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Danae M. Dinkel

*University of Nebraska at Omaha, dmdinkel@unomaha.edu*

Anastasia Kyvelidou

*University of Nebraska at Omaha, akyvelidou@unomaha.edu*

Ben Senderling

*University of Nebraska at Omaha, bsenderling@unomaha.edu*

Kailey Snyder

*University of Nebraska at Omaha, kesnyder@unomaha.edu*

Jung-Min Lee

*University of Nebraska at Omaha, jungminlee@unomaha.edu*

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## Impact of Adiposity on Postural Control at the Onset of Sitting

Danae Dinkel<sup>1</sup>, Anastasia Kyvelidou<sup>2</sup>, Ben Senderling<sup>2</sup>, Kailey Snyder<sup>1</sup>, Jung-Min Lee<sup>1</sup>

<sup>1</sup>School of Health, Physical Education and Recreation, University of Nebraska at Omaha

<sup>2</sup>Department of Biomechanics, University of Nebraska at Omaha



Physical Activity and Health Promotion Lab

### ABSTRACT

Little research has examined the impact of infant adiposity on the quality of gross motor behavior, especially in sitting through measuring postural control. Therefore, the purpose of this study was to examine the impact of adiposity as measured by skinfold thickness (SFT) on postural control at the onset of sitting in typically developing infants. Nineteen infants (n=8 high SFT, n=11 lower SFT) participated in a pilot study examining the relationship between infant physical activity and postural control. High SFT was classified as having a subscapular and triceps measurement in the 85<sup>th</sup> percentile or above according to the WHO age and sex-specific standards. Infant's postural control was measured within one week of the onset of sitting. Three trials of sitting were recorded while infants were sitting on an AMTI force platform and postural sway measures were recorded. Sway movement patterns were analyzed using the range for both the anterior/posterior (AP) and medial/lateral (ML) direction as well as sway path. The results revealed that there were no significant differences between infants in Range in the AP and ML directions. However, Sway Path was significantly different as infants with high SFT showed lower Sway Path values in comparison to lower SFT infants. These results suggest that infants with high SFT cover significantly less distance with their center of pressure than infants with lower SFT. This finding suggest that infants with more adiposity adopt a different postural control strategy. This altered strategy, may limit exploration early in development, which may hinder the progression of cognitive emotional and social processes, however more research is needed.

### INTRODUCTION

Sitting is one of the key motor milestones in the first year of life, which changes the way infants interact with the world. From the sitting position, looking, reaching, and interacting become functional and allow exploration that supports learning and further development of motor skills. Unfortunately, overweight may negatively impact motor skill development.<sup>1,2</sup> However, few studies have assessed how postural control may be impacted by skinfold thickness (SFT). Therefore, the purpose of this study was to examine the impact of SFT on postural control at the onset of sitting in typically developing infants.



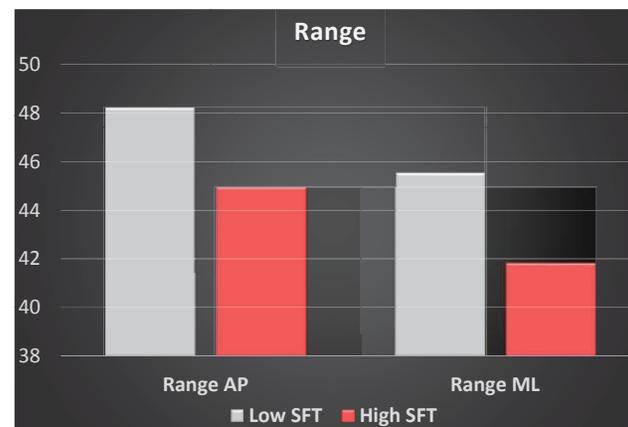
Photo Credit: Ryan Henrikson

### METHODS

- Nineteen infants (n=8 high SFT, n=11 lower SFT) participated in a pilot study examining the relationship between infant physical activity and postural control in normal weight and overweight infants.
- High SFT was classified as having a subscapular and triceps measurement in the 85<sup>th</sup> percentile or above according to the WHO age and sex-specific standards.<sup>3</sup>
- Infant postural control was measured within one week of the onset of sitting when parents perceived their infants could sit independently for 10 seconds at a time.
- Three trials of sitting were recorded while infants were sitting on an AMTI force platform and postural sway measures were recorded.
- Sway movement patterns were analyzed using the Range for both the anterior/posterior (AP) and medial/lateral (ML) direction as well as Sway Path.
- A majority of infants were male (73.6%), White (78.9%), came from a home with a household income >\$60,000 (73.7%), and were breastfed exclusively for  $\geq 6$  months (73.7%).

### RESULTS

- There were no significant differences between infants in Range in the AP and ML directions.



### RESULTS

- There was a significant difference in Sway Path values; infants with high SFT showed lower Sway Path values in comparison to lower SFT infants ( $p < .05$ ).



### DISCUSSION

These results suggest that infants with high SFT cover significantly less distance with their center of pressure and overall move less than infants with lower SFT. This finding may suggest that infants with more adiposity adopt a different postural control strategy, due to the added mechanical constraints imposed by the added SFT. This altered strategy, may limit exploration early in development, which may hinder the progression of cognitive emotional and social processes, however more research is needed.

### KEY REFERENCES

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