



General Guidelines

Electromyography (EMG), sometimes referred to as “biofeedback” or surface electromyography (sEMG), can be an effective tool to help physical rehabilitation professionals assess muscle activity of patients with musculoskeletal and neuromuscular impairments. In addition, EMG feedback provides an effective means of motor learning information for patients.

This modality can be used in one of two ways: 1) provide feedback as to the recruitment of muscles to enhance contractility or 2) provide information as to the recruitment of muscles to promote relaxation. In conditions such as rehabilitation after surgery, EMG is an effective tool to help patients recruit and utilize muscles in correct motor patterns. In conditions such as headaches and TMJ syndromes with hyperactive muscles, EMG supplies real-time feedback to help the patient learn how to relax muscles with excessive tension.

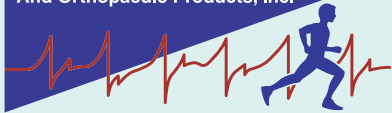
Since EMG monitors electrical activity instead of producing electronic stimulation (as with TENS, NMES, or IFC), there are very few contraindications for its use. EMG can be used on patients with pacemakers, cancer, osteoporosis, and pregnancy without any negative effects.

Setup

- 1. Allow the patient to assume a comfortable position where the area of the body to be treated is accessible.**
- 2. Expose the skin over the area to be treated. Make sure the skin is clean and dry. If necessary, clean the skin first with an alcohol prep pad.**
- 3. Place electrode pads over the area to be treated in an appropriate manner. (Please refer to the protocols within this section for guidelines on the pad placement for specific diagnoses.) Do NOT place any external electrode pads directly over any area where the skin is broken, bleeding, or excessively irritated without prior physician approval. If electrode pads are placed in an area with an open wound, be sure that the electrodes are sterile.**
- 4. Follow the directions below for Adjusting Threshold before beginning treatment.**
- 5. Refer to the information for each diagnosis within this section for the specific recommended settings for each diagnosis or condition.**
- 6. When treatment has been completed, remove electrode pads from skin and check skin for any reaction to the electrode pads or the electrotherapy treatment. Place the electrodes into a bag that can be sealed to keep them from drying out. Please refer to the Instruction Manual for other specific instructions in caring for electrodes or the electronic device.**

Setting Threshold Level for Strengthening

Once the electrode pads have been placed over the area to be treated, turn the EMG machine on but do NOT start a treatment program. Ask the patient to produce and hold a sustained maximum contraction of the muscles to be used. Observe the level of contraction (in μV) displayed on the monitor screen. Ask the patient



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to repeat 2-times and observe the level of μV produced. Take the approximate average of these trials and multiply it by 50-75% (depending upon how aggressive you are looking to strengthen the muscle group). The result of this calculation will be used as the initial threshold level for the patient. Adjust the EMG device up or down until the settings display your initial threshold level. Your patient is now ready to begin their first set of trials. Instruct the patient to contract the muscles being treated until the contraction meets or exceeds the initial threshold level.

Setting Threshold Level for Relaxation

Once the electrode pads have been placed over the area to treated, turn the EMG machine on but do NOT start a treatment program. Ask the patient to relax the muscles to be treated. After several moments (long enough for the patient to relax the muscle), observe the level of output (in μV) displayed on the monitor screen. Used this level as the initial threshold level for the patient. Adjust the EMG device up or down until the settings display your initial threshold level. Remember that when using the EMG device for relaxation, your patient will be trying to "turn off" muscle activity and reduce the number of μV displaying on the screen below the threshold level. Your patient is now ready to begin their first set of trials. Instruct the patient to relax their muscles in order to get below the initial threshold level.