



# Game on: Boosting Mobility in Senior Patients

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# Introduction

- ★ This global population of individuals 65 years and older between 1990 and 2019 increased from 6% to 9%
  1. Research proves that the lengths and frequency of hospital stays goes up with age
  
- ★ Reduced physical activity and prolonged bed rest promote adipose tissue accumulation and altered muscle protein synthesis
  1. Loss of lean muscle mass
  2. Higher falls risk and risk of disability
  
- ★ Older adults with limited mobility at higher risk for frailty
  1. Threatens ability to independently perform (basic activities of daily living)-quality of life of older adults can be improved through improving functional status and maintaining BADL independence



# Introduction

- ★ Deconditioning leading to functional loss in elderly can extend past discharge from hospitals related to multiple factors
  1. Orders from complete bed rest
  2. immobilization due to devices such as urinary catheters
  3. Overzealous falls prevention practices, bed and chair alarms
  4. Progression of chronic diseases and existing functional impairments
  5. Psychosocial factors, fear of falling causing injury or exacerbating existing condition
  
- ★ Steps needed to prevent slow down functional decline
  1. Dynamic balance exercises
  2. Exergames (interactive bedside video games)



# Purpose

- ★ We want to evaluate the impact of a bedside activity device that incorporated exergames on the functional status of hospitalized adults ages 65 years and older.”



# Methods

- ★ 48 Participants recruited
  1. 23 randomized to intervention group
  2. 25 control group
- ★ Ages ranged from 67-90 years old
  1. Majority of participants (89.6%) female
  2. 36 participants (75%) up to primary school education
  3. Most participants (87.5%) lived in public housing apartments on a floor with lift (elevator) landing.
  4. Most (83.3%) lived with family
  5. More than half (60.4%) had a caregiver that was family



# Method

- ★ Single-center randomized control trial
- ★ Two general units at an acute care tertiary hospital
- ★ Participants lived in Singapore
- ★ Inclusion
  1. recruited between July 2019 and March 2021
  2. 65 years of age or older
  3. Community ambulant (with/without gait aids)
  4. No medical contraindications for physical exertion
  5. Cognitively intact (no diagnosed condition that might affect cognition and being able to communicate coherently with a research team member during recruitment)
  6. Exclusion criteria enrolled in another rehab program or being discharged or transferred out of the unit in next three days

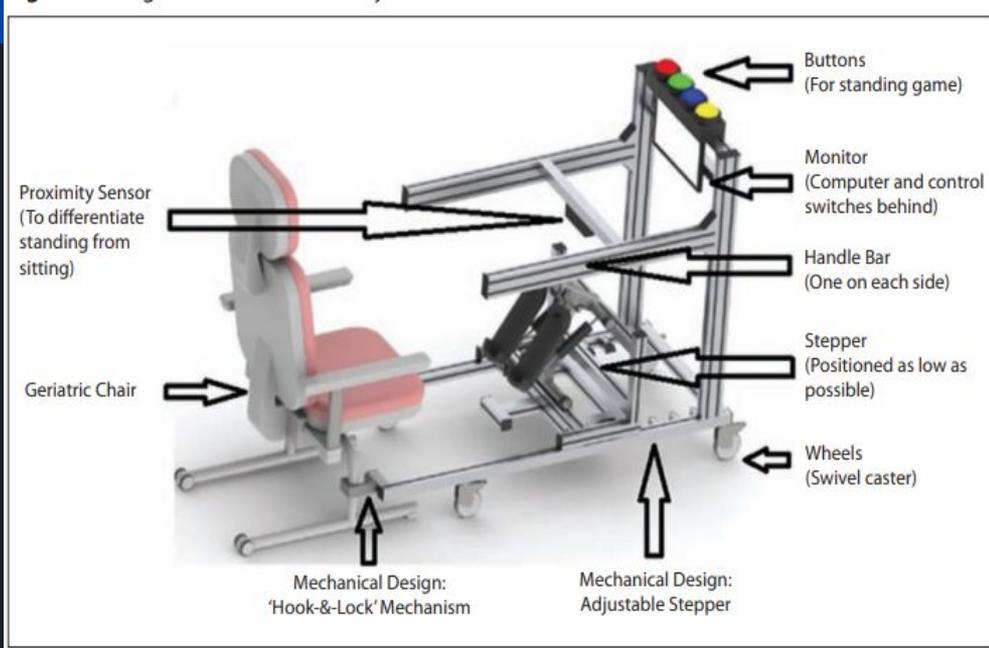


# Method

- ★ Groups developed
  1. The control group received standard care, may/may not include physiotherapy interventions
  2. Intervention group received standard care as well as used the bedside activity device daily
- ★ Data Collected
  1. Date of Birth
  2. Gender
  3. Type of living accommodations
  4. Caregiver presence
  5. Highest level of education
  6. Functional Comorbidity index (18 item list of diagnosis) to determine general health status
  7. Timed Up and Go (TUG) test (assess patient mobility)(day of admission and day of discharge)
  8. Katz index of Independence in Activities of Daily Living (Katz ADL) (ability to perform ADL's) given twice to each participant (day of admission and day of discharge.)

# Exergames Games

Figure 1. Design of the Bedside Activity Device



A research team member would educate patients on how to properly use the bedside activity device then they would observe the patients for one session. For additional sessions the nurse would bring the device in to their rooms and secure it to the geriatric chair for independent use.

- ★ The two games that were placed on the device were the slot machine and color matching each game involved the patient to step, sit to stand.
- ★ **Slot Machine**
  - This game the more steps the patient took the higher the score you would get
- ★ **Color Matching**
  - You would be sitting and the screen would show a fruit like an orange then the patient would need to stand and press one of the color buttons that match the fruit
- ☆ **Safety**
  - Stepper adjustment
    - Steppers can be moved closer to chair
  - Hook and Lock attachment
    - Secures the chair to ensure stability
  - Handlebars
    - Adjustable to patient height



# Results

## ★ TUG times

1. 43 seconds on admission for both groups
2. 33 seconds demonstrated for intervention group on discharge
3. 53 seconds demonstrated for control group on discharge

## ★ Katz ADL scores

1. 4 and 3 were admission scores for both groups
2. 6 = median for intervention group at discharge
3. 4 = median for control group at discharge (no change)
4. Between-group the intervention group showed median = 1
5. Between-group the control group showed median = 0

★ Score on a 0-6 scale with the higher the score meaning the more independence the patient has.



# Conclusion

- ★ Study have shown that the using a bedside activity device, permits the patient to exercise in any given time without the need of supervision. This localizes muscle groups and movements required to perform activities of daily living. This can extend the time for decline or prevent the functional downfall and improve Independence.
- ★ Hospitalization can cause functional decline and is associated with falls, prolonged hospitalization, readmissions, frailty, and mortality in older adults. It is important to have cost-effective interventions such as the bedside activity device that promote functional independence and physical activity in this population during hospitalization.
- ★ It is becoming more and more important for the developing and the implementation of innovative technology in the health care setting.



# Reference

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