Sit-to-Stand transitions for health monitoring using cameras at home

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1. Introduction

Sit-to-stand (STS) transition can be quantified using skeleton data recorded with cameras. The trajectory of the head joint (Figure 3) is processed to find peaks. This produces STS duration and speed of ascent.

2. Results

For participants undergoing hips/knee replacement surgery, speed of ascent correlates really well with the recovery trend of the participant (Figure 1, left). For comparison, healthy participants (Figure 2, right) present no trend. For participants affected by Parkinson’s Disease (PD), speed of ascent correlates well with the MDS-UPDRS III score used by clinicians to measure the severity of PD (Figure 3).

3. Conclusions

STS time and speed are strong indicators of health than can be used to automatically monitor the progress of different medical conditions such as the recovery from hip or knee surgery and PD.