Practical Guidelines

For the Enraf-Nonius Commercial Training

Myomed 632

ENRAF NONIUS

Enraf-Nonius B.V.
P.O. Box 12080
3004 GB ROTTERDAM
The Netherlands
Tel: +31 (0)10 – 20 30 600
Fax: +31 (0)10 – 20 30 699
info@enraf-nonius.nl
www.enraf-nonius.com

Content

1 Preamble 1

2 Naming convention 1
2.1 Central controller 1
2.2 Confirmation button 1
2.3 Assist button 1
2.4 Buttons A to D 1

3 The first EMG demonstration 2
3.1 Sensitivity 5
3.2 Threshold 6
3.3 Shift 7
3.4 Record 8

4 Myofeedback and stimulation 9
4.1 Stimulation above Treshold 10
4.2 Stimulation below Threshold 13

5 Pressure feedback 13

6 Additional Myomed demonstration items 16
6.1 Graphic representations 16
6.2 The use of templates 17
6.3 After the treatment: Analyze 18

7 Generic 6-series demonstration items 19
7.1 The tiltable screen & viewing angle 19
7.2 The one-hand operation 19
7.3 The use of the electrotherapy wizard 20

ENRAF NONIUS

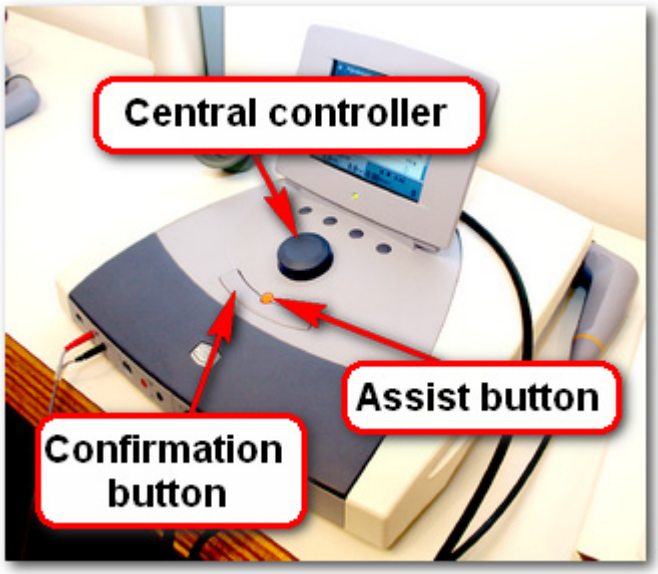
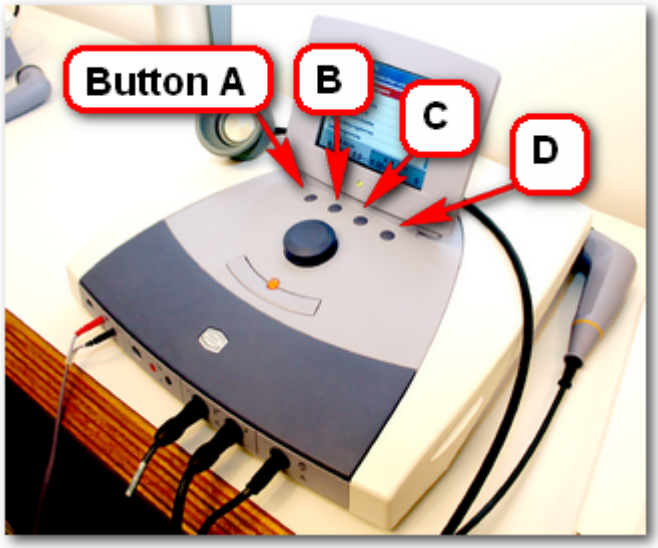
1 Preamble

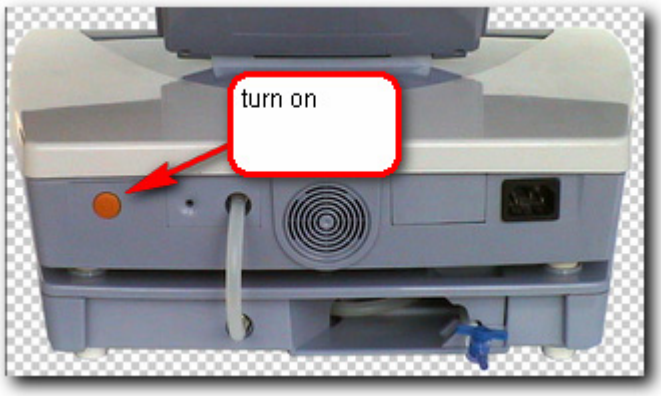
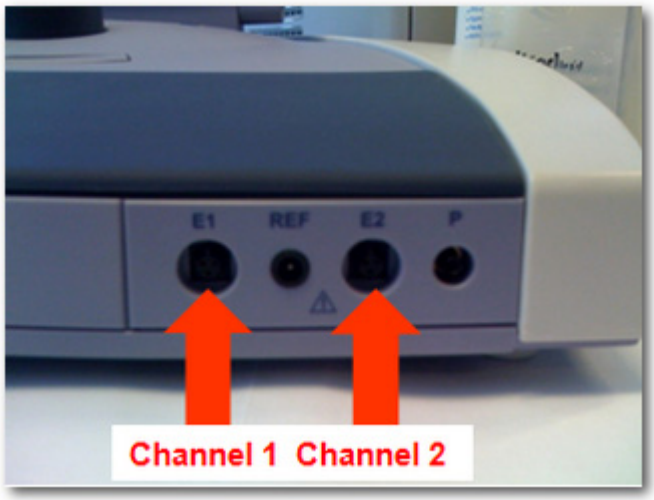
In the following pages we will present a step-by-step practical guidelines for demonstration of the Myomed 632. All steps are documented and displayed in this guideline, but don't hesitate to ask in case of any queries.

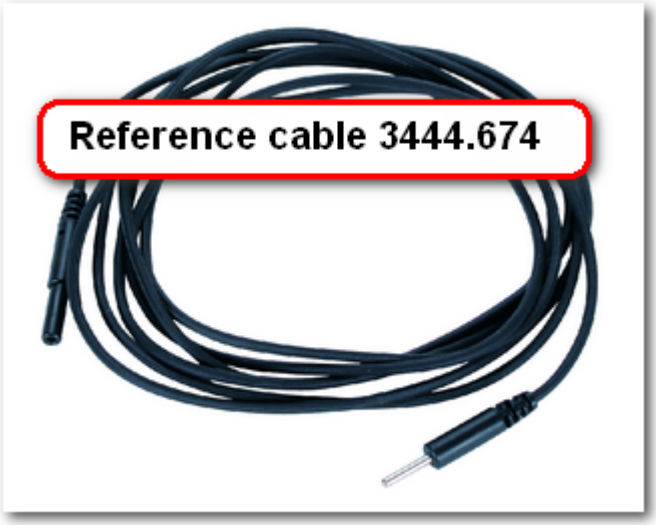
This guideline is not an instruction- or user-manual. In case you need to know in depth the possibilities of the unit you need to consult the User's Manual of the unit you are using. User manuals can be downloaded from the Enraf-Nonius partnersite (http://www.partnersite.enraf-nonius.org/)

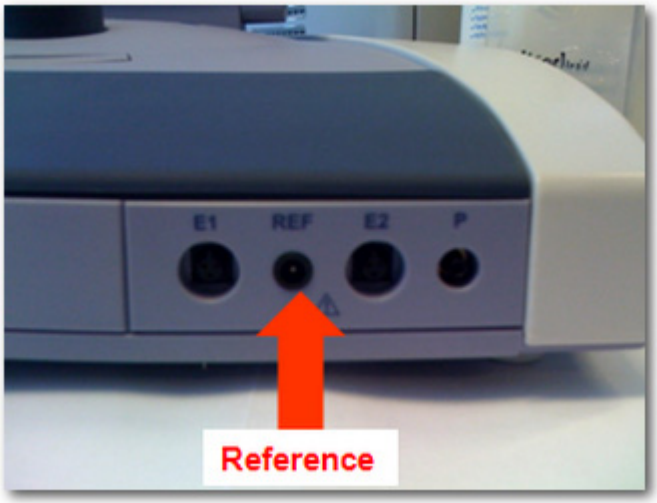
2 Naming convention

In this manual we will use the following names and terminology:

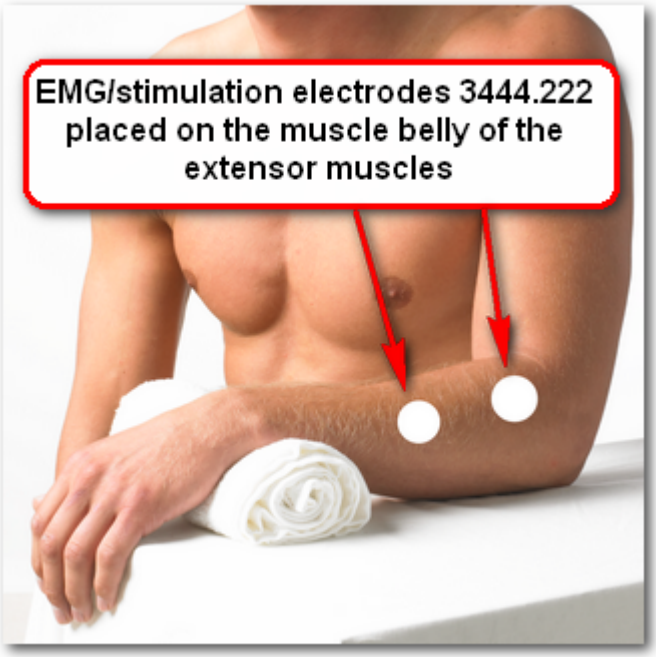
EMG	Electro Myo Graphy = biofeedback of electric activities of muscles (muscle groups)
Pressure Feedback	= biofeedback of the mechanical output, the "compression – relaxation", of muscles (muscle groups)
Stimulation	Electrical stimulation of tissue
SEMG	Surface EMG
	**2.1 Central controller** The big round button that scrolls trough the menu's **2.2 Confirmation button** The long "mouse" button for confirmation of the selected item with the central controller **2.3 Assist button** The small orange button just above the confirmation button that allows for a quick jump to Home – Stop etc.
	**2.4 Buttons A to D** The 4 small buttons just below the screen. Functionality of these buttons is defined by the current "tabs" in the menu screen.

	Turn on the unit
 	Connect the EMG cable 3444.673 in the channel 1 connector (E1)





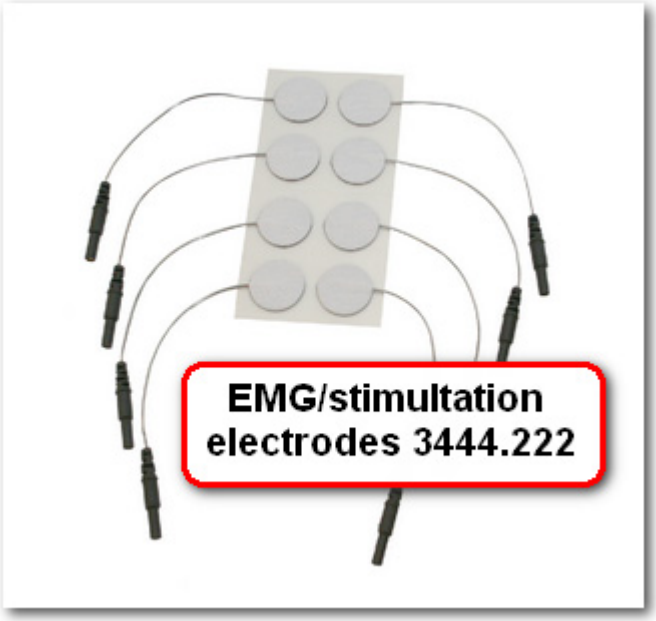
Connect the reference cable 3444.674 to the REF
Connector of the unit



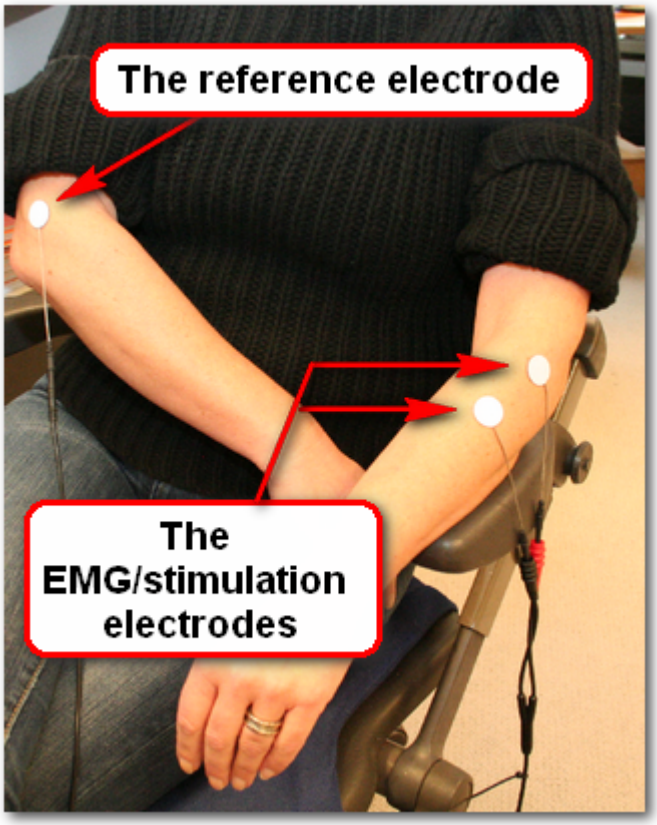
Palpate just below the elbow in order to find the muscle belly of the extensor muscles of the forearm.

The electrodes are placed at ¼ th of the muscle belly.

Rinse and clean that area of the arm.

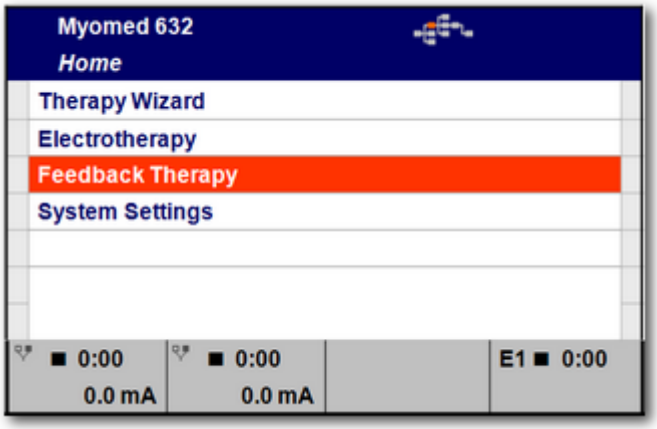


Place the two EMG/stimulation electrodes (3444.222) on the belly of that muscle



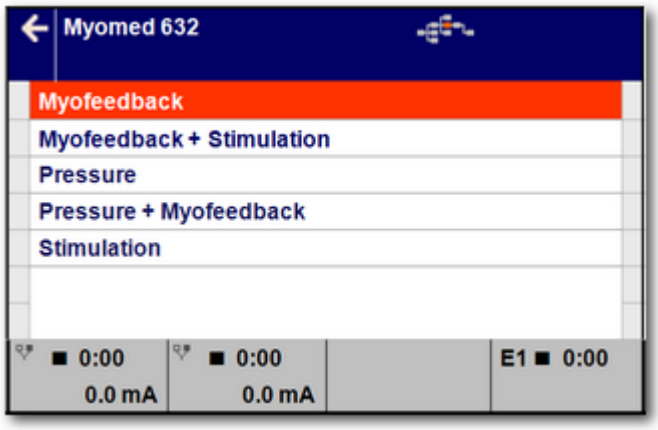
Place the reference electrode on a bony structure somewhere else on the body - for example on the elbow of the other arm.

Note – the bony structure is required because placing the reference electrode on an other muscle could cause disturbance of the EMG signal of the muscle of interest.



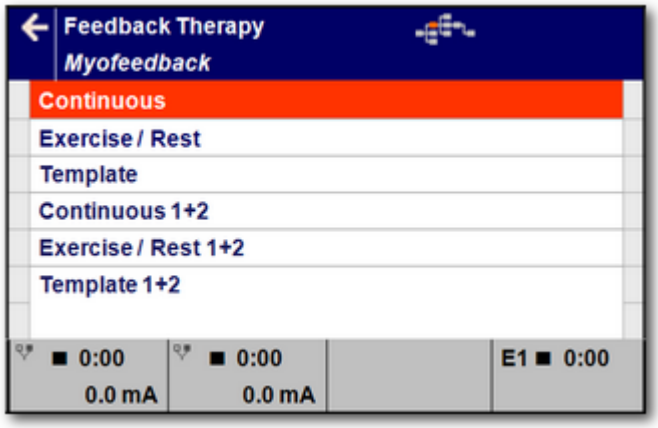
In the main menu of the unit, select “Feedback Therapy” with the central controller.

Confirm with the confirmation button



Select “Myofeedback” from the menu with the central controller.

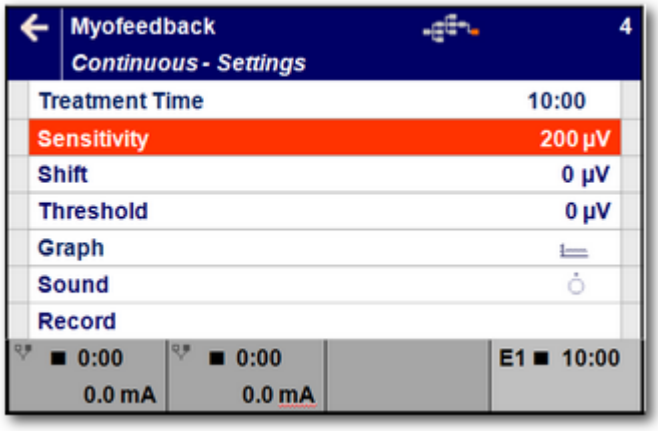
Confirm with the confirmation button



Select “Continuous” from the menu with the central controller.

Confirm with the confirmation button

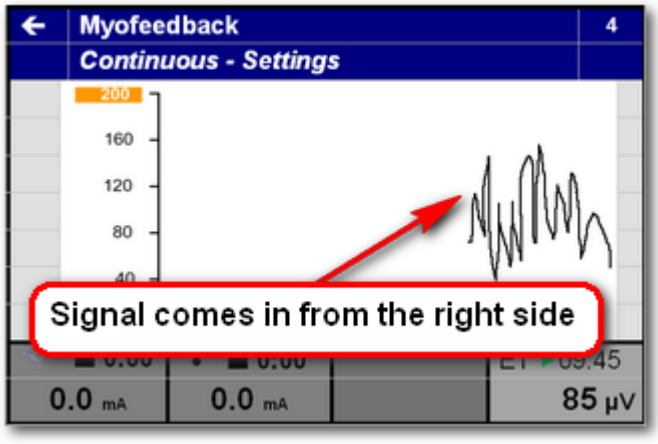
3.1 Sensitivity



Select “Sensitivity” from the menu with the central controller.

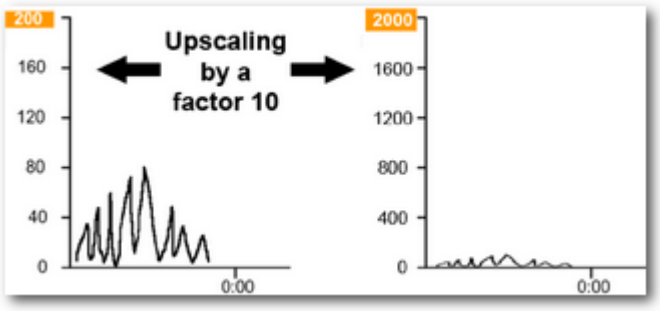
Confirm with the confirmation button.

Set the sensitivity to 200 µV



The muscle activity will be displayed from the right side

Ask the patient for some contraction to set de correct sensitivity



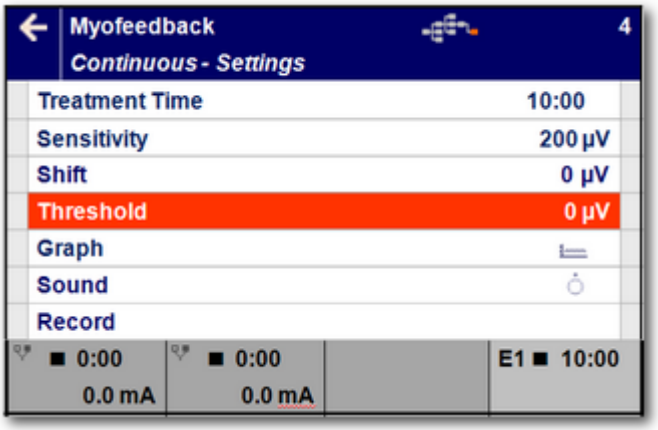
y-scale of 0 to 200 | y-scale of 0 to 2000

What is sensitivity?

- Sensitivity changes the y-scale, in other words – the amplification, of the EMG signal
- Example:
  - A certain signal strength will be well visible at a scale of 1 tot 200 (the left graph)
  - That same signal will hardly be visible on a 0 to 2000 scale (10 times less sensitive, the right graph)

So for feedback purposes we would set the sensitivity to 200 in this case. The signal is then good visible for the patient.

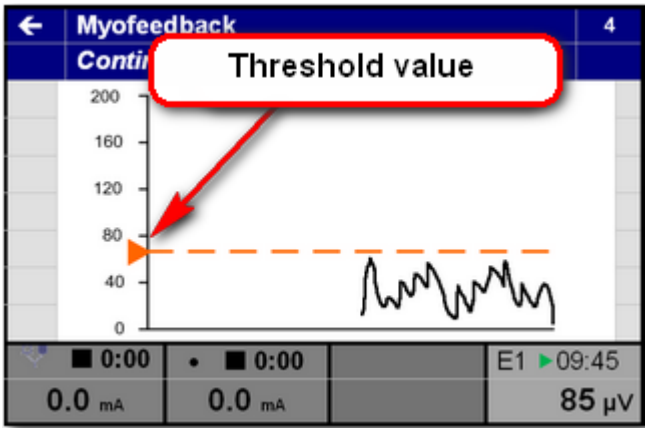
3.2 Threshold



By means of the back button go back to the Settings of the Continuous program.

Select “Threshold” from the menu with the central controller.

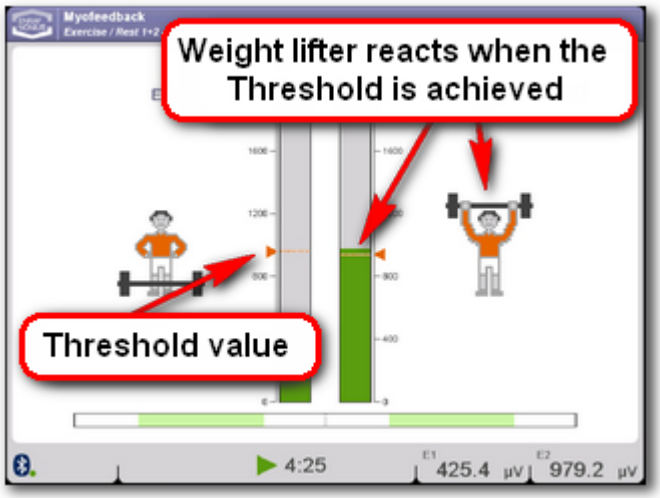
Confirm with the confirmation button.



Ask the patient to contract again

Change the Threshold with the central controller to a value at the top of that contraction.

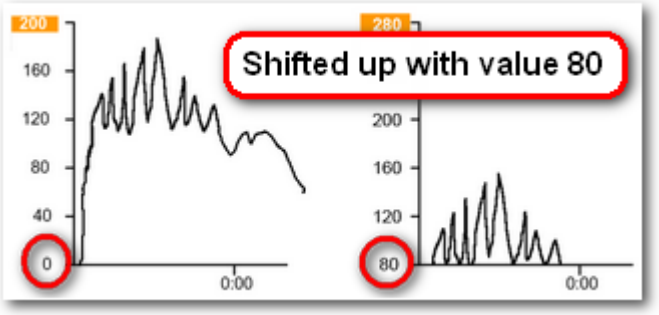
Push the confirmation button to return



What is threshold

- Threshold is a value that the patient should accomplish during his exercise session (the goal that the therapist can set)
- In the normal graph it is represented by a triangle and a dotted line.
- In the bar graph it is represented by an orange line. The weight lifter will react in case this dotted line (the threshold) is achieved.

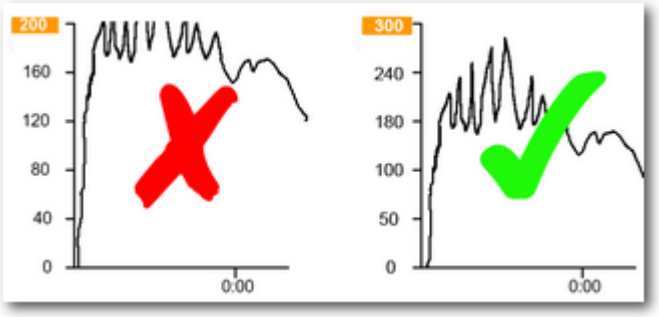
3.3 Shift



Shift is a special tool only available in the Myomed 6- series. With shift one shift the 0-value of the EMG signal on the y-axis.

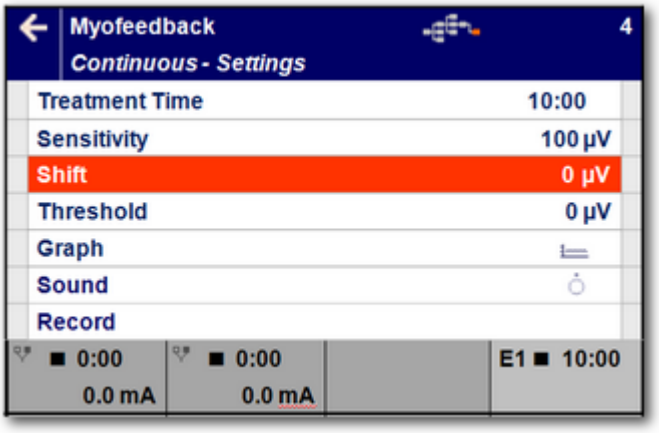
Why is shift used?
Especially in treatment of hypertonic muscles (increased muscle tension) there always is a basic tension (in other words, a basic EMG signal). A large part of the graph would therefore be “occupied” by this basic tension.

By shifting the whole graph we can only get the relevant part in the screen – we exclude the basic tension.

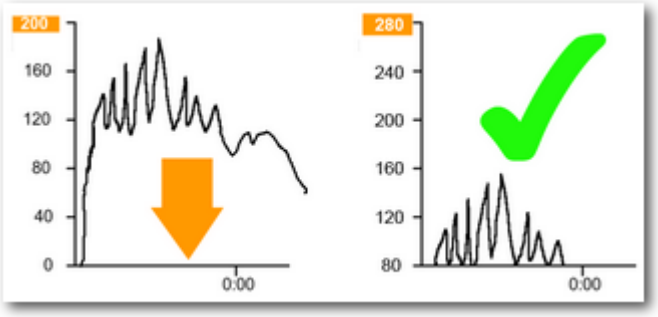


How to set the shift?
Note: For a correct use, connect the patient is first!

Step 1: Ask the patient to contract. Set the sensitivity to the maximum bandwidth, that is the value where the entire signal is within the range of the screen.

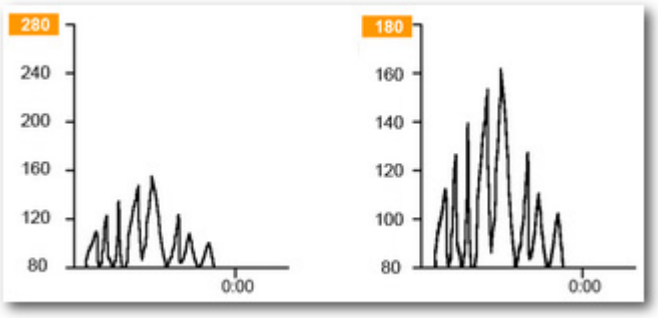


Step 2: Select Shift with the central controller. Push the confirmation button to accept



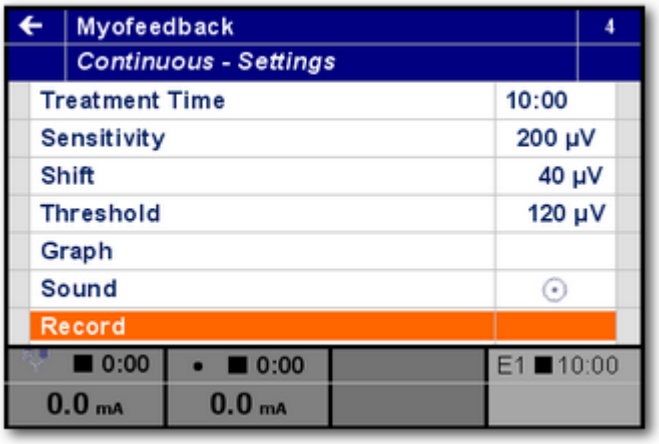
Scroll with the central controller until only the relevant part of the signal is displayed in the graphic. The relevant part is the entire signal minus the basic tension.

Push the confirmation button to return.



One now can adjust sensitivity again to maximize the view on the screen.

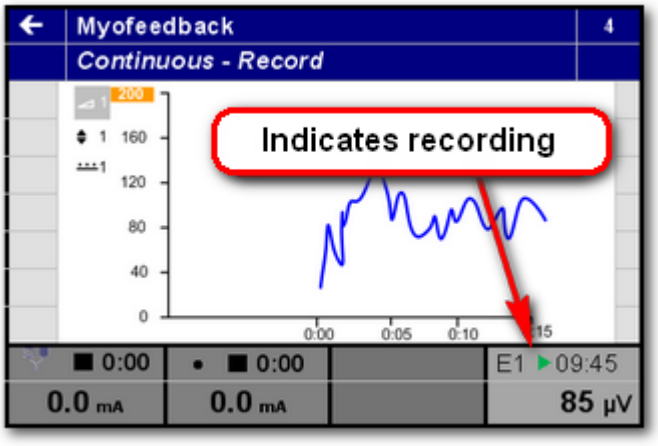
3.4 Record



With proper sensitivity, threshold and shift set one can start recording.

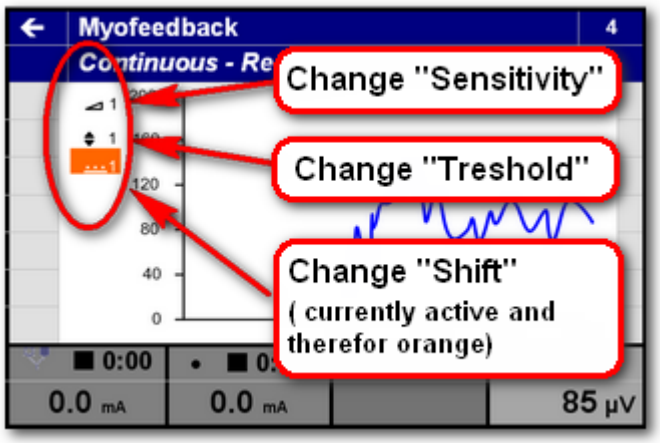
Select “Record” from the menu with the central controller.

Confirm with the confirmation button



The treatment time now starts.

A small green triangle in the right “tab” indicates it is running.



During the recording we can always adjust the sensitivity, threshold and shift, without interrupting the treatment.

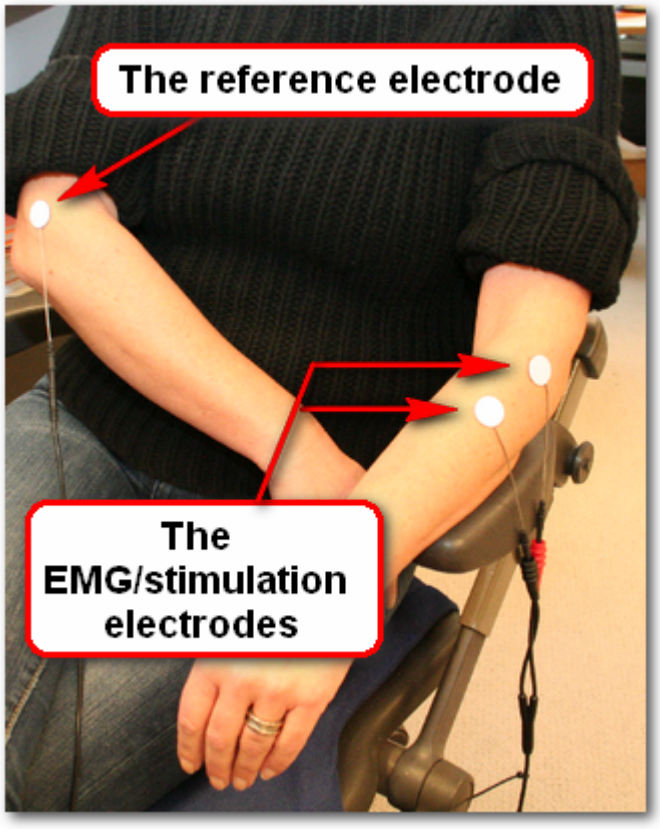
Use the central controller to select one of the three buttons on the screen (left side) in order to change these settings.

Congratulations, you just completed your first demonstration on a Myomed 632. If you understood the above part you basically understand the functionality and use of this unit.

4 Myofeedback and stimulation

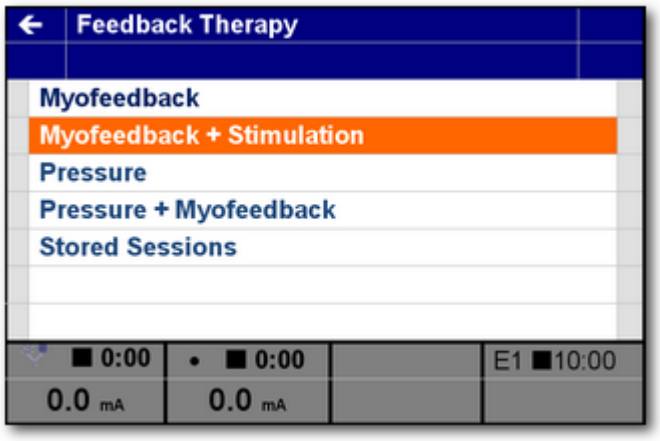
Besides basic EMG feedback – that is measuring and displaying the electric activity of the muscles – the Myomed also allows for a combination of myofeedback and stimulation. This combination of feedback and electrotherapy can be used for numerous reasons, for example in order to combine relaxation with muscle strengthening or to re-educate proper movements (like lifting techniques).

Hereunder a simple demonstration of myofeedback and stimulation.



Turn on the unit and connect the patient exactly the same way as described in the first demonstration.

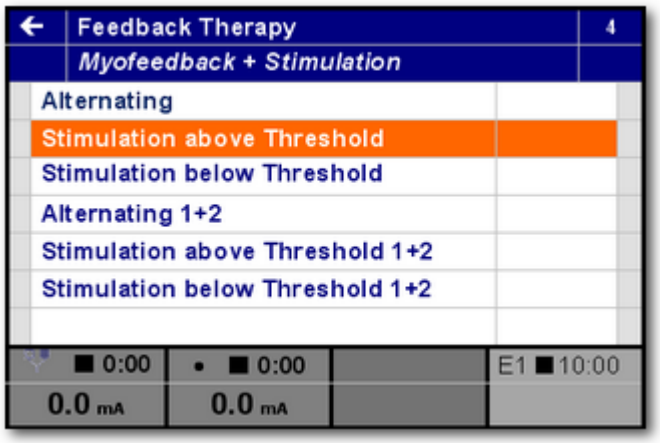
Note: we are combining ***EMG and stimulation***. Do not use “normal” stimulation electrodes – they are not suited for EMG purposes. Only electrodes 3444.222 are applicable!



Select “Myofeedback and stimulation” from the menu with the central controller.

Confirm with the confirmation button

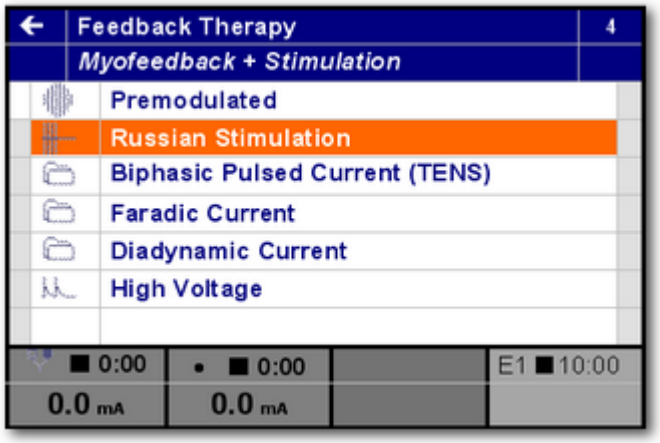
4.1 Stimulation above Treshold



Select “Stimulation above Threshold” from the menu with the central controller.

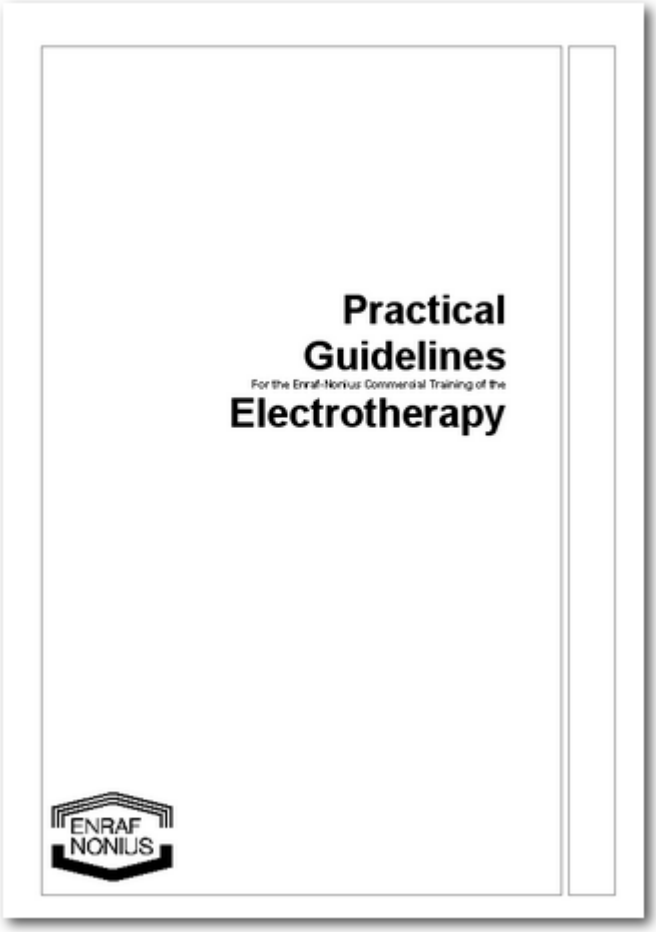
Confirm with the confirmation button

With “Stimulation above Threshold” the electrotherapy currents will become active when the EMG signal supersedes the threshold value.



Select “Russian Stimulation” from the menu with the central controller.

Confirm with the confirmation button

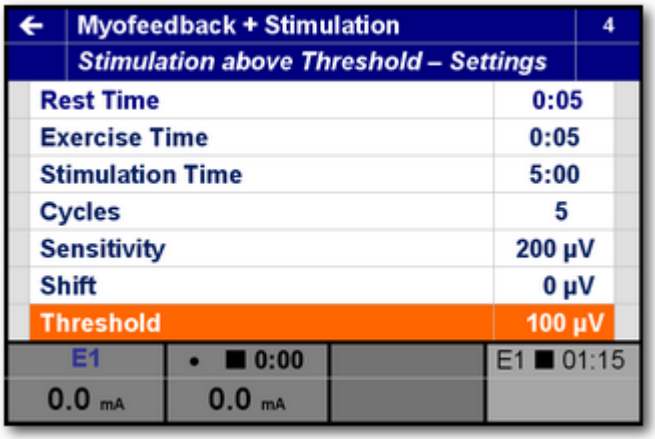


We now will set the parameter of the Russian Stimulation exactly the same as in the "**Practical Guidelines For the Enraf-Nonius Commercial Training Electrotherapy Application**"

Select "Treatment Time" with the central controller. Confirm with the confirmation button. Use the central controller to set the time on 4 minutes.

Select "Surge Program" with the central controller. Confirm with the confirmation button. In the "Surge Program" set the following parameters:

Ramp-up Time	2 seconds
Hold Time	6 seconds
Ramp-down Time	2 seconds
Interval Time	10 seconds



If all surge parameters are set we complete the "Stimulation above Threshold Settings".

Enter the following settings:
Rest Time = 5 seconds
Exercise Time = 5 seconds
Stimulation time = 5 seconds

Be sure you also set a threshold.

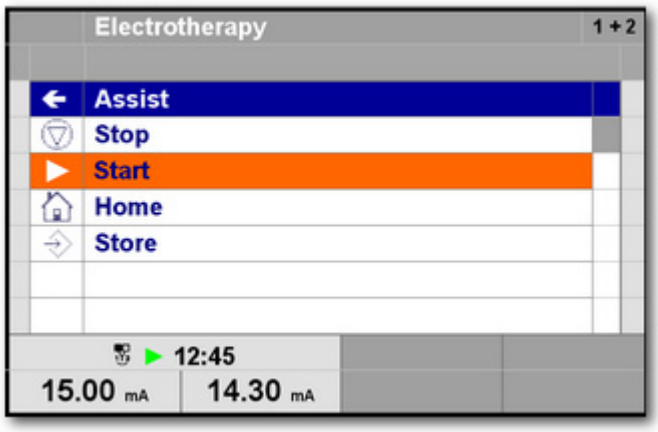
We are doing a demonstration of "Stimulation above Threshold", so without threshold it will not stimulate either (-;

Set a value of 100 mV for threshold

With the above setting we are now going to search for the proper intensity level of the stimulation.

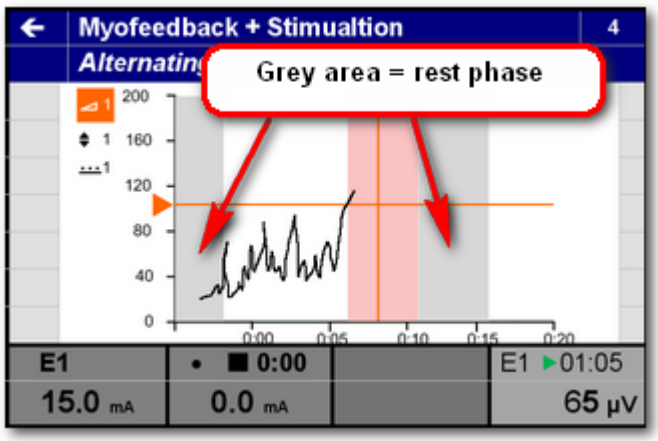
This means we press button A and are slowly going to increase the currents (shown in the left tab) and look for that specific value where a noticeable sensation is generated (that itchy feeling).

Note: For this EMG demonstration we refrain from the contraction as described in the electrotherapy guide – a noticeable sensation will do!



If this point is found we start the EMG – stimulation treatment via the assist button.

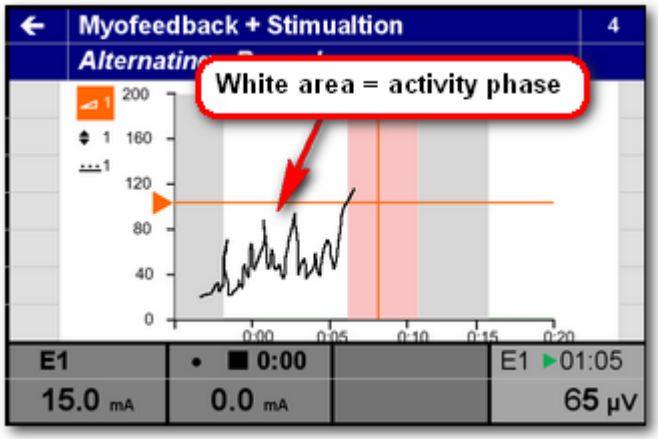
Select “Start” in the upcoming screen and confirm.



You are now getting a combination of all the parameters you entered in different phases.

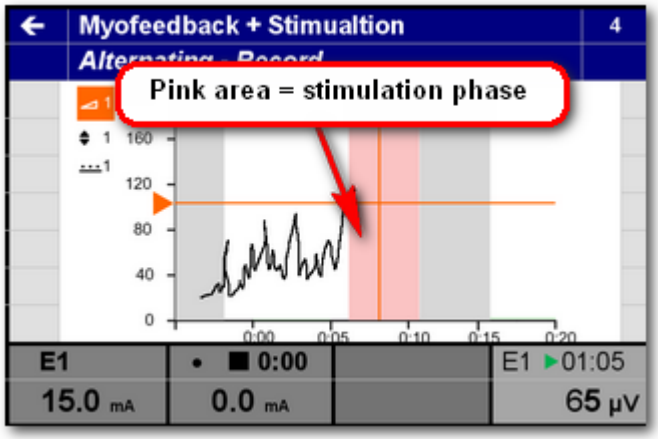
Grey area = rest phase
In the “grey area” you see the rest phase – that part where no activity should be seen.

This area was defined in the ““Stimulation above Threshold - Settings” as “Rest Time”.



White area = active EMG
In the white area the patient should activate the muscle of interest. The EMG signal of that activity is shown in this white area.

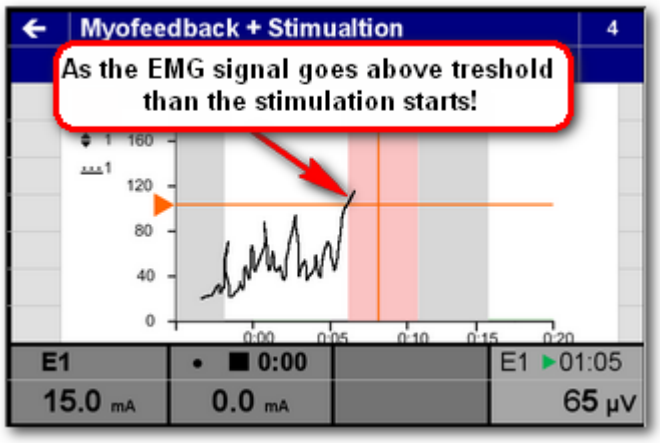
This area was defined in the ““Stimulation above Threshold - Settings” as “Exercise Time”.



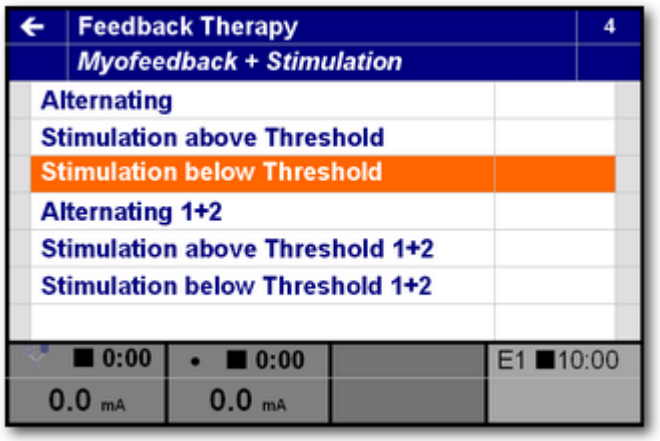
The pink area = stimulation phase
As soon as the activity of the patient is above the threshold the stimulation will start (remember – we are doing a demonstration of “Stimulation above Threshold”).

Here the EMG display will vanish and the electro stimulation (exactly according to the protocol as we set it) will start.

This area was defined in the ““Stimulation above Threshold - Settings” as “Stimulation Time”.



4.2 Stimulation below Threshold



Well – with the description above of "Stimulation above threshold" you should be able to figure out how to set a "Stimulation below Threshold"

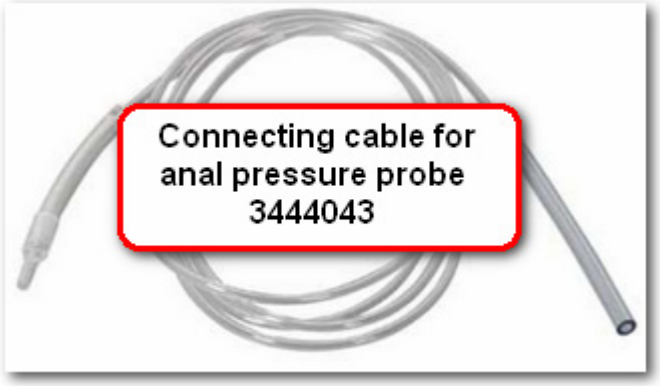
The only difference is of course that stimulation will be triggered as soon as the EMG signal goes below the threshold value.

Go ahead and try it out!

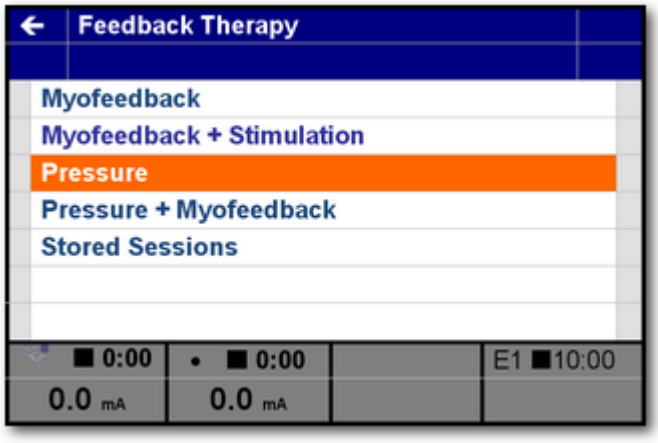
5 Pressure feedback

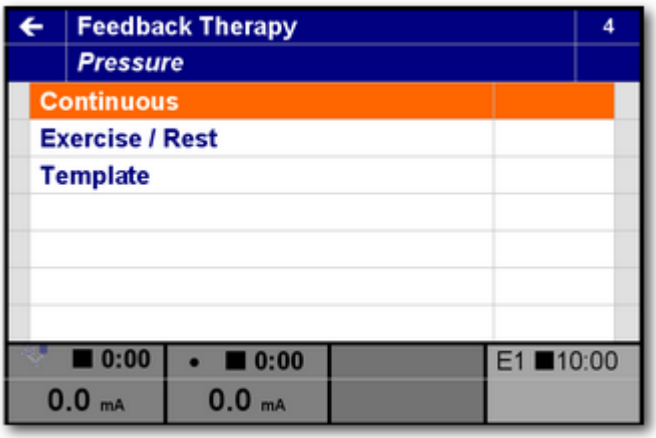
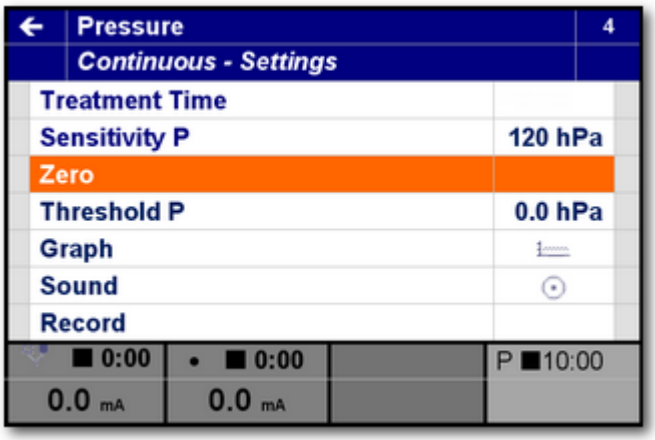
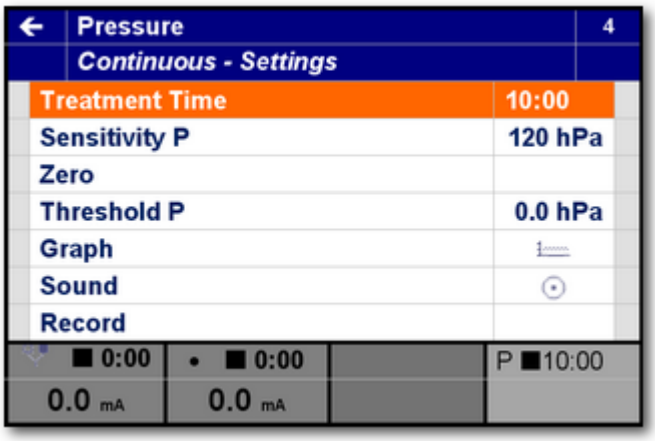
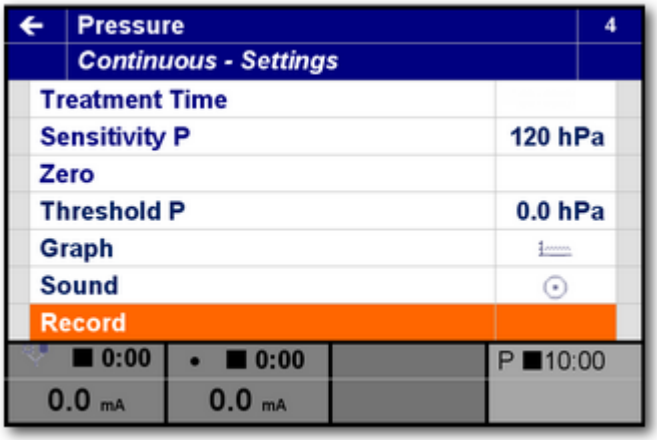
Pressure feedback is for demonstration purposes not very different from EMG feedback. Where the electrical activity of a muscle is the measured and displayed signal in EMG, in pressure feedback we look at the pressure. Pressure is the mechanical outcome of muscle activity. Pressure feedback is very common in incontinence training, but it also can be used in hand rehabilitation for example.

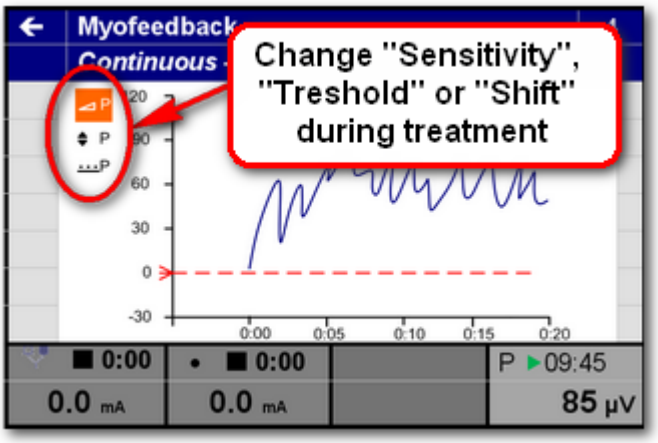
Pressure feedback is easy to show in exhibitions as no electrodes sticking is required, just with a simple balloon you can show the functionality of the unit.



Connect the "Connecting cable for the anal pressure probe" (art nr 3444045) to the pressure (p) channel of the unit.

	
	Connect the “Anal pressure sensor CD” (art nr 3444043) to connecting cable By the way – an alternative set with the Connecting hose for vaginal pressure sensor (art nr 3444044) and the pressure sensor (art nr 3444042) is of course also possible.
	In the main menu of the unit, select “Feedback Therapy” with the central controller. Confirm with the confirmation button.
	Select “Pressure” with the central controller. Confirm with the confirmation button.

	Select “Continuous” with the central controller. Confirm with the confirmation button.
	Since we attached a new interface we need to reset the zero pressure for that interface. Select “Zero” with the central controller. Be sure no pressure is applied to the interface. Confirm with the confirmation button. The pressure zero-calibration of the machine is now reset.
	Set the different parameters of the pressure feedback demonstration: Treatment Time = 4 minutes Sensitivity P = 120 hPa Threshold P = 50 hPa The function of “Sensitivity” and “Threshold” are exactly the same as in EMG feedback. “Shift” is not relevant here. There is no basic pressure – you just put the basic pressure to 0 with the zero setting! You can however change the shift during treatment if necessary.
	Select “Record” with the central controller. Confirm with the confirmation button to start the demonstration.



Just like during the EMG treatment you can change the “Sensitivity”, “Threshold” or “Shift’.

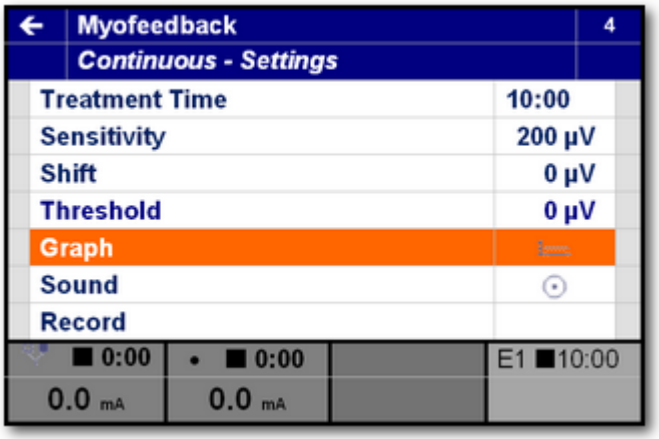
The green triangle in the lower right “Tab” indicates that the treatment is running.

This concludes the demonstration of the pressure feedback. It’s simple, isn’t it!

6 Additional Myomed demonstration items

Now you know how easy it is to demonstrate a Myomed, just a few additional items.

6.1 Graphic representations

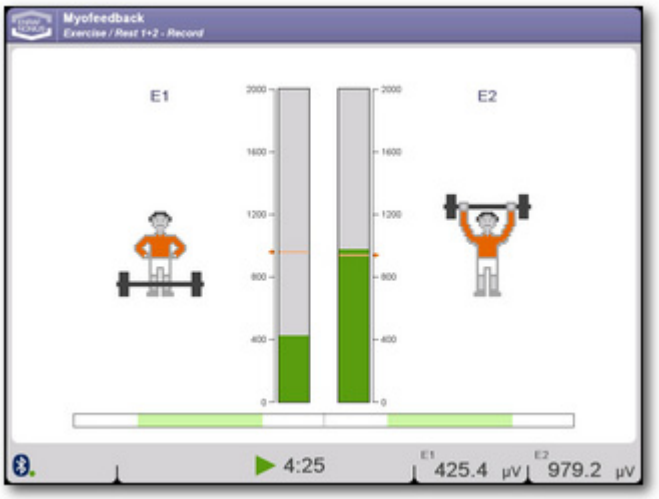


Whatever feedback treatment or demonstration you are doing – you will always have the choice of graphical representation of the signal.

Somewhere during the setting of the feedback parameters you will see the menu item “Graph”. Select “Graph” from the menu with the central controller.

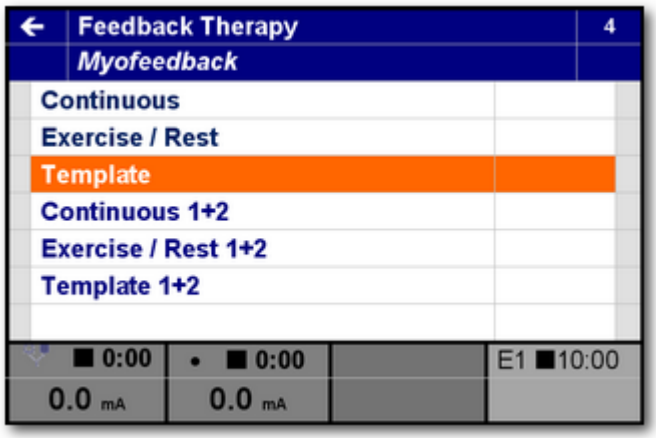
Confirm with the confirmation button

You can then choose from a bar graph or continuous graph.



The bar graph is less impressive but more easy to understand. Worthwhile showing both options to your customer!

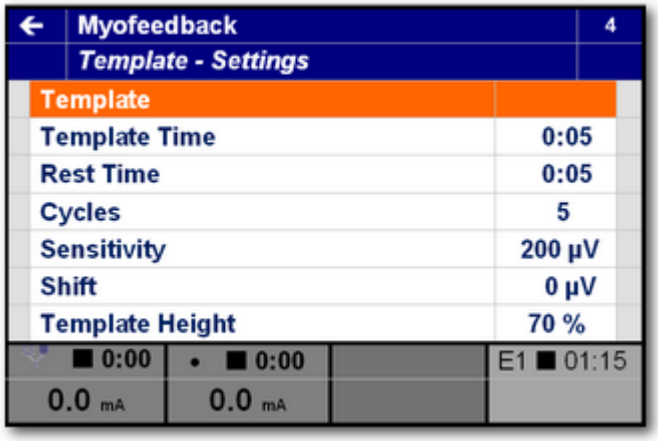
6.2 The use of templates



For training purposes one can use templates to simulate movement patterns.

A template is simply a shaped “Threshold”. Where the normal threshold is a single value (the dotted line in the graph) that the patient is asked to achieve, with templates one introduces changes over time of the Threshold value.

To start training with templates select “Template” from the “Myofeedback” menu with the central controller and confirm with the confirmation button.

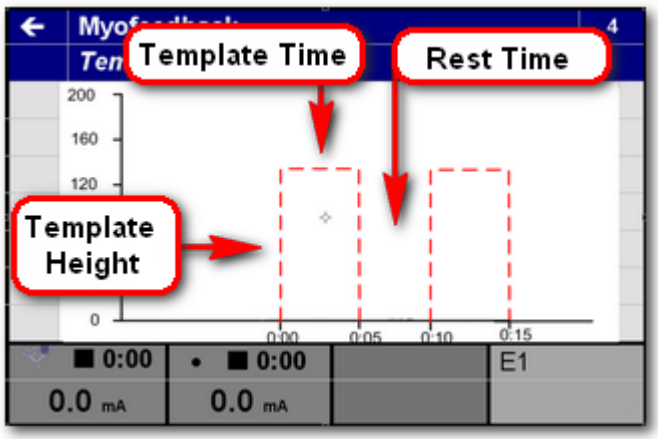


Select “Template” from the “Template – Settings” menu with the central controller.

Confirm with the confirmation button

One can now choose from rectangular shapes, triangular shapes etc.

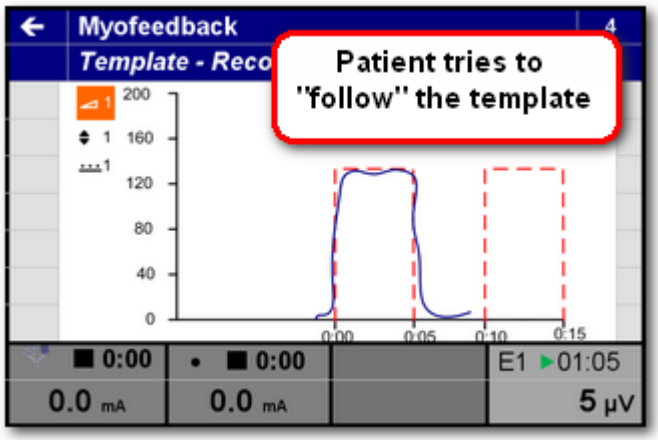
Choose the rectangular shape.



For this shape you can set a number of parameters.

For easy demonstration set:

- Time to 5 sec
- Rest Time to 7 seconds
- Template Height to 70%

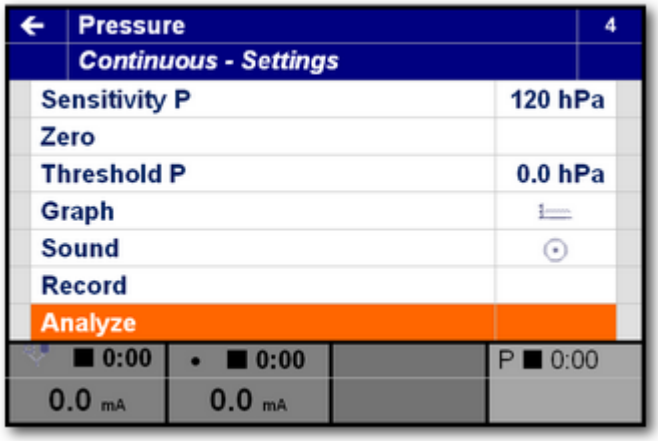


Now start recording.

During this session the template will appear as set. The patient tries to follow the template by means of contracting the muscles at the proper height and time as indicated by the dotted lines of the template.

Of course you can change “Sensitivity”, “Threshold” and “Shift” during recording when necessary.

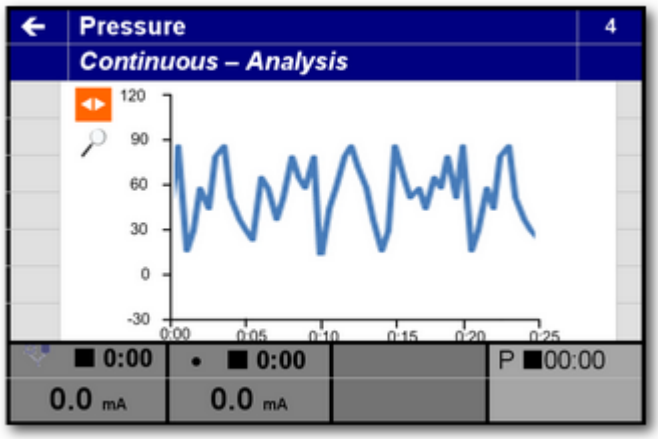
6.3 After the treatment: Analyze



With the Myomed it is easy to show results directly after the treatment, as well graphically as in numbers.

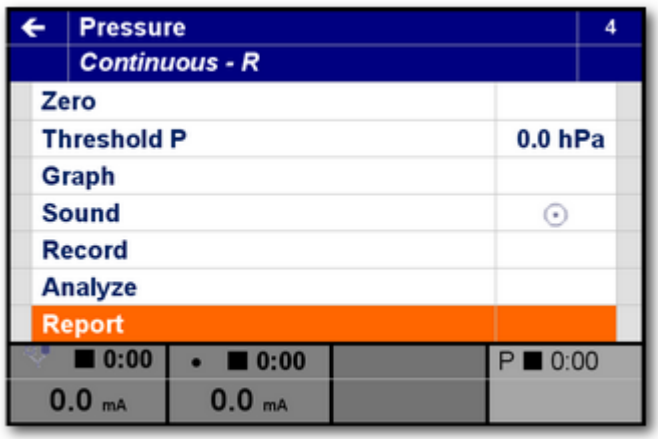
At the end of the treatment select “Analyze” from the menu with the central controller.

Confirm with the confirmation button.



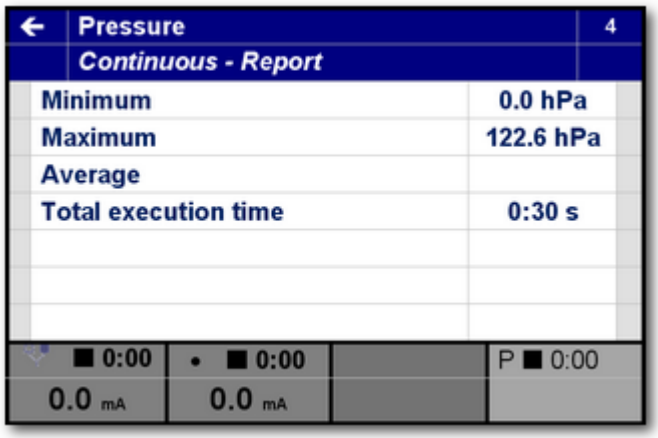
The graph of the recording will be shown. In case you want to zoom in on a particular part of the graph, click on the cursor button  and move the cursor with the central controller tot the part of interest and press the confirmation button.

Click the magnifying glass  to zoom in.



For the numerical results go back one step and select “Report” from the menu with the central controller.

Confirm with the confirmation button.



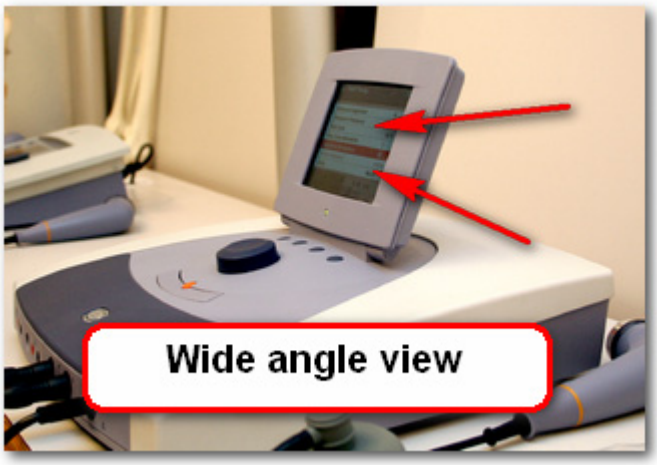
You will now get a simple overview of the values of that specific training.

7 Generic 6-series demonstration items

The following items are imperative in order to convince a potential customer of the ease of use of the Enraf-Nonius 6-Series (all units, not just the Myomed). Items that has been proven in practice, and although sometimes very simple and basic – extremely valuable in the real life daily situation of the therapist.

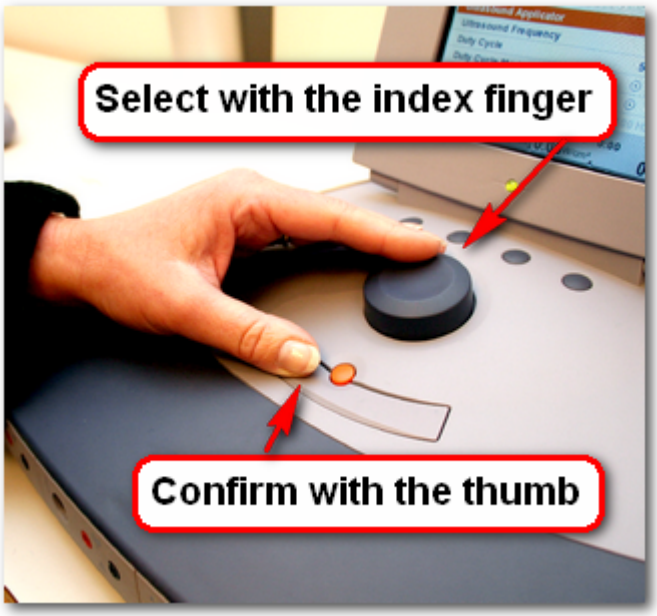
7.1 The tiltable screen & viewing angle

Tiltable – good view from all angles



But due to the highres tft also visible from the sides – it has a very wide-angle view.

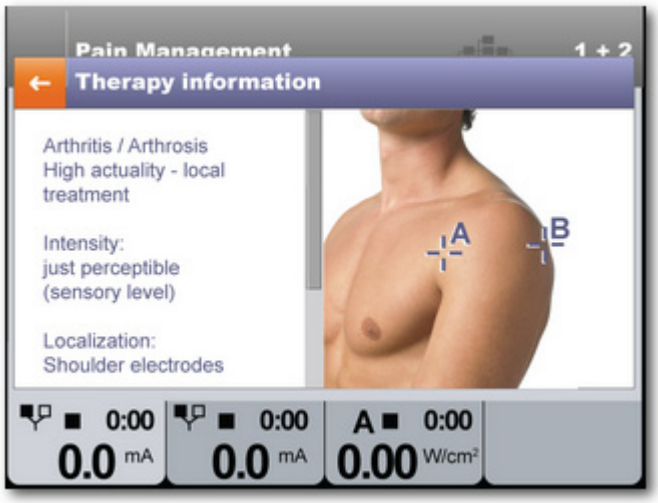
7.2 The one-hand operation



One hand on the patient and one hand on the treatment unit – that is how physiotherapist should work and wants to work.

Not many units allow this – but the Enraf-Nonius 6-series does! Full control of the unit with just one hand – select the item from the menu with your index finger and confirm with the thumb – couldn't be easier!

7.3 The use of the electrotherapy wizard



Always quickly show the therapy guide for electrotherapy – it is clear, easy to understand and unique