

Additional file A

Terminologies and definitions from both programs for the variables examined, plus examples of studies reporting reliability and/or validity of the variables derived from GAITRite® hardware and software. Information sourced from GAITRite® (http://www.gaitrite.com/downloads/WI-02-15_Technical_Reference_L.pdf) and Prokinetics (http://www.protokinetics.com/images/PKMAS_Gait_Measurement_Definitions_Short.pdf).

Outcome variable	GAITRite® term and definition	PKMAS® term and definition	Studies
Speed	Velocity (obtained after dividing the Distance Travelled by the Ambulation time)	Velocity (dividing the sum of all Stride Lengths by the sum of all Stride Times)	[1-16]
Cadence	Number of steps divided by ambulation time (sec), multiplied by 60.	Cadence (number of footfalls minus one, divided by the ambulation time)	[1-3, 5-10, 12-16]
Stride length	Stride length (distance between the heel points of two consecutive footprints of the same foot)	Stride Length (distance from the heel of one foot to the following heel of the same foot)	[1, 3, 4, 6, 8-11]
Step length	Step length (distance from the heel center of the current footprint to the heel center of the previous footprint on the opposite foot)	Step Length (distance between corresponding successive points on the heel of opposite feet measured parallel to the direction of progression for the ipsilateral stride of which it is the second part)	[1, 4, 5, 7-9, 11, 13-15, 17, 18]
Stride duration	Stride Time or Gait Cycle Time (time elapsed between the first contacts of two consecutive footfalls of the same foot)	Stride Time or Gait Cycle Time (time from first contact of one foot to the following first contact of the same foot)	[4, 6, 9-11, 19]
Step duration	Step Time (time elapsed from first contact of one foot to first contact of the opposite foot)	Step Time (period of time taken for one step and is measured from first contact of one foot to the first contact of following other foot)	[1, 2, 4, 7, 11, 13, 14, 17, 18, 20]
Stance duration	Stance Time (time elapsed between the First Contact and the Last Contact of two consecutive footfalls on the same foot)	Stance Time (time when the foot is in contact with the ground)	[2-4, 14, 17, 18]
Swing duration	Swing time (time elapsed between the Last Contact of the current footfall to the First Contact of the next footfall on the same foot)	Swing Time (period of time when the foot is not in contact with the ground)	[2, 4, 18]

Double support duration	Total Double Support (sum of Initial and Terminal Double Support). GAITRite® gives separate values for Initial Double Support (from heel contact of one footfall to toe-off of the opposite footfall) and Terminal Double Support (from opposite footfall heel strike to support footfall toe-off).	Total Double Support (sum of Initial and Terminal Double Support). PKmas® gives separate values for Initial Double Support Time (time when both feet are in contact with the ground at the beginning of the stance phase) and Terminal Double Support Time (time when both feet are in contact with the ground at the end of the stance phase).	[2, 4, 8, 11, 14, 20]
Stance time as a percentage of cycle time	% Stance (Stance Time presented as a percentage of the Gait Cycle Time)	Stance Percentage (Stance Time presented as a percentage of the Gait Cycle Time)	[10, 13]
Double support time as a percentage of cycle time	% Double Support (Double Support Time presented as a percentage of the Gait Cycle Time)	PKMAS® does not produce this variable. It was calculated from Initial and Terminal double support times which were expressed as a percentage of the Gait Cycle Time.	[3, 16]
Base width	H-H Base of Support or Base Width (vertical distance from heel center of one footprint to the line of progression formed by two footprints of the opposite foot)	Stride Width (distance between a line connecting the two ipsilateral foot heel contacts (the stride) and the contralateral foot heel contact between those events and is measured perpendicular to the stride)	[2, 4-6, 8-10, 18]
Foot angle	Toe In / Toe Out (angle between the line of progression and the midline of the footprint)	Toe In/Out Angle (angle between the Direction Of Progression and Foot Angle where Foot Angle is the angle of the foot's placement on the ground measured for the vector from the foot ellipse's heel to the toe)	[4, 5, 8, 17]
Variability (SD) in Stride Length	For both programs, the SD of the individual values for the variable was used, where $SD = \sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}}$ Means of the left SD and right SD were calculated.		[16]
Variability (SD) in step Length			[18]
Variability (SD) in Stride Duration			[16, 19]
Variability (SD) in Step Duration			[18]
Variability (SD) in Step Width			[18]

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