The work of the Healthy Ageing Group: Evidence into practice and novel ways of delivering strength and balance.

Dr Helen Hawley-Hague, Dr Lis Boulton, Dr Emma Stanmore, Jane McDermott, Professor Chris Todd

Disclosure of interests: Funded by EC
Can smartphone and teleconferencing technology be used to deliver an effective home exercise intervention to prevent falls amongst community dwelling older people?

Dr Helen Hawley-Hague, Dr Sabato Mellone, Professor Jorunn Helbostad, Professor Lorenzo Chiari, Professor Chris Todd.
NIHR Study: The Technology

Hello Mr. White, I will guide you through the Timed Up and Go testing procedure...

Now remain seated and wait for me to say GO...

Very Well Mr. White! You have shown an improvement, this will enable you to get up and down stairs more easily.

Very good Mr. White, you are being very active today...

Mr. White is in a good shape!

Hello Mr. White, it’s Mr. Smith, how lovely to see you today...

...let's do some knee bends, lead with your bottom as though you are going to sit in chair...

Your Father may need Help!

FALL DETECTED!
The technology will increase:

- Exercise
- Safety
- Social support
- Motivation

Waist case belt used for wearing the smartphone
NIHR Project outline

Setup Phase
- Steering group
- Creating smartphone applications
- Initial testing
- Working with health professionals

Study 1: Usability Testing
- Acceptability and usability of technology with older adults/health professionals.
- Two weeks testing period with patients and staff.
  - Recording of issues
  - Interviews with patients
  - Focus groups

Revision Phase
- Reflection on findings from usability testing
- Revisions to applications and set-up
- Preparation for Study 2

Feasibility RCT
1. Assess feasibility of interventions delivered as full alternative to standard service.
2. Assess feasibility/acceptability of design and procedures.
3. Determine effect sizes for sample-size calculations for definitive large scale RCT.
Early risk detection and prevention in ageing people by self-administered ICT-supported assessment and a behavioural change intervention delivered by use of smartphones and smartwatches

Dr Elisabeth Boulton, Dr Helen Hawley-Hague, Dr Fan Yang, Professor David French, Professor Chris Todd
The LiFE Concept

• Many opportunities to improve strength and balance throughout the day.
• Look for opportunities to make life more challenging, not to make it easier!
• Principles: decrease the base of support, load the muscles, move more and sit less.
PreventIT Online

https://www.youtube.com/watch?v=upAfGHBnNvdU
The eLiFE system

- Android smartphone – sensors and application
- Android smartwatch – sensors and application for notifications.

Samsung Galaxy J5, 2016

Sony Smartwatch 3
Planning in eLiFE
The eLiFE Behavioural Model – how does the intervention work?

**Skills learned:**
- Goal setting
- Action planning & visualisation
- Habit formation (cues and environmental restructuring)
- Functional exercises
- Hardware & App functionality

**Intervention Phase**
- Instructors support goal setting, planning, visualisation and habit formation along with operation of hardware & App.

**Participants:**
- Participants receive real-time feedback on behaviour.
- Participants: Behaviour: do the activities.
- Participants set goals and plan activities.

**Sustained behaviour:**
- Participants do existing activities, set new goals, plan and perform new activities autonomously.

**Independent Phase**

**Outcomes - Reduced risk of functional decline**
- Improved balance
- Increased strength
- Increased physical activity
- Reduced sedentary time
How far have we got?

Pilot 1
aLiFE

Pilot 2
eLiFE

Feasibility RCT
A multi-centre, cluster randomised controlled trial comparing falls prevention Exergames with standard care for community-dwelling older adults living in assisted living facilities.

Emma Stanmore, Dawn Skelton, Chris Todd
Exergames
Cluster Randomised Trial

Recruitment

18 Sheltered Housing facilities
12 Manchester, 6 Glasgow
137 pts consented, 31 ineligible
106 completed baseline assessments
Control Group

**Standard care**
- Physio assessment
- OTAGO exercise advice
- Falls prevention information and leaflet

Intervention Group

**MIRA**
- Falls prevention tailored exergames
  - 3x per week for 12 weeks plus standard care

**Plus 3 months follow up on falls**
Primary outcome: Balance

Berg Balance Scale
mean increase in BBS 6.18 (95% CI 2.38 to 9.97) (p=0.003).

ITT analysis
Secondary outcome: FES-I: fear of falling

Fear of falling
Effect estimate = -2.69,
95% CI: -4.52 to -0.85,
(p = 0.007)
Secondary outcome: Pain

Effect estimate = -12.07, 95% CI: -22.31 to -1.83, (p=0.024)
Also better outcomes for the Exergames groups’ participants for:

- Cognition
- Fatigue
- Geriatric Depression Scale
- Functional status/lower limb strength (TUG)

**Adherence, attrition and adverse events**

Mean Exergame sessions over 12 weeks = 24.85 out of 36 sessions

Only 14% attrition.

No reported adverse events.
Dr Helen Hawley-Hague, Dr Jane McDermott, Dr Emma Stanmore, Dr Chris Todd
Prevention of Falls Network for Dissemination (ProFouND) 2013-2016

21 partners
15 associates
12 countries

ProFouND aims to influence policy and to increase awareness of falls and innovative prevention programmes amongst all sectors and organisations that work with older people

http://profound.eu.com/
ProFouND Achievements 2013-2016

• Website portal with best practice resources
  www.profound.eu.com

• Cascade Trainers in 10 EU countries

• European Stakeholder Alliance for Active Ageing through Falls Prevention (ESA-on-falls)

• Intervention factsheets:
  general guidance, exercise, vision, bone health, vitamin D, home environment, footwear & protective clothing, falls detection & prevention technologies, long-term care, acute care

• Annual media campaign and EU wide Flash Mob
  https://www.youtube.com/watch?v=iekHwmOh084

• EU Falls Festival www.eufallsfest.eu
EU Falls Festival 2018

Monday 2\textsuperscript{nd} and Tuesday 3\textsuperscript{rd} July

Manchester
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