

Abstract

There is a need for outcome measurement tools which are able to provide accurate and reliable information regarding the efficiency and efficacy of therapeutic intervention of soft tissue injury e.g. ligament tear. Electrical activity within the body tissues has been shown to be influenced by the tissue state, and following injury, bioelectric changes have been demonstrated for example in bone healing and nerve regeneration.

This project considers the relationship between the electrical potentials recorded from the skin surface and clinical recovery following a soft tissue lesion. The measurement of the skin potential is not new but the application and approach used is novel in that a non invasive differential skin surface potential is used instead of the traditional and invasive transcutaneous potential.

The differential potential was initially investigated in non injured subjects in order to gain an understanding of its character and behaviour. Simultaneous monitoring of environmental, physiological and psychological factors enabled evaluation of their influence on the generation mechanisms. In order to carry out the work, specialist instrumentation was designed and computer software developed.

Injured subjects were recruited during two test series and the results compared with those obtained from the non injured subjects. Differences in potential profiles were marked on occasions. However a significant percentage of injured subjects presented a profile which was very similar to the non injured subject potentials.

The failure to demonstrate consistent differences between potentials from the groups may reflect the lability of tissue potentials or that their behaviour is not purely related to local tissue state. Psychological factors were shown to exert influences on the potentials and differences in environmental and physiological conditions may also be responsible for the variations seen. The refinement of the test apparatus and protocol which is discussed may facilitate more discriminative data collection.