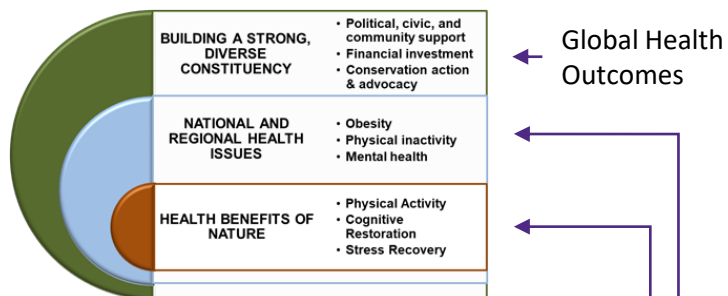


## Introduction:

- Epidemiological data suggests living near green spaces improves health outcomes.



- Psychological measures (i.e. mood, anxiety, stress) show greater improvements following a single walk in nature compared to walks in built environments.<sup>1,2</sup>
- We don't know if regular activity in greenspaces improves long term mental health outcomes.

## Research Questions:

- How do we design longitudinal studies that look at effects of repeated walks?
- Do repeated walks in nature continue to yield beneficial psychological responses?

## Methods

Crossover design study, randomized with respect to starting location. N=38 (female,20). Ages 18-35 (22.9 ± 4.6 years) 50 minute walks 3 times/week; 1 week washout period. Total data collected over 16 months

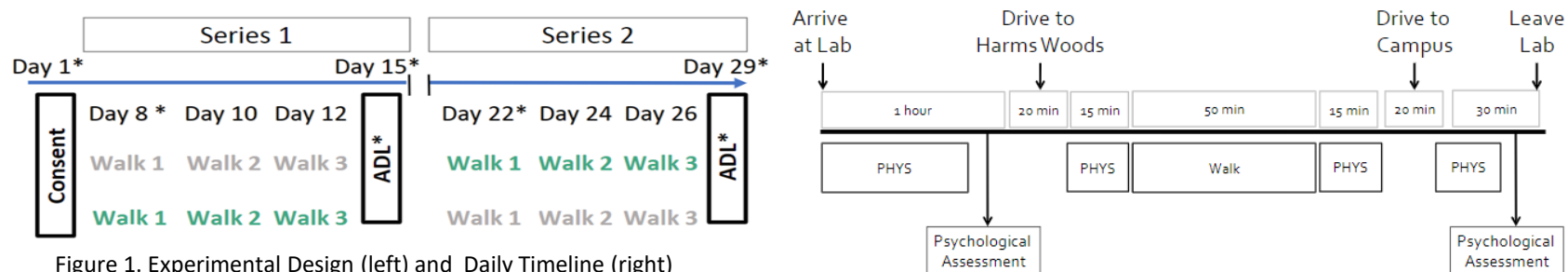


Figure 1. Experimental Design (left) and Daily Timeline (right) Gray = roadside; Green= forest.

## Results

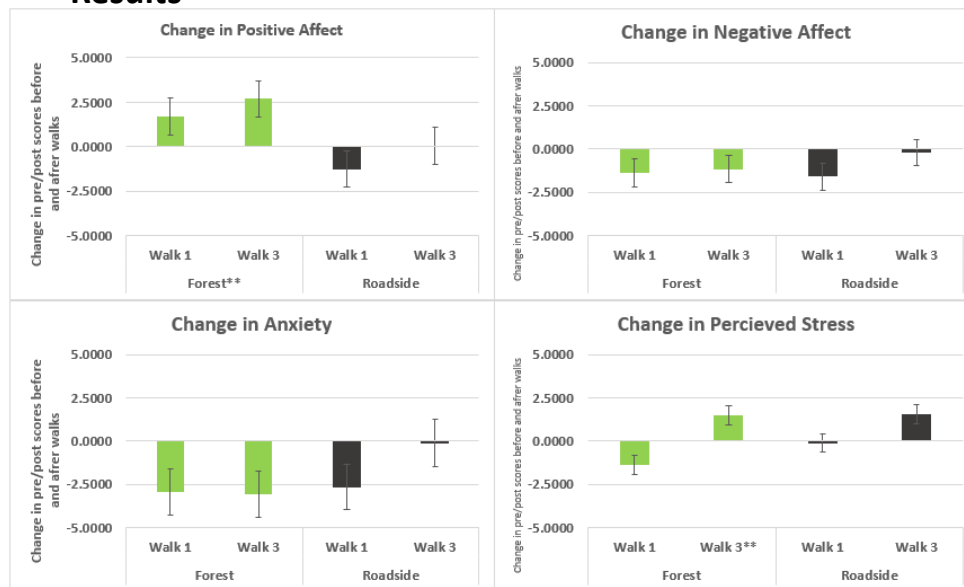


Figure 2. Changes in psychological measures by location for walks 1 and 3.

\*\*p<.01

- Positive affect increased following forest walks on both days.
- Perceived stress increased on the third walk regardless of location.

## Discussion:

- Walking improved psychological outcomes.
- Forest walks have a significant impact on positive affect compared to roadside walks.
- People appear to adapt to roadside walks making them less impactful.
  - This adaptation was not seen for forest walks.
  - But location x walk number interactions were not significant.
- There was a time burden of participating in the study. (3 hours/day)

## Implications for Global Health:

- Designing longitudinal studies of green exercise is needed and possible, but must be done with care.
- Design should not contribute to stress!
  - Cohort consisted of majority college students, with various day-to-day stressors.
  - E.g. mid-term and final exams.
  - Taking time to participate in the study was stressful.
- Proximity to walk site has potential psychological effect.
  - City planning for equitable nature access could be more important than just having green spaces!

## Future Plans:

- Design studies with reduced time burden.
  - Pick locations near home or lab.
  - Give psychological surveys at the walk location.
- Conduct studies with non-student participants / clinical population.
  - Pre-Diabetic patients.

## Works Cited

1. Bratman, et al. Sci Adv 5(7): eaax0903, 2. Koselka, et al. 2016 IJERPH

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