SNS COLLEGE OF PHYSIOTHERAPY
COIMBATORE-35

COURSE NAME : BPT., Physiotherapy IV Year
SUBJECT : Exercise Therapy II
UNIT : II
TOPIC : Balance Exercises
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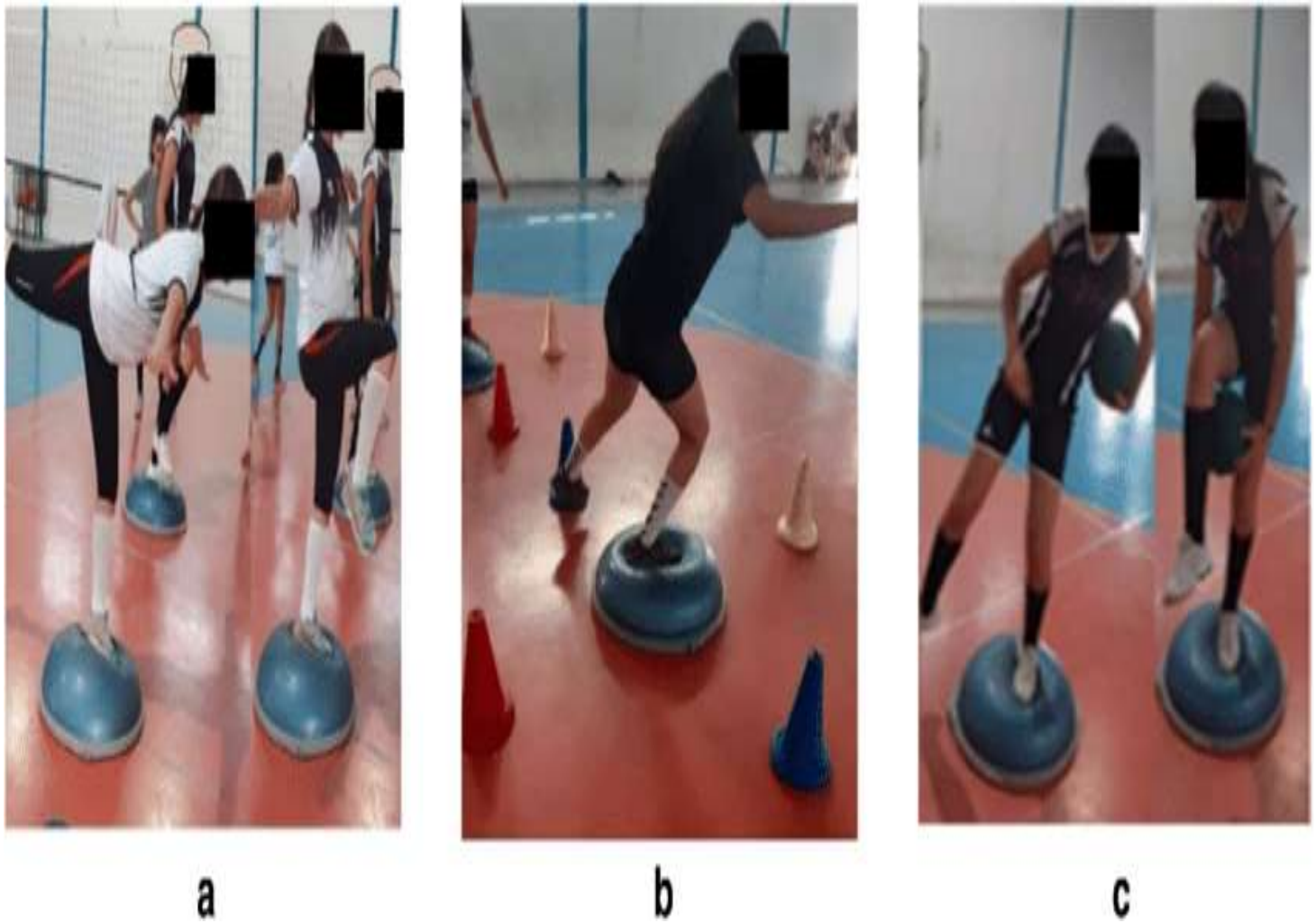
Definition & Importance of Balance

- Balance: Ability to maintain the body's center of gravity within the base of support
- Essential for maintaining posture, mobility, and functional independence
- Dependent on sensory, motor, and cognitive systems

Types of Balance

- Static Balance – maintaining position without movement
- Dynamic Balance – maintaining stability during movement
- Proactive Balance – anticipatory postural adjustments
- Reactive Balance – responding to external perturbations



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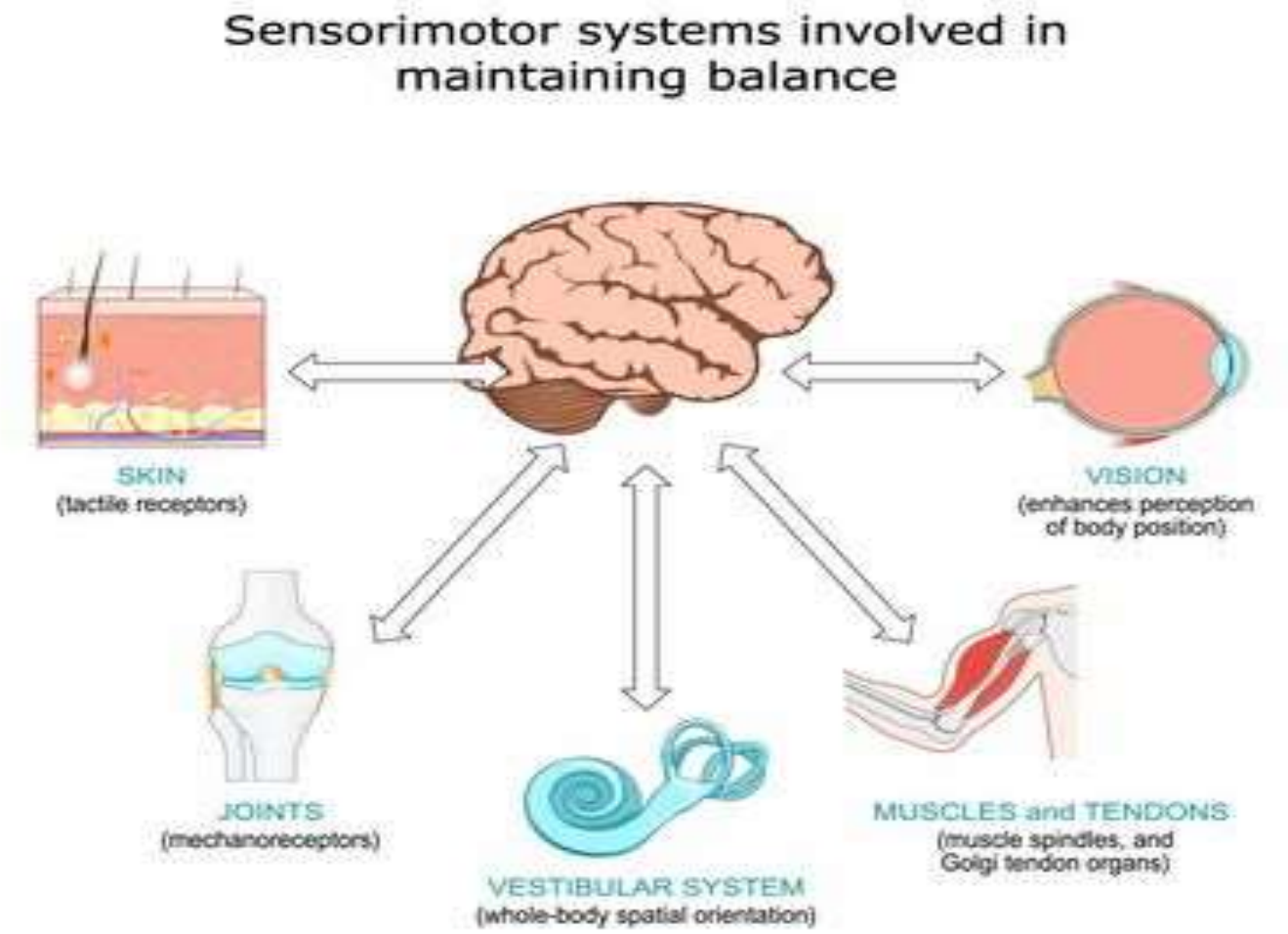
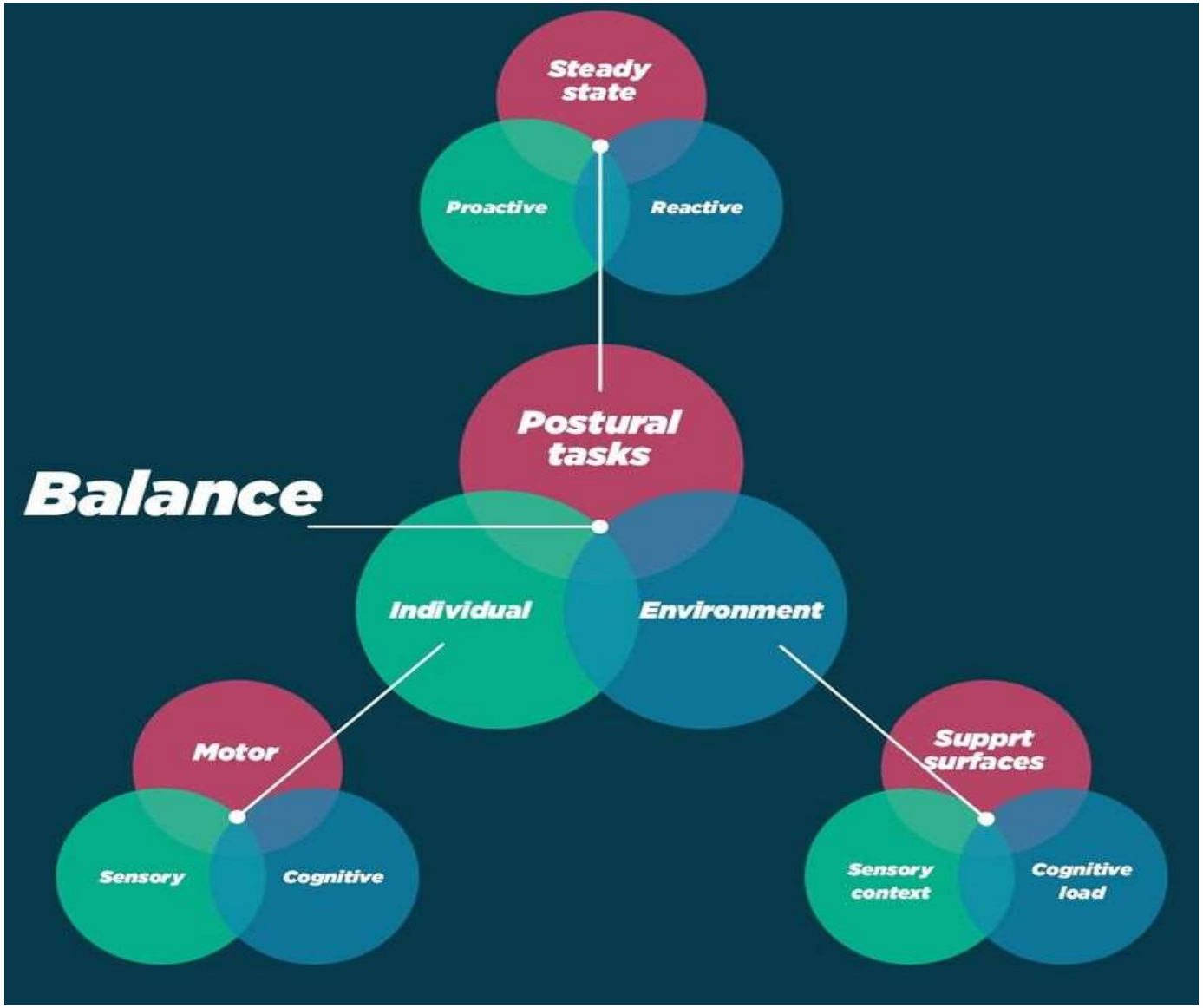
Physiological Systems Involved

- Visual system – provides environmental orientation
- Vestibular system – detects head motion and position
- Somatosensory system – feedback from muscles and joints
- Motor system – executes corrective actions



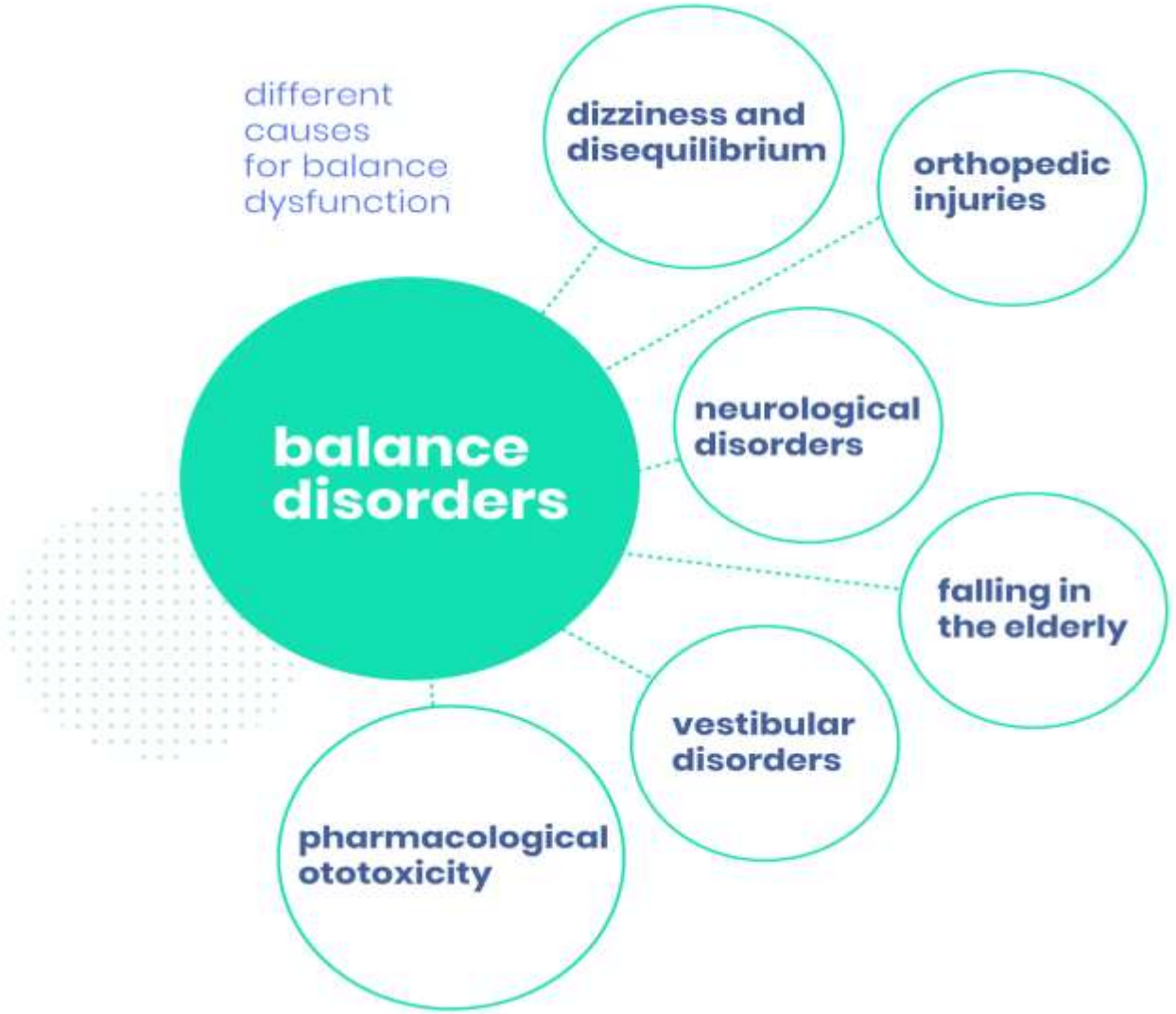
Balance Control Mechanisms

- Sensory organization and integration
- Motor coordination and muscle activation patterns
- Feedback and feedforward postural adjustments



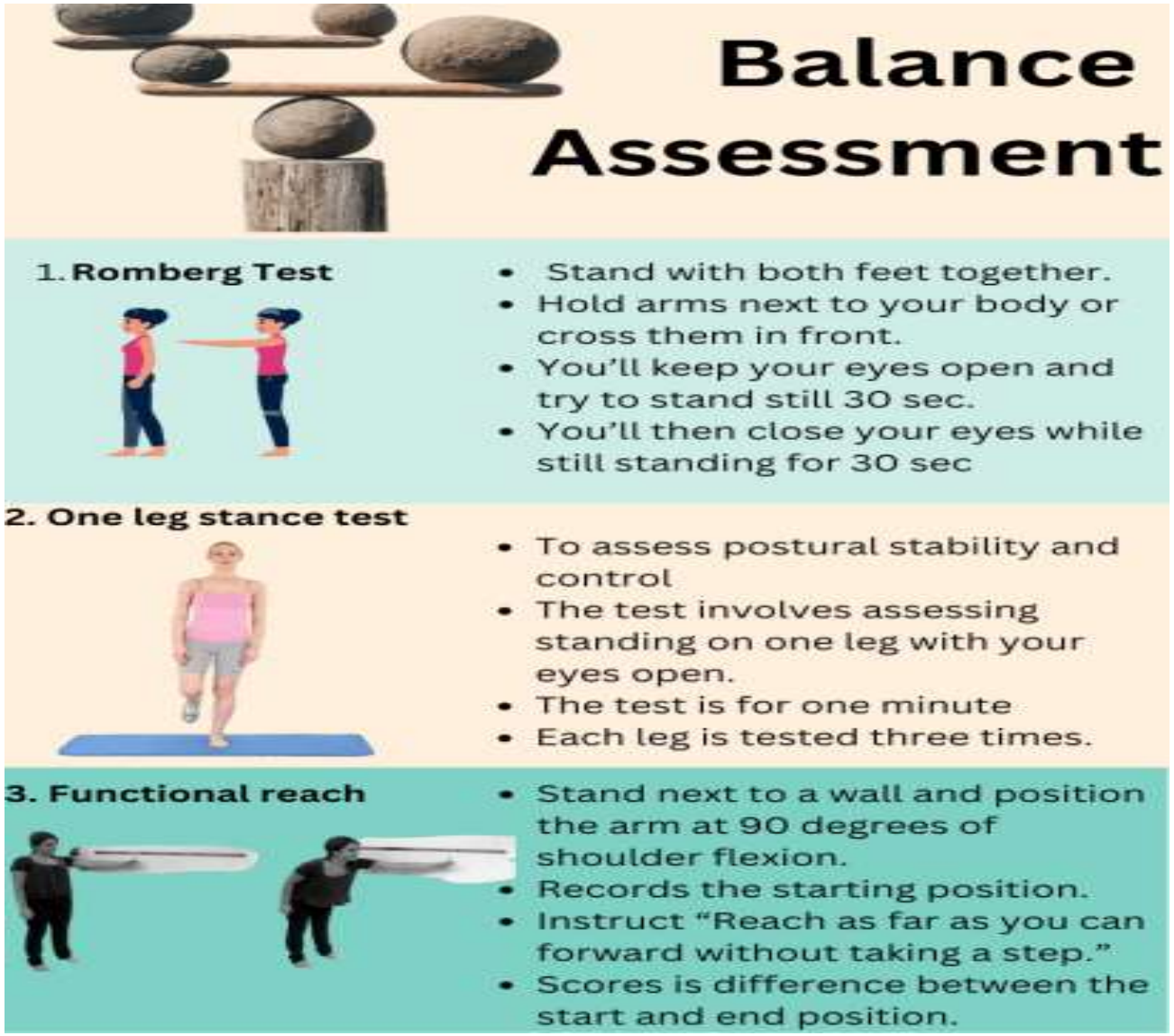
Causes of Balance Impairment

- Neurological disorders (stroke, Parkinson's, cerebellar lesions)
- Musculoskeletal weakness or joint limitations
- Sensory loss (visual, vestibular, or proprioceptive)
- Aging, medication, or fear of falling



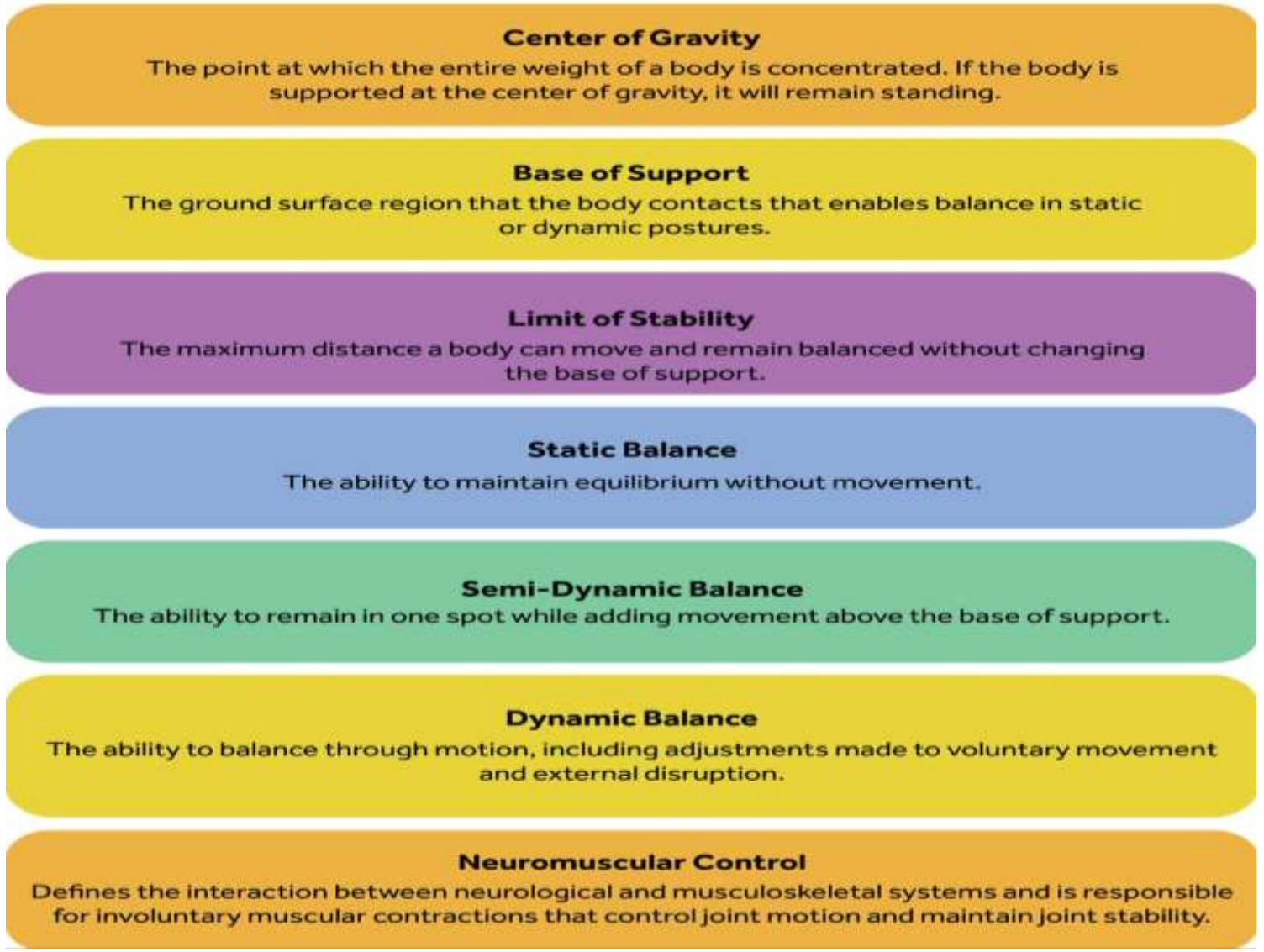
Assessment of Balance

- Static tests – Romberg, Single-leg stance, Sharpened Romberg
- Dynamic tests – Timed Up and Go (TUG), Functional Reach Test
- Clinical Scales – Berg Balance Scale, Dynamic Gait Index
- Instrumented assessment – force platforms, posturography



Principles of Balance Training

- Task specificity and functional relevance
- Progressive challenge to sensory and motor systems
- Variety of practice environments and postures
- Emphasis on safety and patient confidence



Stages of Balance Training

- Stage 1: Static control – sitting, standing on stable surface
- Stage 2: Dynamic control – reaching, stepping, weight shifting
- Stage 3: Functional tasks – walking, stair climbing, turning
- Stage 4: Dual-task and perturbation training

Balance Training Techniques

- Stability ball and wobble board exercises
- Tandem and single-leg stance activities
- Dynamic stepping and obstacle navigation
- Perturbation and sensory integration exercises

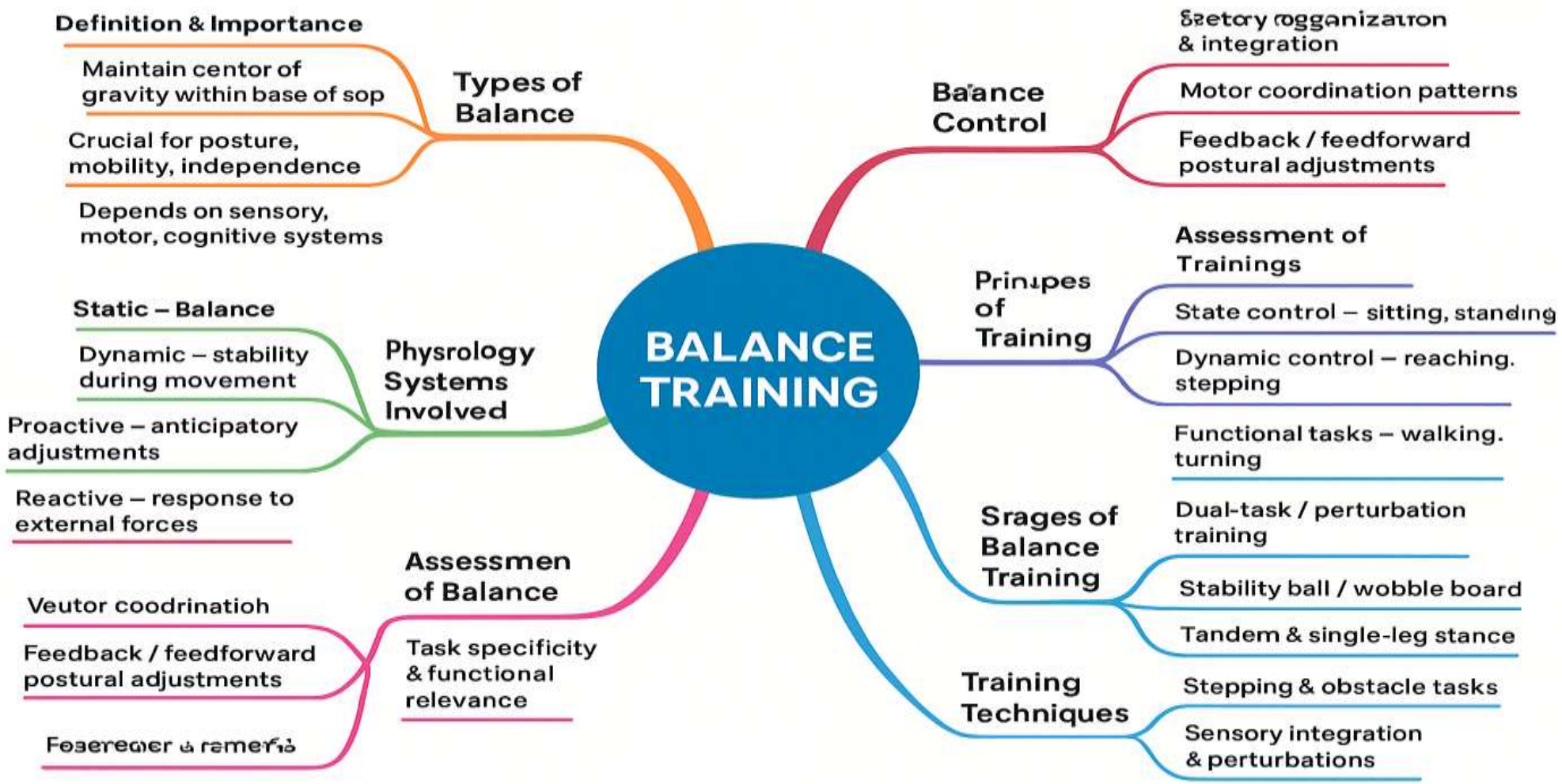
Precautions & Safety Measures

- Ensure therapist supervision during challenging activities
- Use gait belt or parallel bars for safety
- Monitor fatigue, dizziness, and fear
- Start simple, progress gradually

Case Example

- Patient: 68-year-old female post-stroke with balance instability
- Assessment: Berg score 30/56, TUG 18 sec
- Intervention: balance board, reach tasks, dual-task walking
- Outcome: improved Berg score to 45/56, increased confidence

MIND MAP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Tandem & single-leg stance
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Stepping & obstacle tasks
Sensory integration & perturbations