

## Footwear's Influence on Positional Parameters in the Static Posture of Children

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### ABSTRACT

In early childhood, a child's motor control is rapidly evolving. Upright posture is being supported through a combination of sensory factors that are influenced by the child's developing neuromuscular system.<sup>1</sup> Footwear has the ability to create a drastic impact on postural stability during this key time in a child's life. In fact, certain types of footwear may actually be detrimental to the child's normal development of proprioceptive abilities, compared to being able to feel their natural environment while barefoot.

Positional parameters of static posture can be used to evaluate the effects of footwear on postural control.<sup>2</sup>

**PURPOSE:** The purpose of this study was to investigate the effect that stiff soled shoes had on the posture of young children between the ages of 4 and 6 years old. **METHODS:** 13 healthy children between the ages of 4-6 participated in this study. There were 4 males and 9 females. The COP anteroposterior (AP), mediolateral (ML), and radiuses of static upright posture while barefoot and while wearing shoes were evaluated. **RESULTS:** There was a significant difference between the barefoot and shod conditions for COP AP means (Barefoot  $4.57 \pm 1.14$ , Shod  $4.44 \pm 1.11$ ,  $p < .05$ ). There were no statistical differences for either COP ML means (Barefoot  $15.48 \pm 9.14$ , Shod  $11.208 \pm 6.836$ ,  $p > .05$ ), or COP mean radiuses (Barefoot  $16.771 \pm 8.085$ , Shod  $12.802 \pm 5.632$ ,  $p > .05$ ). **CONCLUSION:** In conclusion, it appears that the stiff soled shoes limit the position variables of static posture compared to standing barefoot, though our data was only significantly different for the AP direction. The data suggest that the stiff soled shoes are providing a constraint to the organization of the children's posture, though there is not enough evidence to conclude there are negative effects to a child's natural proprioception of their environment when shod with these specific shoes. Further investigation into the effects of footwear on posture in children, particularly the dynamics of posture, should be done.

### References:

1. Demura et al., 2006. *Sport Sci Health*. 1:156-161
2. Quijoux et al., 2021. *Physiol Rep*. 9(22) : e15067