SOP-09: Gait responses with backpack load during level walking: results from two schools in Galle District

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Introduction: Backpacks are forms of manual carriage techniques. They are very common among Sri Lankan school children. When observing the gait associated with children who carry backpacks, differences in gait have been observed among children with and without backpack loads. The aim of this study was to determine the effect of backpack load on gait response during level walking of school children in two selected schools in Galle district.

Methods: A cross-sectional study was carried out among 50 school children (25 females and 25 males) aged 11-15 years. They walked on the level floor using natural cadence with backpack loads of 0%, 5%, 10%, 15% and 20% from the children's body weight. Spatio-temporal parameters were measured using footprint method and video records.

Results: Multiple comparisons between the duration of gait cycle, stance phase, swing phase, single support phase, stride length, step length, step width, velocity and cadence with 0%, 5%, 10%, 15% and 20% of weights were not statistically significant ($p>0.05$). Multiple comparisons between double support phase with 0%, 5%, 10%, 15% and 20% of weights was statistically significant ($p<0.05$). There was little increment in the means of stride length, step length, velocity, double support phase between walking without backpack load and with more than 15% of backpack load.

Conclusions: Increasing backpack loads were not significantly associated with the duration of gait cycle, stance phase, swing phase, stride length, step length, step width, walking velocity, cadence and duration of single support phase. These changes indicate that children respond to heavier backpack loads by increasing the duration of the double support phase. However, more research on this topic is needed in Sri Lanka to identify the effect of gait response with backpack loads in children.

Keywords: backpack load, spatio- temporal parameters, children, gait responses

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