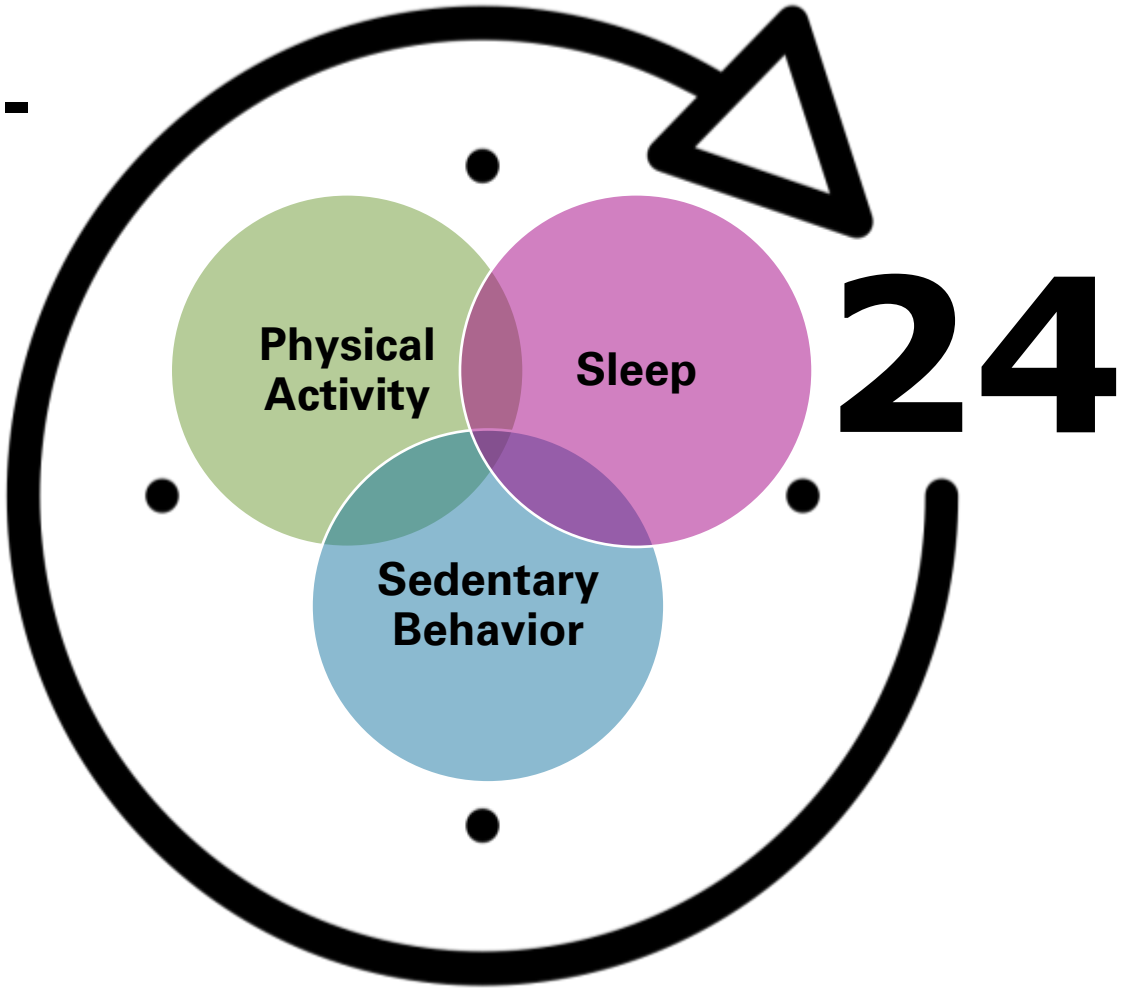
How well do bariatric surgery patients objectively adhere to 24-hour movement guidelines preoperatively and what factors relate to better adherence?



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2023

[X] I have no potential conflict of interest to report

[ ] I have the following potential conflict(s) of interest to report:

Patients who undergo MBS are expected to adhere to multiple health behavior recommendations that are designed to:

1. optimize health before surgery; and
2. enhance/sustain weight loss and health improvements after surgery.

One of these behaviors is physical activity (PA)

Sleep

Sedentary time (ST)

Physical Activity (PA)

Light

Moderate-to-Vigorous (MVPA)

Less movement

More movement

Singular focus on MVPA neglects the potential clinical importance of other movement behaviors that occur during the 24-hour day.

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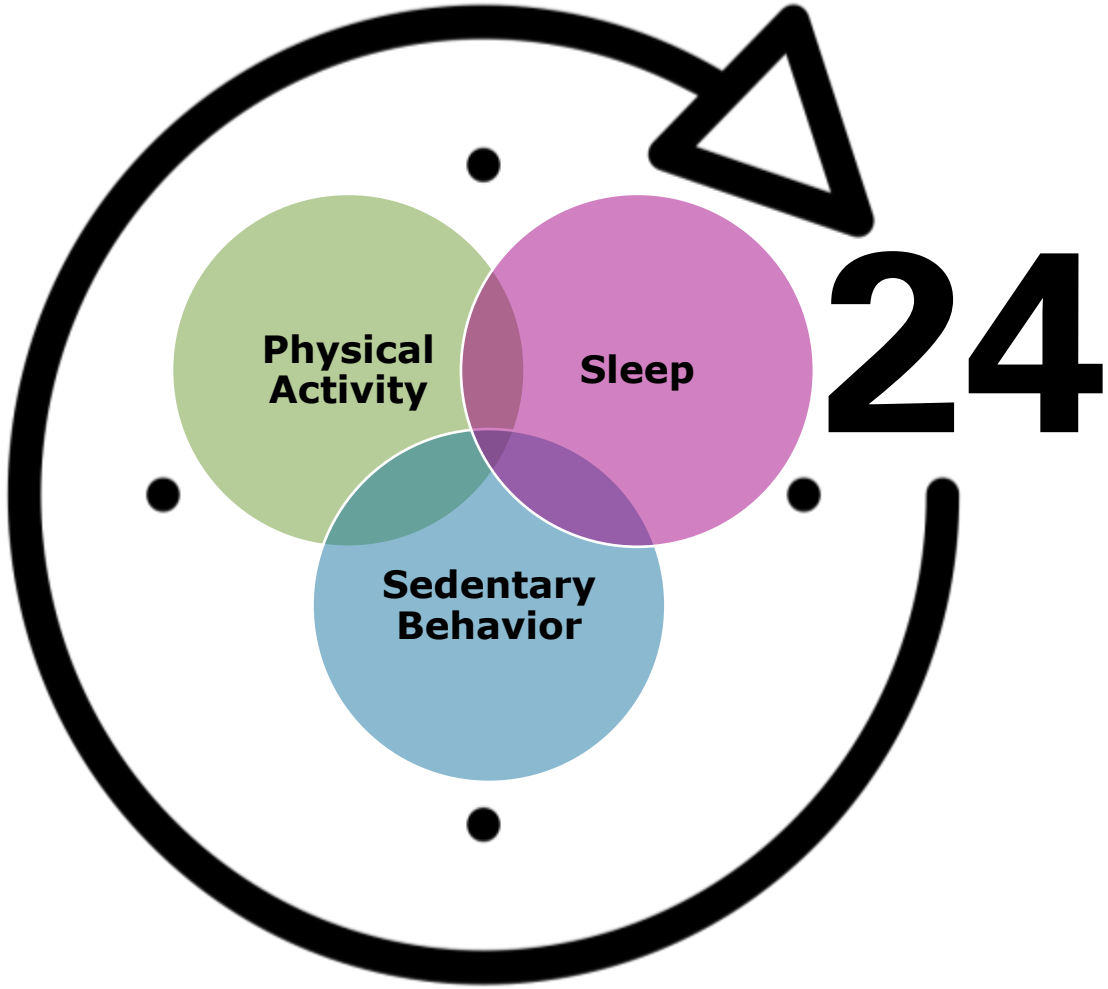
The Whole Day Matters – 24-hour Healthy Movement Cycle

- ≥150 min/wk of moderate to vigorous aerobic physical activities; muscle strengthening activities 2x/wk

- 7-9 hours of good quality sleep on a regular basis, with consistent bed and wake-up times

- Limiting sedentary time to <8 hours with <3 hours of recreational screen time and breaking up long periods of sitting as often as possible



STUDY AIMS

1

Examine objectively-measured adherence (overall & degree) to 24-h movement guidelines

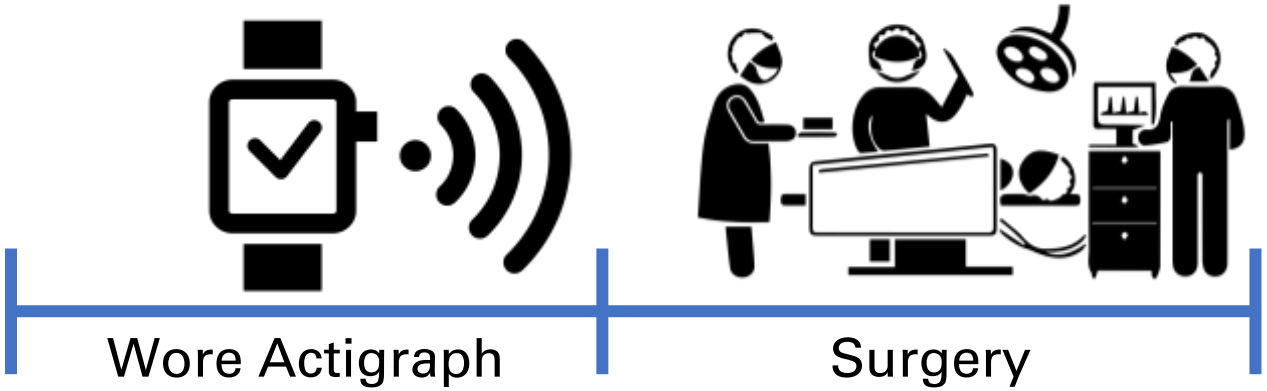
2

Examine sociodemographic and anthropometric correlates of adherence

METHODS: PARTICIPANTS

Adults scheduled to undergo SG who were enrolled in NIH-funded study focused on identifying neuroimaging and behavioral predictors of SG outcomes

METHODS: PROCEDURES



METHODS: ANALYSIS

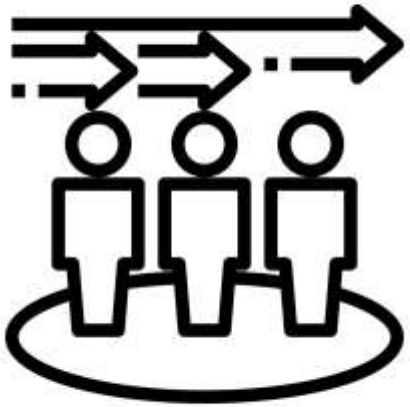
Aim 1: Adherence to movement behavior targets: (1) overall and (2) degree

1. %'s of participants who met movement targets (MVPA [both total and in >10-min bouts], ST, and sleep)
2. Index scores to represent degree of adherence to each of the recommendations + a composite of recommendations
    - e.g., For total MVPA target, a score of +1 = MVPA exceeded the target by 10% vs. a score of -1 = MVPA fell 10% short of meeting target

Aim 2: Associations of sociodemographic (age, sex, race, and ethnicity) and anthropometric (BMI) characteristics with adherence via multiple linear regression

RESULTS (1)

Participant Characteristics (N=103)



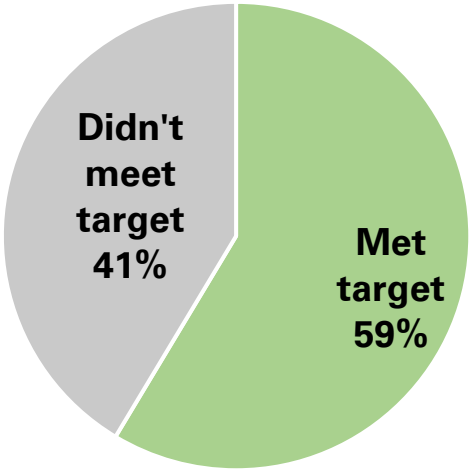
- 81% women
- 40.3 ± 9.1 years old
- 44% Non-White race
- 21.4% Hispanic ethnicity
- BMI = 45.3 ± 6.5 kg/m^2

RESULTS (2)

Total MVPA

Mean min/wk = 214.0 ± 150.9

Overall adherence to 150 total MVPA min/wk target



Degree of Adherence

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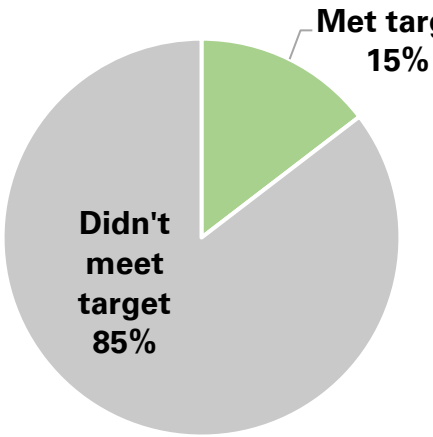
RESULTS (3)

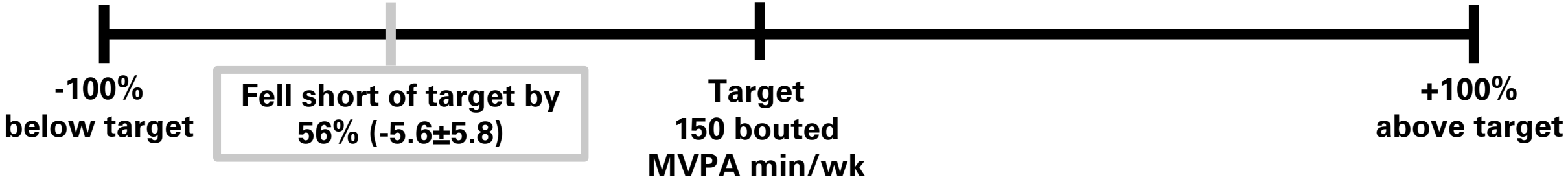
Bouted MVPA

Mean min/wk = 65.4 ± 87.2

Overall adherence to 150 bouted MVPA min/wk target



Degree of Adherence

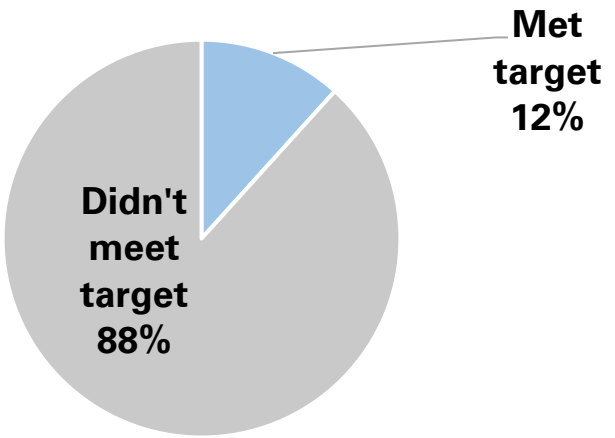


RESULTS (4)

Sedentary Time

Mean hours/day = 13.2 ± 3.3

Overall adherence to <9 ST hours/day target*



Degree of Adherence

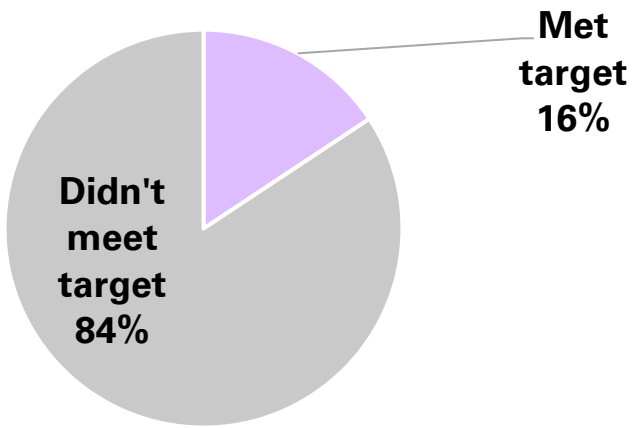
*Target = 9 hrs. when measured objectively; Ross, et al. *Appl Physiol Nutr Metab* 2020

RESULTS (5)

Sleep

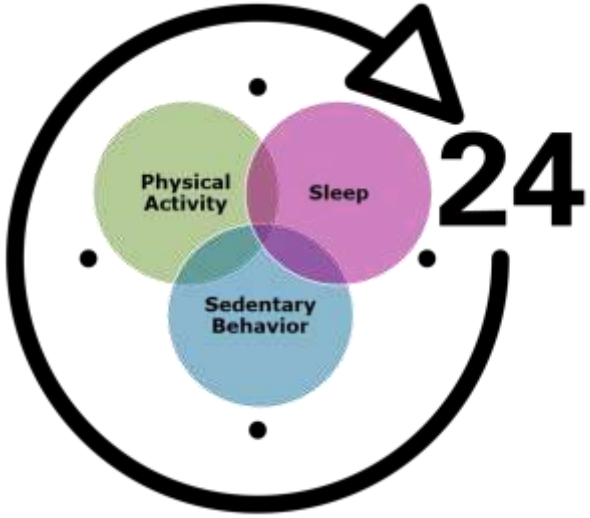
Mean hours/night = 5.7 ± 1.6

Overall adherence to 7-9 hours/night sleep target



Degree of Adherence

RESULTS (6)



Degree of Adherence to Composite of Movement Targets

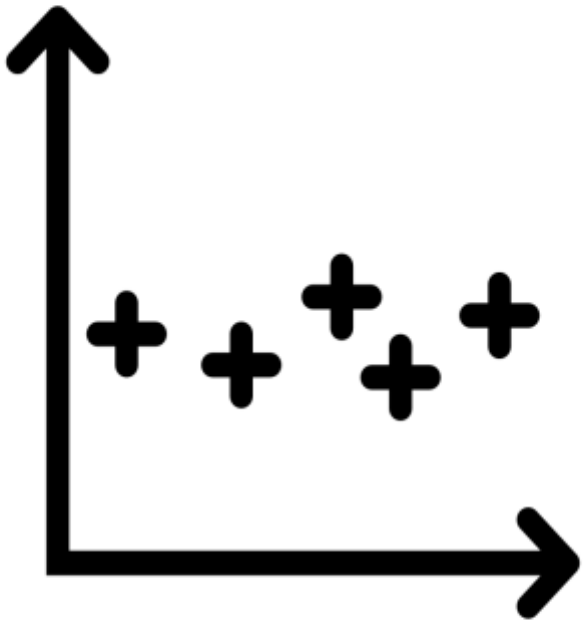
-100% below target

Fell short of target by 38% (-3.8±10.9)

Targets Composite Met

+100% above target

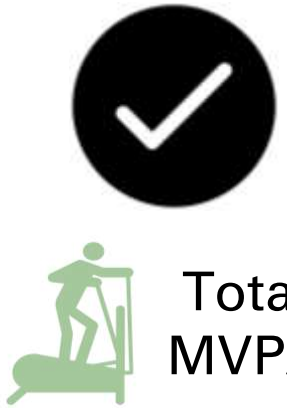
RESULTS (7)



Sociodemographic characteristics and BMI were not associated with adherence to movement behavior targets

DISCUSSION/SUMMARY

- Preoperatively, MBS patients on average demonstrated:
  - High adherence to total MVPA target
  - Low adherence to individual bouted MVPA, ST, and sleep targets and composite of all targets



Total MVPA

Bouted MVPA

ST

Sleep

All

IMPLICATIONS/FUTURE DIRECTIONS

- Need ↑ clinical focus on all movement behaviors
- Identification of modifiable targets to help promote better adherence to recommended targets
- Can we improve adherence before and after MBS?
- Does improved adherence translate into better MBS outcomes?

ACKNOWLEDGEMENTS

NIH NIDDK

R01 DK113408 (MPI: Papasavas, Pearlson)

Study participants

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Hartford HealthCare
Hartford Hospital

Institute of Living
A Division of Hartford Hospital

Yale University

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