

Remote gait analysis in orthopedics: Current trends for advancing the state-of-the-art

Abstract

Advances in wearable sensor technology present an unprecedented opportunity to leverage remote gait analysis to improve musculoskeletal health. New developments target applications both for clinical practice, like quantifying disease severity and monitoring rehabilitation, as well as for research, like the study of how pain- or injury-induced gait patterns become habitual. However, utility in practice requires solutions that are not excessively burdensome, but that are affordable, comfortable, and easy to use. While reducing the number of required sensors helps meet these criteria, it presents a difficulty for some biomechanical analyses. In this talk, I will survey approaches for overcoming this barrier. Current trends involve machine learning, musculoskeletal modeling, simulation, and developing new digital endpoints. These advances will streamline the incorporation of remote monitoring tools for orthopedics and augmenting current practice.