

Exploiting Kinetic and Kinematic Data to Plot Cyclograms for Managing the Rehabilitation Process of BKAs by Applying Neural Networks

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Abstract : Kinematic data wisely correlate vector quantities in space to scalar parameters in time to assess the degree of symmetry between the intact limb and the amputated limb with respect to a normal model derived from the gait of control group participants. Furthermore, these particular data allow a doctor to preliminarily evaluate the usefulness of a certain rehabilitation therapy. Kinetic curves allow the analysis of ground reaction forces (GRFs) to assess the appropriateness of human motion. Electromyography (EMG) allows the analysis of the fundamental lower limb force contributions to quantify the level of gait asymmetry. However, the use of this technological tool is expensive and requires patient's hospitalization. This research work suggests overcoming the above limitations by applying artificial neural networks.

Keywords : kinetics, kinematics, cyclograms, neural networks, transtibial amputation

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