

ABSTRACT

Fatigue in athletes often causes injury. Detection of fatigue often occurs after the injury has occurred. It is important to detect muscle fatigue before it is seen, not only to prevent injury, but also to improve athlete's performance. In recent years there have been many proposed methods for recognizing EMG signal patterns. From so much literature proposes the use of time domain features using the Discrete Wavelet Transform (DWT) method as an appropriate parameter in the feature extraction process when compared to the frequency feature. However, some literature still gives low classification results, this is because some studies have not found certain types of mother wavelet from Discrete Wavelet Transform (DWT) that greatly affect the process of recognizing signal patterns. In addition, studies on the classification of fatigue patterns in leg muscles are still very rarely conducted. The accuracy value obtained from the overall signal classification process is strongly influenced by the results at the proper feature extraction stage. To solve the above problem, this final project proposes the development of feature extraction algorithm on EMG signals by comparing 4 different types of mother wavelets from DWT, namely the type Wavelet Deubechies (db2), Wavelet Coiflets (coif1), Wavelet Haar (haar) and Wavelet Symlet (sym2) to improve the accuracy of the classification process. Performance testing results show that the proposed algorithm successfully achieved an average accuracy of 86.87 % and specificity of 72.18 %.

Keywords : *EMG, wavelet, Mean Peak Frequency, Power Spectral Density, Discrete Wavelet Transform*