Key Movement Observations and Test Findings to Rule in a Balance Diagnosis: Deficit in Steady State Postural Control

ANPT Movement System Diagnoses for Balance Dysfunction Knowledge Translation Task Force
Handout created by:
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Steady State Postural Control
Ability to control the location of the body's center of mass within the base of support during unchanging postures

Postural Movement Strategy

Task modifications: changes in BOS

Key movement observations: wider BOS, increased postural sway, need for UE support to maintain position, adjustment of alignment to lower COM or increase stability (e.g lock knees)

Key test findings: Impaired tone, coordination, reflexes, muscle performance, ability to fractionate movement.

Key OM items: Movement Assessment Scale (sitting balance), BBS (#2,6,7,13,14), FIST (static sitting), PASS (#1-5), miniBEST (#3,7)

Sensory processing

Task modifications: changes in sensory input (i.e. eyes closed, compliant surface)

Key movement observations: increased postural sway, need for UE support to maintain position, change in alignment by tilting head

Key test findings: impaired sensory weighing (mCTSIB), sensation, vision, gaze stability

Key OM items: FIST (eyes closed item), miniBEST (#8)

Balance Confidence

Environmental modifications: place the individual near a wall or other support.

Key movement observations: Grasping of external supports. Provocation of fear, anxiety, dizziness. Change in ability to maintain static position when completing the task near an available UE support.

Key test findings: Increase in RR, HR, and/or BP; autonomic nervous system changes.

Perception of Verticality

Environmental modifications: position the individual on an incline

Key movement observations: lateral, posterior or anterior lean away from vertical, resistance to maintain midline

Key test findings: atypical performance on the Scale for Contraversive Pushing or Burke Lateropulsion Scale (sitting and standing items)

Key OM items: miniBEST (item #9)

Multi-tasking

Task modifications: Additions of a secondary task (motor or cognitive).

Key movement observations: task performance of the primary or secondary task worsens compared to single task, cues needed to maintain attention to the task, inability to complete both tasks simultaneously.

Key test findings: cognitive measures such as the MOCA, SLUMS, mini mental status may indicate deficits in executive function. This is NOT necessary for the diagnosis

Key OM items: dual-task assessment

 Gill-Body KM, Hedman LD, Plummer L, et al. Movement System Diagnoses for Balance Dysfunction: Recommendations From the Academy of Neurologic Physical Therapy's Movement System Task Force. *Phys Ther*. 2021;101(9):pzab153. doi:10.1093/ptj/pzab153

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Key Movement Observations and Test Findings to Rule in a Balance Diagnosis: Deficit in Anticipatory Postural Control

ANPT Movement System Diagnoses for Balance Dysfunction Knowledge Translation Task Force
Handout created by:
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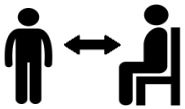
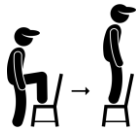
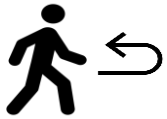




Anticipatory Postural Control
Ability to generate postural adjustments prior to the onset of and during voluntary movement



Postural Movement Strategy

- **Task modifications:** variation in complexity of the task by changing speed, BOS.
- **Key movement observations:** Delay in initiation, impaired sequencing, atypical movement amplitude, atypical postural sway or BOS at termination
- **Key test findings:** Impaired tone, coordination, reflexes, muscle performance, ability to fractionate movement.
- **Key OM items:** FGA, DGI, BBS (# 1,4,5, 8-14), miniBEST (#1-3, 10-13), 5 x STS, FRT, TUG, PASS (#6-12)

Sensory processing

- **Task modifications:** Systematic alterations in sensory input (i.e. eyes closed, compliant surface)
- **Key movement observations:** delay in initiation, atypically slow or fast through execution, atypical sway and BOS at termination.
- **Key test findings:** impaired sensory integrity, vision, gaze stability, dizziness with head turning/tilting or in visually complex environments, vertigo and nystagmus with positional testing (Dix Hallpike and roll test)
- **Key OM items:** DGI (#3-4), FGA (#3-4, 8-9), BBS (#6-8), miniBEST (#7-9).

Balance Confidence

- **Environmental modifications:** place the individual near a wall or other support.
- **Key movement observations:** Grasping of external supports. Provocation of fear, anxiety, dizziness. Change in ability to maintain static position when completing the task near an available UE support. Abilities do not match their self efficacy.
- **Key test findings:** Increase in RR, HR, and/or BP; autonomic nervous system changes.
- **Key OM items:** ABC, Falls Efficacy Scale

Perception of Verticality

- **Environmental modifications:** none needed. Focus on correcting alignment to vertical and assess resistance to movement.
- **Key movement observations:** pushing lateral, posterior or anterior from midline during the task.
- **Key test findings:** atypical performance on Burke Lateropulsion Scale (supine, transfers, and walking items)

Multi-tasking

- **Task modifications:** Add a secondary motor or cognitive task and compare performance in single vs dual-task.
- **Key movement observations:** variability in task performance, need for cues to maintain attention, inability to perform both tasks simultaneously.
- **Key test findings:** impaired executive function might be present in tests such as MOCA, SLUMS, mini mental status. This is NOT necessary for the diagnosis
- **Key OM items:** TUGcog, TUGmanual, mini BEST (#14), DGI (#3-4), FGA (#3-4).

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Key Movement Observations and Test Findings to Rule in a Balance Diagnosis: Deficit in Reactive Postural Control

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Reactive Postural Control
Ability to respond to an unexpected internal or external perturbation without a fall or need for external support

Postural Movement Strategy

Task modifications: vary the speed or BOS to induce a need to recover balance. Should see greater difficulty regaining balance when progressions are applied.

Key movement observations: Loss of balance with inability to regain equilibrium, premature stepping response, >2 steps needed to recover, ineffective stepping (delayed, slow, or too small)

Key test findings: Impaired ability to fractionate movement, inter or intralimb coordination

Key OM items: Push and release test, lean and release test, miniBEST test (#4-6), FIST (#1-3)

Sensory processing

Task modifications: Systematic alterations in sensory input to induce a need to recover balance. Should see greater difficulty regaining balance when progressions are applied.

Key movement observations: Loss of balance with inability to regain equilibrium, premature stepping response, >2 steps needed to recover, ineffective stepping (delayed, slow, or too small)

Key test findings: impaired sensory integrity, visual acuity, depth perception, contrast sensitivity, gaze stability (DVA, HIT), sensory weighing (mCTSIB)

Key OM items: Push and release test, lean and release test, miniBEST test (#4-6), FIST (#1-3)

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