Effects of Interrupting Children’s Sedentary Behaviors with Activity

Background
Study Information states that children spend about six hours per day engaging in sedentary behavior. It has been found that excessive time spent in a seated or reclined position may be associated with insulin resistance regardless of fat mass and can be a predictor of increased weight gain. These sedentary behaviors can predict a greater risk of adult onset metabolic diseases.

Purpose
Current research has shown the benefits of interrupting sedentary behavior with brief moderate to light activities, such as walking every twenty minutes, in reducing glucose and insulin sensitivity. This study investigated the effects of continuous sedentary behavior compared to interrupted sedentary behavior on insulin, glucose, and fat levels without changing the food intake after the study.

Population
The study was done on twenty-eight children ages 7-11 with a fasting blood glucose of <100 mg/dl and a healthy body weight. Researchers excluded children with overweight/obesity, cardiac or pulmonary disease, Type 2 Diabetes, endocrine disorders, or use of medications that alter metabolism.

Procedure
This study placed participants in either an uninterrupted sitting (SIT) group in which they remained seated for 3 consecutive hours, or a sitting interrupted with walking group (SIT+WALK) group. Children in the SIT+WALK group exercised on a treadmill for three minutes every thirty minutes at a speed that maintained a consistent heart rate. Participants walked for 18 minutes total throughout the study.

Results
During the glucose tolerance test, the average heart rate and step counts over the entire 3 hours were significantly higher in the SIT-WALK participants versus the SIT participants. Overall, their heart rate was increased and insulin secretion was lower in SIT+WALK versus SIT. Total energy intake and the percentage of calories consumed from carbohydrates, fats, and proteins from the post-test meal did not change.

Limitations
Only normal weight children were used, where other studies have used both overweight and normal weight children. There was a small number of participants which can make it hard to detect significant differences. There was no limitation of the participant’s free living activity before study, and the children’s activity within a 24 hour window could have affected a body’s insulin sensitivity.

Conclusion
Interrupting sitting with short bursts of medium intensity walking improved short-term metabolic function in normal weight children while not increasing food intake.

Nutrition research summaries should not be used as a substitute for advice from your own medical provider. Speak with your dietitian or physician about additional advice or if you have a question about this material.

Written by: Kelly Payne & Anne Sugrue
Edited by: Neeka Tabatabaei