



# MIND & GAIT

## Promoting independent living in frail older adults by improving cognition and gait ability and using assistive products

Project AAC in 02 / SAICT / 2016 reference number 023822

**João Apóstolo**

Cofinanciado por:



MIND & GAIT

PARTNERS

## 4 HIGHER EDUCATION INSTITUTIONS

### MULTIDISCIPLINARITY



Escola Superior de  
Enfermagem de Coimbra

NURSING



instituto politécnico de leiria

NURSING

COMPUTER  
ENGINEERING

OCCUPACIONAL  
THERAPY



POLITÉCNICO  
DE COIMBRA

MECHANICAL  
ENGINEERING



EXERCISE  
SCIENCES

## 2 RESIDENTIAL STRUCTURES FOR ELDERLY

### END USER ORGANISATIONS

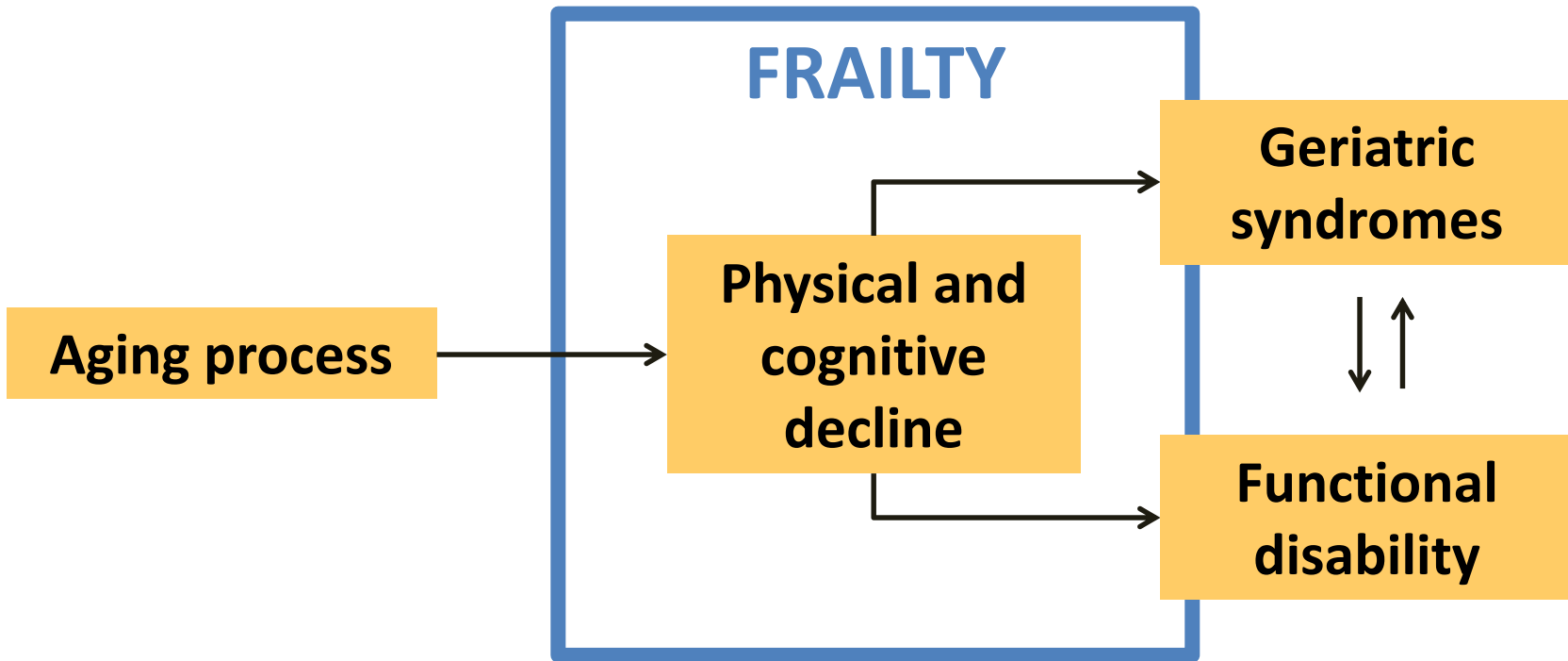


Caritas Diocesana  
de COIMBRA

MISERICÓRDIA



DE ALCOBAÇA



A multifactorial state of vulnerability associated with aging that results from the reduction of homeostatic reserves. It leads to an increased risk of falls, fractures, disability and dependence, hospitalization, institutionalization, and death.

## Effectiveness of interventions to prevent pre-frailty and frailty progression in older adults: a systematic review

João Apóstolo<sup>1</sup> • Richard Cooke<sup>2</sup> • Elzbieta Bobrowicz-Campos<sup>1</sup> • Silvina Santana<sup>3</sup> • Maura Marcucci<sup>4,5</sup> • Antonio Cano<sup>6</sup> • Miriam Vollenbroek-Hutten<sup>7</sup> • Federico Germini<sup>5</sup> • Barbara D'Avanzo<sup>8</sup> • Holly Gwyther<sup>2</sup> • Carol Holland<sup>2</sup>

- Physical exercise programs provided in groups to pre-frail and frail older adults that are institutionalized<sup>32</sup> or that live in community<sup>42,46,49</sup> are an effective intervention for reducing frailty level (Level of Evidence – 1a) or, at least, for positively changing some of the frailty indicators. Thus,
  - Cognitive training provided to pre-frail and frail older adults from the community<sup>53</sup> is an effective intervention for reducing frailty level and improving knee strength (Level of Evidence – 1c). Thus, based on current evidence, health
- Combined multidisciplinary treatment 1c). Combined multidisciplinary treatment including nutritional supplementation, physical training and cognitive training is an effective intervention for reducing frailty level, especially



## PROJECT AIM

Promote independent living in frail older adults by improving cognition and gait ability and using assistive products

## COMBINED INTERVENTION

**Cognitive Stimulation Program**



**Physical Exercise Program**

**Group sessions**

**Individual sessions**



**Animal-assisted activities**



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1

Update and test  
the cognitive  
stimulation  
program

2

Develop and test  
the physical  
activity program

3

Upgrade the  
ABMRW\*

4

Test the ABMRW\*

\*Auto-blocking kit  
mechanism for rolling  
walkers



Combined intervention development

5

Assess the effectiveness of the combined  
intervention in old adults with frailty

6

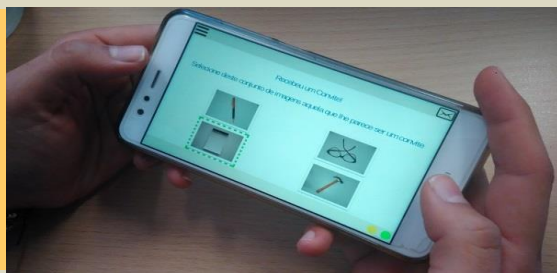
Develop a web platform to support the  
material and disseminate the intervention  
materials

7

Analyze participant perception  
of the interventions

## ACTIVITY 1

**Script of an individual  
Cognitive Stimulation  
Program developed and  
validated**



**Script is being transformed  
into a web application to  
be submitted for digital  
validation**

## ACTIVITY 2

**Physical Exercise Program  
developed and validated**



**Duração:** 7 a 10 minutos  
**Intensidade:** 2 a 3 séries de 4 a 8 repetições  
5 a 6 ESE, leve a moderada  
(Controle os sinais de sobre-esforço)  
**Movimento:** dinâmico/estático (10° a 30°),  
unilateral/simultâneo  
Incluir exercícios de respiração 4 a 5 ciclos

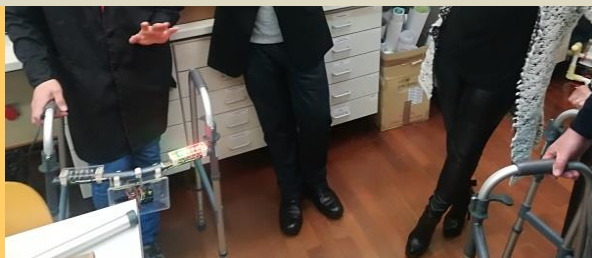
**Mobilidade Pernas**



**The developed contents  
will be transformed into an  
e-book**

### ACTIVITY 3

The initial prototype of the  
**ABMRW** is developed



To improve prototype,  
sensors are being  
introduced to detect  
balance.

### ACTIVITY 4

The initial prototype of the  
**ABMRW** is tested



The device was tested with  
17 users of rolling walkers  
from 2 elderly end-users  
organizations





RESULTS

## ACTIVITY 5

RCT

**Assess the effectiveness of the combined intervention**

A total of 43 **older adults at risk of developing frailty** met inclusion criteria



Randomly allocated



**Experimental group (n=22)**



**Control group (n=21)**

Receiving **Combined intervention**  
3 times a week during 12 weeks :

- 24 sessions of **physical exercise**
- 12 sessions of **cognitive stimulation**

Receiving **Standard Care**

ongoing



RESULTS

## ACTIVITY 5

RCT

**Assess the effectiveness of the combined intervention**

### Pre-test and post-test outcomes

- Cognitive performance;
- Depressive symptomatology;
- Gait speed;
- Biomechanical parameters of gait;
- Risk of fall based on gait and balance;
- Activities of daily living;
- Sociodemographic and clinical data.

ongoing



## RESULTS

### ACTIVITY 6

**Web Platform is being developed.**



**All the programs and contents developed will be there available**

### ACTIVITY 7

**Focus groups and face to face interviews are being developed.**



**Students;  
Researchers;  
Older adults;**



## PROJECT IMPACT



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**PREVENTION OF  
COGNITIVE AND  
PHYSICAL DECLINE**

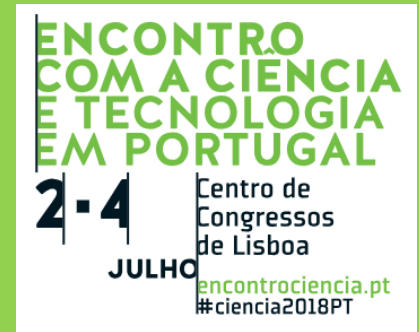
**FALLS PREVENTION**

**INDEPENDENT  
LIVING OF FRAIL  
OLDER ADULTS**

**ACTIVE AGEING**

**QUALITY OF LIFE  
IMPROVEMENT**

**INVOLVEMENT OF  
CITIZENS IN  
HEALTH RESEARCH**



# Thank You!

For more information or collaborations please contact:  
[apostolo@esenfc.pt](mailto:apostolo@esenfc.pt)



PORTUGAL CENTRE FOR EVIDENCE BASED PRACTICE  
A JOANNA BRIGGS INSTITUTE CENTRE OF EXCELLENCE



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