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## ACCELEROMETRY FOR MEASURING ENERGY EXPENDITURE FROM PHYSICAL ACTIVITY IN HEALTHY CHILDREN

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**Rationale:** To evaluate which accelerometer is most suitable to measure energy expenditure (EE) in children.

**Methods:** Healthy children completed a movement protocol (lying, sitting, coloring, playing with a ball, walking (2,4,6 km/h), running (8,10km/h)) wearing 3 of the in total 4 included accelerometers (Activ8®, Actigraph®, GeneActiv® and PAM400®) simultaneously. Thereafter participants continued wearing them one week at home. Participants and/or parents filled out an activity record and scored the accelerometers on user-friendliness. Reference values for the metabolic equivalent of task (METs) based on double labelled water studies were used as gold standard. Physical Activity Level (PAL) was the primary outcome variable. Intraclass correlation coefficient (ICC) were calculated for the movement protocol and home measurements separately to determine validity for each accelerometer.

**Results:** 12 children (3-14 years) were included in this study. For the GeneActiv® it was not possible to calculate ICC because METs was not included in the output. The movement protocol ICC of the Activ8® was good in children >9 years (0.84-0.88) but moderate in younger children (<9 years)(0.65-0.7). The ICC was low for the Actigraph® (0.6). The PAM® had 100% missing data in the movement protocol and 60% for the home measurements due to synchronization problems with the Atris® app. Based on activity records the Activ8® and the PAM® had good ICC scores (0.85 and 0.81 respectively). The PAM® had the best user user-friendliness score of 7.8 and Activ8® (6.3) the lowest.

**Conclusion:** Activ8® scored as the best suitable for measuring EE from activity in children in clinical practice. More studies are necessary in less active children to assess validity in lower PAL. An instruction video on how to remove the band aid without causing pain will hopefully improve the user- friendliness off the Activ8®.

**References:** METy Values (Smoothed) – View All Categories - NCCOR Youth Compendium of Physical Activities

**Disclosure of Interest:** None declared