

Hälsoteknikcentrum Halland

Accuracy of Qinematic Posture Scan tracking point algorithms,

Krautwald, T., Lundgren, L., & Jonsson, E. (2017), Final Report 960919 - Health Technology Center Halland, Halmstad University, Sweden.

Abstract

This project is a collaborative work between the markerless 3D posture scan software provider Qinematic AB from Stockholm and Health Technology Center Halland from Halmstad. The aim of this case study was to evaluate the accuracy of Qinematics tracking point algorithms. The double leg squat was analyzed against a Qualisys 6-camera 3D motion capture system. The results show a promising outcome. Qinematics algorithm could impressively reproduce all measured tracking points (shoulder surfaces, hips, knees and center of mass) with high accuracy. The differences were dependent from the axis the tracking points were travelling on. Forth and back movements were differing $1.94 \pm 1.06\%$. Left and right movements were differing $0.72 \pm 0.37\%$. Up and down movements were differing $1.84 \pm 1.10\%$. Especially for lower extremities the tracking point estimation improved around the turning point of the movement (deepest squat position). It can be stated that Qinematic's algorithm is a high valued and applicable device for a future health market. It can be used as a high-fidelity examination device that standardizes posture examination. Due to a short screening-time it will enable therapists and doctors to focus on treatment instead of time consuming body screenings with serious human errors. However, more improvements towards special patient groups have to be done. This can be realized with a strong collaboration between research engineers and the company. Further improvements are also awaited through Qinematic's machine learning algorithm that improves automatically with an increasing number of scans.