



## Investigating nutritional status and body composition in children with cerebral palsy; the Eat, Sleep Play-CP study

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Cerebral palsy (CP), or to use the Te Reo term “Hōkai Nukurangi”, is an umbrella name for a group of permanent neurodevelopmental disorders, affecting movement and posture<sup>(1)</sup>, and is the most common childhood onset physical disability globally. The available literature on the nutritional status of children with CP describes high rates of malnutrition, however data appears to be skewed towards children of higher levels of impairment impacting functional independence. Less is known about the nutritional status of children with lower levels of impairment. The aim of the “Eat, Sleep, Play-CP” study was to evaluate total energy intake, total protein intake and the timing of protein intake in relation to physical activity for children with CP across all functional levels living in Aotearoa New Zealand. Children with CP aged 5-12 years were invited to participate in an observational assessment of dietary intake using parent reported 24-hour dietary recall (Intake 24) on three non-consecutive days, accompanied by a questionnaire capturing self-reported sleep and physical activity patterns. Body composition was assessed via whole body dual energy X-ray absorptiometry scan. Nine participants (6 males, median age: 10 years, n = 2 Māori), across Gross Motor Function Classification System levels I-IV, and Eating and Drinking Classification System levels I-III took part in the study. The median total energy intake was 7267kJ/d (range 5355-10731.96kJ/d), and median protein intake was 67g/d (range 49-111g/d). According to the Nutrient Reference Values for Australia and New Zealand (NRV)<sup>(2)</sup>, 3 of the 9 participants (33%) were within the recommended range for energy intake according to their age and reported physical activity levels. Of the other 6, 4 were below and 2 were above the recommended ranges. All 9 met the recommended protein intake (NRV). Participants had a median percentage body fat of 40% (range 20-46%), and non-fat mass of 58% (range 52-76%). Five participants fell within the overweight or obese range for their age and sex, three of whom were within the recommended range of total energy daily intake according to NRVs. This outcome may indicate that for some children with CP, recommendations could be over-estimating the actual requirements. These early results may bring in to question current practice around guidance for energy intake requirements for children with CP and their whānau to support healthy body composition. Further investigations are needed to establish whether specific energy intake guidelines are required for children with CP.

**Keywords:** children; cerebral palsy; nutrition; body composition

### Ethics Declaration

Yes

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### References

1. Bax M, Goldstein M, Rosenbaum P *et al.* (2005) *Dev Med Child Neurol* **47**, 571–766.
2. National Health and Medical Research Council, New Zealand Ministry of Health. Nutrient Reference Values for Australia and New Zealand. 2006.