SNS COLLEGE OF PHYSIOTHERAPY
COIMBATORE-35

COURSE NAME : BPT., Physiotherapy IV Year
SUBJECT : Exercise Therapy II
UNIT : III
TOPIC : Co-ordination Exercises
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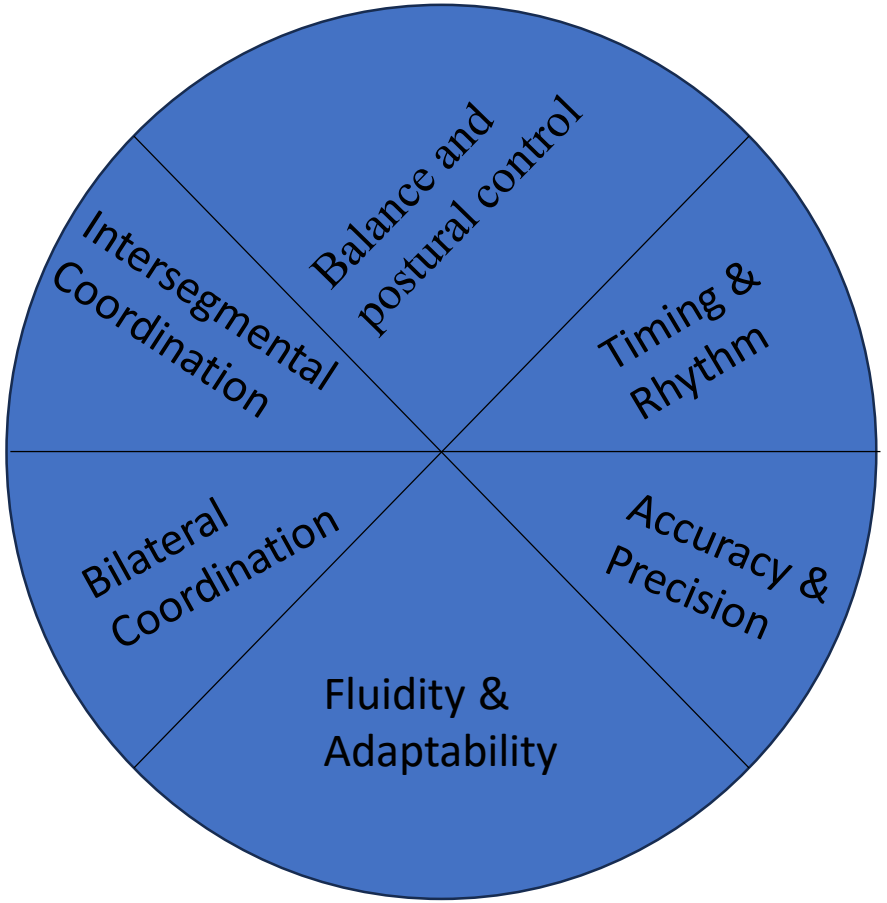
What is Coordination?

- The ability to perform smooth, accurate, controlled motor responses
- Integration of sensory input, central processing, and motor output
- Includes timing, sequencing, force regulation, spatial accuracy

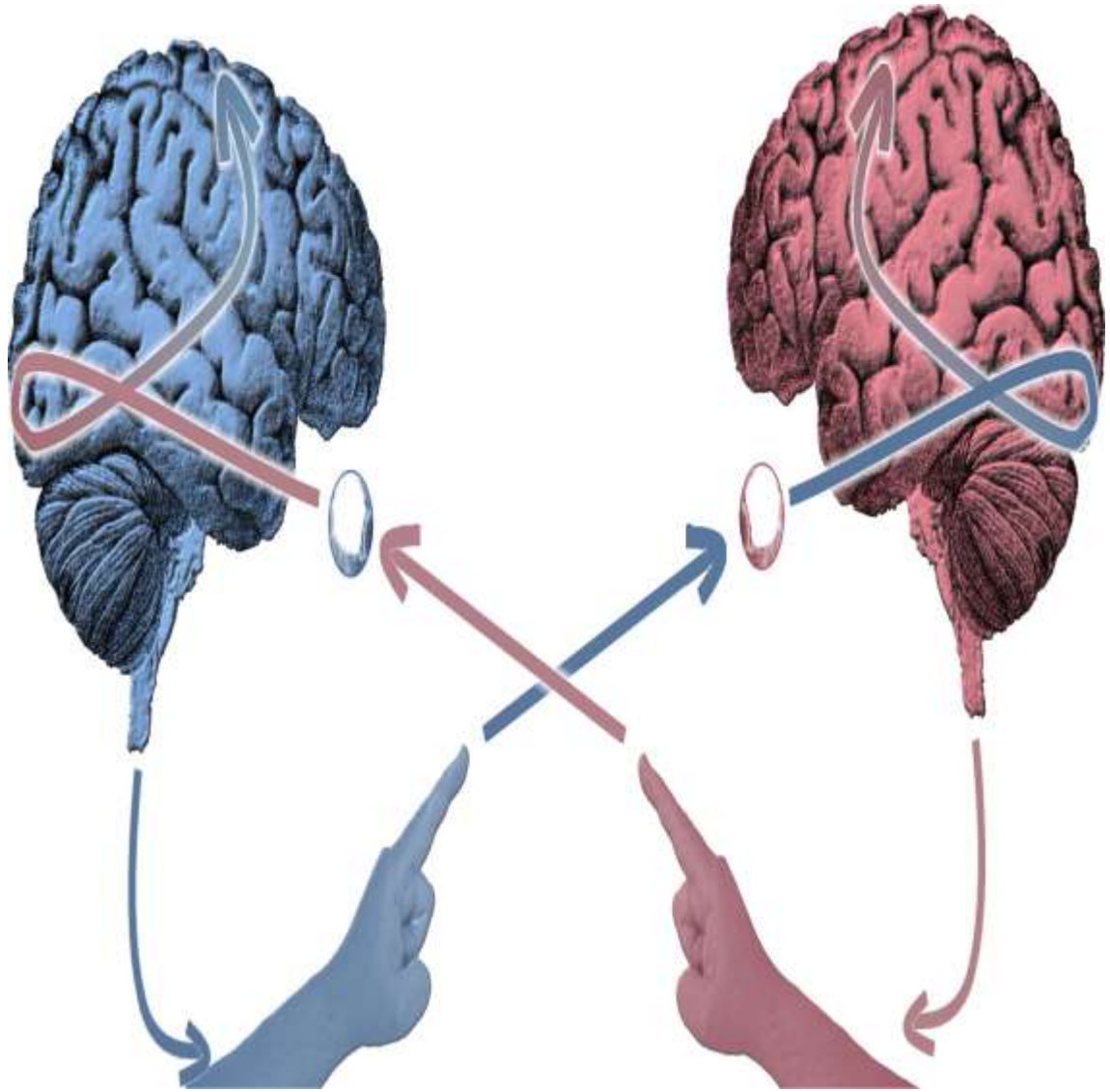
Key Components

- Balance and postural control
- Timing and rhythm
- Accuracy and precision
- Fluidity and adaptability
- Bilateral and intersegmental coordination



Neurophysiological Basis

- Sensorimotor integration: proprioception, vision, vestibular inputs
- Motor planning: premotor and supplementary motor areas
- Execution and timing: cerebellum, basal ganglia, motor cortex
- Feedback (reactive) and feedforward (anticipatory) control

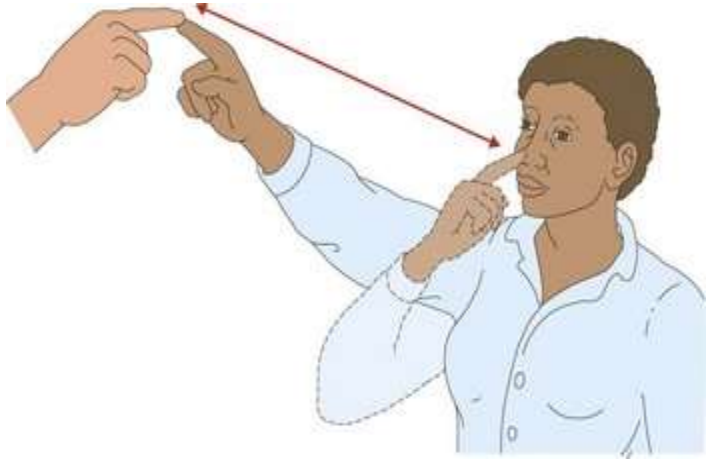


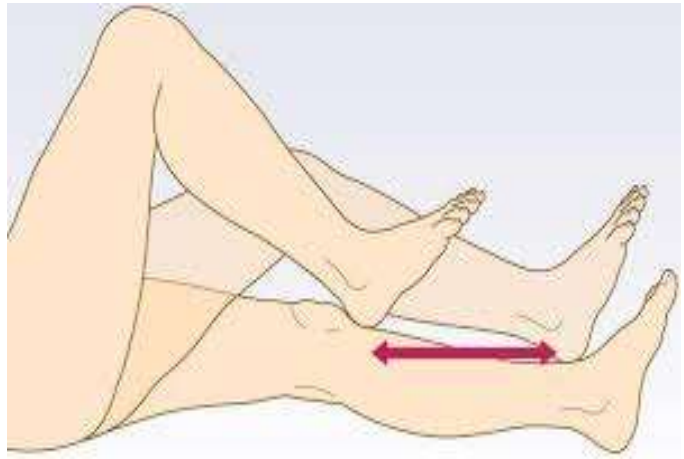
Types of Coordination Impairment

- Ataxia — inaccuracy, dysmetria, decomposition of movement
- Dysdiadochokinesia — impaired rapid alternating movements
- Apraxia — impaired motor planning (not due to weakness)
- Incoordination due to sensory loss (peripheral neuropathy)

Clinical Assessment: Bedside Tests

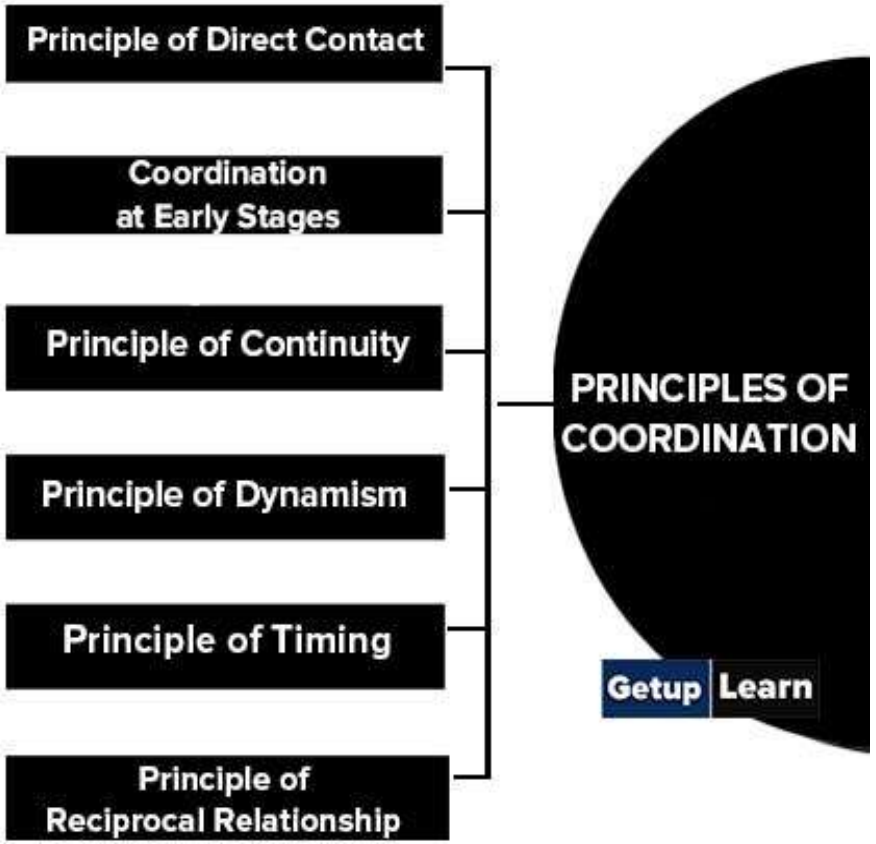
- Finger-to-nose and heel-to-shin tests
- Rapid alternating movements (RAM) / Pronation-supination
- Tandem walk and heel-to-toe gait
- Timed Up and Go (TUG) with dual task





Principles of Training

- Task specificity and functional relevance
- Progressive challenge and variability
- High repetition with feedback (knowledge of performance/outcome)
- Incorporate sensory cues (visual, auditory, proprioceptive)
- Combine static and dynamic tasks; include dual-tasking

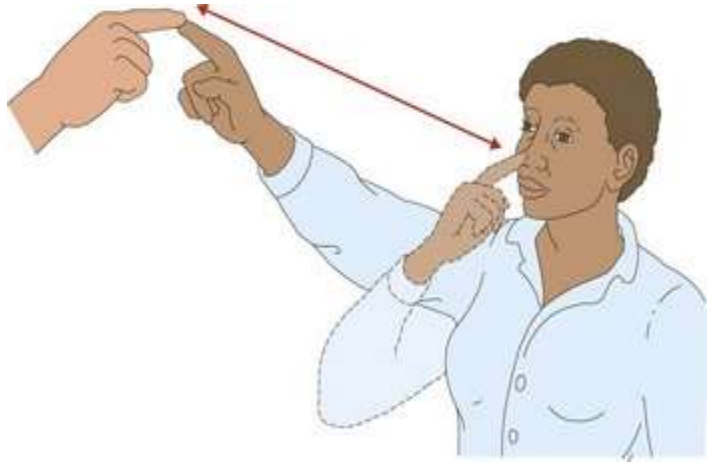


Training Approaches

- Balance and postural control exercises (static → dynamic)
- Task-oriented and functional training (sit-to-stand, reaching)
- Rhythmic cueing and metronome-guided practice
- Constraint-induced and repetitive task practice for hand coordination
- Use of equipment: balance boards, therapy balls, ladders, cones

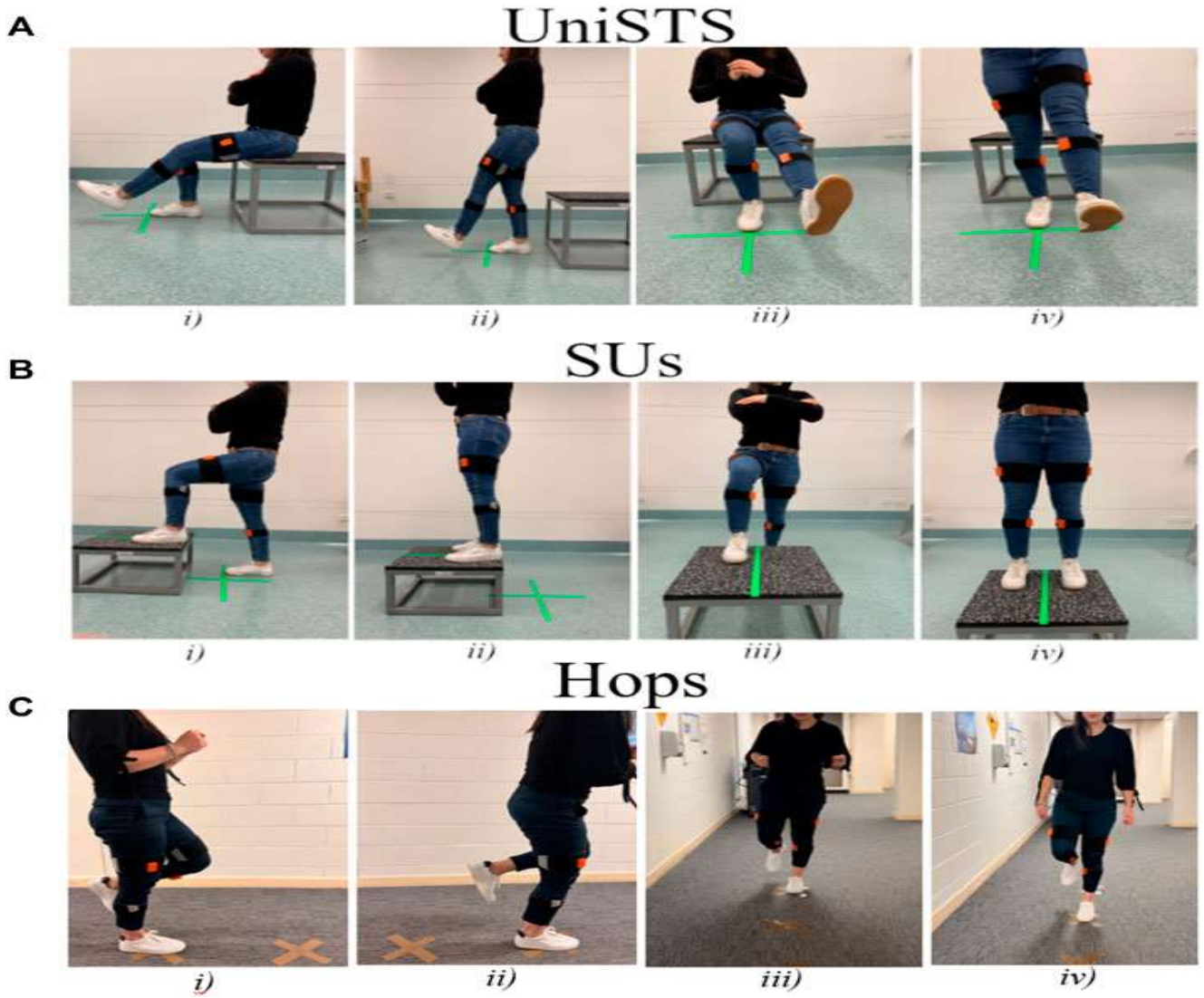
Exercises — Upper Limb

- Finger-to-nose progression: slow → fast → eyes closed
- Pegs/coins transfer and tray tasks (speed & accuracy)
- Ball toss against wall: varying distances and heights
- Mirror therapy and visuomotor tasks for proprioceptive deficits



Exercises — Lower Limb & Gait

- Tandem stance → single-leg stance → perturbation drills
- Agility ladder drills: emphasis on foot placement and rhythm
- Stepping over obstacles and variable surface walking
- Dual-task gait training: count backwards while walking



Sample 60-min Session Plan

- Warm-up (10 min): gentle ROM, marching, dynamic reach
- Focused coordination block (25–30 min): targeted tasks & progressions
- Functional integration (10–15 min): sit-to-stand, gait/transfer practice
- Cool-down & education (5 min): feedback, home exercise prescription

Progression & Dosing

- Start with simple, slow tasks → increase speed and complexity
- Manipulate sensory input (eyes open → closed), base of support, attention load
- Repetitions: many short trials rather than one long attempt
- Frequency: daily or multiple sessions per week depending on goal

Case Example

- Patient: 55-yr M with left cerebellar stroke — ataxic limb movements
- Assessment highlights: dysmetria on finger-to-nose, impaired tandem gait
- Plan: metronome-guided reaching, balance board sessions, pegboard practice
- Expected outcomes: improved accuracy, reduced fall risk, functional gains

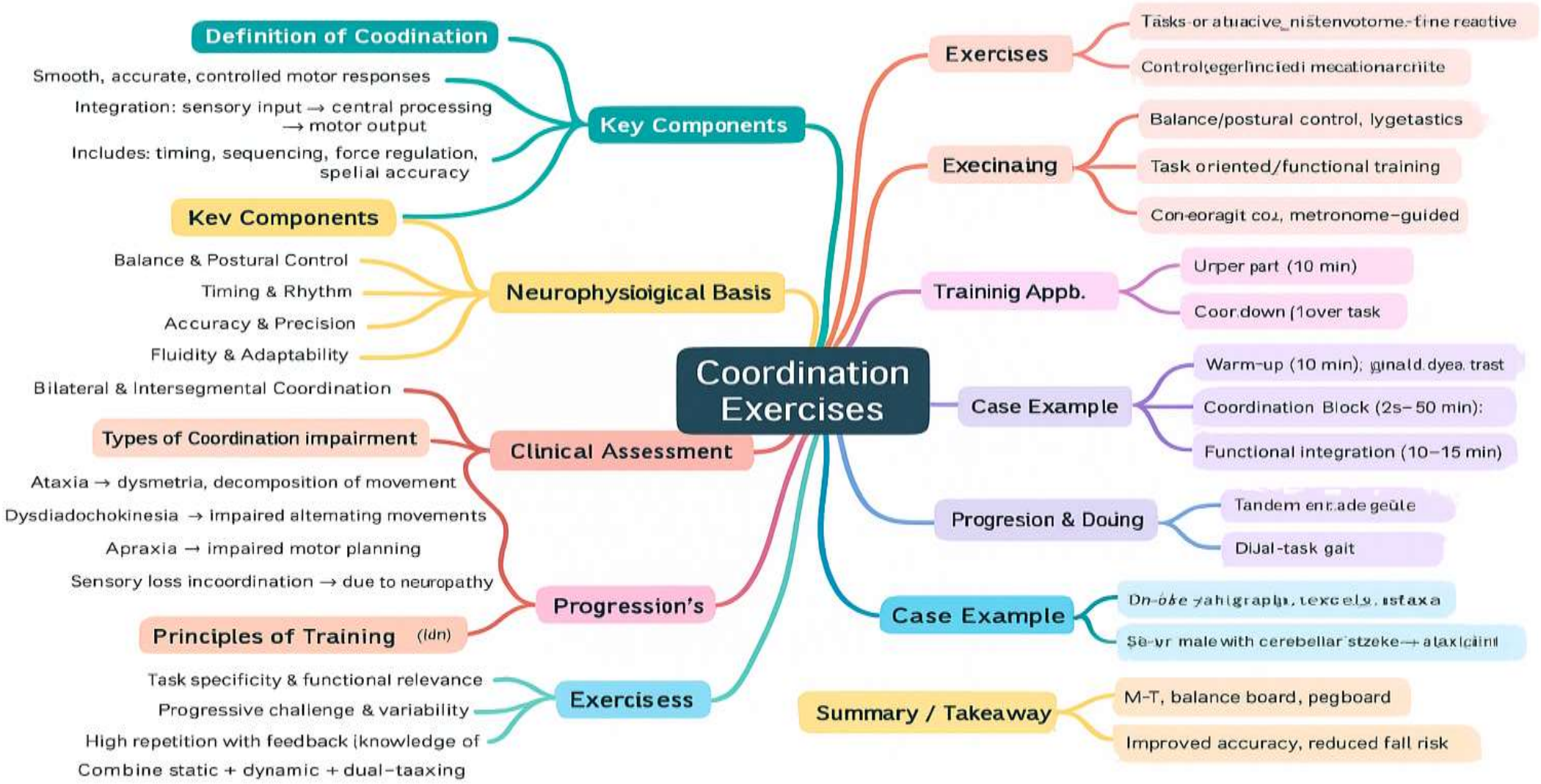
Precautions & Safety

- Monitor for fatigue, dizziness, and increased ataxia with haste
- Avoid high-risk tasks without proper guarding or harness
- Modify for cardiovascular or orthopedic limitations
- Document adverse responses and adjust training intensity

Summary — Takeaways

- Coordination = integrated sensorimotor control; vital for independence
- Assess with simple bedside tests and standardized outcome measures
- Train with task-specific, repetitive, progressively challenging activities
- Safety, individualization, and objective measurement are essential

MIND MAP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Summary / Takeaway
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