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**Literature search results**

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**Armchair movement**

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; AMED; BNI; CINAHL; EMBASE; HMIC; Health Business Elite; MEDLINE; PsychINFO; Google Scholar; Google Advanced Search

**Database search terms:** Seated exercise, Seated aerobic exercise, All-extremity seated exercise, All-extremity semi-recumbent exercise, Arm-crank ergometry, Aerobic fitness and dementia, Aerobic exercise/adjunctive therapy, Seated range of motion exercise, Seated balance exercise training programme, Exercise activities and dementia, Alternative exercise modes, Aerobic exercises and cognitive impairment, Chair exercise, Chair aerobics

**Evidence search string(s):**

**Google search string(s):**

**Summary**

Lots of references to activity being good for well-being of elderly patients with dementia – either at home or in residential/primary care. The term ‘Armchair movement’ doesn’t seem to be used so hopefully, the search terms used will have provided enough resources!

**Guidelines and Policy**

Occupational therapy interventions and physical activity interventions to promote the mental wellbeing of older people in primary care and residential care
Evidence-based reviews

1. Baum EE, Jarjoura D, Polen E et al
Effectiveness of a group exercise programme in a long-term facility: a randomised pilot trial

2. Gates NJ, Valenzueal M, Sachdev PS et al
Study of mental activity and regular training (SMART) in at risk individuals: a randomised double blind, sham controlled longitudinal trial
BMC Geriatrics, 2011, Vol 11, p 19

Published research – Databases

1. Improvement of cognitive function after physical movement training in institutionalized very frail older adults with dementia.
Citation: GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry, December 2011, vol./is. 24/4(197-208), 1662-9647;1662-971X (Dec 2011)
Author(s): Thurm, Franka; Scharpf, Andrea; Liebermann, Nadine; Kolassa, Stephan; Elbert, Thomas; Luchtenberg, Dietmar; Woll, Alexander; Kolassa, Iris-Tatjana
Abstract: Physical exercise has positive effects on cognitive functioning in both healthy older adults and ambulatory older adults with dementia. The present study investigated whether a 10-week multimodal movement intervention conducted in the seated position can slow cognitive deterioration in demented and physically very frail nursing-home residents. Our analysis revealed that training participants showed no further overall cognitive deterioration throughout the study and a significant improvement in the ADAS-Cog orientation/praxis subscore (p = .04). In contrast, the control group demonstrated a significant decline in the ADAS-Cog sum score (p = .02). These results might be of relevance for geriatric practice since they indicate that a short-term physical intervention-even in the seated position-can decelerate cognitive decline and dementia despite physical frailty. (PsycINFO Database Record (c) 2013 APA, all rights reserved) (journal abstract)
Publication Type: Journal; Peer Reviewed Journal

Citation: Dissertation Abstracts International: Section B: The Sciences and Engineering, 2011, vol./is. 72/5-B(3086), 0419-4217 (2011)
Author(s): Nary, Dorothy E
Abstract: A single-subject changing criterion design was used in two studies to empirically assess a home-based exercise treatment package for sedentary participants with severe mobility-related disabilities. The independent variable in both studies included a behavioral contract, education, goal setting, self-monitoring, reinforcement, and contingent attention. Both studies enrolled 2 participants and used seated exercise programs on videotape to deliver the intervention. In study 1, participants incrementally increased their exercise to a mean of three 17-minutes sessions per week over 14 weeks. In study 2, participants increased their weekly exercise to five 20-minutes sessions per week, and five 35-minute sessions per week, respectively, over 16 weeks. The second study also incorporated objective data collected with motion devices to validate participant self-reports of exercise. These findings indicate that a home-based exercise treatment package can assist individuals with severe mobility-related disabilities to increase exercise minutes and sessions, to work toward recommended physical activity goals for all Americans of 30 minutes of moderate-intensity physical activity on most days of the week. (PsycINFO Database Record (c) 2012 APA, all rights reserved)
3. The effects of single bouts of aerobic exercise, exergaming, and videogame play on cognitive control.

**Citation:** Clinical Neurophysiology, August 2011, vol./is. 122/8(1518-1525), 1388-2457 (Aug 2011)

**Author(s):** O'Leary, Kevin C; Pontifex, Matthew B; Scudder, Mark R; Brown, Michael L; Hillman, Charles H

**Abstract:** Objective: The effects of single bouts of aerobic exercise, exergaming, and action videogame play on event-related brain potentials (ERPs) and task performance indices of cognitive control were investigated using a modified flanker task that manipulated demands of attentional inhibition. Methods: Participants completed four counterbalanced sessions of 20 min of activity intervention (i.e., seated rest, seated videogame play, and treadmill-based and exergame-based aerobic exercise at 60% HRmax) followed by cognitive testing once heart rate (HR) returned to within 10% of pre-activity levels. Results: Results indicated decreased RT interference following treadmill exercise relative to seated rest and videogame play. P3 amplitude was increased following treadmill exercise relative to rest, suggesting an increased allocation of attentional resources during stimulus engagement. The seated videogame and exergame conditions did not differ from any other condition. Conclusions: The findings indicate that single bouts of treadmill exercise may improve cognitive control through an increase in the allocation of attentional resources and greater interference control during cognitively demanding tasks. However, similar benefits may not be derived following short bouts of aerobic exergaming or seated videogame participation. Significance: Although exergames may increase physical activity participation, they may not exert the same benefits to brain and cognition as more traditional physical activity behaviors. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

**Publication Type:** Journal; Peer Reviewed Journal

4. Results from the Healthy Moves for Aging Well program: Changes of the health outcomes.

**Citation:** Home Health Care Services Quarterly: The Journal of Community Care, April 2009, vol./is. 28/2-3(100-111), 0162-1424;1545-0856 (Apr 2009)

**Author(s):** Yan, Tingjian; Wilber, Kathleen H; Wieckowski, Jennifer; Simmons, W. June

**Abstract:** The Healthy Moves for Aging Well program piloted a home-based, low-intensity strength exercise program that targeted a nursing home certifiable, ethnically diverse sample of community-residing adults aged 65 and older. This study examined the effectiveness of the Healthy Moves program in reducing participants' number of falls, fear of falling, depression, and pain. Results indicated that participants (n = 338) had statistically significant declines in the number of falls and level of pain. These declines were found among participants who improved their exercise performance. This pilot suggests that a modest intervention that couples behavior change with seated exercise can have a positive outcome on a sample of older adults who have high levels of functional impairment and lack a regular exercise regime. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

**Publication Type:** Journal; Peer Reviewed Journal

5. Alternative exercise modes in older adult populations.

**Citation:** Dissertation Abstracts International: Section B: The Sciences and Engineering, 2008, vol./is. 69/5-B(2954), 0419-4217 (2008)

**Author(s):** Mendelsohn, Marissa E

**Abstract:** Exercise can improve mobility, endurance capacity, muscle strength, and balance and flexibility in older adults. All-extremity seated exercise machines and arm-crank ergometers provide alternative modes of exercise that are ideal to accommodate lower extremity weakness or injury, and impaired weight-bearing ability, balance, coordination, or gait in older populations. The overall objective of this thesis was to investigate alternative modes of exercise in various older adult populations. The alternative modes of exercise included all-extremity semi-recumbent exercise and arm-crank ergometry. The older adult populations included sub-groups of community-dwelling older adults between the ages of 61 and 89 years old (n=21, Chapter 2; and n=22, Chapter 4), frail older adults between the ages of 72 and 93 (n=18, Chapter 3), and patients with hip fracture between the ages of 66 and 91 (n=20, Chapter 5). Exercise responses (heart rate and oxygen consumption) were measured to provide the initial data verifying that these alternative
modes of exercise to assess aerobic fitness are suitable options for the growing older adult population. The studies showed that alternative modes of exercise were well-tolerated, effective, and psychometrically acceptable in the older adult sub-groups. In addition, the possibility was raised that aerobic exercise is an effective adjunctive therapy during inpatient rehabilitation in patients following hip fracture. Thus different exercise options have been identified for clinicians in rehabilitation settings to use in order for their clients and patients to exercise effectively and comfortably despite any limitations that might hinder performance in more traditional modes of exercise. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

Publication Type: Dissertation Abstract. For information only – we can’t obtain these

Citation: Journal of Health Psychology, May 2008, vol./is. 13/4(447-458), 1359-1053;1461-7277 (May 2008)
Author(s): Graham, Rodger; Kremer, John; Wheeler, Garry
Abstract: This qualitative study describes the effect of exercise on psychological well-being among individuals with chronic illnesses and disabilities such as stroke, cancer, diabetes and arthritis. Eleven users of a physical disability daycentre completed a novel, six-month, group-based programme of seated exercise provided by the first author. Results from grounded analyses of in-depth interviews provide evidence that exercise offers a powerful means to actively manage mood problems associated with disability, to preserve and cultivate personal identity in a positive manner and to connect with others and one’s own body in ways which limit the development of illness-related psychological distress. Implications for the development of further research and future provision of similar services are discussed. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Publication Type: Journal; Peer Reviewed Journal

7. The Effect of 6 Months Training on Leg Power, Balance, and Functional Mobility of Independently Living Adults Over 70 Years Old.
Citation: Journal of Aging and Physical Activity, October 2004, vol./is. 12/4(497-510), 1063-8652;1543-267X (Oct 2004)
Author(s): Ramsbottom, Roger; Ambler, Anne; Potter, Janie; Jordan, Barbara; Nevill, Alan; Williams, Carol
Abstract: Where strength training has been used in conjunction with functional-task training in older people, not only have there been improvements in leg strength but also improved function has been measured (e.g., Skelton & McLaughlin, 1996). Many studies use participants from care homes rather than community dwellers. We investigated changes in leg power, balance, and functional mobility in community-dwelling sedentary men and women over 70 years of age (n = 6 for training group [TR]; n = 10 for control group [CN]). Progressive training took place over 24 weeks using seated and nonseated exercise. For TR, leg power increased 40%, from 108 +/- 40 to 141 +/- 53 W (p < .01); dynamic balance increased 48%, from 22.3 +/- 7.9 to 33.1 +/- 6.1 cm (p < .01; functional reach); and functional mobility increased 12%, from 7.46 +/- 1.32 to 6.54 +/- 1.41 s (p < .05; timed walk). CN showed no significant change. In conclusion, a community-based exercise program led to large improvements in leg-extensor power, dynamic balance, and functional mobility. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Publication Type: Journal; Peer Reviewed Journal

8. Keeping the beat: Use of rhythmic music during exercise activities for the elderly with dementia.
Citation: American Journal of Alzheimer’s Disease and Other Dementias, November 2001, vol./is. 16/6(377-380), 1533-3175;1938-2731 (Nov-Dec 2001)
Author(s): Mathews, R. Mark; Clair, Alicia A; Kosloski, Karl
Abstract: Evaluated the effects of a recorded instrumental musical accompaniment on participation in a series of 14 exercise activities with 21 74-97 yr old nursing home residents with dementia. All exercise sessions, specifically designed by physical therapists for older adults, were lead by an activity aide and consisted of a series of seated exercises. Direct observations of resident behavior were conducted over a 25-wk period in a reversal experimental design. Results show increased levels of participation during the experimental condition observations where rhythmic music accompanied the exercise
activities. The music intervention is most successful on those generally most willing to participate in social activities. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

**Publication Type:** Journal; Peer Reviewed Journal

9. **Effects of resistance training on functional ability in elderly individuals.**

**Citation:** American Journal of Health Promotion, March 2011, vol./is. 25/4(237-243), 0890-1171 (Mar-Apr 2011)

**Author(s):** Fahlman, Mariane M; McNevin, Nancy; Boardley, Debra; Morgan, Amy; Topp, Robert

**Abstract:** Purpose: Determine the effects of 16 weeks of strength training on measures of functional ability in elderly who are functionally limited. Design: Quasi-experimental trial in which elderly volunteers were assigned to either an exercise group or a control group. Participants: Eighty-seven participants (65-93 years) living independently but with some functional limitations. Intervention. Thirteen different strength training exercises using Thera-Band resistive bands (Hygenie Corporation, Akron, Ohio). The program was 16 weeks in duration, and the frequency was three times per week. Participants exercised in a group setting one time per week and were given a home exercise book to follow for two additional sessions per week. Measures: Functional ability was operationalized to include a variety of measures related to functional ability that impact activities of daily living, morbidity, and mortality in the elderly, including upper- and lower-body strength and gait. Analysis: Intervention effects were analyzed using a 2 (groups: exercise group vs. control group) x 3 (time: baseline vs. mid vs. post) analysis of variance. Results: The exercise group demonstrated significant improvements in upper-body strength as measured by biceps curl (F[2,140] = 39.870; p < .05) and lower-body strength as measured by chair sit-to-stand (F[2,124] = 25.887; p < .05). Gait velocity (F[2,140] = 37.317; p < .05) and step length (F[2,140] = 4.182; p < .05) both increased for the exercise group at week 9, but this increase disappeared by week 17. Compared with minimal changes in the control group, the exercise group demonstrated significant improvements in upper-body strength as measured by biceps curl and lower-body strength as measured by chair sit-to-stand. Conclusion: Some measures of function ability were improved after a 16-week structured exercise program for functionally limited elderly. Because functional ability has been inversely correlated with short-term morbidity and the need for assisted living among older adults, providing opportunities to exercise is crucial to future functioning and independence of the elderly population. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

**Publication Type:** Journal; Peer Reviewed Journal

10. **Effects of a group-based exercise program on the physical performance, muscle strength and quality of life in older women.**

**Citation:** Archives of Gerontology and Geriatrics, November 2007, vol./is. 45/3(259-271), 0167-4943 (Nov 2007)

**Author(s):** Eyigor, Sibel; Karapolat, Hale; Durmaz, Berrin

**Abstract:** This study was aimed at determining the effect of a group-based exercise program on the physical performance, muscle strength and quality of life (QoL) in older women. Twenty women performed an exercise program for 8 weeks, at the rehabilitation unit. Outcome measures included a 4-m and 20-m walk test, a 6-min walk test, stair climbing and chair rise time, timed up and go test, isokinetic muscle testing of the knee and ankle, and the short form-36 (SF-36) and geriatric depression scale (GDS) questionnaires. The mean age of the study group was 70.3±/6.5 years. After the completion of the exercise program, all of the physical performance tests and the SF-36 scores for the participants showed statistically significant improvements (p<0.05). In the isokinetic evaluations, most of angular velocities showed a significant increase in the peak torque (PT) values for knee extension and flexion, and for ankle plantar flexion (p<0.05). We concluded that this exercise program, when applied to older women, resulted in improved physical performance, increased muscle strength measured in both the knee and ankle, and improvement in the scores, estimating the QoL. We have shown that this exercise program is both effective and reliable for this age group of women. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

**Publication Type:** Journal; Peer Reviewed Journal

11. **A field study of step-up exercises with touch for elderly people.**

**Citation:** Perceptual and Motor Skills, December 2005, vol./is. 101/3(835-839),
Abstract: This study assessed step-up exercises appropriate for elderly persons (M age=70.7 yr., SD=7.0). The group did several exercises in 7 sessions per month (average participants per session was 14, SD=3). A 30-sec. chair-stand test (sit-to-stand), questionnaires on activities of daily living, and impressions of the exercises were examined. Activities of daily living were expected to differ on cluster analysis before and after exercise sessions. Each cluster was classified by basic and instrumental activities. The 30-sec. chair-stand test did not significantly improve. Subjects enjoyed doing exercises with touch. Appropriate exercises for elderly persons should promote activities of daily living. Functional movements with touch seem appropriate for maintaining physical fitness and social interaction. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Publication Type: Journal; Peer Reviewed Journal

Citation: Journal of Aging and Physical Activity, October 2001, vol./is. 9/4(452-465), 1063-8652;1543-267X (Oct 2001)
Author(s): Chin A Paw, Marijke J. M; de Jong, Nynke; Stevens, Martin; Bult, Petrus; Schouten, Evert G
Abstract: The article describes the design and preliminary evaluation of a 17-week, twice-weekly, comprehensive, progressive exercise program for frail elderly adults. The main objective was to maintain or improve mobility and performance of daily activities essential for independent functioning. Strength, speed, endurance, flexibility, and coordination were trained by walking, kneeling, and chair stands, performed in the context of motor behavior such as games and daily activities. The acceptability of the exercise program was evaluated in a population of community-dwelling, frail older adults (mean age 77.6 +/- 5.4 years). Eighty-one percent completed the program. Program appreciation and attendance were high. Seventy-three percent reported wanting to continue participating if possible--although most only once a week. At follow-up (1-1.5 years afterward) 30% were still participating in an exercise program. The exercise program was enjoyed and accepted by a population of frail, previously sedentary elderly adults. Widespread implementation of this program could increase physical activity among frail older adults. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Publication Type: Journal; Peer Reviewed Journal

Citation: Brain Injury, July 2009, vol./is. 23/7-8(686-692), 0269-9052;1362-301X (Jul 2009)
Author(s): Pyun, Sung-Born; Yang, Heeseung; Lee, Sangil; Yook, Jinsook; Kwon, Jaesung; Byun, Eun-Mi
Abstract: Objective: To evaluate the effectiveness of a 12-week individualized home programme of rehabilitation for patients with cognitive impairment. Methods: Six patients with cognitive dysfunction, after haemorrhagic stroke, participated in this study. A programme was carried out in the home environment that consisted of four mixed training programmes: cognitive remediation therapy, story retelling, cognitive enhancing games and aerobic exercise. The patients performed the home programme for 2 hours a day, 7 days a week, for 12 weeks. The main outcomes were measured using the MMSE, Neurobehavioural Cognitive Status Examination (NCSE), domain-specific computerized neuropsychological test for attention, memory and executive function, the Lowenstein Occupational Therapist Cognitive Assessment (LOTCA), the Modified Barthel Index (MBI) and the Seoul-Instrumental Activity of Daily Living (S-IADL). Results: After completion of a 12-week home programme, the patients' S-IADL scores improved significantly (p<0.05). The patients' MMSE and NCSE scores improved marginally, with mean score changes of 4.2 (p=0.058), 4.7 (p=0.078) and 6.8 (p=0.068) points, respectively. However, the patients' domain-specific cognitive test and LOTCA scores did not significantly change. Conclusion: The results of this study showed that an individualized home programme improved IADL performance in patients with cognitive dysfunction and may have a beneficial effect on cognition, as assessed by general cognitive measures. (PsycINFO Database Record (c) 2012 APA, all rights reserved) (journal abstract)

Publication Type: Journal; Peer Reviewed Journal
Full Text: Available from EBSCOhost in Brain Injury
14. Effect of an exercise program on functional performance of institutionalized elderly
Citation: Journal of Rehabilitation Research and development, 2004, Vol 41 (5), p659 – 668
(70 refs)
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15. The effects of exercise training on elderly persons with cognitive impairment and dementia: A meta-analysis
Citation: Arch Phys Med Rehabil, 2004, Vol 85, p1694 – 1704 (99 refs)
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Published Research - Google Scholar

From 1st fifty results:

Improvements in quadriceps strength with regular seated exercise in the institutionalized elderly.

ME McMurdo, LM Rennie - Archives of physical medicine and …. 1994 - europepmc.org
The quadriceps strength of a group of residents homes for the elderly (mean age 83 years) was assessed in a randomized controlled trial of seated group exercise versus group reminiscence therapy. Fifty-five of 65 volunteers completed the 6-month study, with 4 ...

A controlled trial of exercise by residents of old people's homes

MET McMURDO, L RENNIE - Age and ageing, 1993 - Br Geriatrics Soc ...
This study reports the findings of a controlled trial of seated exercise in residents of local authority homes for the elderly. ... Even very elderly residents of old peoples homes can benefit from participation in regular seated exercise and improve their functional capacity. Introduction ...

Reducing risk of falling in older people discharged from hospital: a randomized controlled trial comparing seated exercises, weight-bearing exercises, and social visits

CM Vogler, C Sherrington, SJ Ogle, SR Lord - Archives of physical …. 2009 - Elsevier ...
Tests. The seated exercise group performed better than the social visit group in PPA score (P=.019) but for no other outcome factor. The seated exercise group had the highest rate of musculoskeletal soreness. Conclusions. In ...

A randomized controlled trial of a home exercise programme for elderly people with poor mobility

MET McMURDO, R JOHNSTONE - Age and ageing, 1995 - Br Geriatrics Soc ...
A similar supervised group programme of seated exercise was effective in yielding functional improvement and increased quadriceps strength in a group exercise programme for elderly people in institutions [5]. The lack of effect in the current study may have been due to poor ...

The functional effects of physical exercise training in frail older people

MJMCA Paw, A Chin, JGZ van Uffelen, I Riphagen… - Sports Medicine, 2008 - Springer
Page 1. Sports Med 2008; 38 (9): 781-793 REVIEW ARTICLE 0112-1642/08/0009-0781/$48.00/0 © 2008 Adis Data Information BV. All rights reserved. The Functional Effects of
Effects of physical training on the physical capacity of frail, demented patients with a history of falling: a randomised controlled trial

C Toulotte, C Fabre, B Dangremont, G Lensel… - Age and …, 2003 - Br Geriatrics Soc

McMurdo et al. [29] similarly demonstrated an increase in quadriceps strength and walking area with seated exercise in institutionalised elderly subjects. We did not measure muscle strength because of the dementia of the subjects. However, like McMurdo et al. ...