A statistical method for electromyographic envelope determination

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ABSTRACT

The information extracted from electromyographic signals can provide researchers with a number of useful information to study muscle activity. Various techniques can be found in the literature to perform such analyses. However, most of them, when dealing with dynamic contractions, for instance, do not take adequate care when highlighting the correct window of the collected signal. Hence, the results may refer not only to the muscle contraction but also to other parts of the collected signal that may contain inactivity or artifact noise.

This work presents a method to automatically detect the EMG envelope. In so doing it is possible to find out the correct time when the contraction begins and ends. The proposed technique is based on statistical analyses of the raw signal. To locate the boundaries of the EMG envelope, the computational algorithm searches for points where the signal reaches, at least, three standard deviations with regard to the average of the whole data.

The results have shown that the method can correctly detect EMG envelopes even on very noise conditions.

References


