

## Review of surface electrode placement for recording electromyography signals

### ABSTRACT

**Background:** Surface Electromyography (SEMG) signal has used in monitoring muscle activities. It has been widely applied in many areas, such as body member prosthesis, noise cancellation for brain-computer interface, and robotics. The SEMG acquisition method for collecting the signal with low-noise has extensively investigated in the last decade. The objective of this study is to review the recent works on electrode position and identify avenues for future research. **Methods:** A review of the relevant literature published between 1986 and 2015. This study commences with the basics of SEMG and recent methods for electrode position. **Result:** The different noises affecting SEMG signal include the spread of the innervation zone, cross-talk from neighbour muscles, electrode size, and location of electrode placement. Moreover, electrode placement or displacement effect SEMG signal in both time and frequency domain. **Conclusion:** Although several SEMG studies examined the effects of electrode position and internal electrode distance on forearm muscles, only a few studies addressed the methodological difficulties of the electrode position. In the majority of studies, electrodes were placed without the specific symptoms of the points along the length or shape of the muscle. Moreover, IED varied in different studies.

**Keywords:** Electrode placement; Inter electrode distance; SEMG electrode; Surface electromyography