Terminology for Clinical Gait Analysis

1.0 GENERAL TERMS

1.1 **Observational Gait Analysis (OGA):** A qualitative visual description of an individual's upper and lower extremities, pelvis and trunk motion during ambulation.

2.0 THE GAIT CYCLE

2.1 **Gait Cycle**: The period of time from one event (usual initial contact) of one foot to the following occurrence of the same event with the same foot.

2.2 **Gait Stride**: The distance from initial contact of one foot to the following initial contact of the same foot. A gait stride is made up of a left and right step.

2.3 **Stance Phase**: The period of time when the foot is in contact with the ground.

2.4 **Swing Phase**: The period of time when the foot is not in contact with the ground.

2.5 **Double Support**: The period of time when both feet are in contact with the ground. This occurs twice in the gait cycle, at the beginning and end of the stance phase.

2.6 **Single Support**: The period of time when only one foot is in contact with the ground. In walking, this is equal to the swing phase of the contralateral limb.

3.0 TEMPORAL AND SPATIAL PARAMETERS

3.1 **Step Length**: The distance from a point of contact with the ground of one foot to the following occurrence of the same point of contact with the other foot. The right step length is the distance from the left heel to the right heel when both feet are in contact with the ground. Expressed in meters.

3.2 **Stride Length**: The distance from the initial contact of one foot to the following initial contact of the same foot. Expressed in meters. Stride length always equals the sum of left and right step lengths.
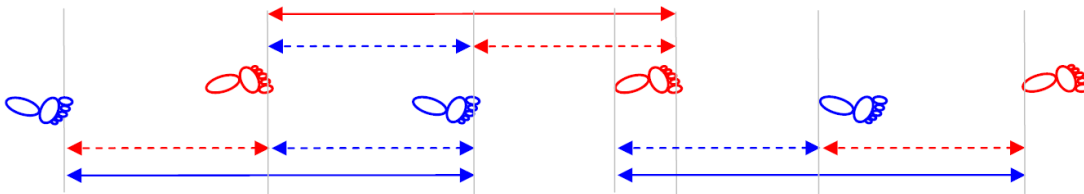

Figure 1. Step length (dashed line) and stride length (continuous line) for symmetrical gait. Step and stride length are independent of the part of the foot being used as a reference for measuring.
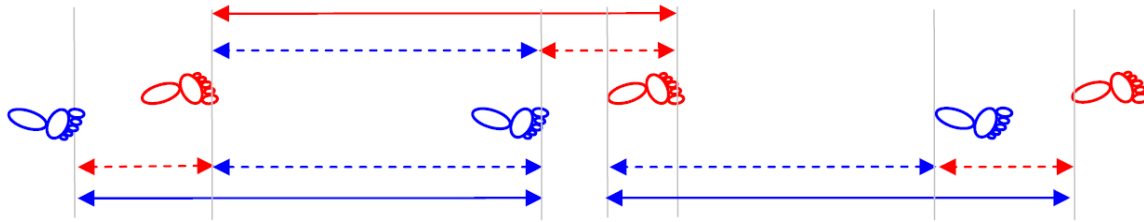
Figure 2. Step length (dashed line) and stride length (continuous line) for an asymmetrical gait. The left and right step lengths are not the same. Stride length remains the sum of the left and right step lengths.

3.3 **Step width**: The side to side distance between the feet. The distance measured is affected by the part of the foot used as the reference.

3.4 **Stride Time/Cycle Time**: Time to complete a single gait cycle. The point in the gait cycle used as the reference point to measure duration does not matter. By convention it is usually calculated as the period of time from initial contact of one foot to the following initial contact of the same foot. Expressed in seconds.

3.5 **Cadence**: Rate at which a person walks. Expressed in steps per minute.

3.6 **Natural cadence/velocity/usual gait speed/self-selected gait speed**: The rate of walking that is voluntarily assumed.

3.7 **Velocity:** The rate of change of linear displacement along the direction of progression measured over one or more strides, expressed in meters per second (m/s)

4.0 TERMS USED FOR THE DESCRIPTION OF GAIT

4.1 Antalgic gait: Modification of gait pattern due to pain.

4.2 Drop foot: Excessive ankle plantarflexion in terminal swing due to inactive or weak ankle dorsiflexors.

4.3 Reciprocal gait: A gait pattern of alternating movements of the lower extremities.

4.4 Heel toe gait: A normal foot contact pattern with initial contact made with the heel followed by foot flat and the heel off.

4.5 Steppage gait: A compensation for a clearance problem by excessively flexing the hip and knee in the swing phase. Usually seen with people who have a drop foot.

4.6 Scissor gait: A gait pattern involving excessive adduction in swing.

4.7 Gluteus medius lurch/Compensated Trendelenberg gait: A gait pattern with varying degrees of lateral trunk lean towards the side of hip pathology, compensation for pain and/or hip abductor weakness.

4.8 Crouched gait: Excessive hip and knee flexion in the stance phase of gait. A gait pattern that is common among people with cerebral palsy.

4.9 Gluteus maximus lurch: A gait pattern with posterior trunk lean on the stance leg to maintain hip extension due to weak gluteus maximus.