# Clinician Quick Reference: Gait Analysis

**Purpose:** To provide clinicians with a quick reference for gait analysis to allow for efficient identification of gait deviations that may be amenable to use of an AFO or FES.

| | Initial Contact (IC) | Loading Response (LR) | Mid Stance (MSt) | Terminal Stance (TSt) | Pre-Swing (PSw) | Initial Swing (ISw) | Mid Swing (MSw) | Terminal Swing (TSw) |
|---|---|---|---|---|---|---|---|---|
| Phase of gait | Moment when foot hits the ground | Weight is rapidly transferred onto limb and foot flat position is achieved | Trunk progresses from behind to in front of the ankle over a single stable limb | Trunk continues a forward progression relative to the foot. Heel rises from ground | Body weight rapidly unloads and is transferred to the contralateral limb | Thigh begins to advance as hip, knee, and foot rapidly flex to clear the floor | Thigh continues advancing, knee begins to extend, foot clearance is maintained | Knee achieves maximal extension, ankle remains in neutral to prepare for initial contact |
| % Gait Cycle | 0 | 0-11% | 11-30% | 30-50% | 50-60% | 60-73% | 73-87% | 87-100% |

## Ankle - Sagittal View

| Typical Joint Position | 0° DF (neutral) | 5° PF | 5° DF | 10° DF | 15° PF | 5° PF | Neutral | Neutral |
|---|---|---|---|---|---|---|---|---|
| Typical Muscle Activity | Concentric pre-tibials | Eccentric pre-tibials | Eccentric soleus and gastroc | Concentric soleus and gastroc | Concentric soleus and gastroc | Concentric pre-tibials | Concentric pre-tibials | Concentric pre-tibials |
| Common Deviations Post CVA | Contacts ground on forefoot or foot flat | Foot slap | Reduced tibial advancement equinovarus foot position, excessive DF | Delayed or absent heel off, excessive DF, excessive PF | Delayed or absent heel off, reduced PF and push-off | Reduced DF, foot drop, equinovarus foot position | Reduced DF, foot drop, equinovarus foot position | Reduced DF, foot drop, equinovarus foot position |

## Knee - Sagittal View

| Typical Joint Position | Appears fully extended | 20° flexion | Appears fully extended | Appears fully extended | 40° flexion | 60° flexion | 25° flexion | Appears fully extended |
|---|---|---|---|---|---|---|---|---|
| Typical Muscle Activity | Quadriceps | Eccentric quadriceps | Concentric quadriceps | No activity | Eccentric quadriceps concentric hamstrings | Concentric gracilis | Eccentric hamstrings | Eccentric hamstrings, concentric quadriceps |
| Common Deviations Post CVA | Reduced knee extension | Excessive or absent knee flexion | Genu recurvatum or excessive knee flexion | Genu recurvatum or excessive knee flexion | Reduced knee flexion | Reduced knee flexion | Reduced knee flexion | Reduced knee extension |

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