

Time and Frequency Domain Features of EMG Signal During Islamic Prayer (*Salat*)

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Abstract—

Electromyography (EMG) activity of muscles can help us to assess the muscular functions during daily activity. In this paper, we investigate the EMG based assessment of the muscles situated in dorsal side of human body. Specifically, two upper and lower back muscles named as erector spinae and trapezius muscles are investigated during the body movements involved in Islamic prayer (*Salat*). Several time and frequency domain features of the EMG signal were examined to find the significant variation in the muscles activity. Results show that, both muscles maintain a balance in terms of contraction and relaxation during bowing and prostration position of *Salat*. In addition, the frequency domain features indicate that, the lumbar spine muscle exhibits contraction in each alternate position during the prayer. The finding of the study may help to develop rehabilitation program for the senior citizens suffering from back pain that restrain them to perform obligatory *Salat*.

Index Terms—Electromyography, EMG, back pain, *Salat*