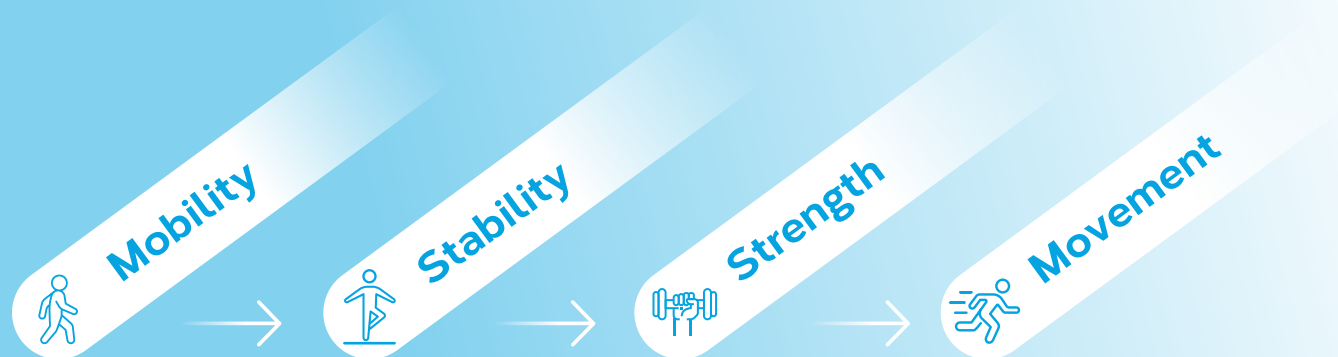


Your **portable lab**
for assessment and training



Movement re-education path

We assess and train **movement** in a comprehensive way, based on **objective data**



Cognitive training

Mobility

Joint mobility, or Range of Motion (RoM), is a fundamental part of human movement. To move effectively and without effort, each joint must possess adequate mobility. This allows the joint to adapt more easily to the stresses to which the body is subjected and decreases the potential risk of trauma and sprains. However, following injuries, it is very often difficult to be able to restore the previous joint situation and during a rehabilitation process it becomes therefore essential to measure the improvements obtained in terms of degrees.

In this sense, the **Gyko** inertial sensor can be used very easily and quickly to assess and monitor mobility, whether static or dynamic. It provides not only angle measurement, but also information on the **fluidity** and **speed of the movement** performed.





Stability

Postural control is often associated with balance as it represents the act of maintaining, achieving or restoring that state of stability during any static/dynamic activity.

The subject interacts with external forces through postural actions involving voluntary or involuntary muscle activations. We speak of postural control both in a static or semi-static situation and in a dynamic situation (with or without displacement).

Checking, monitoring and restoring postural control is an integral and fundamental part of most rehabilitation or injury prevention projects.

Thanks to **Gyko** and **Optogait** it is possible to **objectify motor control** in different types of situations, from the classic sway test to gait analysis.





Strength

Strength is the motor capacity that a muscle, or group of muscles, can exert in an action in order to overcome or oppose an external load. Strength training is often associated with the use of weights, but can take a variety of different forms.

When performed correctly, this type of training can provide significant functional benefits including increasing the strength and endurance of bones, muscles, tendons and ligaments, improving joint function, reducing the risk of injury, increasing bone density, metabolism and fitness, and improving cardiac function.

Strength development, in addition to the clear link with performance, is of fundamental importance in the rehabilitation project for most of the pathologies treated, from sports recovery to pre- and post-surgical treatments, to the prevention of muscle degeneration in the elderly.

Using our systems, it is possible to optimise the work performed, both by **monitoring the classic work with loads** and by **verifying the correct 'return to activity' time**.



Movement

During a dynamic activity, maintaining, achieving or restoring a state of balance is a complex task that requires great coordination skills. Unlike a static position, in fact, in dynamics the body's centre of mass constantly shifts out of the support base provided by the feet and it is crucial for a person to be able to control these changes in order to avoid falls and increase bodily proprioception. The systems that come into play in balance control are the visual, somatosensory and vestibular. They work in a co-ordinated manner and a deficit in any one of the three is enough to lead to increased difficulty in

position maintenance. At the same time, however, the systems are trainable and thus able to respond to any malfunctioning of the others.

Dynamic balance monitoring can be performed during typical activities of daily life such as walking. In this case, **Optogait and Gyko** provide useful parameters to identify the possible origin of a stability problem and the mechanism put in place to respond to this disturbance.



Cognitive training

Cognitive training is a new way of supporting the rehabilitation project and aims to maintain or improve a person's abilities through brain stimulation, thus acting on brain plasticity and increasing the number of neural connections. Research has shown that, under the right circumstances and with the right stimuli, every brain can optimise its physical and psychic efficiency by exploiting its plasticity. Thanks to the collaboration with **BrainHQ from Posit Science**, Microgate is able to offer scientifically structured programmes that focus on various cognitive areas and stimulate brain functions. After an assessment of the initial level, it is possible, thanks to these non-invasive and scientifically proven solutions, to go and work specifically on the **mechanisms of neuronal plasticity** with protocols that can be adapted to the abilities of the individual person.



OPTOGAIT

Optogait is an optical detection system, consisting of a bar receiver and a transmitter. A luminous carpet is created on ground with a maximum width of 6 metres and a spatial resolution of approx. 1 cm. The acquisition speed is one thousandth of a second. The system makes it possible to detect on the ground the spatio-temporal parameters time parameters of walking, running and jumping on the ground, allowing an objective objective approach in movement re-education, fundamental in the rehabilitation or injury prevention project. Optogait can be complemented by GYKO for a more complete overview.

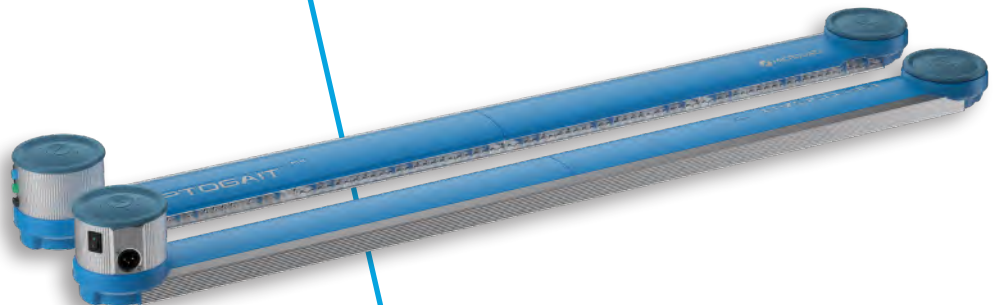
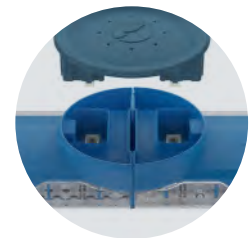
OBJECTIVE ASSESSMENT

QUICKLY IDENTIFY variability, postural problems and asymmetries by reading data and observing videos

DEVELOP CUSTOMISED TRAINING AND REHABILITATION PROGRAMS distinguished on the basis of test results

PERIODICALLY MONITOR training results and efficacy

MOTIVATE the athlete by providing tangible evidence of progress made



GYKO^{PRO}

GykoPro is a triaxial inertial system with a time resolution of one thousandth of a second. At the operational level, it allows real-time assessment of flexibility, balance control, and strength and power development. When used in conjunction with Optojump Next, the data from the latter will be automatically supplemented by the data recorded by GYKO.



OBJECTIVE ANALYSIS OF POSTURE FOR:
QUANTIFY the deficit in terms of joint function
joint function or muscle power

ASSESS AND MEASURE the subject's balance in
different situations and/or on different surfaces

MONITOR exercise intensity with real-time visual
biofeedback

TRACK AND REPORT the subject's recovery
throughout rehabilitation

IN CONJUNCTION WITH OPTOGAIT allows
to integrate the information measured on the
ground by Optogait with the kinematics of the
trunk, synthetically highlighting its dynamism,
stability and coordination

WITTYSEM

Motor-cognitive training: A “smart traffic light” composed of a 7x5 multi-colour LED matrix that can handle different symbols and colours. Thanks to collaboration with PositScience, Microgate is now able to offer targeted workouts that stimulates basic cognitive functions. More than 200 scientific publications show that these exercises can stimulate brain plasticity, allowing to modify and physically optimise its structure and function.



COGNITION IN MOTION:

- Cognitive skills assessment
- Cognitive skills training (resources that needed to return to normal)
- Extended dual task: combines cognitive training with motor task (WittySem measures cognitive load). Calibrates according to the needs of the individual, adaptive system.

OPTIMIZING physical and psychic efficiency by exploiting one's own plasticity

WORK on neuronal plasticity mechanisms with **PROTOCOLS ADAPTABLE** to the individual's abilities





**Hi-tech in support of well-being.
Made in Italy, since 1989.**

We develop technology to improve the work of operators in the rehabilitation and medical fields. We provide solutions adapted to different needs, offering modular, high-performance equipment for every phase of the rehabilitation process.



medical.microgate.it

