

# APRU Global Health Conference 2021

## GLOBAL URBAN HEALTH

16-18 November 2021

The University of Hong Kong, Pokfulam, Hong Kong

### Abstract No. Abstract Title

**90**                      **Effects of Intensity and Frequency of Walking Exercise on Cardiorespiratory Fitness among Older Adults with Insomnia: A Pilot Study**

Theme                      **C. Environment, health & active lifestyle**

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### Introduction

#### **The insomniac population is at high risks of poor cardiorespiratory fitness**

Previous epidemiological study have found an inverse association between insomnia and cardiorespiratory fitness (Sleep 2013;36(1):99-108).

#### **Optimal exercise intensity and frequency for improving cardiorespiratory fitness among insomniac individuals**

The World Health Organization's physical activities recommendation suggested that at least 150 min of moderate-intensity, or 75 min of vigorous-intensity aerobic physical activity per week could improve cardiovascular disease mortality and sleep (British Journal of Sports Medicine 2020;54:1451-1462). However, the effectiveness of performing this recommended aerobic physical activity volume under weekend warrior exercise pattern is remain unknown.

#### **Purpose**

this study aims to compare the effectiveness of different aerobic exercise frequencies (i.e., regular exercise pattern vs. weekend warrior) and intensities (i.e., moderate-intensity vs. vigorous-intensity) on improving cardiorespiratory fitness among insomniac older adults.

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### Methods

#### Participants

Thirty-five older adults with insomnia were completed this study.

#### Inclusion criteria

1. Chinese male or female
2. Age  $\geq 50$  years
3. Present of insomnia symptoms over the past 3 months according to insomnia diagnostic criteria from fifth edition of the diagnostic and statistical manual of mental disorders (DSM-5)

#### Outcome measures

The maximal exercise test was conducted on a calibrated motor driven treadmill (T150 DE LC MED, COSMED). Gaseous analysis system (Quark CPET, COSMED) and 12-lead electrocardiogram (Quark T12x, COSMED) were used to continuously measure and record the oxygen consumption and heart rate during the test. The maximal attainable oxygen consumption was VO<sub>2</sub>max.

#### Intervention

##### Pre-test

Attention control, stretching exercise (75 minutes/wk, once session weekly)

Vigorous-intensity brisk walking (75 minutes/wk, three sessions weekly)

Moderate-intensity walking (150 minutes/wk, three sessions weekly)

Vigorous-intensity brisk walking (75 minutes/wk, once session weekly)

Moderate-intensity walking (150 minutes/wk, once session weekly)

##### Post-test

##### Week 0

##### Week 12

#### Exercise intensity

- Moderate intensity groups walked at the heart rate equivalent to 3.25 METs
- Vigorous intensity groups walked at the heart rate equivalent to 6.5 METs

Note: The METs (metabolic equivalent of task, 1 METs equivalent to sitting) obtained using a calibrated metabolic cart before the enrollment of the intervention.

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### Results and Discussion

#### Regular exercise pattern (exercise three times weekly) improved cardiorespiratory fitness

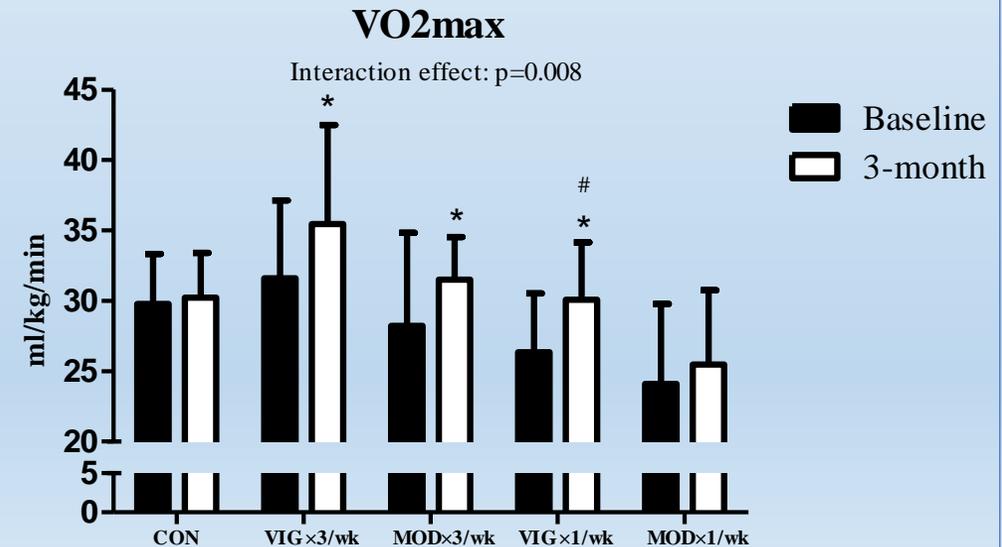
- Compared with attention control, all walking groups with regular exercise pattern (VIG×3/wk and MOD×3/wk) improve aerobic fitness.
- No statistical difference was detected between VIG×3/wk and MOD×3/wk

#### The weekend warrior exercise pattern only improve cardiorespiratory fitness under vigorous exercise intensity

- Among weekend warrior exercise group, only VIG×1/wk improve VO<sub>2</sub>max compared with CON.
- VIG×1/wk intervention induce better improvement in VO<sub>2</sub>max compared with MOD×1/wk.

#### Conclusion

- Performing the WHO recommend aerobic physical activity volume (i.e. 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic-type physical activities weekly) with regular exercise pattern could improve cardiorespiratory fitness among insomniac older adults.
- The present study showed that weekend warrior exercise pattern only elicit improvement in cardiorespiratory fitness under vigorous-intensity.



\*: significantly different from control at the same time point.  
#: significantly different from MOD×1/wk at the same time point.  
Values are expressed as mean ± standard deviation.

Sample size: CON: n=6, VIG×3/wk: n=8, MOD×3/wk: n=7, VIG×1/wk: n=8, MOD×1/wk: n=7