Human movement analysis: the soft tissue artefact issue

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Editorial

Human movement analysis: the soft tissue artefact issue

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This Special Issue of the Journal of Biomechanics reports an overview of the innovative research being conducted on a problem which every researcher reporting on the kinematics of humans and animals must cope with. The problem is rooted in our inability to directly observe the bones of our participants during the activities of interest and it represents a critical challenge since it is the motion of these underlying bones that is generally the nexus of our research.

We are most often forced to reconstruct the motion of bones using the recorded trajectories of markers placed on the skin, which, due to the interposed soft tissues, are not rigidly fixed to the underlying bones. The local mobility of these markers (now commonly referred to as soft tissue artefact, or STA) leads to errors that, in some cases, are of the same order of magnitude as the motions at the joints being investigated. This problem therefore puts at risk the validity of a significant body of research in the basic, clinical and applied sciences. It is also a problem that, until recently, has been neither fully understood nor considered, arguably overlooked, by many of us whose research is affected by it. With this Special Issue, we hope this scenario will change.