The Relationship between Outdoor Activity and Health in Older Adults

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

- Mean (SD) minutes per day in median
  - 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

- **Outdoor time**: P<.001
- **Activity time**: P<.001
- **Outdoor activity time**: P<.05
Fear of falling

Below median
Above median

P<.01
P<.001
P<.004

Outdoor time
Activity time
Outdoor activity time
Quality of life

P < .02

- Outdoor time: Below median
- Activity time: Below median
- Outdoor activity time: Above median
400m walk - fitness

Outdoor time
Activity time
Outdoor activity time

P<.04
P<.001
P<.04

Below median
Above median
Trails B - cognition

P < .02
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