

'Physical activity measurement instruments for children with cerebral palsy: a systematic review'

Désirée B Maltais¹, Rita J G van den Berg-Emons²

1 Laval University, Quebec City, QC, Canada. **2** Erasmus Medical Center, Department Rehabilitation Medicine and Physical Therapy, Rotterdam, the Netherlands.
Correspondence to: Desiree.Maltais@rea.ulaval.ca

doi: 10.1111/j.1469-8749.2010.03872.x

SIR—We read with interest the systematic review of physical activity measurement instruments for children with cerebral palsy (CP) by Capio et al.¹ We agree with the authors' rationale for undertaking the review, that 'the best instrument or combination of instruments to use to measure physical activity among children with CP has not been established comprehensively in previously published literature'.¹ It seems to us, however, that the authors employed a non-traditional definition of physical activity in their review.

Although the concept of physical activity was not explicitly defined in the article, it appears to have been implicitly defined as being very closely related to participation, since the authors stated that, 'Valid and reliable measures of physical activity among children with disabilities such as CP are especially critical to estimate participation ...'.¹ Physical activity, however, is traditionally defined as 'any bodily movement produced by the skeletal muscles that results in a substantial increase over resting energy expenditure'.² We believe it is important that such a definition be used in the context of physical activity research, including research involving children with CP, because it is this type of definition which underlies the science of physical activity research and physical activity recommendations for various populations. To use another definition or definitions, even implicitly, could lead to confusion and difficulty comparing results across populations or within a specific population, such as children with CP.

We would suggest the authors' conclusion that the Children's Assessment of Participation and Enjoyment/Preferences for Activity of Children (CAPE/PAC), the Activities

Scale for Kids – Performance version (ASKp), and the Uptimer are valid measures of physical activity is potentially misleading since these three tools were neither designed nor validated as measures of physical activity, as the concept is traditionally defined. According to the test developers, the CAPE/PAC was designed and validated as a measure of children's participation in everyday activities outside of school.³ Although various 'physical activity' items are evaluated, these items are used to assess participation in physical activities and not physical activity, per se. For example, there is no distinction between being pulled on an inner tube (a sedentary, rather than a physical activity) and diving and swimming very fast underwater (clearly a physical activity). They are both considered a water sport and a child who engaged in the former could presumably receive the same score for this item as a child who engaged in the latter. As for the ASKp, according to its developers it was designed and validated as a measure of physical disability or physical function.⁴ Since the final ASKp score includes scores on items such as turning doorknobs or playing quietly (rather sedentary activities) and items such as running with friends (clearly a physical activity), from a content validity perspective, the final score does not appear to represent a measure of physical activity, again as it is traditionally understood. It would appear to us that the Uptimer is also not a valid measure of physical activity, in the above mentioned sense of the term, since the measure does not distinguish between the time spent standing (a rather sedentary activity) and time spent walking or running (two physical activities).⁵

To conclude, while these three tools may be considered valid measures with respect to their intended purposes, we would suggest that we continue to require a systematic review and appraisal of physical activity measures used with, or perhaps suitable for, children with CP, a review that explicitly defines physical activity in a manner consistent with the body of knowledge already developed.

REFERENCES

1. Capio CM, Sit CH, Abernethy B, Rotor ER. Physical activity measurement instruments for children with cerebral palsy: a systematic review. *Dev Med Child Neurol* 2010; **52**: 908–16.
2. Bouchard C, Shephard RJ. Physical activity, fitness and health: the model and key concepts. In: Bouchard C, Shephard RJ, Stephen T, editors. *Physical Activity, Fitness and Health: International Proceedings and Consensus Statement*. Champaign, IL: Human Kinetics, 1994: 77–88.
3. King G, Law M, King S, et al. Children's Assessment of Participation and Enjoyment (CAPE) and Preferences for Activities of Children (PAC). San Antonio, TX: Psychological Corp., 2004.
4. Young NL, Williams JI, Yoshida KK, Wright JG. Measurement properties of the activities scale for kids. *J Clin Epidemiol* 2000; **53**: 125–37.
5. Pirpiris M, Graham HK. Uptime in children with cerebral palsy. *J Pediatr Orthop* 2004; **24**: 521–8.