

The cross-correlation coefficient (CC) was used to estimate the effects of muscular voluntary contraction (MVC) and fibres inclination. The study was based on simulated surface electromyographic (sEMG) signals generated in a cylindrical multi-layer volume conductor (bone, muscle, fat and skin) and detected by longitudinal single differential (LSD), inverse binomial of order two (IB2) and maximum kurtosis (MKF) systems. We calculated correlation coefficients of sEMG signal generated from parallel fibres and sEMG signals detected when the fibres inclination angle (FIA) varied from 0° to 360° by a step of 5° . The results showed that the CC decreases as the FIA increases. Moreover, for each pair of sEMG signals, the effect of the fat layer thickness on CC was negligible. The signals detected by LSD system were more correlated at low MVC level than the high MVC level. However, the signals detected by IB2 and MKF systems have an inverse effect