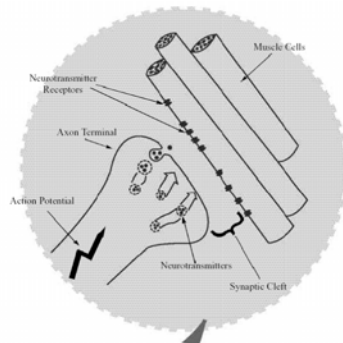


## MEASUREMENT OF ELECTROMYOGRAM

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## Background

- Skeletal muscle performs mechanical work.
- It is stimulated to contract when the brain or spinal cord activates motor units.
- An action potential in the motoneuron causes activation of muscle fibers.
- The activation of motor units by action potentials generates a stochastic voltage signal in the muscle.
- The amount of work is proportional to the number of activated motor units.



## Experimental objectives

- To determine the maximum grip strength for the right versus the left hand
- To observe, record and correlate motor unit recruitment with the increased power of skeletal muscle contraction
- To record the EMG when inducing fatigue

## Accessories used

- Electrode Lead Set
- Hand Dynamometer
- Disposable Electrodes



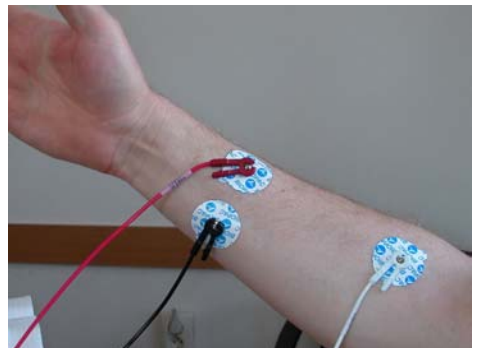
## Tasks performed by the student

- Electrode positioning
- Calibration (sensitivity setting)
- Record forearm EMG in dominant arm
  - Squeeze the hand dynamometer four times, starting with a light squeeze and ending with the maximum
  - Squeeze the hand dynamometer with the maximum clench force and try to maintain it
- Repeat the sequence for the non-dominant arm

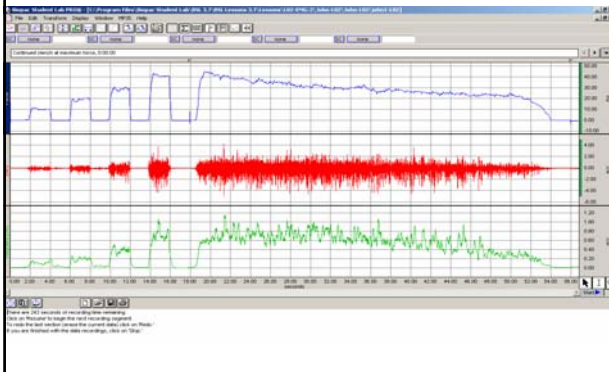
## Sample measurement



## EMG - Electrode setting



## EMG – sample recording



## Data analyses

- Determine force vs. „integrated” EMG relationships from the respective mean of the four 2-s contraction periods
  - For the dominant arm
  - For the non-dominant arm
  - Record values and create graph
- Calculate the time for the 50% decrease of the maximum clench force for both arms