

# Therapeutic Exercise

## Foundational Concepts

CHAPTER

1

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General Concepts

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# Therapeutic exercise

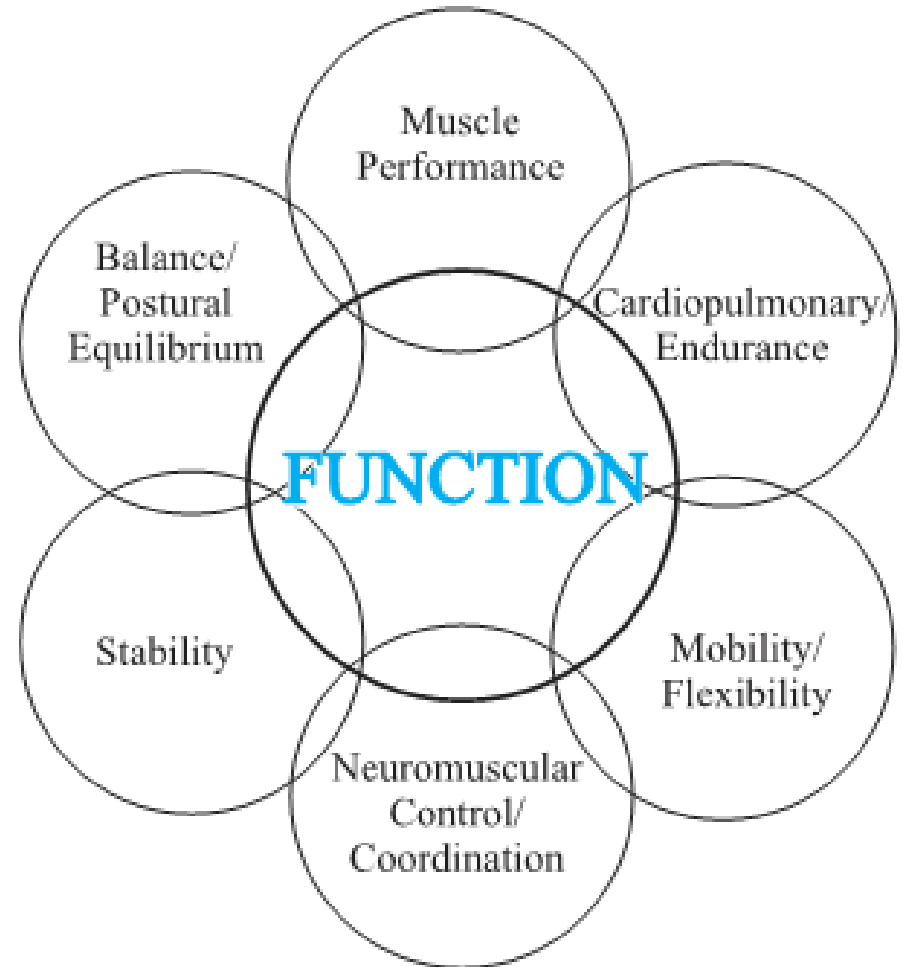
- Therapeutic exercise is the **systematic, planned** performance of **bodily movements, postures, or physical activities** intended to provide a **patient/client** with the means to:
  - Remediate or prevent impairments.
  - Improve, restore, or enhance physical function.
  - Prevent or reduce health-related risk factors.
  - Optimize overall health status, fitness, or sense of well-being

# PATIENT VRS CLIENT

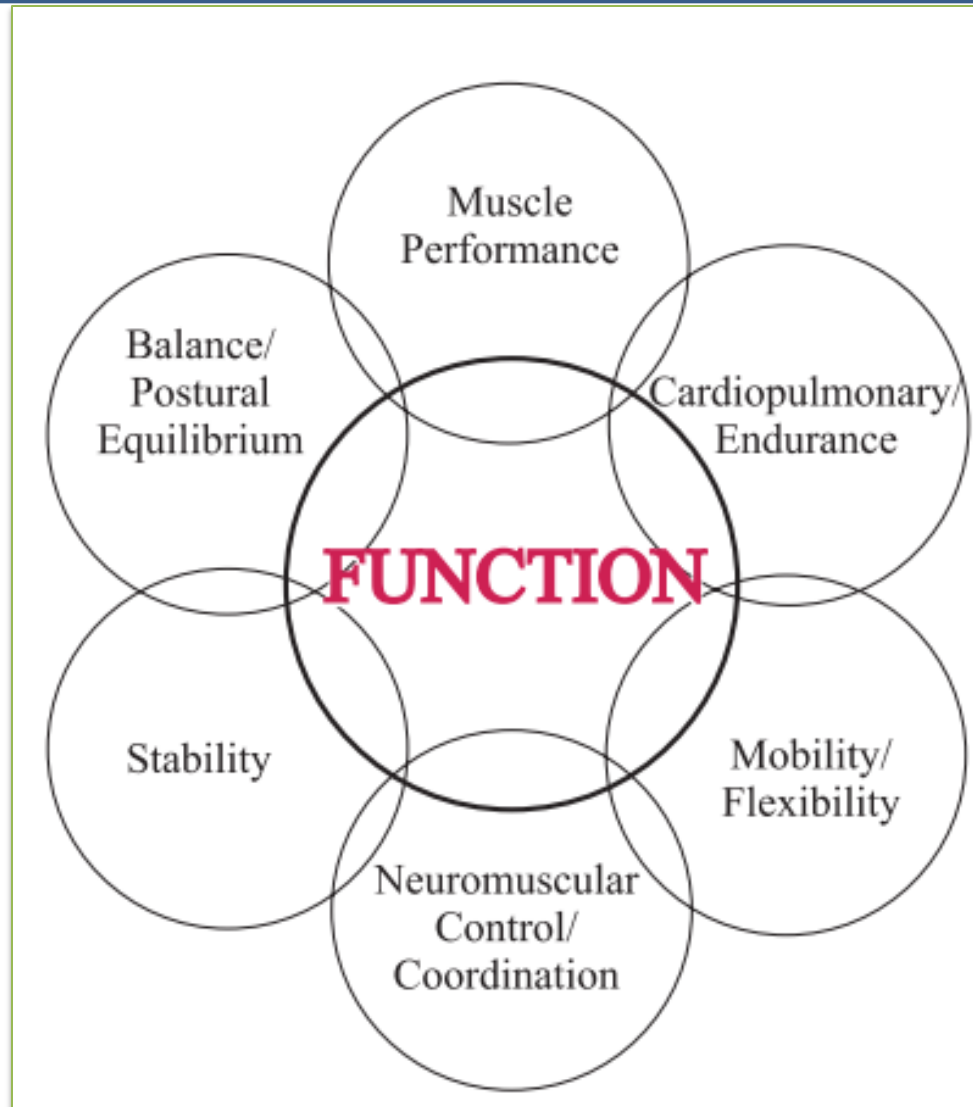
- A **patient** is an individual with **impairments and functional deficits** diagnosed by a physical therapist and is receiving physical therapy care to improve function and pre-vent disability.
- A **client** is an individual without diagnosed dysfunction who engages in physical therapy services **to promote health and wellness** and to prevent dysfunction

# Aspects of Physical Function

The ability to function independently at home, in the workplace, within the community, or during leisure and recreational activities is contingent upon **physical** as well as **psychological** and **social** function.



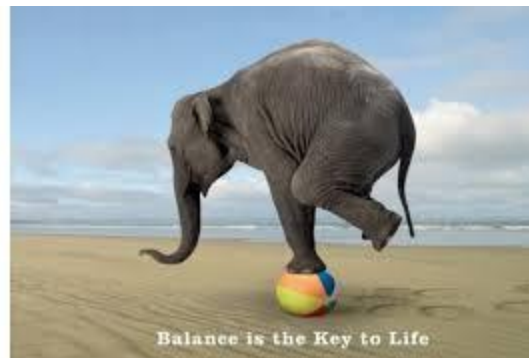
# Components of Physical Function



# Balance

The ability to align body segments against gravity to maintain or move the body (center of mass) within the available base of support without falling;

**The ability to move the body in equilibrium with gravity via interaction of the sensory and motor systems**



# Cardiopulmonary fitness

- The ability to perform moderate-intensity, repetitive, total body movements (walking, jogging, cycling, swimming) over an extended period of time



# Coordination

- The correct timing and sequencing of muscle firing combined with the appropriate intensity of muscular contraction leading to the effective initiation, guiding, and grading of movement.
- Coordination is the basis of smooth, accurate, efficient movement and occurs at a conscious or automatic level.





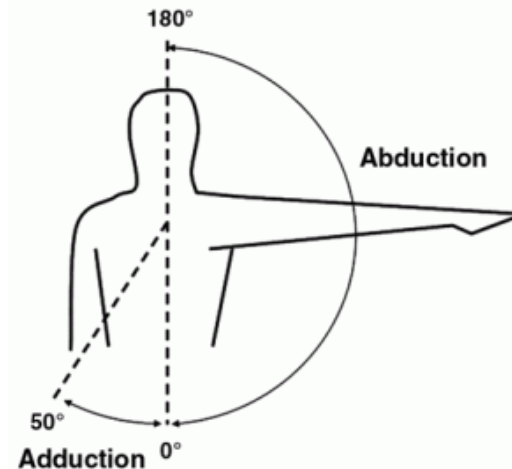
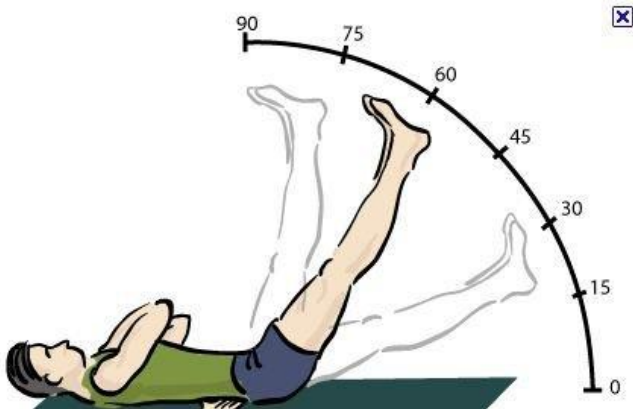
# Flexibility

The ability to move freely, without restriction;  
used interchangeably with mobility



# Mobility

- The ability of structures or segments of the body to move or be moved in order to allow the occurrence of range of motion (ROM) for functional activities (functional ROM).
- **Passive mobility** is dependent on soft tissue (contractile and noncontractile) extensibility
- **Active mobility** requires neuromuscular activation.



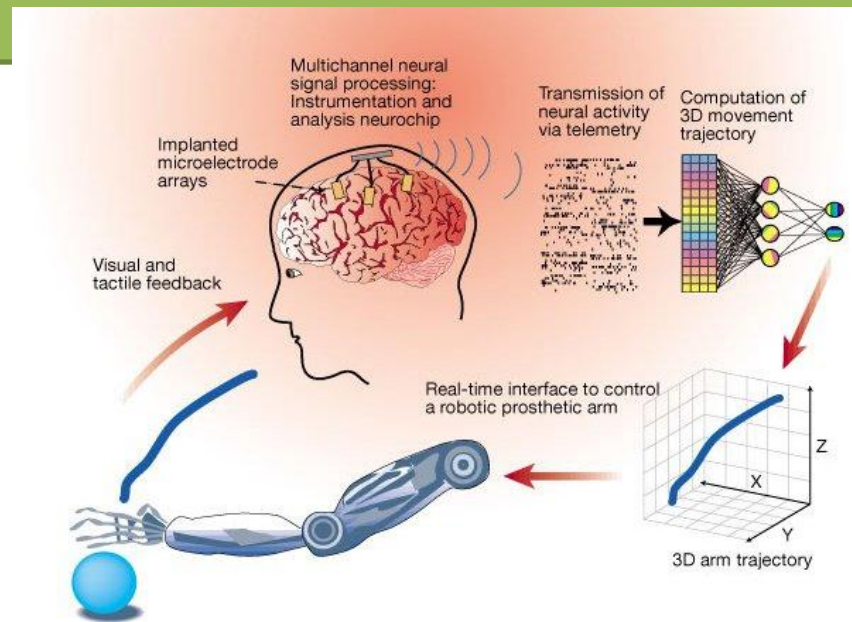
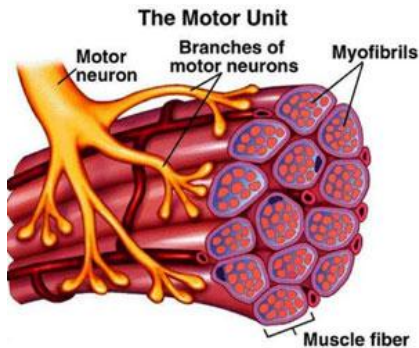
# Muscle performance

The capacity of muscle to produce tension and do physical work. Muscle performance encompasses strength, power, and muscular endurance



# Neuromuscular control

- Interaction of the **sensory and motor systems** that enables synergists, agonists and antagonists, as well as stabilizers and neutralizers to anticipate or respond to **proprioceptive and kinesthetic information** and, subsequently, to work in correct sequence to create coordinated movement.

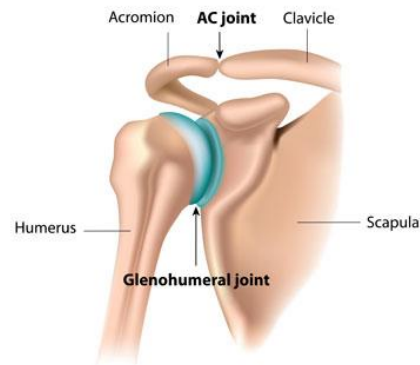


- Postural control, postural stability, and equilibrium.
- Used interchangeably with static or dynamic balance



# Stability

- The ability of the neuromuscular system through synergistic muscle actions to hold a proximal or distal body segment in a stationary position or to control a stable base during superimposed movement.



# Types of Therapeutic Exercise Interventions

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## **BOX 1.1 Therapeutic Exercise Interventions**

- Aerobic conditioning and reconditioning
- Muscle performance exercises: strength, power, and endurance training
- Stretching techniques including muscle-lengthening procedures and joint mobilization/manipulation techniques
- Neuromuscular control, inhibition, and facilitation techniques and posture awareness training
- Postural control, body mechanics, and stabilization exercises
- Balance exercises and agility training
- Relaxation exercises
- Breathing exercises and ventilatory muscle training
- Task-specific functional training



# Exercise Safety

- Specific
- Detail history and examination
- Indication and contra indication
- Environment and space

# Exercise safety

- Patient safety
- Physiotherapist safety