

Editorial on Electromyography **Vinay Kille***

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Editorial

When studying neuromuscular reflexes, muscle performance, or movement patterns, electromyography may be a valuable method for the physiotherapist to gain information about the timing or extent of muscle activity. The strength of the signal recorded is determined by the placement of electrodes, sufficient skin preparation, and the EMG machine's specifications. To accurately interpret EMG data, the user must be able to identify artefacts that can distort the recording, as well as choose a processing technique that is suitable for the application. This paper will go over all of these topics and provide the reader an overview of EMG techniques.

Physical therapists are allowed to conduct needle EMGs with the permission of a physician and surgeon, however they are not allowed to render diagnostic or prognostic interpretations.

Low back pain is a multifactorial etiological condition that affects 6.8% of the global population at any given time. 1 It is one of the leading causes of job absenteeism and disability in everyday activities, negatively impacting an individual's quality of life.

Traditionally, a physician or physical therapist used techniques like palpation, anamnesis, and the Borg scale to make a clinical diagnosis of low back pain.

Questionnaires and physical performance tasks may be used to monitor the progression of low back pain during physical therapy care. 5 All of these scenarios have a high level of subjectivity, since they are based on the patient's report or the physical therapist's perception. As a result, double-blind experiments are also used.

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The Back Analysis System, an alternative low back pain assessment technique, was suggested in 1993. More "objective" diagnosis and follow-up are possible with the Back Analysis System. This system is based on the induction of muscle fatigue as measured by surface electromyography (EMG). The median frequency (MF) during a prolonged muscle contraction can be mapped in the frequency domain. The MF appears to decrease during the fatigue period, indicating a reduction in the motor unit action potential firing rate during a muscle contraction. An index of muscle exhaustion during isometric contractions has been suggested as a guide for determining low back pain based on this spectral variable.

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As a result, it's been proposed in recent years that chronic low back pain is linked to localised muscle fatigue. Muscle fatigue is viewed in this light as a continuous process that begins with the initiation of neuromuscular activity and can result in changes in electrical activity, electrical transmission, excitation-contraction coupling, and other aspects of the nervous system different aspects of the contraction mechanism People with low back pain have earlier signs of muscle weakness in their lower back muscles than people who are healthy, according to scientific evidence. However, there has been a tendency to concentrate on small samples of athletes in studies where the aim was to use EMG to differentiate between people with and without pain.

Athletes have gotten a lot of coverage, but non-athletes have gotten a lot less. Furthermore, while studies have been conducted with the goal of analysing the relationship between the EMG signal and low back pain, the inherent weaknesses of the procedure must be examined before considering the method's ability to achieve a straight diagnosis. As a result, the current research, which used similar techniques, was conducted similar to those used in other experiments, such as discriminant statistical analysis, and which centred on sedentary topics, represents a step toward clinical application of the technique.

The aim of this study was to see if muscle fatigue indexes measured in the frequency domain would distinguish between sedentary subjects with lumbar pain and sedentary subjects without lumbar pain. If surface EMG can be used to achieve such discrimination, it is likely that the same procedure can be used to gain an objective evaluation of low back pain.