



# The Relationship between Outdoor Activity and Health in Older Adults

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**MIPARC:  
Multilevel  
Intervention for  
Physical  
Activity in  
Retirement  
Communities**



# Background



- Humans have an innate connection and attraction to nature, often referred to as ‘biophilia.’
- Exposure to nature and physical activity outdoors improves mental health and well being.
- Greater enjoyment and opportunities for more social interaction may contribute to the outdoor activity experience.
- No studies to date, however, have used objective measures of physical activity and location in order to better understand possible relationships.

# Background



- The relationship between physical activity location and health has not been studied in older adults.
- Less than 3% meet the recommendations of 150 minutes per week of activity.
- Older adults can benefit greatly from physical activity; improving physical, emotional and cognitive functioning.
- Limitations in physical functioning, fear of falling and neighborhood design may prevent older adults from being active outdoors.

# Background



- Studies have shown that going outdoors can have long term health benefits for older adults.
- Older adults often have low levels of Vitamin D.
- Vitamin D deficiency is related to many chronic conditions including cancer, heart disease and bone health.



# Sample



- N=118 older adults
- Residing in Continuing Care Retirement Communities
- Average age 83 years old (oldest 98)
- 69% female
- High income Caucasians





# Data collection



- Participants wore GT3X plus accelerometer & Qstarz BT1000X GPS device for 7 days
- Completed survey
  - Demographics
  - Quality of life
  - Depression
  - Fear of falling
- Completed cognitive test
  - Trails A & B
- Complete physical functioning test
  - 400 m walk



RED device



BLACK device

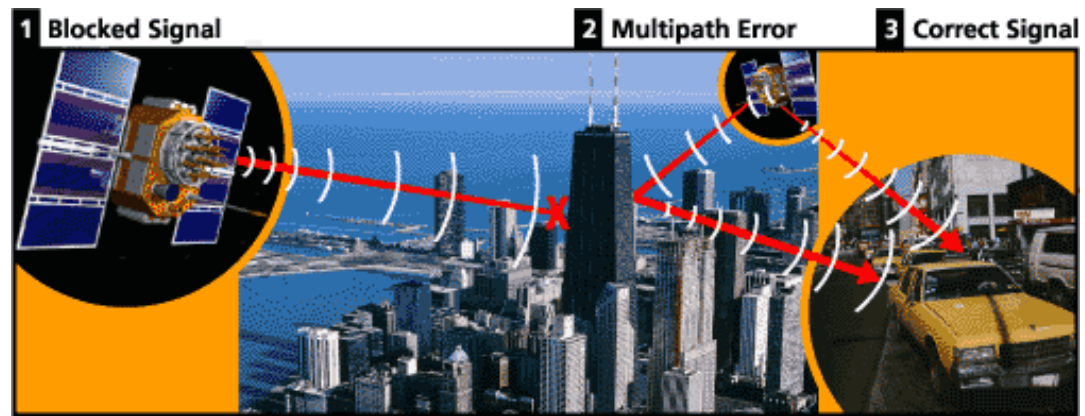
*WEAR the device belt. . .*



# Data processing



- Data aggregated to 60 seconds
- Accelerometer data
  - Non wear time 90 consecutive zeros
  - 10 hour valid day
  - 1000 counts per minute activity cut off
- GPS data
  - Merged with accelerometer data
  - Processed through PALMS
  - Indoor outdoor minutes from signal to noise ratio
    - Validated in two samples >80% accuracy
  - Vehicle time removed
  - Rescored per day worn
  - % time in outdoor PA



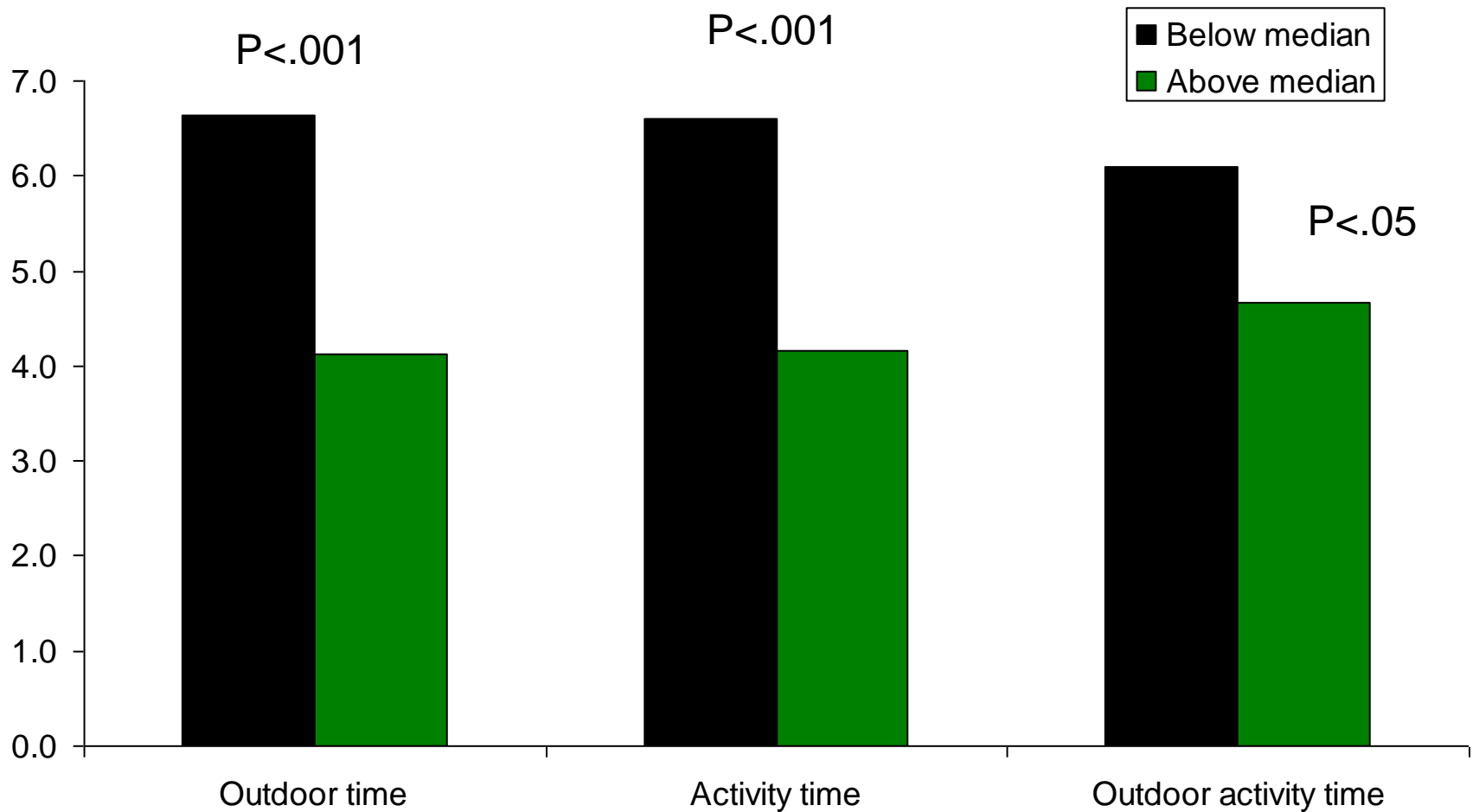


# Descriptive results

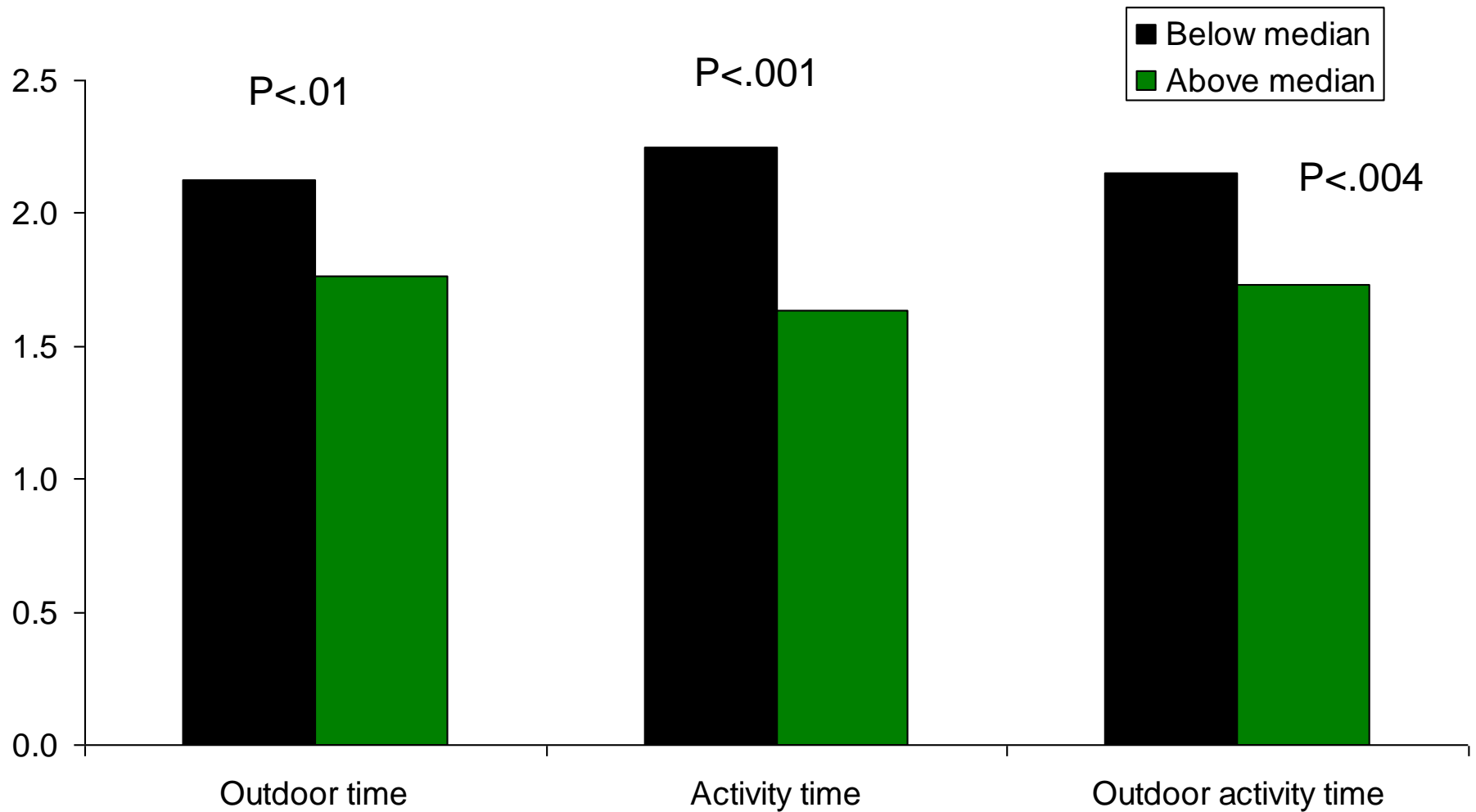


		median
• Mean (SD) minutes per day in		
– PA	31.2 (26.1)	24.6
– Outdoors	84.8 (130.8)	33.3
• % PA time per day outdoors	23.4 (24.2)	14.2
• Mean (SD) scores		
– QoL:	3.95 (.64)	
– Depression:	5.44 (4.12)	
– Fear of falling:	1.96 (.79)	
• Mean (SD) time to complete		
– Trails A:	55.37 (23.6)	
– Trails B:	149.97 (77.8)	
– 400 meter walk:	435.51 (128.9)	

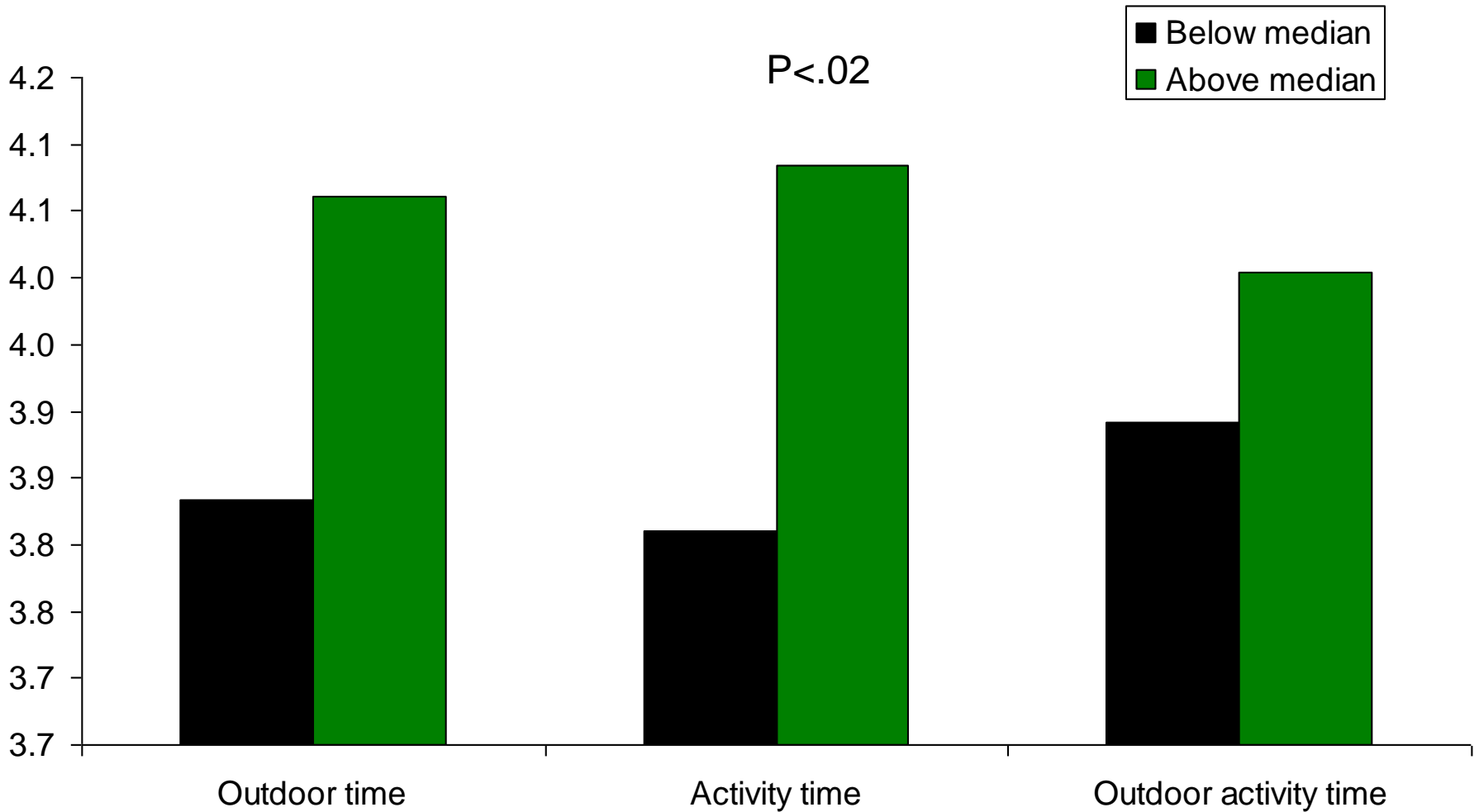
# Depression scores



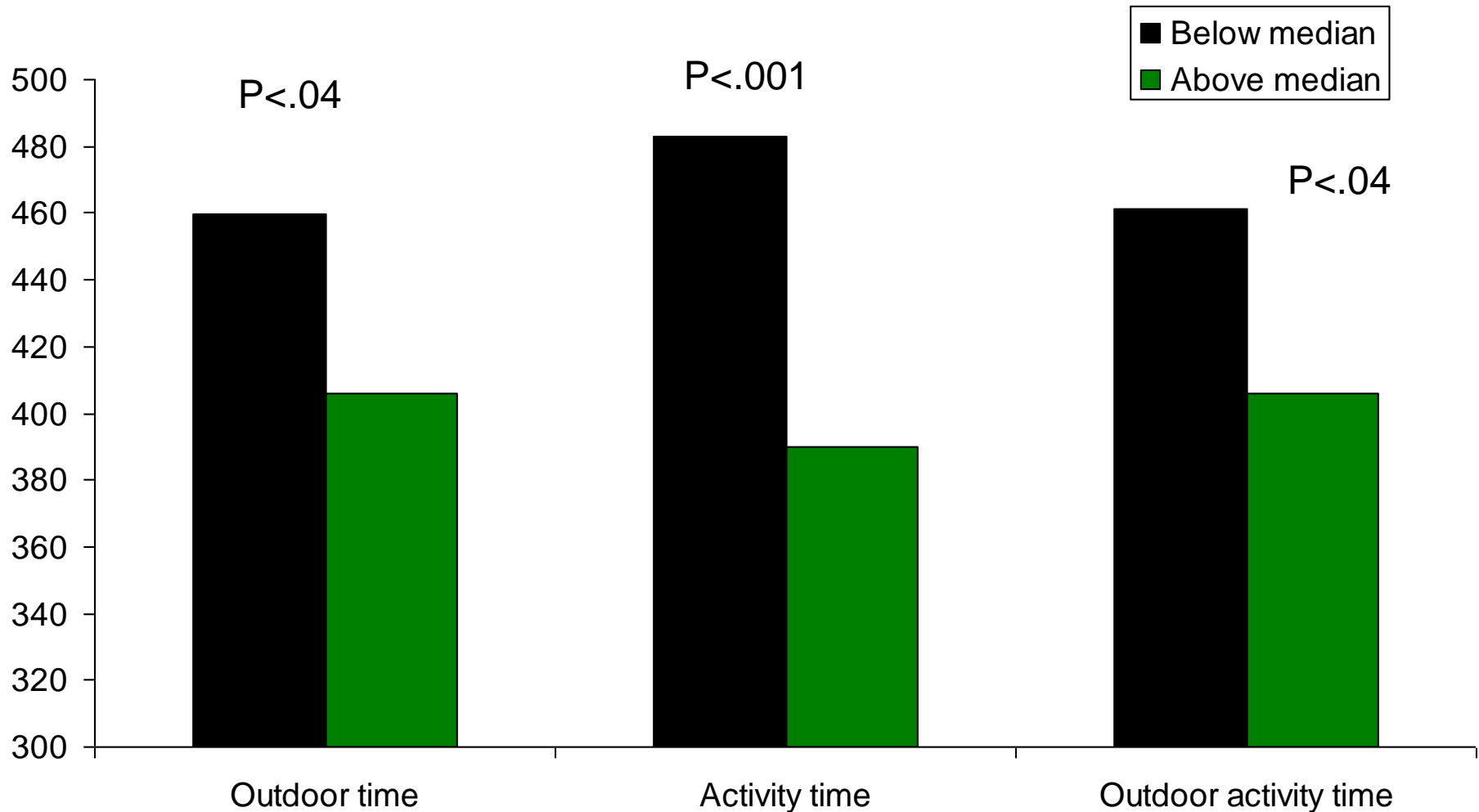
# Fear of falling



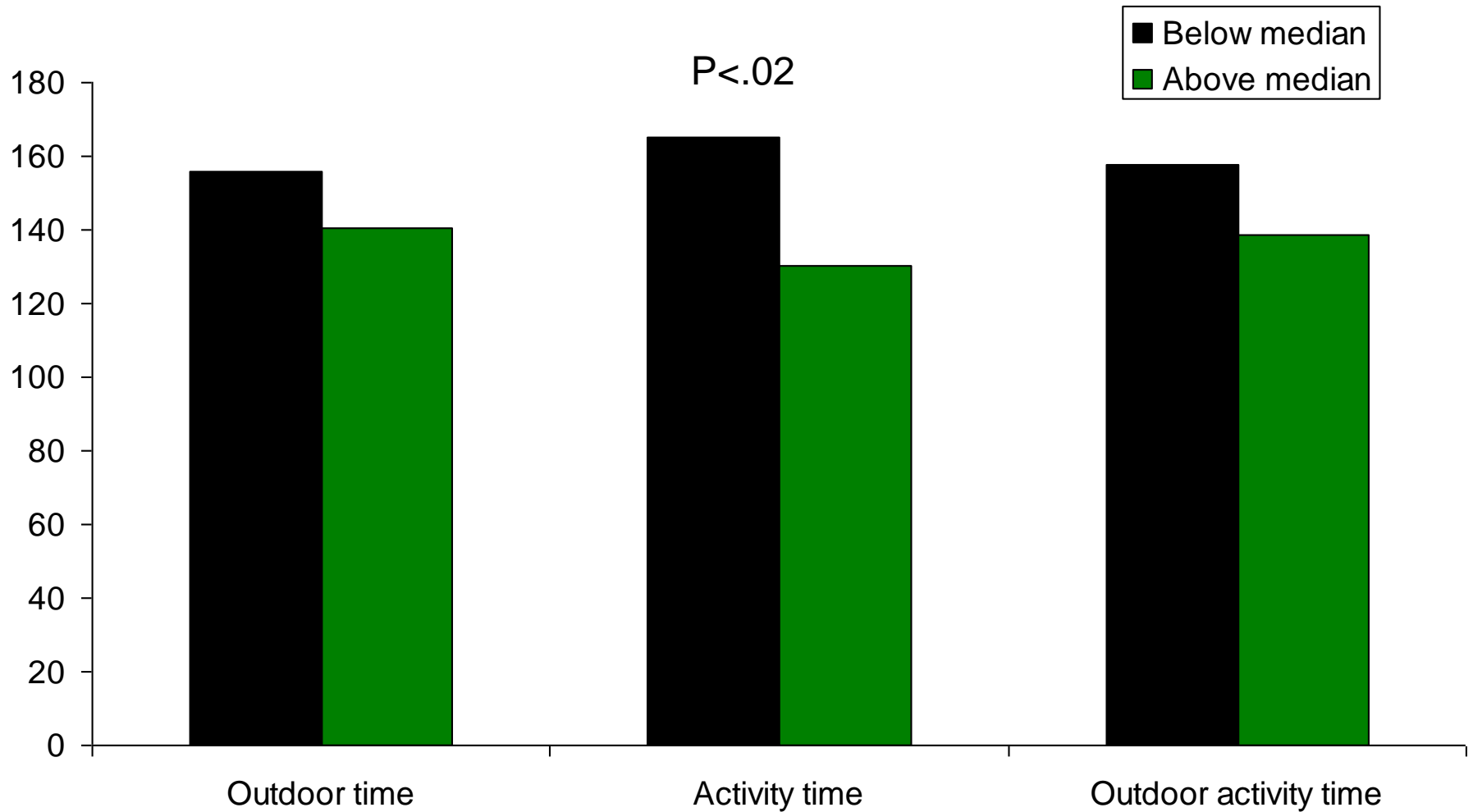
# Quality of life



# 400m walk - fitness



# Trails B - cognition





# Summary



- Accelerometer measured light to moderate physical activity related to depression, fear of falling, quality of life, fitness, & cognition
- GPS measured outdoor time related to depression, fear of falling, fitness
- GPS/Accelerometer measured outdoor activity time related to depression, fear of falling, fitness



# Conclusion



- Direction of relationship not yet established
- Physical activity anywhere is beneficial
- Promoting outdoor activity (less than quarter performed outdoors) would promote both activity and outdoor time
- More time outdoors, more likely to be active (60%  $p < .05$ )
- Safe outdoor environments may help promote more outdoor activity

