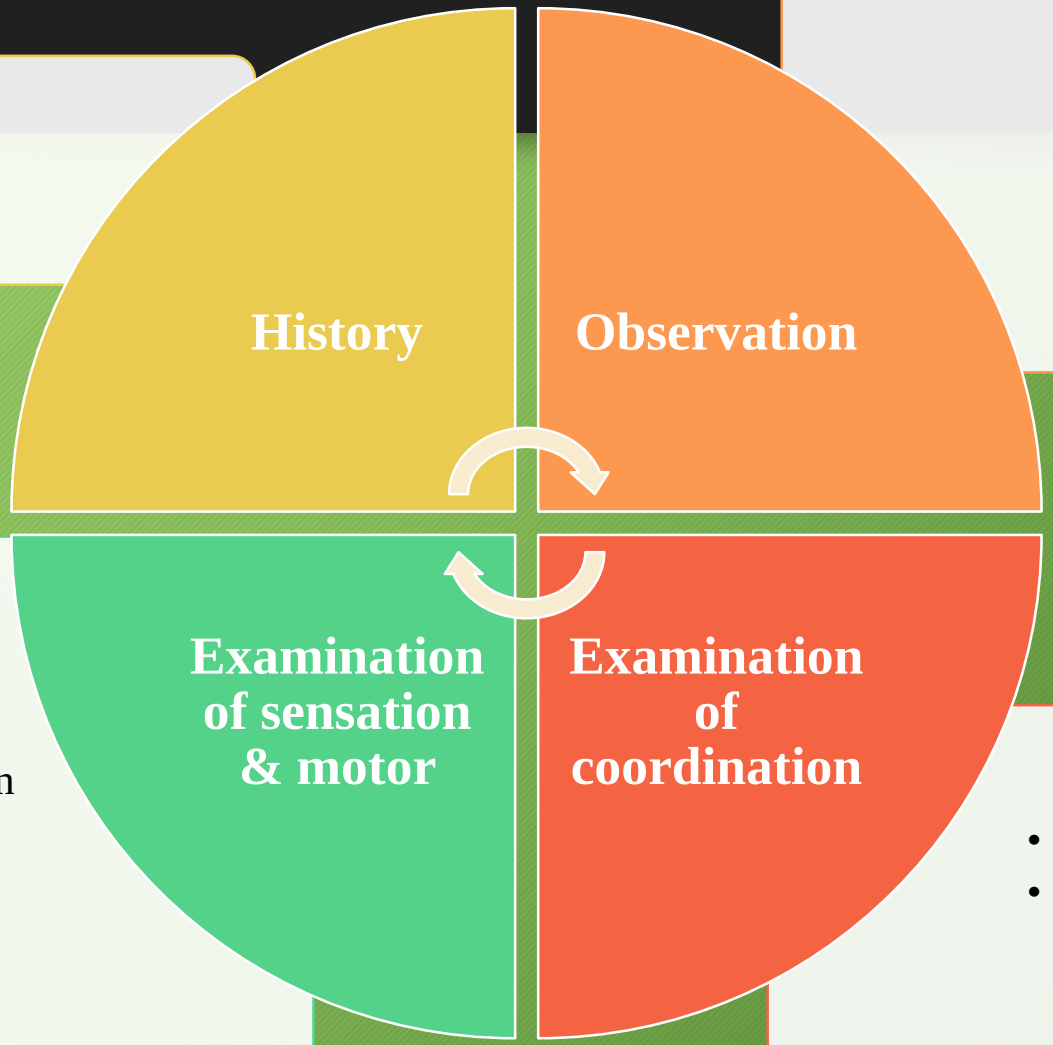
Intervention model

Framework (evaluation part):

Autonomic nervous system



Assessment:



- Chief complain
- Sign & symptoms
- Ability & disability

- Transfer
- Posture
- Autonomic nervous system

- Sensory:
- Extroception & Proprioception
- Combined cortical
- Motor:
- ROM, Tone
- DTR
- Muscle strength (functional patterns)

- Non equilibrium tests
- Equilibrium tests

Framework (evaluation part):

- List of problems:

Respiratory disorders

Decrease of cardiovascular endurance

Mobility deficits

Abnormal sensation

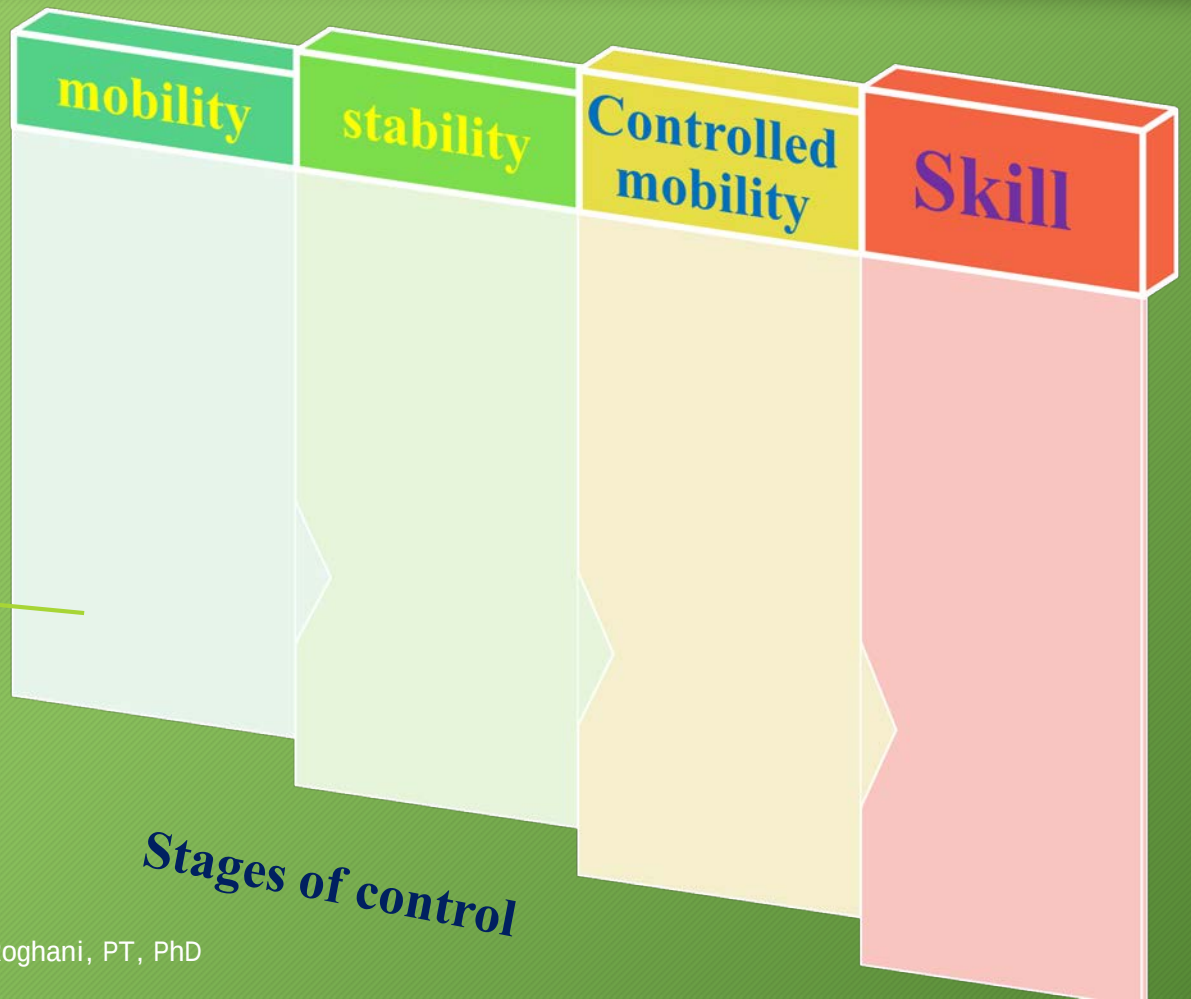
Balance

Static & dynamic postural control

- Impairment-based approach
- In-depth diagnostic assessment

Framework (evaluation part):

Activities:
Postures and movements



INTRODUCTION

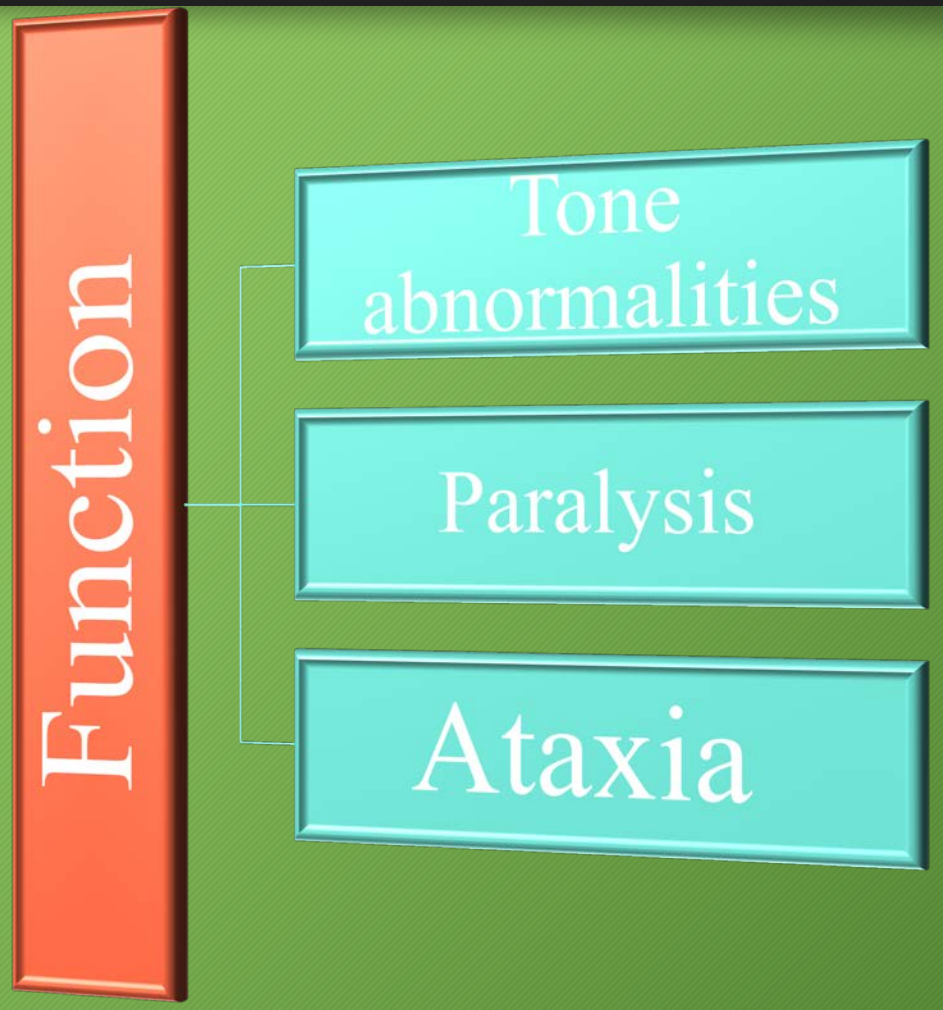
✓ **underlying theories challenge treatment:**

❖ **motor learning → how therapist plans his way of treatment**

- **Cognitive stage = what to do**
- **Associative stage = how to do**
- **Autonomous/ automatic stage = how to succeed**

Important factors:
Feedback
Practice

Impairment- based approach:



Impairment- based approach:

- Tone
  - Techniques
    - Active:
      - PNF
      - Bobath approach
    - Passive:
      - Rood approach
  - Agents
    - Thermal agents
    - Electrical stimulation

Impairment- based approach:

- The most appropriate form of therapy: **Functional rehabilitation**

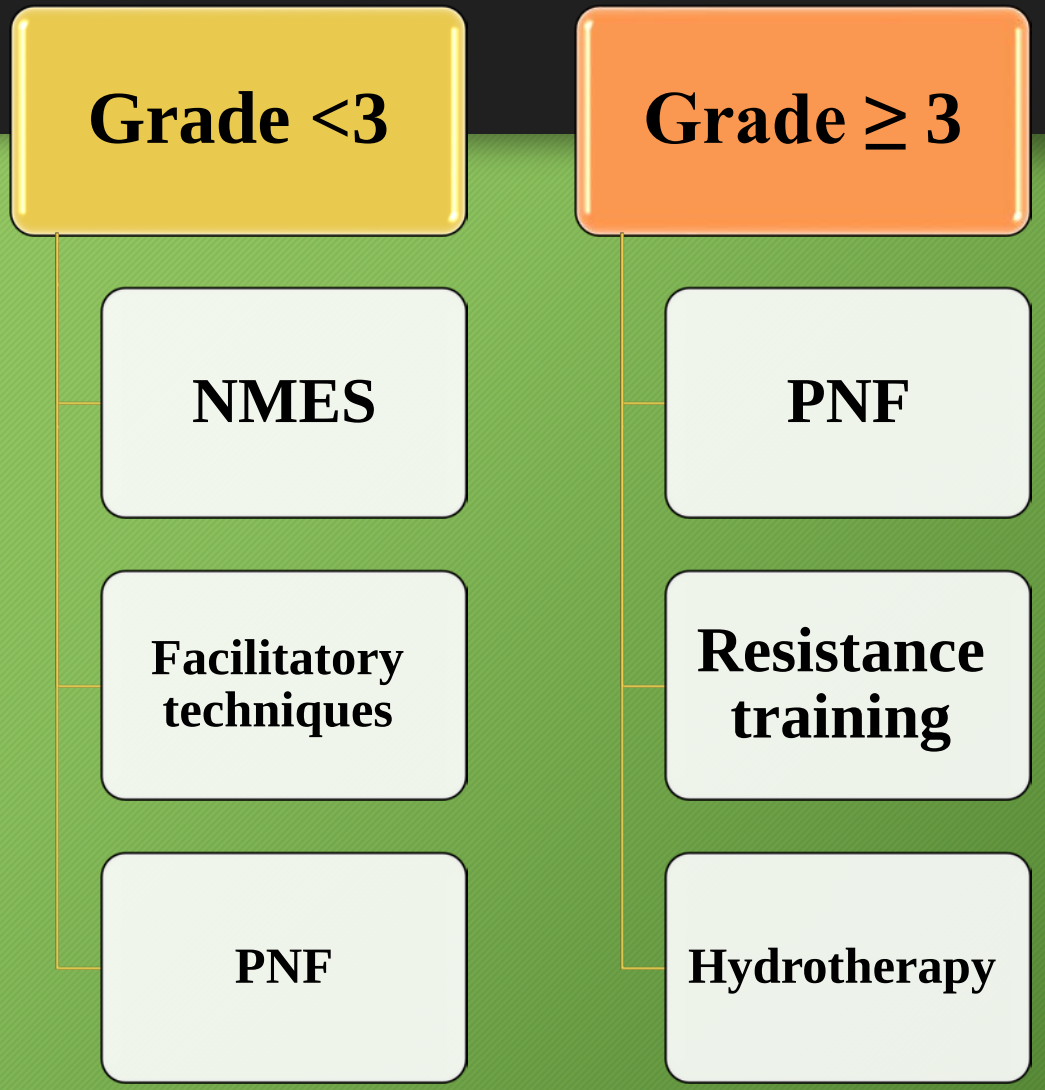
- Methods:
  - ❖ Proprioceptive Neuromuscular Facilitation (PNF)
  - ❖ Bobath Neurodevelopmental Treatment (NDT)

Active inhibition of spasticity is more effective and better than passive stretch of muscle

Use & efficiency of these methods has been confirmed in evidence based medicine

Impairment- based approach:

Muscle weakness



Ataxic person:

- Exercises:
- coordination & control of movement exercises

- Proprioceptive training

- Light weights on extremities

Impairment- based approach:

- Balance training:
- Static & dynamic postural control exercises
- Aquatics exercises
- Pilates
- Vestibular exercises
- Hippotherapy

Impairment- based approach:

- **Neurogenic bladder dysfunction:**

✓ **pelvic diaphragm muscle exercises:**

✓ **Kegel isometric exercises**

✓ **Enhancement of deep muscles such as transversus abdominis**

Other muscular groups:

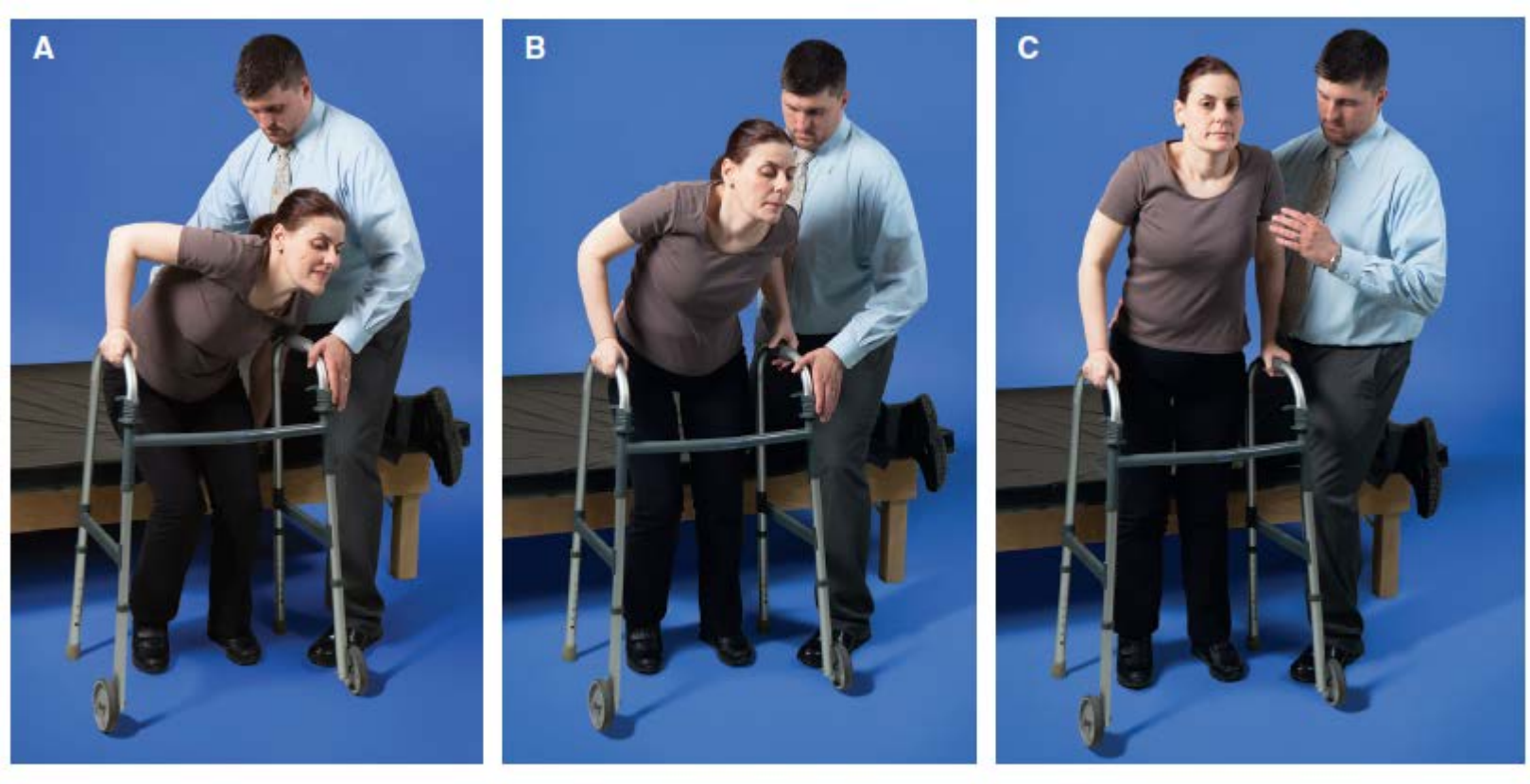
gluteal muscles, the adductor muscles

Agents: EMG biofeedback, NMES

Impairment- based approach:

- Gait training:
- Prerequisites → normalize of muscle tone, improvement of muscle function and postural control
- **Sit-to-stand movement transition is an important component of pre-gait/gait training**

Impairment- based approach:



Gait training:

Walking on a treadmill with body weight relief

The improvement of gait parameters
Increases strength and endurance of the muscles of the lower limbs

Gait training:

Impairment- based approach:

- Respiratory function:
  - breathing exercises
  - Early mobilization

physical activities 2–3 times per week
an intensity of 50–70% of VO2max (60–80% of maximum heart rate)
initial period:40 min

- Aerobic endurance:

Weeks or even months
Treadmill or cycloergometer


Conclusion

Thank you so much

If you any question:
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