

Gait analysis dedicated to Health Care



Locometrix® received a prize at the National
Competition for the Creation of Innovative Companies
Paris 1999 and 2001



Locometrix®

www.locometrix.com

→ The LOCOMETRIX device

This new gait analysis system is based on technology which is used in the aerospace industry: the measurement of accelerations.

The apparatus includes three accelerometers, a microprocessor which records locomotor movement next to the centre of gravity.



→ The walking test

The apparatus which is incorporated in an elastic belt is attached around the waist of the patient. This process takes less than one minute.

The walking test can be carried out anywhere, for example in a long corridor, in a gymnasium, or on a stadium concourse.



→ Important measurements related to Gait Quality

An innovative software for very informative gait variables

Stride frequency

its decrease gives an early prediction of Locomotor disorders

Left and right symmetry index

a global index for asymmetrical pathology

Gait regularity

- a major indicator of Gait Quality
- independent of age and gender until the age of 70y
- correlated to clinical indices, gait regularity allows the grading of the gravity and severity of gait disorders
- major predictor of falling in elderly people

Medio-lateral instability

the complementary measurement of gait regularity

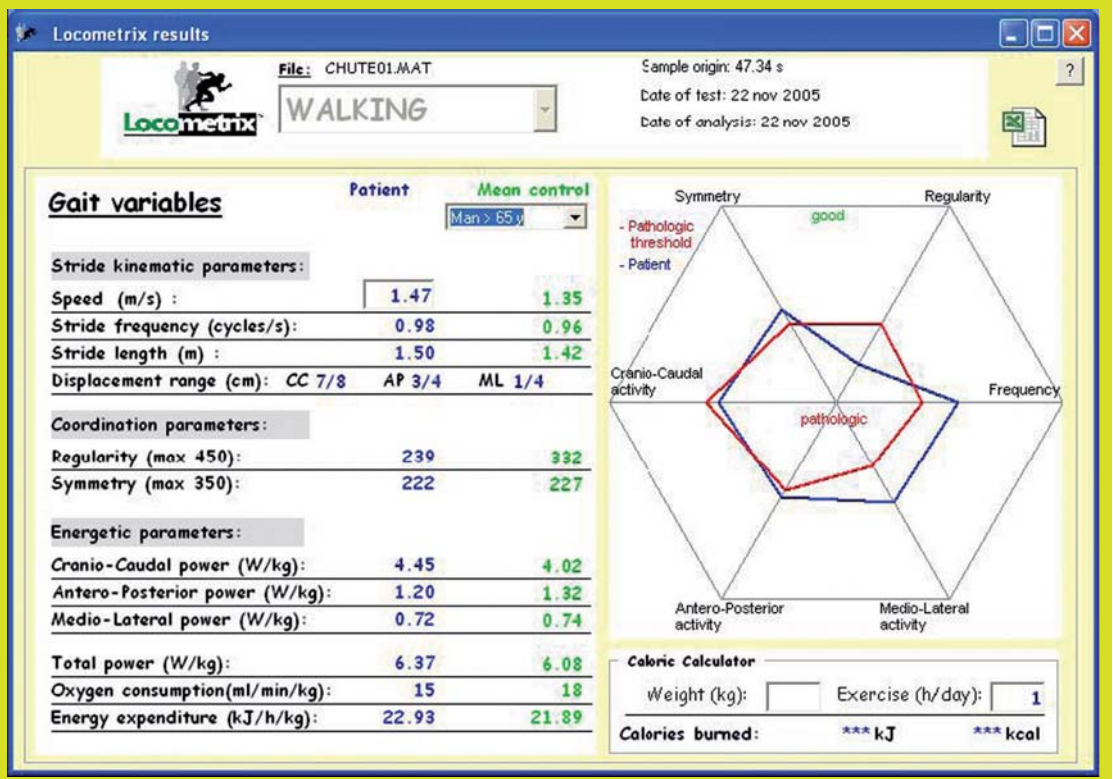
Gait constraints

- the measure of the shock energy over the median lumbar region
- they are linked to neurological, and/or musculoskeletal disorders
- and predictive of gravity

Walking economy

The total mechanical power allowed to calculate burnt calories

→ Example of a walking test: Faller patient



Patient

77 year old man, healthy and active, with a recent history of a fall.

Stride Pattern

Excellent walking speed, with a normal stride frequency and stride length.

Stride coordination

- Right and left steps are symmetric,
- Poor coordination characterized by a low regularity (239; normal value > 300).

Energy assessment

- The total mechanical power is normal.

Conclusion

The rehabilitation program has to take into account the decrease of the regularity, and to reinforce the stride coordination by means of proprioceptive exercises.

→ Main validated applications



● For Rehabilitation

Locometrix provides precise information according to gait abnormalities and gait adaptation mechanisms.

Locometrix allows a more specific rehabilitation.



● For Gait deterioration and risk of fall

Locometrix highlights the characteristics of gait deterioration: loss of speed, decrease of cadence and/or regularity.

Physical activity programs can be individually adapted.



● For Obesity

Locometrix assesses the walking economy according to walking speed. More effective training programs can be prescribed to the patient.

● For Hip and Knee osteoarthritis

- Locometrix precisely measures the gait function.
- Locometrix provides a better understanding of gait adaptation.
- Locometrix can be applied after total hip or knee replacement.



● For Neurological diseases

Locometrix grades and subgroups neurological diseases such as Parkinson's Disease, fibromyalgia, dementia...

A better follow up can be achieved.



→ Main publications

- Accelerometric gait analysis for use in hospital outpatients.
Rev Rhum [Engl. Ed.], 1999; 66: 389-97
- Reference data for normal subjects obtained with an accelerometric device
Gait and Posture, 2002; 16: 124-34
- Gait abnormalities in elderly fallers
Journal of aging and physical activity, 2003; 11: 39-51
- Analyse des troubles de la marche par une méthode accélérométrique dans la maladie de Parkinson
Revue Neurologique, 2003; 159: 786-9
- Gait analysis in coxarthrosis using an accelerometric device (abstract)
Annals of the Rheumatic Diseases, 2004; 63, supplement 1: 365-6
- Gait regularity: measurement and significance (abstract)
Gait and Posture, 2005; 21: S7
- Gait disorders in patients with fibromyalgia
Joint Bone Spine, 2006; 73: 543-6

→ Main customer references

Medical applications

Hospital Pontchaillou, Neurological and Rehabilitation Department, France
Clinic of Valmont, Neurological and Rehabilitation Department, Switzerland

Sports

University of Evry, Exercice Physiology Laboratory, France
National Rugby training center, Marcoussis, France

Pharmaceutical Company

Pierre Fabre Medicament, France



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