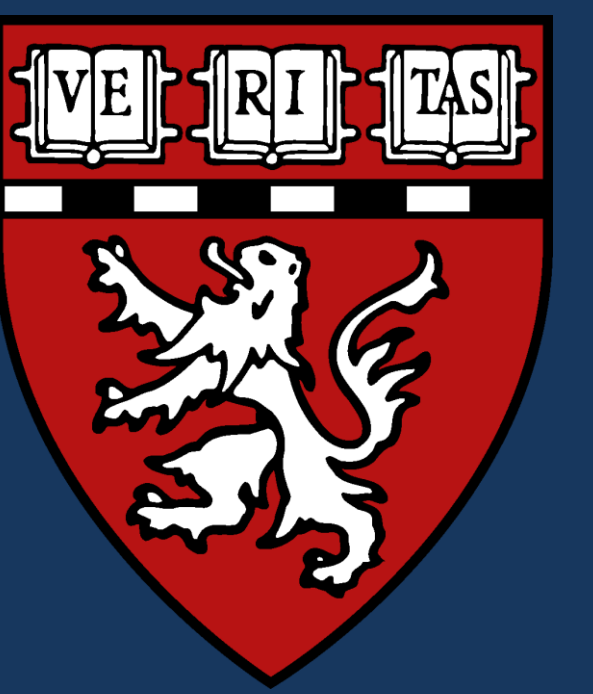




# A Randomized Controlled Trial of a Multilevel Physical Activity Intervention Among People with Metabolic Syndrome



Crystal Castillo<sup>1</sup>, Lauren E. Harnedy<sup>1</sup>, Anne N. Thorndike<sup>2,3</sup>, Elyse R. Park<sup>2,3</sup>, Jeff C. Huffman<sup>1,2</sup>, Rachel A. Millstein<sup>1,2</sup>

1. Department of Psychiatry, Massachusetts General Hospital, Boston, MA, 2. Harvard Medical School, Boston, MA, 3. Department of Medicine, Massachusetts General Hospital, Boston, MA

## Background

- Metabolic syndrome includes 5 cardiometabolic risk factors that affect 1/3 of US adults.
- Modifying health behaviors (physical activity, diet) can prevent the development of chronic diseases.
- Multilevel interventions to improve physical activity are needed:
  - Individual, social, community levels
- Positive psychology interventions aim to increase psychological well-being (e.g., optimism, positive affect).
- This pilot randomized controlled trial aimed to help people with metabolic syndrome increase physical activity and well-being.**

## Methods

### Study Design

- Randomized (waitlist control) trial
- 8-weekly group sessions:
  - adults
  - at least 2 of 5 MetS criteria
  - <150 minutes/week of self-reported moderate-to-vigorous physical activity (MVPA)
  - PCP at an MGH Healthcare Center

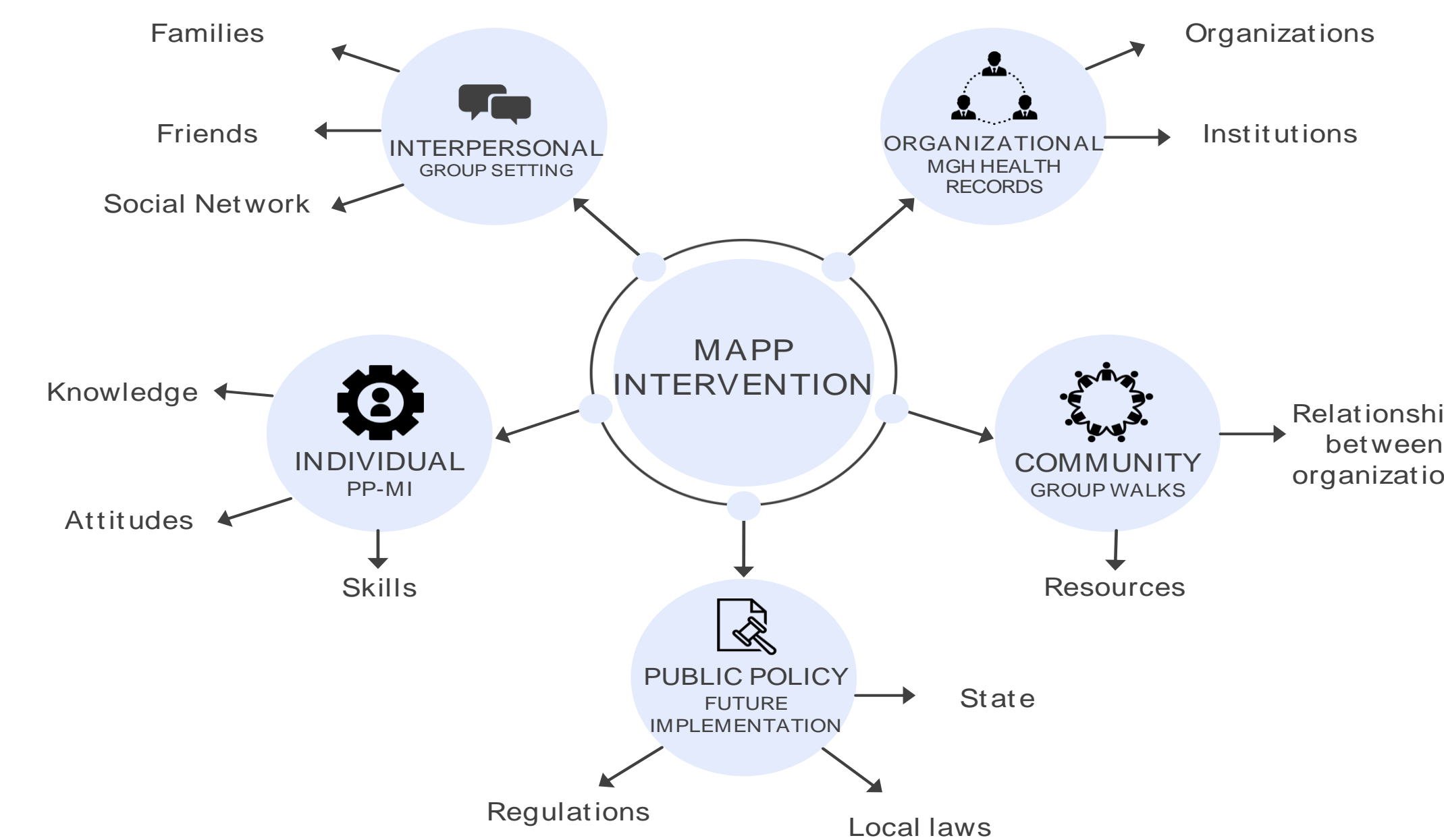
### Pre-post Intervention Assessments

- Physical activity: Actigraph GT3X-BT
- Weight and blood pressure
- Self-report measures:
  - Feasibility and Acceptability (primary)**
  - Optimism (LOT-R)
  - State Optimism (SOM)
  - Positive Affect (PANAS)
  - Anxiety and Depression (HADS)
  - Perceived Stress (PSS-4)
  - Physical Activity Enjoyment (PACES)
  - Self Efficacy for Exercise (SEE)
  - Barriers to Being Active (BBAQ)
  - Quality of Life (SF-12)
  - Self-reported physical activity (IPAQ-SF)
  - Fat intake (NCI screener)
  - Fruit and vegetable intake (BRFSS screener)

## Methods

### Intervention Content

- Weekly 60-90 minute group session
  - clinical psychologist/CRC
  - manual
- Positive psychology exercises related to physical activity
- Motivational interviewing topics
- Group support:
  - Weekly group neighborhood walk (in-person)
  - Group zoom call (virtual)
- Physical activity goal setting
  - Self monitoring
    - Fitbit
    - Step graphs

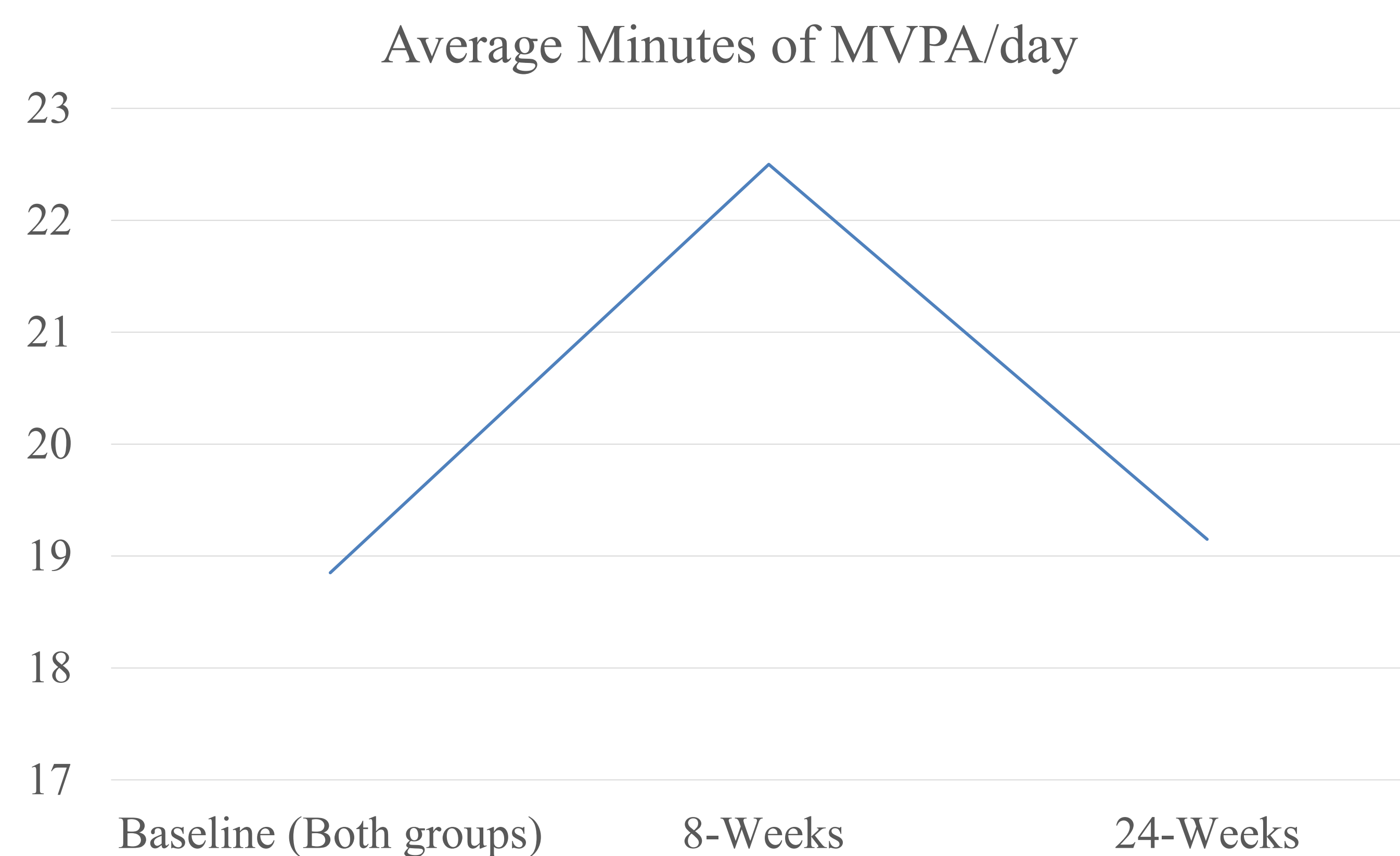


MAPP Intervention Content (8 weekly sessions)

Session	Goal-Setting Topic	Positive Psychology Topic
1	Moving for Better Health and Small Steps	Gratitude for Health
2	Setting a SMART Physical Activity goal	Perseverance
3	Barriers and Problem Solving	Personal Strengths
4	Finding New Routes	Enjoyable and Meaningful Activities
5	Using Neighborhood and Social Resources	Past Successes
6	Reducing Your Sitting Time/ Standing Breaks	Capitalizing on Goals and Health
7	Strength Training and Equipment	The Good Life
8	Managing slips	Planning for the Future

## Results

Average MVPA Across Timepoints (Both Groups Combined)



### Participant Quotes

- "I've worked for 60 years and been doing the same thing and she changed me in only 8 weeks" "Her style of never really telling you what to do, but of figuring out what to do yourself based on what we did and said, was great. She knew how to nudge us in the right directions."
- "Enjoyed meeting the others and will keep in touch past the study. Will continue to report to each other"
- "The study helped me understand that it's okay to mess up when trying to increase physical activities, the progress is not always a straight line"
- "That's probably my favorite part of this whole study--it's made it (walking) a priority for me and I'm doing it more, and I'm really just much more conscious of it. That's far and away the biggest thing that I got out of it."

## Results

### Baseline Demographic Information

	M (SD) or N (%)
<b>Age</b>	60.56 (12.27)
<b>Female</b>	44 (68.75%)
<b>Race</b>	
<b>White</b>	60 (93.75%)
<b>Black</b>	1 (1.56%)
<b>Asian</b>	1 (1.56%)
<b>Latino</b>	5 (7.81%)

### Feasibility

- 64 participants enrolled
  - 55 participants completed follow-up assessments
  - 89.4% of sessions attended

### Intervention Acceptability Ratings

0-10 scale	Median	
	Ease	Utility
All group activities	8.0	8.0

## Discussion

- This pilot randomized controlled trial of a multilevel physical activity PP-MI community-based intervention demonstrated high feasibility and acceptability in people with metabolic syndrome.
- Pre-post data shows improved overall physical activity and mental health (data not shown here).
- Exit interviews showed that participants enjoyed the program, the providers, and found it to be a jumpstart to a more active lifestyle.
- Generalizability may be limited due to the lack of diversity in race/ethnicity.
- Data analysis is ongoing with plans for broader implementation.