

Exercise Therapy

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Ataxic Gait

Definition

Ataxic gait is an abnormal gait characterized by uncoordinated, irregular and unsteady walking, with impaired balance and control of limb movements, commonly associated with cerebellar dysfunction or impaired proprioception.

Causes

- Cerebellar lesions or cerebellar degeneration.
- Sensory loss due to impaired proprioception.
- Peripheral neuropathy affecting joint position sense.
- Vitamin B12 deficiency causing posterior column dysfunction.
- Alcohol intoxication or other conditions affecting coordination.
- Neurological disorders such as multiple sclerosis.

Gait characteristics

- Wide base of support.
- Irregular and variable step length.
- Uncoordinated foot placement.
- Side-to-side swaying of the trunk.
- Poor balance and postural stability.
- Irregular walking rhythm and cadence.
- Difficulty walking in a straight line.
- Increased risk of falls.
- In sensory ataxia, a high-stepping or stamping pattern may be present.

Gait deviations

- Initial contact: Foot placement may be inaccurate or inconsistent.
- Loading response: Weight acceptance may be poorly coordinated.
- Mid stance: Trunk sway and instability may occur while maintaining single-limb support.
- Terminal stance: Forward progression and push-off may be poorly coordinated.
- Pre-swing: Transfer of weight to the opposite limb may be unsteady.
- Initial swing: The limb may be lifted excessively or move along an irregular trajectory.
- Mid swing: Foot placement and limb advancement may lack coordination.
- Terminal swing: The foot may be positioned inaccurately for the next step

Functional problems

- Difficulty walking on uneven surfaces.
- Difficulty turning or changing direction.
- Difficulty with tandem walking.
- Impaired balance during standing and walking.
- Increased risk of falls.
- Difficulty performing daily activities that require coordinated mobility.

Joint Movements During Gait: Sagittal, Frontal and Transverse Plane Motions

Gait Cycle Phases

Determinants of Gait

Gait Analysis: Definition, Spatial and Temporal Variables

Gait Cycle: Definition, Phases and Gait Analysis with Diagrams

Human Gait

Reference:

1. O'Sullivan SB, Schmitz TJ, Fulk GD. Physical Rehabilitation. Elsevier.
2. Magee DJ. Orthopedic Physical Assessment. Elsevier.

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