Strength Training for Older People

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Overview

✓ Strength Training has Significant Benefits for Older People

✓ Understand the Barriers and Facilitators to Exercise (including Strength Training) – findings from new research from WA

✓ Work Closely with the Older Person – Communication, Motivation, Adult Learning Styles

✓ Provide a Supportive Environment
Insufficient Physical Activity
2011-12

Per cent
90
80
70
60
50
40
30
20
10
0

18–24 25–34 35–44 45–54 55–64 65–74 75+

Age group (years)

Men Women

Disability among Older People

(53%) report a disability – But only 1 in 5 (20%) severe or profound core activity limitation

57% of adults who described their health as "excellent" did sufficient physical activity compared with 27% of people with "fair" and 26% with "poor" self-assessed health
Potential Engagement

People aged 65 and over - 72% rated their health as excellent, very good or good

Older Adults Engaging in Strength Training

Population based Telephone Survey Older People (NSW)
- Strength training at least 2 days per week - 12%
- Problems with walking or used a walking aid and those who had fallen - 20% to 40% less likely to participate in any balance or strength training

Population Telephone survey all ages (QLD)
- 7% of those over 55 years did gym based resistance training

Recommendations

Be active on most, preferably all, days every week

- accumulate 150 to 300 minutes moderate intensity physical activity / 75 to 150 minutes vigorous intensity physical activity
- do muscle-strengthening activities on at least 2 days each week
- minimise the amount of time spent in prolonged sitting
- break up long periods of sitting as often as possible

US guidelines (CDC) - muscle strengthening activities on 2 or more days per week
Benefits of Strength Training
Resistance Training - Established Benefits

- Functional Capacity and Maintenance
- Quality of Life
- Psychological well-being, Depression
- Independence
- Cardiovascular benefit – including for those with HF
- Falls Prevention
- Bone Strength

*Improvements in walking speed, dynamic balance, walking endurance, muscle mass, glycaemic control, obesity, hypertension*

AMCM: 2009; Peterson et al 2010, Chodzko 2009
Elastic Band RT

Improvement in lean mass, body fat, LL strength, endurance, CV fitness, CV risk factors

Meta-analysis - 11 studies (n= 834, ages 60 to 79)

RT with Elastic Bands

- strong effects on muscle strength in healthy elderly
  (SMD = 1.30; 95% CI: 0.90, 1.71)

- Limited information available about training intensity

- Effective for Improving Muscle Strength In Range Of Older People, less in those with Pathology

Lee; 2015, Yang 2015, Martins et al, 2013
Home Based Training

- **LIFE program – Functional Strength Training**

- **Meta-analysis** 8 studies (theraband, light weights)
  mean age = 76 years, studies

- Functional ability significantly improved - average decrease in Timed Up & Go test being $-0.8 \pm 0.5$ s

- More supervised studies - significant increases in strength and functional ability

- Improvement in both strength and functional ability - improvements are generally small; intensity, progression difficult to measure

Thiebaud et al, 2013; Clemson et al, 2012
Background: resistance training improves muscle strength in older people (large component is neuromuscular based)

But .... does it improve function?

- Evidence from 121 RCTs (6,700 participants)
- Reported adherence rate high (greater than 75%)

Lui et al, Cochrane Database Sys Rev 2009
Results

Higher intensity training (54 trials, 2026 participants) has a larger effect on strength than low to moderate intensity training (19 trials, 103 participants; p 0.007)

- Both training approaches probably effective in improving strength
- Longer duration programmes (i.e. greater than 12 weeks vs less than 12 weeks) also compared with shorter duration programmes – minimal differences
- Treatment effects in older people with and without chronic disease (or functional limitation) – less effect size
Strength and Function

- Modest improvement in Gait Speed (24 trials, 1179 participants, MD 0.08 m/s, 95% CI 0.04 to 0.12)
- Moderate-large effect for Getting out of a Chair (11 trials, 384 participants)
- TUG significantly better than controls
- Large positive effect on Muscle Strength (73 trials, 3059 participants)
- Participants with OA: Reduction in Pain following PRT
Older people Who Strength Train

- Become stronger
- Improve their performance of simple activities such as walking, climbing steps, or standing up from a chair more quickly
- Improve in activities such as getting out of a chair or stair climbing, Improve physical abilities, including more complex daily activities - bathing or preparing a meal
- Reduced pain in people with osteoarthritis
What are Older People Saying about Strength Training?
CURTIN University researchers are working with Healthway, Silver Chain and the Council on the Ageing WA to determine what strength-training routines seniors are using and to encourage more seniors to participate.

Curtin University School of Physiotherapy and Exercise Science project manager Elissa Burton said the project would highlight to seniors the importance of strength training and the physical and emotional benefits of exercise.

“Research shows only 12 per cent of Australian seniors currently participate in strength training each week,” Dr Burton said.

“Strength training is essential for building and maintaining muscles, curbs the effects of osteoporosis and reduces the symptoms of chronic diseases, all of which help older people live in their own homes longer.”

Dr Burton said researchers would seek to understand why some older people didn’t feel comfortable participating in regular strength training and

Hill K (Curtin), Lewin G (Silver Chain), Pettigrew S, Hill AM, Burton E (Curtin), Marston K, Airey P(COTA), Bainbridge E (Curtin). Improving community participation in strengthening programs for older people. 2015-2017 FUNDING from HEALTHWAYS
Aim: review the available evidence to identify factors that constitute motivators and barriers to community-dwelling older people participating in resistance (strength) training programs

Method: systematic review

Included studies: 60 years and over, living in community, resistance training

Outcomes of interest: motivators and barriers to participation in resistance training

Methodological approaches – broad range of study designs included

Burton et al 2016
Findings

- n = 1,937 Participants, Study sample sizes ranged from 8 to 414
- Mean age = 69.9 years (range 50 to 94 years)
- Six studies included only Women
Barriers and Motivators
Motivators – Individual Level

Physical Benefits
- Health
- Physical Functioning
- Good health / Health scare
- Reduce pain/injury/illness including chronic conditions
- Appearance

Psychological Benefits
- Mental Function - improved alertness, concentration, stimulate mind, relieve Stress/relaxing
- Mental Health - mood, Positive outlook, Wellness
- Exercise Self-Efficacy
Barriers - Individual

Psychological
- Lack of willpower, negative attitude, low self-efficacy
- No enjoyment, too old, fear of looking too muscular
- Risk of heart attack / stroke / death
- Emotional problems that interfere with daily living e.g nervous / depressed

Physical
- Poor health, risk of injury/pain, pain, tired/fatigue

Other
- Lack of time or knowledge, inconvenient, cost, exercise low priority
Motivators: Social & Environmental

**Environment** - Organized Exercise Opportunity
- Access to facility / equipment, convenience, travel
- Program characteristics - exercising difficulty, own pace, gym atmosphere
- Staff characteristics – access, knowledge, interaction, competence

**Social support and Encouragement** - peers and staff, spouse, family, friends, health professional (doctor)
- Increase Social Activity
- Observing others being active - family/friends participate in PRT
Identifying motivators and barriers to older community-dwelling people participating in resistance training: A cross-sectional study

Elissa Burton, Gill Lewin, Simone Pettigrew, Anne-Marie Hill, Liz Bainbridge, Kaela Farrier, Trish Langdon, Phil Airey & Keith D Hill

Aim: Identify motivating factors and barriers influencing a broad group of older community dwelling adults to either commence or continue participation in a RT program

Methods: cross sectional survey

Participants: LLLS, COTAWA, Home Care Agency

n = 1327 questionnaires were returned (response rate = 42.5%).
## Results

### Barriers
- Ongoing injury or illness
- Pain
- Not interested
- Feeling too old

### Facilitators
- To feel good physically, to feel fit
- To feel good mentally

#### Home Care
- Be independent, Reduce falls

#### Seniors group
- Feel good physically and mentally
Barriers – Social and Environmental

Social
- Family and/or work obligations/responsibilities
- Lack of social support

Environment
- Lack of exercise facilities, moved away from facility
- Geographical location
- Lack of age appropriate programs
Factors Associated With Older Patients' Engagement in Exercise After Hospital Discharge


Anne-Marie Hill, MSc; Tammy Hoffmann, PhD; Steven McPhail, PhD; Christopher Beer, MB, BS; Keith D. Hill, PhD; Sandra G. Brauer, PhD; Terence P. Haines, PhD

DOI: https://doi.org/10.1016/j.pmr.2011.04.009

Abstract

Prospective
Observational Study

N=343 Quantitative and qualitative analysis

❖ Setting and Participants
Swan Districts hospital, Perth Western Australia
≥ 60 years discharged after rehabilitation

❖ Final telephone survey 6 months after Discharge

Hill AM et al; APMR 2011
## Survey 6 months after discharge

<table>
<thead>
<tr>
<th>Engagement in exercise</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal programme at least x1 week</td>
<td>109 (35.7)</td>
</tr>
<tr>
<td>- group</td>
<td>43 (39.4)</td>
</tr>
<tr>
<td>- unsupervised at home</td>
<td>34 (31.2)</td>
</tr>
<tr>
<td>Not at discharge but now commenced</td>
<td>19 (6.2)</td>
</tr>
<tr>
<td>Ceased programme</td>
<td>54 (17.7)</td>
</tr>
<tr>
<td>No engagement</td>
<td>115 (37.8)</td>
</tr>
<tr>
<td>Recall of recommendation to exercise by PT</td>
<td>221 (72.5)</td>
</tr>
</tbody>
</table>
Barriers to engagement

Self Efficacy
- No need
- Don’t fall over
- Dislike exercise
- Lost interest
- Don’t feel safe
- Might fall

Medical
- Shortness of breath
- Too unwell
- Increases back pain

Service delivery
- Could not get to class
- Not given program
# Predictors of Engagement

- **Self-belief of serious risk of injury from a fall**
  OR 0.72, (95% CI 0.60, 0.87), p<0.001

- **Recommended by physiotherapist**
  OR 2.90, (95% CI 1.71, 4.92), p<0.001

- **Lived with partner**
  OR 1.76, (95% CI 1.11, 2.79), p=0.02

- **Lived home alone**
  OR 0.56, (95% CI 0.33, 0.39), p=0.02

- **No recall of recommendation**
  OR 0.43, (95% CI 0.21, 0.86), p=0.02
Practical Strategies
Exercise

Motivators
- Feel younger, alert stimulates mind
- Strength, function, independence
- Social support, feeling of belonging
- Convenient, age appropriate own pace

Barriers
- No willpower, no enjoyment, risk of death
- Risk of injury, pain, tired
- No social support, family responsibilities
- Lack age appropriate or general facilities

Mediating Role of Health Professional

Inactive
Engagement in RT

EMOTIONAL SUPPORT
• PERSONAL GOALS TO ACHIEVE
• AFFIRMATION
• REWARDS

FEARFUL OF INJURY, HEART ATTACK
LACK OF WILLPOWER, DISLIKE
NO EASY CLASS, GOOD INSTRUCTION
FEELING TOO OLD
POOR HEALTH, PAIN, FATIGUE

ONGOING SUPPORT
• DIARIES
• PEERS
• HANDOUTS

COMMUNICATION
EDUCATION
DISCUSSION
PLANNING

STRATEGIES
• SOCIAL OR HOME
• PICTORIAL GUIDE
• TRAINING

PERSONAL GOALS TO ACHIEVE
AFFIRMATION
REWARDS
Opportunity – Social, Environment

Motivation – Confidence, Overcome Barriers

Capability – Knowledge, Awareness

Michie et al, 2011
Aim Seek Older Peoples’ Views About how they would Like to Receive Falls Prevention Information
World Cafe Forum

live
LOVE
LEARN

Falls Prevention-World Cafe Forum held on 29 Oct 2014. A conversational process with over 80 individuals aged 60 plus, sharing insights and feasible solutions towards prevention of falls.
Older Peoples’ Views

- **Personal experience** is Key to being Receptive or Seeking out Falls Prevention Information

- Pictures and Visual cues, Practical strategies

- **Credible Sources of Information** - Public Libraries, Peer Educators, Seniors’ Organisations, Local Shopping Centres
Advice for Health Professionals

Positive Tone
Respect, Empathy
Time to Listen to Foster Motivation

“...Respect has gone out the window...”
“...Caring, trust and respect before the message can be received...”
“...Tells to me like a real human being, draws pictures for me...”
Plan of Action

✓ Develop a Working Group at your Setting – Include Older Adults

✓ Benchmark the Exercise that your Population is Undertaking

✓ Follow up with Effective Communication to Group/Individual Patients

✓ Provide Supportive Resources and Environment for Older People to Engage in Exercise – Buddies, Checklists, Videos, Emails, Local “Go To”

✓ Take a “Champion” Role At Your Site
Summary

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