

## **Accuracy of the Actigraph GT3x for the assessment of active energy expenditure during 4 activities of daily living in post-stroke subjects.**

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**Introduction:** The Actigraph has already been validated in healthy populations for the assessment of Active Energy Expenditure (AEE). However, despite its common use in post-stroke subjects, few studies have verified its validity in subjects with stroke sequelae in situations of daily living.

**Purpose :** To evaluate the Actigraph's AEE assessment accuracy and the influence of the placement of the device during a sequence of common activities of daily living in post-stroke subjects.

**Method:** All subjects affected with stroke sequelae were invited to participate in this study. Participating subjects were wearing the Actigraph on three different locations – ankle, hip and wrist on the non-affected side – and were asked to perform 4 tasks: transfers, manual task, walking during six minutes and walking up and down stairs. The values of AEE estimated by the Actigraph were compared to those measured by a portable breathing gas exchange analyzer Metamax. The agreement between Actigraph and Metamax values was analyzed with Bland-Altman plots for each task and each sensor location.

**Results:** 46 subjects have participated to the study protocol. Large differences were recorded according to the location of the sensor and the type of task. Overall, the wrist Actigraph provided the active energy expenditure values closest to the Metamax (MD=-1.82kcal ; %MD=-5%). The agreement with the Metamax was poor in general regardless of the sensor location and type of task.

**Conclusions:** This study found large differences between the AEE as measured by the Actigraph and the Metamax according to the location of the sensor and the type of task performed by the subject. Moreover, the agreement between the Actigraph and Metamax is poor, which means that the results obtained with this device must be interpreted carefully in post-stroke populations.