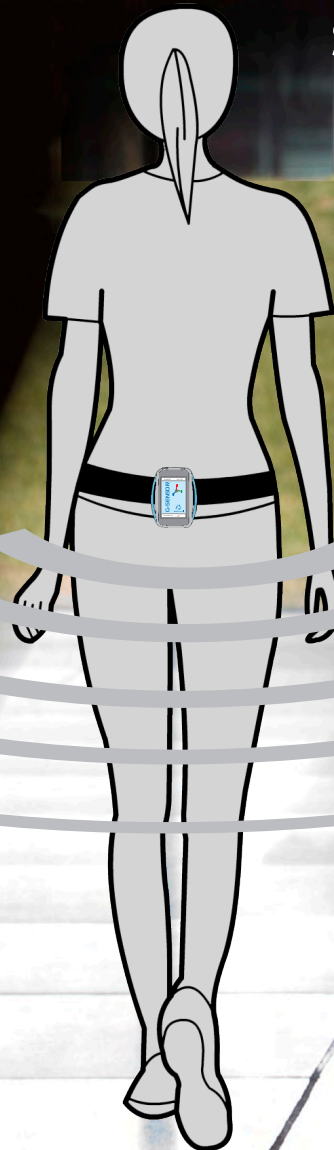


# BTS G-WALK

Complete solution for  
the evaluation of the  
spatial-temporal  
gait parameters



**BTS** Biomedical

# BTS G-WALK

## Complete solution for the evaluation of the spatial-temporal gait parameters

BTS G-WALK is the ideal solution to treat pathologies related to gait disorders.

BTS G-WALK is a wireless system consisting of an inertial sensor composed by a triaxial accelerometer, a magnetic sensor, and a triaxial gyroscope that positioned on L5 allows a functional gait analysis.

The system extrapolates from the data acquired all the spatial-temporal gait parameters required to perform a diagnosis or to define a training strategy.

BTS G-WALK is an intuitive and easy-to-use solution to obtain accurate, objective and quantitative data.

The quick to execute tests that do not require any subject's preparation, together with the automatic report generation make BTS G-WALK suitable for a wide range of applications: prevention, diagnosis and follow-up of rehabilitative or pharmacological intervention.

### **Spatial-temporal parameters analysis**

The spatial-temporal gait parameters are a powerful and easy-to-use tool for the functional evaluation of neurological and orthopedic patients, allowing the objective analysis of motor capabilities and treatments results.

### **Pelvis' kinematic analysis**

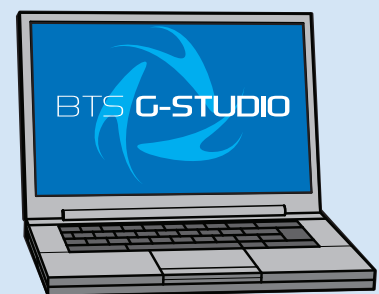
The system provides some kinematic gait parameters. In particular it provides information about antero-posterior rotations, anti-retroversion, and tilt of the pelvi.

### **Comparison with normative data**

It includes normative data for an automatic comparison of acquired parameters with 'normal' class allowing an immediate visual result showing the difference between the patient and the average.

### **Refundable exam**

Reimbursement codes related to movement evaluation are included in the list of national health institutions, such as CPT in US, DRG in EU or NHS within UK. Institutes and healthcare practitioners affiliated with major medical insurance plans can have reimbursement provided for such exams.



**Spatial-temporal gait parameters**

- speed,
- cadence,
- step length,
- stride length,
- step width,
- gait cycle duration,
- stance duration,
- swing,
- single and double support

They quantify:

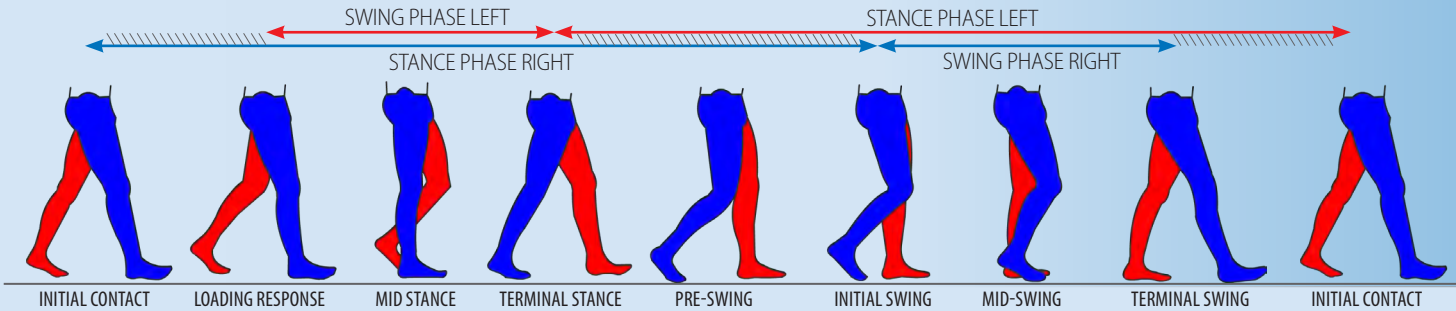
- functional motor residuals of hemiplegic patients; the purpose is to plan a correct rehabilitation obtaining the best functional recovery with significant effects on everyday life;
- deambulation capacity in orthopedic patients to support the

decision of surgical intervention and to evaluate the treatment efficacy (LCA reconstruction, knees arthroplasty, etc...);

- motor strategy changes in elder subjects to prevent injuries related to fall.

*“When you cannot measure, when you can’t express numbers, you’ve done small steps to the science stage, whatever it is”.*

ARISTOTELE



**Applications and software features:**

**Application in neurologic field**

The hemiparetic subject gait is characterized by reduction of speed, cadence and step length:

	NORMAL SUBJECT	HEMIPARETIC SUBJECT
SPEED	68.5+/- 6.7 m/min	44.0+/-22.9 m/min
CADENCE	102.8+/- 5 stps/min	84.8+/- 22.4 stps/min
STEP LENGTH	1.3+/- 0.1 m	1.1+/- 0.6 m

Moreover, there is an asymmetry in the different step phases and an increased energy expenditure.

**Parkinson disease**

Spatial-temporal gait parameters are indicators of rehabilitation treatment efficacy, especially the pharmacological one.

In fact it has been demonstrated in literature how the spatial parameters (as the step length) are for example DOPA-dependent, unlike the temporal parameters (such as stance and swing phase duration) that are DOPA-resistant.

**Prevention of the fall risk in elder subjects**

It has been demonstrated in literature that differences in mean values of some gait parameters, compared to reference values, such as reduced speed and stride length and increased double support time, are associated with fear of falling and are the result of an adaptation to a gait pattern that searches for a safer walking approach. But, when these parameters show

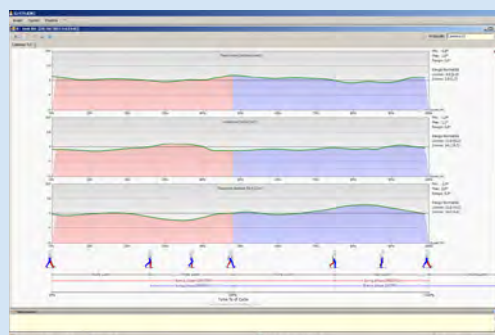
short-term variability, verifiable with measurement each 3 months, they become an independent predictive factor of falling.

**Orthopedics application**

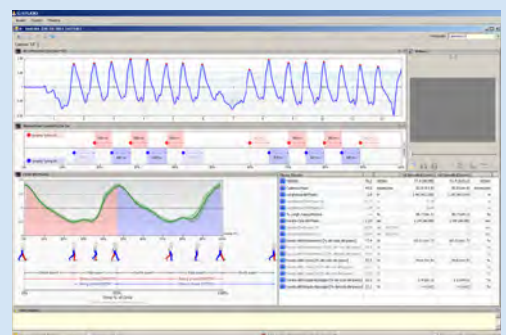
Gait parameters are adopted as useful information to plan the rehabilitation maximizing the functional recovery, preventing overloads of the prosthetic components and averting postural alterations and complications. Moreover the gait parameters support the evaluation of the treatment of knee arthroplasty.

**BTS G-STUDIO**

Is an easy-to-use but complete software for the analysis of spatial-temporal gait parameters and pelvis' kinematic. It Includes normative data for all the acquired parameters.



Kinematic analysis



Spatial-temporal parameters analysis

# BTS G-WALK

Complete solution for the evaluation of the spatial-temporal gait parameters



Real dimension

	Std. Equipment	Add-on
<b>Components and accessories</b>		
1 wireless inertial sensor	●	
Belt with pocket for the sensor positioning	●	
Workstation		●
BTS G-STUDIO software	●	
Up to 2 webcam for video recording		●

## Support and training

Installation, first training and activities start-up		●
Helpdesk - 3 months	●	
Customer support all inclusive		●

## Technical features\*

Dimensions	78x48x20mm
Weight	62gr
Sensors typologies	Tri-axial accelerometer with multiple sensitivity ( $\pm 1,5g, \pm 6g$ ) Tri-axial magnetometer Tri-axial gyroscope with multiple sensitivity ( $\pm 300gps \pm 1200gps$ )
Battery	rechargeable via USB 18/24 hours of autonomy
Connectivity	Bluetooth®
Frequency	up to 200Hz
Working	real-time

\* Technical specifications and components are subject to change without prior notice.



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