

## Pre-Prandial Vinegar Ingestion Improves Two-Hour Glucose Control in Older, Type II Diabetics More Than Post-Prandial Walking

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### ABSTRACT

**Background:** Exercise engagement benefits diabetic patients through an insulin-like effect on muscle. Literature indicates that vinegar consumption may lower blood glucose levels. It is not currently clarified whether a relative amount of vinegar ingestion or a walking bout is more effective at controlling glucose in older, Type II diabetics during the acute phase following a meal. **Purpose:** The aim was to directly compare the impact of preferred-pace walking (15 min, postprandial) versus ingestion of a relative quantity of vinegar (0.3 g/kg) on two-hour glucose control. **Methods:** The two arms of the trial were completed in a randomized, crossover manner. Six Type II diabetic patients (Females = 5; Males = 1; Age = 70.5 ± 9.0 yrs.) enrolled and underwent baseline finger pricks to establish glucose levels. The test meal consisted of an 85 g bagel, 13 g of butter, and 237 mL of orange juice. On the respective days, the vinegar was diluted into 59 mL of orange juice and ingested before the meal or the subject completed a 15-min walk at 15 min post-meal. For both trials, glucose was checked every 30 min following the test meal. **Results:** One subject was removed from all present analysis due to medication-related non-compliance. For the vinegar trial, the resting heart rate was 72.0 (± 9.5) and baseline, 30-, 60-, 90-, and 120-min average blood glucose levels were: 117 (±12), 149 (±39), 172 (±49), 185 (±49), and 180 (±44) mg/dl. For the preferred walking speed phase, the resting heart rate was 75.5 (±15.6) and baseline, 30-, 60-, 90-, and 120-min average glucose levels were: 113 (±10), 147 (±53), 180 (±53), 208 (±72), and 206 (±71) mg/dl. Preferred walking speed was found to average 3.1 (± 1.5) kph and total steps averaged 1418 (±376). The between-arm comparison of glucose at 120-min trended towards significance ( $p = 0.081$ ). **Conclusions:** Compared with a bout of walking, a relative quantity of vinegar may serve as a more suitable mechanism for older Type II diabetics to control acute spikes in glucose after a high carbohydrate meal. With an adequately-powered analysis, between-arm comparisons at multiple time-points would likely have achieved statistical significance. Nevertheless, the meaningfulness of the glucose control exhibited should not be lost due to the lack of statistical significance. Finally, the slow absolute preferred walking pace of many older adults may undermine the ability for walking to result in sufficient energy expenditure capable of subsequent glucose control.