# Decomposition of surface EMG signals from cyclic dynamic contractions

*File name = Decomposition of surface EMG signals from cyclic dynamic contractions*

Decomposition of EMG into MUAPS

* <https://pubmed.ncbi.nlm.nih.gov/15298438/>

MUAPTs = motor unit action potential trains

* <http://www.bu.edu/nmrc/files/2010/04/002.pdf>
* <https://www.youtube.com/watch?v=vXb0ZvkFkS8&ab_channel=khanacademymedicine>

Issue with sEMG decomposition:

* During the contraction of the muscle, the shape and the amplitude of the MUAPs changes (the space between the electrode changes) which has influence on the measure

Not finished

# Detecting the unique representation of motor-unit action potentials in the surface electromyogram

*File name = farina2008.pdf*

Need multi-channel system to identify action potential using surface EMG because of the low-pass filtering induced by the tissues interposed between the fibers and the electrode

Needs to identify single motor unit from sEMG

Uses a grid of 11x11 emg sensor

* 1 Laplacian channel is composed of 5 electrodes (one and its 4 neighbours)
* Channels can be grouped

Test the capacity of selected recording configurations to discriminate the action potentials of single motor units in sEMG recordings

* Relation between # of motor unit identified and # of channels (more channel = more action unit identified)
* Low pass filtering of tissues (skin…) makes the signal almost indistiguishable for sEMG under som conditions (this study aims to find these conditions)

Result : need larger sEMG grid

# The effective neural drive to muscles is the common synaptic input to motor neuros

*File name = farina2014*