

## Background

Exercise reduces blood glucose levels by stimulating glucose uptake into muscle cells through muscle contraction<sup>1,2</sup>.

Many individuals remain sedentary due to various barriers<sup>3</sup>.

However, it is unclear if there is a simple and effective way to receive the benefits of exercising.

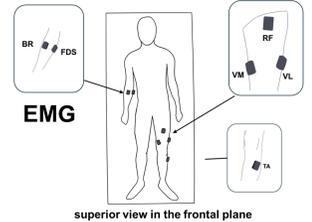
## Purpose

To investigate whether full-body muscle contractions could serve as a simple and effective method to improve glucose regulation, particularly for sedentary individuals compared to active individuals

## Methods

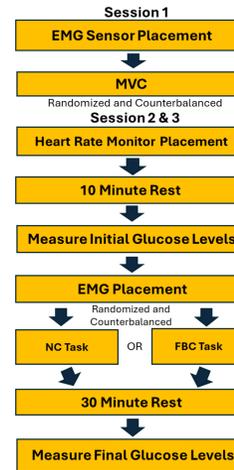
### Setup

3 Sedentary adults (19.6 ± 1.5 years, 1 Woman)  
3 Active adults (24.0 ± 7.0 years, 1 Woman)

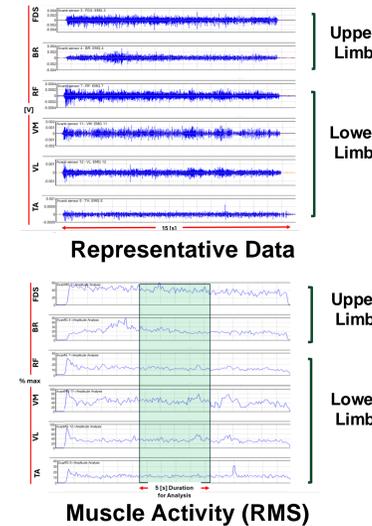


Sedentary: < 600 MET-min/week  
Active: > 600 MET-min/week

### Protocol



### Data Analysis



EMG: Electromyogram, FDS: Flexor Digitorum Superficialis, BR: Brachioradialis VL: Vastus Lateralis, VM: Vastus Medialis, RF: Rectus Femoris, TA: Tibialis Anterior  
RMS: Root Mean Square, FBC: Full Body Contraction, NC: No Contraction

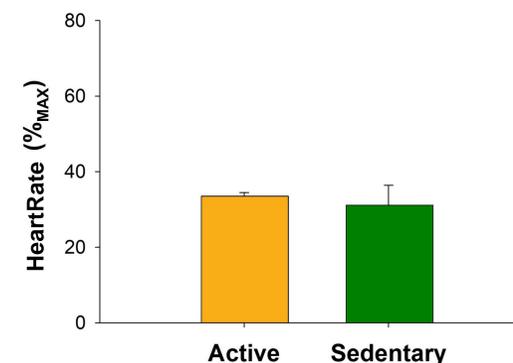
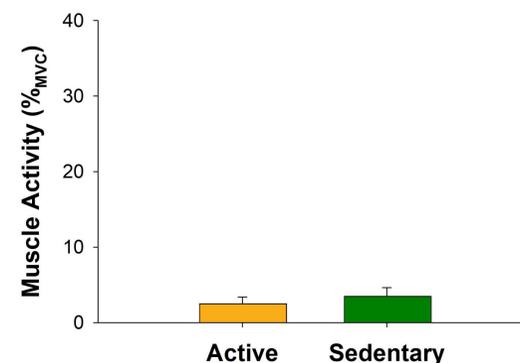
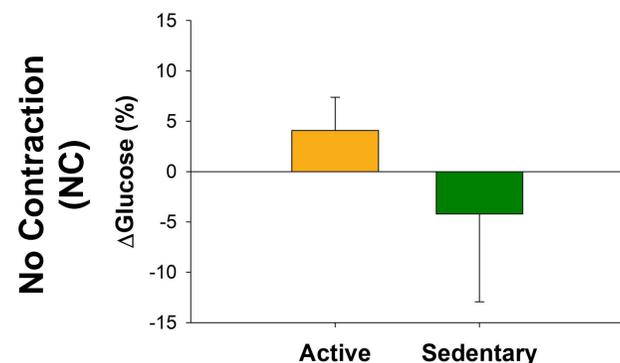
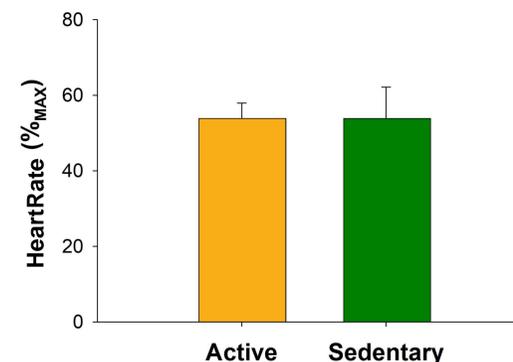
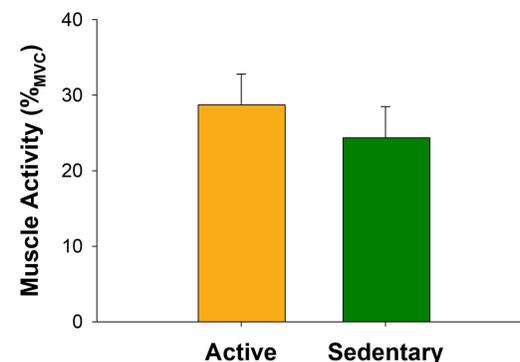
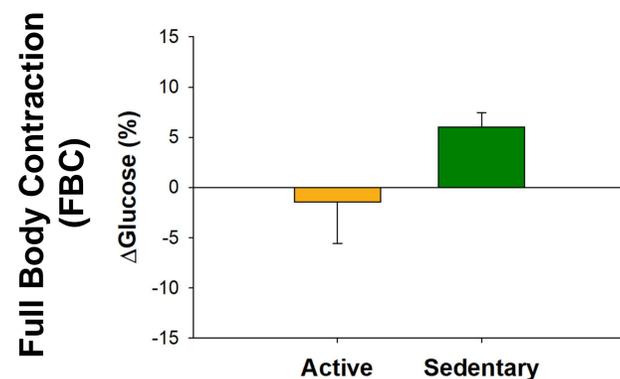
## Conclusions

FBC intensity and duration may ***not have been sufficient to improve glucose regulation in the sedentary group.***

The sedentary group exhibited ***lower muscle glucose utilization, suggesting a reduced ability to effectively process glucose during and after full-body contraction.***

More effective glucose regulation may require higher-intensity or longer-duration full-body contractions in sedentary group.

## Results



Despite the lack of statistical significance, the effect sizes for FBC (d = -0.88) and NC (d = 1.12) indicate substantial practical differences between Active and Sedentary group.

The effect size of Muscle Activity level during FBC (d=0.61) indicated a moderate difference between Active and Sedentary group.

No meaningful differences during FBC (d ≈ 0) but slight differences (d = 0.44) during NC between Active and Sedentary Group.

## Future Work

Future research should explore optimal full-body contraction protocols that enhance glucose uptake and regulation, particularly in sedentary individuals.

## References

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## Research Inquiry



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