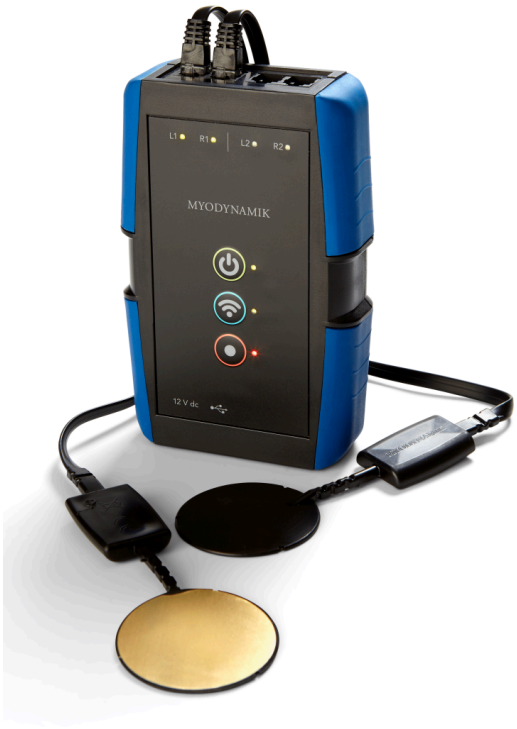
curo
DIAGNOSTICS



ACOUSTIC MYOGRAPHY – the CURO system

A CURO is a piece of equipment which enables you to select and follow skeletal muscles and ligaments whilst physically active. You can select your own muscle / ligament groups, or take advantage of the CURO software to identify where to measure from.

Together with a CURO unit you will be better able to follow and direct training, identify muscle imbalance and precisely locate muscle injuries.

As well as being able to quantify improvements in actual physical performance in specific sports settings, this technique provides the opportunity for an athlete to follow his or her potential for further training without causing injury.

The CURO can be easily applied to most sports disciplines.

Training questions where the CURO can help

1) Are my muscles healthy, or am I over-training with my current exercise programme?

2) Is my current training programme giving measurable improvements in terms of muscle recruitment and performance?

3) Does my training programme result in better efficiency through improved coordination?

4) Are my muscles trained in a symmetrical and balanced way when I exercise?

Muscle selection

The CURO App (Apple Store) helps you select a muscle group, or muscle groups (a total of 2 muscle groups can be assigned per CURO). The app also provides an online source of information with regard to muscle anatomy.

Muscle measurements

CURO recordings have been shown to be an easy noninvasive method for assessing muscle function during periods of movement and exercise, opening up new possibilities for clinical, sports, and home settings.

The CURO system

The CURO measurements are pain-free, non-invasive and allow you to train without restrictions or

CONTACT DETAILS CURO Diagnostics ApS Denmark. CVR No. 33 96 05 49

Mobile: +45 6146 2732 info@curo-diagnostics.com

https://curo-diagnostics.com/

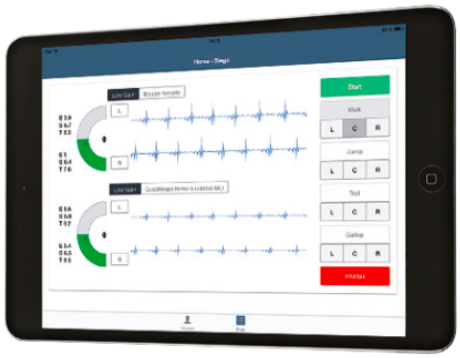
hindrances. Muscle activity can be followed directly on an iPad in real-time during a training session, and afterwards be transformed into a detailed analysis report. This is a quick technique (5 minutes to setup and get using).

CURO analysis
Recordings are made in real-time and reveal the level of balance between muscle groups, the level of performance, the degree of coordination and can even reveal early signs of fatigue. Since the CURO system measures muscle contractions, it is more precise than other muscle systems currently on the market. It uses three parameters that the central nervous system (Motor Cortex) uses to generate force in a muscle.

- E-score – the efficiency and coordination with which a muscle is used for any given task.
- S-score – the number of fibres recruited for any given task (signal amplitude (Volts) – spatial summation).
- T-score – the rate with which active muscle fibres are reactivated (signal frequency (Hz) – temporal summation).

Train effectively and avoid muscle injuries
With acoustic myography as a tool, the evaluation of performance and the attainment of training goals for cycling and many other sports like running or football is now possible.

- Force production in muscles has been shown to be closely correlated with the CURO analysis parameters T- and S-score, hence these two values can be used to assess improvements in muscle strength.
- The balance score between muscles can be used to help athletes train symmetrically and avoid imbalance injuries.
- Muscle recordings can be used to assess early signs of fatigue under training and prevent injury with associated loss of competition time.



CONTACT DETAILS CURO Diagnostics ApS Denmark. CVR No. 33 96 05 49

Mobile: +45 6146 2732 info@curo-diagnostics.com

https://curo-diagnostics.com/

A comparison of acoustic myography and the CURO system with another form of muscle measurement (surface electromyography), reveals a number advantages of the CURO.

	AMG	sEMG
Signal	A pure muscle contraction signal	A combined signal of nerve and muscle fibre depolarization
Accuracy	An accurate measurement of muscle contraction	Not an accurate measurement of muscle contraction – more of muscle depolarization
Stability	A stable signal during movement unaffected by sweating	An unstable signal – affected by movement, and distorted or lost during sweating
Lead artefacts	The signal recorded is not affected by lead movements	Very sensitive to lead movements – resulting in baseline shift
Interpretation	The signal recorded can be analysed into its concentric and eccentric phases	No clear concentric or eccentric phases can be discerned
Noise	The signal is not prone to extraneous noise from electromagnetic fields	Often affected by electric motors, treadmills or electromagnetic fields
Correlation	ESTi® Score signals (amplitude, frequency and efficiency) have been found to correlate in a linear fashion with muscle power	Less accurate correlation – usually a root mean square (RMS) of the signal has to be performed before muscle force correlations can be made
Preparation	There is no need to prepare the recording site, neither shaving nor alcohol wash is necessary	Typically, one would shave and clean the contact site prior to attaching an electrode
M-wave & H-wave	AMG recordings lend themselves to simple and accurate M-wave and H-wave recordings	sEMG recordings of M- and H-waves are technically more difficult
Placement	Only one sensor is needed and placement is less crucial with regard to the recorded signal	Three electrodes are required and their configuration is important for signal quality
Inactivity	The signal is noise-free during periods of inactivity	Background noise can often interfere with the signal during inactivity or slight movements – often requiring filtering
Repeatability	The same sensors can be used again for the same muscle or a subsequent measurement – improving repeatability	Electrodes have to be discarded after a single use and can be affected by storage/age

CONTACT DETAILS CURO Diagnostics ApS Denmark. CVR No. 33 96 05 49

Mobile: +45 6146 2732 info@curo-diagnostics.com

https://curo-diagnostics.com/