



# Objectively Monitored Physical Activity in Older Adults: A Literature Synthesis

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## INTRODUCTION

- Physical activity benefits people's health, helps improve older adults' independence and aging in place.
- Objective measures in physical activity increases dramatically during last decades and are considered more reliable and accurate.
- Little consensus exists on objective monitoring techniques, metrics or characters used to describe physical activity.

## QUESTIONS

- What types of objective measures were used in physical activity monitoring in older adults?
- What kinds of objective characteristics/metrics were used to describe physical activity across different measures?

## AIMS

- This synthesis of the literature we reviewed recent researches on physical activity and objective measures in older adults, provide an analysis on activity metrics and dimensions used in objective physical activity monitoring.

## METHODS

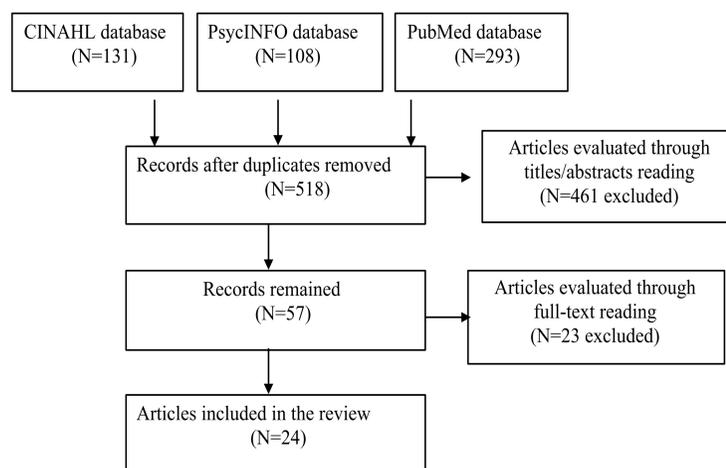


Figure 1. Flow chart of identification of included articles

## CONCLUSIONS

- Different devices and activity characteristics were used to describe objective monitored PA based on different study purposes and other reasons.
- Most studies combined metrics and dimensions to express activity in older adults.
- Steps taken per day is the mostly used metrics in objective PA description.
- Accelerometers was the mostly used devices.
- Accelerometers were used to measure activity dimensions including intensity, duration and pattern.
- Home monitor systems were usually used to monitor activity events remotely and in real time.
- Low to moderate activity intensity needs more detailed expression as major level in older people.

## RESULTS

- Objective measures of physical activity in reviewed studies include two main types - home monitoring systems & wearables devices.

Objective Measures of physical activity used in reviewed studies	Number of studies
<b>Pedometer</b>	
<i>Fitbit One™</i>	1
<i>Yamax digi-Walker(hip wear)</i>	1
<i>The Yamax SW-200</i>	1
<i>StepWatch 3.1(ankle wear)</i>	1
<b>Accelerometer</b>	14*
<i>Waist wear</i>	6
<i>Hip wear</i>	1
<i>Thigh wear(activPAL)</i>	6
<b>Actiheart Activity Monitor</b>	1
<b>Sense-Wear Pro 3 Armband (SWA)</b>	2
<b>Home Monitoring System</b>	
<i>eKauri</i>	1
<i>Passive Remote Patient Monitoring (PRPM) Systems (GreatCall )</i>	1
<i>Home Based Sensor System</i>	1

### Physical activity dimensions and metrics used in reviewed studies

#### Activity Intensity

- Number of steps taken*
- Activity counts*
- Metabolic equivalents of task (MET)*

#### Activity Duration

- Time spent in physical activity*

#### Activity Patterns

- Posture change-transition between status*
- Bout length*

#### Activity types

- Home monitoring systems*