



## Comparison of spatiotemporal measures of gait in soft versus hard soled footwear

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**Aim:** There is little evidence to guide recommendations of footwear for young children. The aim of this study was to investigate the difference in spatiotemporal measures of gait in young children during walking and running in soft and hard soled footwear.

**Method:** Demographic and lower limb anthropometric data was collected. Participants walked and ran along a GAITrite mat in a randomised order. Conditions of interest were soft and hard soled boots, sandals and runners and a comparison of barefoot to soft soled footwear. Gait spatiotemporal measures were extracted from the GAITrite. Linear regression clustered by participant was used to understand the different gait variables.



## Results:

There were 47 typically developing children aged 2-4 years recruited. Soft soled sandals increased stride length significantly greater than hard soled footwear (Coef= 2.07, CI95%=-4.01 to -0.08,  $p=0.04$ ) during walking only. There were no other differences between walking or running in soft or hard soled sandals, boots or runners. There was a small increase in tripping in soft soled sandals during walking only.

## Significance of the findings to allied health:

Current perception is that the sole hardness is an important feature in young children's shoes. These findings infer that sole hardness has a limited effect on children's gait. Parents seeking advice from health professionals about footwear can be informed that this feature has limited impact on walking and running in young children which can therefore guide both clinician and industry recommendations.

