Evidence Portfolio – Brain Health Subcommittee, Question 2

What is the relationship between physical activity and quality-of-life?

a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?

Sources of Evidence: Existing Systematic Reviews, Meta-Analyses, and Pooled Analyses

Conclusion Statements and Grades

Strong evidence demonstrates that, for the general population, greater amounts of physical activity are associated with a positive perception of quality of life. **PAGAC Grade: Strong.**

Strong evidence demonstrates that, for older adults (older than age 50 years; primarily 65 years and older), physical activity improves health-related quality of life when compared with minimal or no-treatment controls. **PAGAC Grade: Strong.**

Strong evidence demonstrates that, for adults ages 18 to 65 years, physical activity improves health-related quality of life when compared with minimal or no-treatment controls. **PAGAC Grade: Strong**.

Limited evidence suggests that among youth ages 5 to 18 years, lower levels of sedentary time are associated with higher perceptions of global quality of life. **PAGAC Grade: Limited**

Moderate evidence indicates that physical activity improves quality of life in individuals with schizophrenia. **PAGAC Grade: Moderate.**

Limited evidence suggests that physical activity improves quality of life for adults with major clinical depression. **PAGAC Grade: Limited.**

Insufficient evidence is available because of a small number of controlled studies with mixed results to determine the relationship between physical activity and quality of life in individuals with dementia. **Grade: Not assignable.**

Insufficient evidence is available to determine whether a dose-response relationship exists between physical activity and quality of life across populations. **PAGAC Grade: Not assignable.**

Insufficient evidence is available to determine whether the association between physical activity and quality of life varies as a function of race/ethnicity, socioeconomic status, or body mass index. **PAGAC Grade: Not assignable.**

Description of the Evidence

An initial search for systematic reviews, meta-analyses, pooled analyses, and reports identified sufficient literature to answer the research question as determined by the Brain Health Subcommittee. Additional searches for original research were not needed.

OLDER ADULTS

Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis

Overview

Seventeen existing reviews assessing the relationship between physical activity and quality-of-life in older adults were included. Of these, 6 were meta-analyses,[1-6] 10 were systematic reviews,[7-16] and 1 was a pooled analysis.[17] The reviews were published between 2007 and 2017.

The meta-analyses included a range of 2 to 21 studies and covered the following timeframes: from 2001 to 2010,[1] inception to 2010,[2] 1973 to 2007,[3] inception to 2012 and 2013,[4, 6] and 1950 to 2010.[5]

The systematic reviews included a range of 6 to 53 studies and covered the following timeframes: 1966 to 2006,[7] 2000 to 2015,[8] inception to 2016,[9] inception to 2013,[10] 2006 to 2013,[11] inception to 2010,[12] 1993 to 2007,[13] 1998 to 2011,[14] 2000 to 2012,[15] and 1955 to 2008.[16]

The pooled analysis included data from 2 studies.[17]

Exposures

The majority of included reviews examined different modalities of physical activity, including aerobic and strength training. Some reviews examined specific types of physical activity or exercise, including aerobic training[9]; high-intensity progressive resistance strength training[6]; yoga, tai chi, and/or qigong[5, 13]; pilates[10]; and home-based exercise interventions.[12]

Outcomes

The majority of included reviews examined health-related quality of life (HRQoL) using various self-report instruments.

ADULTS

Existing Systematic Reviews and Meta-Analyses

Overview

Nine existing reviews assessing the relationship between physical activity and quality-of-life in adults were included. Of these, 4 were meta-analyses[18-21] and 5 were systematic reviews.[22-26] The reviews were published between 2009 and 2017.

The meta-analyses included a range of 4 to 56 studies and covered the following timeframes: inception to 2007,[18] 2001 to 2016,[20] inception to 2011,[21] and inception to 2013.[19]

The systematic reviews included a range of 14 to 38 studies and covered the following timeframes: 1806 to 2006,[22] inception to 2009,[23] 1985 to 2014,[24] 1980 to 2010,[25] and inception to 2015.[26]

Exposures

The included studies examined different types of physical activity. Some reviews assessed different types of self-reported or objectively measured physical activity performed in different domains.[22-25] Other reviews focused on specific types of physical activity, including gardening,[20] qigong,[21] and Zumba dance.[26]

Outcomes

The majority of included reviews examined health-related quality of life (HRQoL) using various self-report instruments.

DEMENTIA

Existing Systematic Review and Meta-Analyses

Overview

Two meta-analyses[27, 28] and 1 systematic review[29] assessing the relationship between physical activity and quality-of-life in individuals with dementia were included. The reviews were published between 2011 and 2017.

The meta-analyses included 13[27] and 2[28] studies and covered a timeframe from inception to 2016 and from inception to 2009, respectively.

The systematic review included 2 studies and covered a timeframe from inception to 2013.[29]

Exposures

All included reviews examined different modalities of exercise interventions, including strength, flexibility, aerobic, and/or balance training.

Outcomes

The reviews examined HRQoL, assessed with the SF-36 or disease-specific scales for patients with dementia.

YOUTH

Existing Systematic Review

Overview

One systematic review[30] assessing the relationship between physical activity and quality-of-life in youth was included. The review was published in 2015.

The systematic review included 14 studies that addressed quality-of-life as an outcome and covered a timeframe from inception to 2013.

Exposures

The systematic review examined sedentary behavior, primarily screen-time.

Outcomes

The systematic review examined well-being and perceived quality-of-life.

DEPRESSION

Existing Systematic Review and Meta-Analyses

Overview

Two meta-analyses[31, 32] and 1 systematic review[29] assessing the relationship between physical activity and quality-of-life in individuals with depression were included. The reviews were published in 2013 and 2014.

The 2 meta-analyses included 6 studies[31] and 1 study[32] addressing the outcome of interest, and both covered a timeframe from inception to 2013.

The systematic review[29] included 4 studies addressing the outcome of interest and covered a timeframe from inception to 2013.[29]

Exposures

Two reviews examined different modalities of exercise interventions, including aerobic, strength, flexibility, and balance training.[29, 31] One review[32] examined yoga.

Outcomes

The included reviews examined HRQoL, assessed in most cases with the SF-36.

SCHIZOPHRENIA

Existing Systematic Reviews and Meta-Analysis

Overview

One meta-analysis[33] and 2 systematic reviews[34, 35] assessing the relationship between physical activity and quality-of-life in individuals with schizophrenia were included. The reviews were published between 2012 and 2016.

The meta-analysis included 29 studies and covered a timeframe from inception to 2015.[33]

The 2 systematic reviews included 10[34] and 13[35] studies and covered a timeframe from inception to 2011 and from 2011 to 2014, respectively.

Exposures

Two reviews examined different modalities of exercise, including aerobic, strength, and yoga[33, 35] whereas one[34] focused on physical therapy interventions that incorporated various types of exercise modalities.

Outcomes

The included reviews examined HRQoL, assessed using various self-report measures.

Populations Analyzed

The table below lists the populations analyzed in each article.

Table 1. Populations Analyzed by All Sources of Evidence

	Age	Disability Status	Chronic Conditions
Baker, 2007	Adults ≥60		
Bize, 2007	Youth and adults 15–65		
Bouaziz, 2016	Adults ≥65		
Bouaziz, 2017	Adults ≥70		
Brown, 2011	Adults 30–45		
Bullo, 2015	Adults ≥60		
Chao, 2015	Adults, mean age >60		
Chou, 2012	Older adults		Frail
Clegg, 2012	Mean age range 78–88		Frail
Cooney, 2013	Adults ≥18		Depression
Cramer, 2013	Adults		Depression
Dauwan, 2016		Schizophrenia or schizophrenia spectrum disorder	
Forsman, 2011	Adults ≥65		
Gillison, 2009	Adults >18		
Jahnke, 2010	Adults, most studies mean age ≥55		
Kelley, 2009	Adults >50		
Lambert, 2016	Adults; mean age range 41–73.7		
Morey, 2008	Adults 65–94		
Ojagbemi, 2017			Dementia
Orgeta, 2014	Adults		
Park, 2014	Adults ≥65		

	Age	Disability Status	Chronic Conditions
Patel, 2012	Adults ≥60 (mean 63.5–77.5)		
Potter, 2011	Adults ≥60	Cognitive impairment, dementia	
Pucci, 2012	Adults ≥18		
Raymond, 2013	Adults ≥60		
Soga, 2017	Mean age range 8.5–84.7		
Stevens, 2014	Adults ≥50		
Suchert, 2015	Mean age range 5–18		
Tavares, 2014	Adults >60	Alzheimer's disease	Depression
Vagetti, 2014	Adults ≥60		
Vancampfort, 2012	Adults 18–63	Schizophrenia	
Vendramin, 2016	Adults; mean age range: 18–65		
Vera-Garcia, 2015	Adults; mean age range 22–64		Schizophrenia
Wang, 2013	Adults ≥18		Depression, chronic illnesses
Weening-Dijksterhuis, 2011	Adults ≥70		Frail

Supporting Evidence

Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis

Table 2. Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis Individual Evidence Summary Tables

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Baker MK, Atlantis E, Fiatarone Singh MA. Multi-modal exercise programs for older adults. Age Ageing. 2007;36(4):375-381.</td></tr>
<tr><td>Purpose: To systematically review all health outcomes to concurrent strength, aerobic, and balance training in older adults to assess the current level of evidence regarding the feasibility and efficacy of current guidelines.</td><td rowspan="5">Abstract: BACKGROUND: Various modalities of exercise have been demonstrated to improve physical function and quality of life in older adults. Current guidelines stress the importance of multi-modal exercise for this cohort, including strengthening exercises, cardiovascular, flexibility and balance training. There is a lack of evidence, however, that simultaneously prescribed doses and intensities of strength, aerobic, and balance training in older adults are both feasible and capable of eliciting changes in physical function and quality of life. METHODS: A comprehensive, systematic database search for manuscripts was performed. Two reviewers independently assessed studies for potential inclusion. Physical and functional performance outcomes were extracted. The relative effect sizes (ES) were calculated with 95% confidence intervals. RESULTS: Fifteen studies were included totalling 2,149 subjects; the mean cohort age ranging from 67 +/- 8 to 84 +/- 3 years. A low mean relative ES for strength was seen across the reviewed studies. Only six of the eleven studies that included balance measurements found a significant improvement in balance compared to controls. Aerobic fitness was seldom measured or reported. Five out of the six studies investigating fall rates showed a significant reduction. Functional and quality of life measures generally did not improve with exercise. CONCLUSION: Multi-modal exercise has a positive effect on falls prevention. The limited data available suggests that multi-modal exercise has a small effect on physical, functional and quality of life outcomes. Future research should include robustly designed trials that involve multi-modal exercise at individually prescribed intensities based on doses found to be effective in single-modality studies.</td></tr>
<tr><td>Timeframe: 1966–December 2006</td></tr>
<tr><td>Total # of Studies: 15 (4 only addressing quality of life outcome)</td></tr>
<tr><td>Exposure Definition: Multi-modal exercise intervention with at least 3 concurrently conducted modalities of strength/progressive resistance training, aerobic/cardiovascular endurance (e.g., walking, cycling) training, and balance/stability training. Interventions may or may not have included flexibility exercises. Interventions were home-based or supervised center-based programs ranging from 3 to 12 months in length, and the most common session frequency was 3 times/week.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: Short Form-36.
Examine Cardiorespiratory Fitness as Outcome: Yes</td></tr>
<tr><td>Populations Analyzed: Adults ≥60</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Bize R, Johnson JA, Plotnikoff RC. Physical activity level and health-related quality of life in the general adult population: a systematic review. Prev Med. 2007;45(6):401-415.</td></tr>
<tr><td>Purpose: To systematically review and analyze data examining the relationship between PA level and health-related quality of life among adults.</td><td rowspan="4">Abstract: OBJECTIVE: Little is known regarding health-related quality of life and its relation with physical activity level in the general population. Our primary objective was to systematically review data examining this relationship. METHODS: We systematically searched MEDLINE, EMBASE, CINAHL, and PsycINFO for health-related quality of life and physical activity related keywords in titles, abstracts, or indexing fields. RESULTS: From 1426 retrieved references, 55 citations were judged to require further evaluation. Fourteen studies were retained for data extraction and analysis; seven were cross-sectional studies, two were cohort studies, four were randomized controlled trials and one used a combined cross sectional and longitudinal design. Thirteen different methods of physical activity assessment were used. Most health-related quality of life instruments related to the Medical Outcome Study SF-36 questionnaire. Cross-sectional studies showed a consistently positive association between self-reported physical activity and health-related quality of life. The largest cross-sectional study reported an adjusted odds ratio of "having 14 or more unhealthy days" during the previous month to be 0.40 (95% Confidence Interval 0.36-0.45) for those meeting recommended levels of physical activity compared to inactive subjects. Cohort studies and randomized controlled trials tended to show a positive effect of physical activity on health-related quality of life, but similar to the cross-sectional studies, had methodological limitations. CONCLUSION: Cross-sectional data showed a consistently positive association between physical activity level and health-related quality of life. Limited evidence from randomized controlled trials and cohort studies precludes a definitive statement about the nature of this association.</td></tr>
<tr><td>Timeframe: 1806–May 2006</td></tr>
<tr><td>Total # of Studies: 14</td></tr>
<tr><td>Exposure Definition: PA level: physical fitness as an indirect indicator; self-reported, supervised nature of PA in its intervention group; changes in submaximal aerobic capacity; activity logs from heart rate monitors; and activity sensors.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Health-related quality of life: measurements capturing general (self-rated) health or its multidimensional components (physical, emotional, and social); perceived health (e.g., as rated on an ordinal scale ranging from “poor” to “excellent”).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Youth and adults 15–65</td><td>Author-Stated Funding Source: Swiss National Science Foundation; Canada Research Chair in Diabetes Health Outcomes and Health Scholar Award from the Alberta Heritage Foundation for Medical Research; New Investigator Salary Award from the Canadian Institutes for Health Research.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Bouaziz W, Lang PO, Schmitt E, Kaltenbach G, Geny B, Vogel T. Health benefits of multicomponent training programmes in seniors: a systematic review. Int J Clin Pract. 2016;70(7):520-536. doi:10.1111/ijcp.12822.</td></tr>
<tr><td>Purpose: To evaluate the evidence of the health benefits of multicomponent training, including endurance training, muscle strengthening, balance exercises, stretching, and/or coordination training in older adults.</td><td rowspan="5">Abstract: BACKGROUND: The ageing process is intrinsically associated with decline in physical endurance, muscle strength and gait ability and balance, which all contribute to functional disability. Regular physical training, and more particularly multicomponent training (MCT), has demonstrated many health benefits. OBJECTIVE: To evaluate the evidence of the health benefits of MCT including endurance training, muscle strengthening, balance exercises, and/or stretching (i.e. flexibility training) and/or coordination training in adults aged 65 years or over. METHODS: A comprehensive, systematic database search for manuscripts was performed in CINAHL Plus, Embase, Medline, PubMed Central, ScienceDirect, Scopus, Sport Discus and Web of Science using key words. For potential inclusion, two reviewers independently assessed all intervention studies published in English language from 1 January 2000 to 30 April 2015. RESULTS: Of 2525 articles initially identified, 27 studies were finally included in this systematic review. They were all divided into five categories according to their main outcome measurements (cardio-respiratory fitness, metabolic outcomes, functional and cognitive functions and quality of life, QoL). These studies reported that MCT has a significant beneficial effect on cardio-respiratory fitness and on metabolic outcomes. Substantial improvement in functional and cognitive performance was also measured and a slighter but positive effect on QoL. CONCLUSION: Overall, this review demonstrates a positive effect of MCT with functional benefits and positive health outcomes for seniors. Based on this evidence, clinicians should encourage all adults aged 65 or over to engage in MCT programmes to favour healthy ageing and keeping older members of our society autonomous and independent.</td></tr>
<tr><td>Timeframe: 2000–April 2015</td></tr>
<tr><td>Total # of Studies: 27 (5 addressing quality of life)</td></tr>
<tr><td>Exposure Definition: Multimodal or multicomponent training composed of endurance/aerobic (e.g., walking, cycling, or rowing), strength/resistance training (progressive in nature), and balance/stability (e.g., specific balance exercises, tai chi).
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life (SF-36).
Examine Cardiorespiratory Fitness as Outcome: Yes</td></tr>
<tr><td>Populations Analyzed: Adults ≥65</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Bouaziz W, Vogel T, Schmitt E, Kaltenbach G, Geny B, Lang PO. Health benefits of aerobic training programs in adults aged 70 and over: a systematic review. Arch Gerontol Geriatr. 2017;69:110-127. doi:10.1016/j.archger.2016.10.012.</td></tr>
<tr><td>Purpose: To examine the cardiovascular, metabolic, functional, cognitive, and quality-of-life outcomes resulting from aerobic training programs in adults ages 70 years and over in order to assess the current level of evidence regarding its benefit on five major heallth-related conditions.</td><td rowspan="5">Abstract: Aging is intrinsically associated with a progressive decline in muscle strength and mass, and aerobic capacity. This contributes to reduced mobility and impaired quality of life (QoL) among seniors. Regular physical activity, and more particularly aerobic training (AT), has demonstrated benefits on adults' health. The aim of this review was to assess the current level of evidence regarding the health benefits of AT in the population aged 70 years and over. A comprehensive, systematic database search for manuscripts was performed. Two reviewers independently assessed interventional studies for potential inclusion. Cardiovascular, metabolic, functional, cognitive, and QoL outcomes were targeted. Fifty-three studies were included totalling 2051 seniors aged 70 years and over. Studies selected were divided into 5 categories according to their main outcomes: cardiovascular function (34 studies), metabolic outcomes (26 studies), functional fitness (19 studies), cognitive functions (8 studies), and QoL (3 studies). With a good level of evidence but a wide heterogeneity between study designs, a significant and beneficial effect of AT was measured on the 5 outcomes. For QoL results showed a significant but slighter improvement. This systematic review highlights the benefits of AT on seniors' health outcome such as cardiovascular, functional, metabolic, cognitive, and QoL outcomes although the optimal program remains unclear. When more studies regarding this specific population are needed to determine the most favourable exercise program, clinicians should nevertheless encourage older adults over 70 to participate in AT programs to favour active and healthy ageing.</td></tr>
<tr><td>Timeframe: Inception–January 2016</td></tr>
<tr><td>Total # of Studies: 53 (3 only addressing quality-of-life outcome)</td></tr>
<tr><td>Exposure Definition: Aerobic training: mainly using treadmill running/walking, cycling, and rowing. Most interventions were conducted 3 days a week or had 2–6 sessions. Intervention length ranged from 9 to 96 weeks, with varying levels of intensity.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: physical function, role limitations/physical, bodily pain, general health, vitality, mental health, role limitations/emotional, social function; measured with Short Form-36 or MacNew global score.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥70</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Brown HE, Gilson ND, Burton NW, Brown WJ. Does physical activity impact on presenteeism and other indicators of workplace well-being?. Sports Med. 2011;41(3):249-262. doi:10.2165/11539180-000000000-00000.</td></tr>
<tr><td>Purpose: To examine the impact PA has on employee well-being and presenteeism.</td><td rowspan="4">Abstract: The term 'presenteeism' is a relatively new concept in workplace health, and has come to signify being at work despite poor health and performing below par. Presenteeism, which is potentially critical to employers, has been associated with a range of psychosocial outcome measures, such as poor mental health and employee well-being. Physical activity is a potential strategy for reducing presenteeism, and for improving the mental health of employees. This article reviews evidence on the relationships between physical activity and employee well-being and presenteeism in the workplace, and identifies directions for research in an emerging field. Electronic and manual literature searches were used to identify 20 articles that met the inclusion criteria. These included 13 intervention trials (8 randomized controlled trials, 5 comparison trials) and 7 observational studies (3 cohort, 4 cross-sectional). Outcome measures were grouped into 'workplace well-being', 'psychosocial well-being' and 'physical well-being'. Studies measured a wide variety of outcomes, with absenteeism being the most commonly assessed. Evidence indicated a positive association between physical activity and psychosocial health in employees, particularly for quality of life and emotional well-being. However, findings were inconclusive as to the role of physical activity in promoting workplace well-being. Only one study reported on presenteeism, with mixed evidence for outcomes. This article indicates that physical activity and employee psychosocial health are positively related, but there is limited evidence of a relationship between physical activity and presenteeism. A standardized definition of presenteeism and an appropriate evaluation tool are key research priorities if the complex relationships between physical activity and workplace well-being are to be better understood.</td></tr>
<tr><td>Timeframe: Inception–November 2009</td></tr>
<tr><td>Total # of Studies: 20</td></tr>
<tr><td>Exposure Definition: PA that included a variety of behaviors, such as incidental PA, walking, jogging, leisure time physical exercise, and physically demanding sport.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Workplace well-being, psychosocial well-being (e.g., vitality, energy, cheerfulness, tension, nervousness, relaxation, self-esteem), or physical well-being (e.g., physical quality of life, physical functioning).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults 30–45</td><td>Author-Stated Funding Source: Heart Foundation Research Fellowship; National Health and Medical Research Council program grant.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Bullo V, Bergamin M, Gobbo S, et al. The effects of Pilates exercise training on physical fitness and wellbeing in the elderly: a systematic review for future exercise prescription. Prev Med. 2015;75:1-11. doi:10.1016/j.ypmed.2015.03.002.</td></tr>
<tr><td>Purpose: To investigate and summarize the benefits of pilates exercise training, in terms of physical fitness and other outcomes related to quality of life among the elderly.</td><td rowspan="5">Abstract: UNLABELLED: This systematic review aims to summarize the effects of Pilates exercise training (PET) in elderly population on physical fitness, balance and fall prevention, and its effects on mood states, quality of life and independence in the daily living activities. METHODS: Keyword "Pilates" associated with "elderly", "aging" and "old subjects" were identified as terms for the literature research in MEDLINE, Embase, PubMed, Scopus, PsycINFO and SPORTDiscus. Only studies published in peer-reviewed journals written in English language were considered. A meta-analysis was performed and effect sizes (ES) calculated. RESULTS: 10 studies were identified (6 RCTs and 4 uncontrolled trials); age ranged from 60 to 80years. Overall, PET showed large ES to improve muscle strength (ES=1.23), walking and gait performances (ES=1.39), activities of daily living, mood states and quality of life (ES=0.94), moderate to high effect on dynamic balance (ES=0.77), small effects on static balance (ES=0.34) and flexibility (ES=0.31), while a small effect on cardio-metabolic outcomes (ES=0.07). CONCLUSIONS: PET should be taken into account as a way to improve quality of life in the elderly, due to the imparted benefits of fall prevention, physical fitness, and mood states. In this context, physicians might include PET as a tool for exercise prescriptions for the elderly.</td></tr>
<tr><td>Timeframe: Inception–December 2013</td></tr>
<tr><td>Total # of Studies: 10 (4 studied outcome of interest)</td></tr>
<tr><td>Exposure Definition: Pilates-identified exercise training intervention.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: assessed with the World Health Organization's quality of life questionnaire for the elderly.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥60</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Chao YY, Scherer YK, Montgomery CA. Effects of using Nintendo Wii exergames in older adults: a review of the literature. J Aging Health. 2015;27(3):379-402. doi:10.1177/0898264314551171.</td></tr>
<tr><td>Purpose: To summarize and synthesize the impact of using the Wii exergames on physical function, cognition, and psychosocial effects in older adults.</td><td rowspan="5">Abstract: OBJECTIVE: The purpose of this review is to summarize and synthesize the impact of using the Nintendo Wii exergames in older adults. METHOD: A database search was conducted to identify relevant studies. The search was limited to empirical studies, with particular attention paid to the effects of Wii exergames intervention on cognition, physical function, and psychosocial outcomes in older adults. RESULTS: A total of 22 empirical studies met inclusion criteria and were included in this review. Positive effects included improving physical function, decreasing depression, and increasing cognition and quality of life in older adults. Improved socialization and motivation to exercise were also reported. DISCUSSION: Using Wii exergames does show promise as an intervention to improve physical function, cognition, and psychosocial outcomes in older adults. Evidence supports that Wii exergames is a safe and feasible tool to encourage older adults to engage in exercise.</td></tr>
<tr><td>Timeframe: 2006–December 2013</td></tr>
<tr><td>Total # of Studies: 22</td></tr>
<tr><td>Exposure Definition: Physical exercise using Wii exergames. The frequency of the exercise intervention ranged from 2 to 5 times per week, and lasted 10 to 60 minutes per session. Duration of the exercise programs ranged from 2 to 20 weeks.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Mental health-related quality of life.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults, mean age >60</td><td>Author-Stated Funding Source: No funding source used.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Chou CH, Hwang CL, Wu YT. Effect of exercise on physical function, daily living activities, and quality of life in the frail older adults: a meta-analysis. Arch Phys Med Rehabil. 2012;93(2):237-244. doi:10.1016/j.apmr.2011.08.042.</td></tr>
<tr><td>Purpose: To determine the effects of exercise training on frail older adult subjects, specifically on physical functions, performance in activities of daily living (ADLs), and quality of life, through a systematic review of literature and a meta-analysis.</td><td rowspan="5">Abstract: OBJECTIVES:
To determine the effect of exercise on the physical function, activities of daily living (ADLs), and quality of life (QOL) of the frail older adults.
DATA SOURCES:
Relevant articles published between 2001 and June 2010 were searched in PubMed, MEDLINE, EMBASE, the Chinese Electronic Periodical Service, CINAHL, and the Cochrane Library databases.
STUDY SELECTION:
The participants were selected based on the predetermined frailty criteria and randomly assigned to either an exercise or control group. The intervention for the exercise group was a single or comprehensive exercise training program, whereas usual care was provided to the control group.
DATA EXTRACTION:
The characteristics and outcome measures of the included studies were identified independently by 2 investigators.
DATA SYNTHESIS:
The effect sizes of physical function assessed by the timed up and go test, gait speed, the Berg Balance Scale (BBS), the ADL questionnaires, and QOL measured by the Medical Outcomes Study 36-Item Short-Form Health Survey were calculated, using a weighted mean difference (WMD) and a 95% confidence interval (CI) to represent the results. Compared with the control group, the exercise group increased their gait speed by .07 m/s (95% CI .02-.11), increased their BBS score (WMD=1.69; 95% CI .56-2.82), and improved their performance in ADLs (WMD=5.33; 95% CI 1.01-9.64). The exercise intervention had no significant effects on the Timed Up & Go test performance and the QOL between the groups.
CONCLUSIONS:
Exercise is beneficial to increase gait speed, improve balance, and improve performance in ADLs in the frail older adults.</td></tr>
<tr><td>Timeframe: 2001–June 2010</td></tr>
<tr><td>Total # of Studies: 8 total (2 only addressing quality of life outcome)</td></tr>
<tr><td>Exposure Definition: Interventions include flexibility, low- or intensive-resistance, aerobic, coordination, balance, and tai-chi exercises; repetitive performance of ADLs; and task-oriented or gait training. Each exercise program generally involved 60- to 90-minute sessions, repeated daily or weekly for 3 to 12 months.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Weighted mean differences of quality of life: Medical Outcomes Study 36-Item Short-Form Health Survey.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Older adults, frail</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Clegg AP, Barber SE, Young JB, Forster A, Iliffe SJ. Do home-based exercise interventions improve outcomes for frail older people? Findings from a systematic review. Rev Clin Gerontol. 2012;22(1):68-78.</td></tr>
<tr><td>Purpose: To evaluate whether home-based exercise interventions improve outcomes for frail older people.</td><td rowspan="5">Abstract: Background
Frailty is common in older age, and is associated with important adverse health outcomes including increased risk of disability and long-term care admission.
Objectives
To evaluate whether home-based exercise interventions improve outcomes for frail older people.
Data sources
We searched systematically for randomised controlled trials (RCTs) and cluster RCTs, with literature searching to February 2010.
Study selection
All trials that evaluated home-based exercise interventions for frail older people were eligible. Primary outcomes were mobility, quality of life and daily living activities. Secondary outcomes included long-term care admission and hospitalisation.
Results
Six RCTs involving 987 participants met the inclusion criteria. Four trials were considered of high quality. One high quality trial reported improved disability in those with moderate but not severe frailty. Meta-analysis of long-term care admission rates identified a trend towards reduced risk. Inconsistent effects on other primary and secondary outcomes were reported in the other studies.
Conclusions
There is preliminary evidence that home-based exercise interventions may improve disability in older people with moderate, but not severe, frailty. There is considerable uncertainty regarding effects on important outcomes including quality of life and long-term care admission. Home-based exercises are a potentially simple, safe and widely applicable intervention to prevent dependency decline for frail older people.</td></tr>
<tr><td>Timeframe: Inception–February 2010</td></tr>
<tr><td>Total # of Studies: 6 total (1 only addressing quality of life outcome)</td></tr>
<tr><td>Exposure Definition: Home-based exercise interventions, including progressive resistance training, combined program with resistance and aerobic training, and multimodal programs. Modal treatment frequency was 3 times per week (range 3–21 sessions per week). Modal treatment duration was 6 months (mean 28 weeks, range 6 weeks–18 months).
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: EuroQol Group 5- Dimension Self-Report Questionnaire
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Mean age range 78–88, Frail</td><td>Author-Stated Funding Source: No funding source used.</td></tr>
</table>

Depression	
Meta-Analysis **Citation:** Cooney GM, Dwan K, Greig CA, et al. Exercise for depression. *Cochrane Database Syst Rev.* 2013;(9):Cd004366.	
Purpose: To determine the effectiveness of exercise in the treatment of depression in adults compared with no treatment or a comparator intervention. **Timeframe:** Inception–May 2013 **Total # of Studies:** 37 **Exposure Definition:** Interventions included aerobic exercise, treadmill walking, walking, strength training, and a combination (strength, aerobic, and flexibility). Interventions ranged from 10 days to 16 weeks. **Measures Steps:** No **Measures Bouts:** No **Examines HIIT:** No **Outcomes Addressed:** Quality of Life: Short Form-36, Minnesota Living with Heart Failure Questionnaire. **Examine Cardiorespiratory Fitness as Outcome:** No	**Abstract:** BACKGROUND: Depression is a common and important cause of morbidity and mortality worldwide. Depression is commonly treated with antidepressants and/or psychological therapy, but some people may prefer alternative approaches such as exercise. There are a number of theoretical reasons why exercise may improve depression. This is an update of an earlier review first published in 2009. OBJECTIVES: To determine the effectiveness of exercise in the treatment of depression in adults compared with no treatment or a comparator intervention. SEARCH METHODS: We searched the Cochrane Depression, Anxiety and Neurosis Review Group's Controlled Trials Register (CCDANCTR) to 13 July 2012. This register includes relevant randomised controlled trials from the following bibliographic databases: The Cochrane Library (all years); MEDLINE (1950 to date); EMBASE (1974 to date) and PsycINFO (1967 to date). We also searched www.controlled-trials.com, ClinicalTrials.gov and the WHO International Clinical Trials Registry Platform. No date or language restrictions were applied to the search.We conducted an additional search of the CCDANCTR up to 1st March 2013 and any potentially eligible trials not already included are listed as 'awaiting classification.' SELECTION CRITERIA: Randomised controlled trials in which exercise (defined according to American College of Sports Medicine criteria) was compared to standard treatment, no treatment or a placebo treatment, pharmacological treatment, psychological treatment or other active treatment in adults (aged 18 and over) with depression, as defined by trial authors. We included cluster trials and those that randomised individuals. We excluded trials of postnatal depression. DATA COLLECTION AND ANALYSIS: Two review authors extracted data on primary and secondary outcomes at the end of the trial and end of follow-up (if available). We calculated effect sizes for each trial using Hedges' g method and a standardised mean difference (SMD) for the overall pooled effect, using a random-effects model risk ratio for dichotomous data. Where trials used a number of different tools to assess depression, we included the main outcome measure only in the meta-analysis. Where trials provided several 'doses' of exercise, we used data from the biggest 'dose' of exercise, and performed sensitivity analyses using the lower 'dose'. We performed subgroup analyses to explore the influence of method of diagnosis of depression (diagnostic interview or cut-off point on scale), intensity of exercise and the number of sessions of exercise on effect sizes. Two authors performed the 'Risk of bias' assessments. Our sensitivity analyses explored the influence of study quality on outcome. MAIN RESULTS: Thirty-nine trials (2326 participants) fulfilled our inclusion criteria, of which 37 provided data for meta-analyses. There were multiple sources of bias in many of the trials; randomisation was adequately concealed in 14 studies, 15 used intention-to-treat analyses

	and 12 used blinded outcome assessors.For the 35 trials (1356 participants) comparing exercise with no treatment or a control intervention, the pooled SMD for the primary outcome of depression at the end of treatment was -0.62 (95% confidence interval (CI) -0.81 to -0.42), indicating a moderate clinical effect. There was moderate heterogeneity (I(2) = 63%).When we included only the six trials (464 participants) with adequate allocation concealment, intention-to-treat analysis and blinded outcome assessment, the pooled SMD for this outcome was not statistically significant (-0.18, 95% CI -0.47 to 0.11). Pooled data from the eight trials (377 participants) providing long-term follow-up data on mood found a small effect in favour of exercise (SMD -0.33, 95% CI -0.63 to -0.03).Twenty-nine trials reported acceptability of treatment, three trials reported quality of life, none reported cost, and six reported adverse events.For acceptability of treatment (assessed by number of drop-outs during the intervention), the risk ratio was 1.00 (95% CI 0.97 to 1.04).Seven trials compared exercise with psychological therapy (189 participants), and found no significant difference (SMD -0.03, 95% CI -0.32 to 0.26). Four trials (n = 300) compared exercise with pharmacological treatment and found no significant difference (SMD -0.11, -0.34, 0.12). One trial (n = 18) reported that exercise was more effective than bright light therapy (MD -6.40, 95% CI -10.20 to -2.60).For each trial that was included, two authors independently assessed for sources of bias in accordance with the Cochrane Collaboration 'Risk of bias' tool. In exercise trials, there are inherent difficulties in blinding both those receiving the intervention and those delivering the intervention. Many trials used participant self-report rating scales as a method for post-intervention analysis, which also has the potential to bias findings. AUTHORS' CONCLUSIONS: Exercise is moderately more effective than a control intervention for reducing symptoms of depression, but analysis of methodologically robust trials only shows a smaller effect in favour of exercise. When compared to psychological or pharmacological therapies, exercise appears to be no more effective, though this conclusion is based on a few small trials.
Populations Analyzed: Adults ≥18, Depression	**Author-Stated Funding Source:** National Institute for Health Research.

<table>
<tr><th colspan="2">Depression</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Cramer H, Lauche R, Langhorst R, Dobos G. Yoga for depression: a systematic review and meta-analysis. Depress Anxiety. 2013;30(11):1068-1083. doi:10.1002/da.22166.</td></tr>
<tr><td>Purpose: To examine the effectiveness and safety of different yoga forms in patients with depressive disorders and individuals with elevated levels of depression.</td><td rowspan="4">Abstract: BACKGROUND: Mind-body medical interventions are commonly used to cope with depression and yoga is one of the most commonly used mind-body interventions. The aim of this review was to systematically assess and meta-analyze the effectiveness of yoga for depression. METHODS: Medline/PubMed, Scopus, the Cochrane Library, PsycINFO, and IndMED were searched through January 2013. Randomized controlled trials (RCTs) of yoga for patients with depressive disorders and individuals with elevated levels of depression were included. Main outcomes were severity of depression and remission rates, secondary outcomes were anxiety, quality of life, and safety. RESULTS: Twelve RCTs with 619 participants were included. Three RCTs had low risk of bias. Regarding severity of depression, there was moderate evidence for short-term effects of yoga compared to usual care (standardized mean difference (SMD) = -0.69; 95% confidence interval (CI) -0.99, -0.39; P < .001), and limited evidence compared to relaxation (SMD = -0.62; 95%CI -1.03, -0.22; P = .003), and aerobic exercise (SMD = -0.59; 95% CI -0.99, -0.18; P = .004). Limited evidence was found for short-term effects of yoga on anxiety compared to relaxation (SMD = -0.79; 95% CI -1.3, -0.26; P = .004). Subgroup analyses revealed evidence for effects in patients with depressive disorders and in individuals with elevated levels of depression. Due to the paucity and heterogeneity of the RCTs, no meta-analyses on long-term effects were possible. No RCT reported safety data. CONCLUSIONS: Despite methodological drawbacks of the included studies, yoga could be considered an ancillary treatment option for patients with depressive disorders and individuals with elevated levels of depression.</td></tr>
<tr><td>Timeframe: Inception–January 2013</td></tr>
<tr><td>Total # of Studies: 12</td></tr>
<tr><td>Exposure Definition: Interventions that included yoga. Interventions lasted for 3 days to 12 weeks, and varied in session length and intensity.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of Life: Short Form 36 Health Survey.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults, Depression</td><td>Author-Stated Funding Source: Rut and Klaus Bahlsen Foundation.</td></tr>
</table>

<table>
<tr><th colspan="2">Schizophrenia</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Dauwan M, Begemann MJ, Heringa SM, Sommer IE. Exercise improves clinical symptoms, quality of life, global functioning, and depression in schizophrenia: a systematic review and meta-analysis. Schizophr Bull. 2016;42(3):588-599. doi:10.1093/schbul/sbv164.</td></tr>
<tr><td>Purpose: To quantitatively review the impact of exercise on quality of life, global functioning, depression, and cognition in patients with schizophrenia spectrum disorder.</td><td rowspan="4">Abstract: BACKGROUND: Physical exercise may be valuable for patients with schizophrenia spectrum disorders as it may have beneficial effect on clinical symptoms, quality of life and cognition. METHODS: A systematic search was performed using PubMed (Medline), Embase, PsychInfo, and Cochrane Database of Systematic Reviews. Controlled and uncontrolled studies investigating the effect of any type of physical exercise interventions in schizophrenia spectrum disorders were included. Outcome measures were clinical symptoms, quality of life, global functioning, depression or cognition. Meta-analyses were performed using Comprehensive Meta-Analysis software. A random effects model was used to compute overall weighted effect sizes in Hedges' g. RESULTS: Twenty-nine studies were included, examining 1109 patients. Exercise was superior to control conditions in improving total symptom severity (k = 14, n = 719: Hedges' g = .39, P < .001), positive (k = 15, n = 715: Hedges' g = .32, P < .01), negative (k = 18, n = 854: Hedges' g = .49, P < .001), and general (k = 10, n = 475: Hedges' g = .27, P < .05) symptoms, quality of life (k = 11, n = 770: Hedges' g = .55, P < .001), global functioning (k = 5, n = 342: Hedges' g = .32, P < .01), and depressive symptoms (k = 7, n = 337: Hedges' g = .71, P < .001). Yoga, specifically, improved the cognitive subdomain long-term memory (k = 2, n = 184: Hedges' g = .32, P < .05), while exercise in general or in any other form had no effect on cognition. CONCLUSION: Physical exercise is a robust add-on treatment for improving clinical symptoms, quality of life, global functioning, and depressive symptoms in patients with schizophrenia. The effect on cognition is not demonstrated, but may be present for yoga.</td></tr>
<tr><td>Timeframe: Inception–July 2015</td></tr>
<tr><td>Total # of Studies: 29</td></tr>
<tr><td>Exposure Definition: Exercise: types of exercise were classified into 3 domains, aerobic (e.g., endurance training, cardiovascular exercise, treadmill walking), anaerobic (muscle strength training), and yoga.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life (QoL) and depressive symptoms: various QoL and depression questionnaires. Global, social, and occupational functioning: Global Assessment of Functioning scale and Social and Occupational Functioning Scale. Mean change in cognitive domains.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Schizophrenia or schizophrenia spectrum disorder</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Forsman AK, Nordmyr J, Wahlbeck K. Psychosocial interventions for the promotion of mental health and the prevention of depression among older adults. Health Promot Int. 2011;26(Suppl 1):i85-i107. doi:10.1093/heapro/dar074.</td></tr>
<tr><td>Purpose: To assess the effectiveness of psychosocial interventions for mental health promotion and depression prevention among older people.</td><td rowspan="4">Abstract: The aim of this review was to assess the effectiveness of psychosocial interventions for the promotion of mental health and prevention of depression among older people. A systematic review of prospective controlled trials was conducted including 69 studies. The studies were divided into physical exercise, skill training, reminiscence, social activities, group support and multicomponent interventions. Data from 44 trials contributed to a meta-analysis of effectiveness. Overall, psychosocial interventions had a positive effect on quality of life and positive mental health. The pooled interventions also had a statistically significant effect on reduction in depressive symptoms. Social activities significantly improved positive mental health, life satisfaction and quality of life and reduced depressive symptoms. Based on the results of this study, duration of interventions is of importance, since interventions lasting for >3 months exhibited more positive effects compared with shorter interventions. Meaningful social activities, tailored to the older individual's abilities and preferences should be considered in aiming to improve mental health among older people.</td></tr>
<tr><td>Timeframe: Inception–September 2010</td></tr>
<tr><td>Total # of Studies: 44 (21 PA intervention)</td></tr>
<tr><td>Exposure Definition: PA or exercise interventions with a physiological component in addition to a psychosocial component (e.g., physical exercise groups). The group of physical exercise interventions involved varied individual or group physical exercise.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: Short Form-36 Health Survey. Life satisfaction: Satisfaction with Life Scale, Life Satisfaction Index-A.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥65</td><td>Author-Stated Funding Source: The Sixth Research Framework of the European Commission; EVO funding from Vaasa Hospital District, Finland.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Gillison FB, Skevington SM, Sato A, Standage M, Evangelidou S. The effects of exercise interventions on quality of life in clinical and healthy populations; a meta-analysis. Soc Sci Med. 2009;68(9):1700-1710. doi:10.1016/j.socscimed.2009.02.028.</td></tr>
<tr><td>Purpose: To provide an overview of the effect of exercise interventions on subjective quality of life across adult clinical populations.</td><td rowspan="5">Abstract: The aim of the study was to provide an overview of the effect of exercise interventions on subjective quality of life (QoL) across adult clinical populations and well people, and to systematically investigate the impact of the exercise setting, intensity and type on these outcomes. From a systematic search of six electronic databases, 56 original studies were extracted, reporting on 7937 sick and well people. A meta-analysis was conducted on change in QoL from pre- to post-intervention compared with outcomes from a no-exercise control group, using weighted (by the study's sample size) pooled mean effect sizes and a fixed-effects model. Significant differences in outcome were found when treatment purpose was compared; prevention/promotion (well populations), rehabilitation, or disease management. Three to 6 months post-baseline, a moderate positive effect of exercise interventions was found for overall QoL in rehabilitation patients, but no significant effect for well or disease management groups. However, physical and psychological QoL domains improved significantly relative to controls in well participants. Psychological QoL was significantly poorer relative to controls in the disease management group. This pattern of results persisted over 1 year. With some exceptions, better overall QoL was reported for light intensity exercise undertaken in group settings, with greater improvement in physical QoL following moderate intensity exercise. The implications for future health care practice and research are discussed.</td></tr>
<tr><td>Timeframe: Inception–September 2007</td></tr>
<tr><td>Total # of Studies: 56</td></tr>
<tr><td>Exposure Definition: Intervention incorporating an active exercise component (e.g., walking, aerobic, mixed).
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Pre- and post-test ratings of quality of life (QoL) for both intervention and control groups. Overall QoL, physical health, psychological well-being, level of independence, and social relationships.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults >18</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Jahnke R, Larkey L, Rogers C, Etnier J, Lin F. A comprehensive review of health benefits of Qigong and Tai Chi. Am J Health Promot. 2010;24(6):e1-e25. doi:10.4278/ajhp.081013-LIT-248.</td></tr>
<tr><td>Purpose: To evaluate the current evidence for a broad range of health benefits for both qigong and tai chi using only randomized controlled trials, and to evaluate the potential of treating these 2 forms of meditative movement as equivalent forms.</td><td rowspan="4">Abstract: OBJECTIVE: Research examining psychological and physiological benefits of Qigong and Tai Chi is growing rapidly. The many practices described as Qigong or Tai Chi have similar theoretical roots, proposed mechanisms of action, and expected benefits. Research trials and reviews, however, treat them as separate targets of examination. This review examines the evidence for achieving outcomes from randomized controlled trials (RCTs) of both. DATA SOURCES: The key words Tai Chi, Taiji, Tai Chi Chuan, and Qigong were entered into electronic search engines for the Cumulative Index for Allied Health and Nursing (CINAHL), psychological literature (PsycINFO), PubMed, Cochrane database, and Google Scholar. STUDY INCLUSION CRITERIA: RCTs reporting on the results of Qigong or Tai Chi interventions and published in peer-reviewed journals from 1993 to 2007. DATA EXTRACTION: Country, type and duration of activity, number/type of subjects, control conditions, and reported outcomes were recorded for each study. SYNTHESIS: Outcomes related to Qigong and Tai Chi practice were identified and evaluated. RESULTS: Seventy-seven articles met the inclusion criteria. The nine outcome category groupings that emerged were bone density (n = 4), cardiopulmonary effects (n = 19), physical function (n = 16), falls and related risk factors (n = 23), quality of life (n = 17), self-efficacy (n = 8), patient-reported outcomes (n = 13), psychological symptoms (n = 27), and immune function (n = 6). CONCLUSIONS: Research has demonstrated consistent, significant results for a number of health benefits in RCTs, evidencing progress toward recognizing the similarity and equivalence of Qigong and Tai Chi.</td></tr>
<tr><td>Timeframe: 1993–December 2007</td></tr>
<tr><td>Total # of Studies: 67</td></tr>
<tr><td>Exposure Definition: Randomized controlled trials of qigong or tai chi. Frequency and duration, 30–120 minutes/session, 1–5 times/week for 3 weeks to 12 months. Subgroups: qigong or tai chi.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults, most studies mean age ≥55</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Kelley GA, Kelley KS, Hootman JM, Jones DL. Exercise and health-related quality of life in older community-dwelling adults: a meta-analysis of randomized controlled trials. J Appl Gerontol. 2009;28(3):369-394. doi:https://doi.org/10.1177/0733464808327456.</td></tr>
<tr><td>Purpose: To use the meta-analytic approach to examine the effects of PA across all components of health-related quality of life among older adults.</td><td rowspan="4">Abstract: The authors used the meta-analytic approach to examine the effects of physical activity on health-related quality of life (HRQOL) in older community-dwelling adults. A random-effects model was used for all primary analyses. Of the 257 studies screened, 11 randomized controlled trials representing 13 groups and 617 men and women (324 physical activity, 293 control), all older than 50, were included. Overall, a significant (small to moderate) standardized effect size improvement was found for physical function as a result of physical activity (Hedges's g = 0.41, 95% confidence interval [CI] = 0.19, 0.64, p < .001). This was equivalent to a common language effect size of 62% and an odds ratio of 2.14 (95% CI = 1.42, 3.24). No significant differences were found for the other nine HRQOL outcomes. Although additional research is needed, results suggest that physical activity improves self-reported physical function, a component of HRQOL, in older community-dwelling adults.</td></tr>
<tr><td>Timeframe: 1973–August 2007</td></tr>
<tr><td>Total # of Studies: 11</td></tr>
<tr><td>Exposure Definition: Aerobic and/or strength training interventions. Length of training across all interventions ranged from 8 to 26 weeks. The most common aerobic training modalities were walking and stationary cycling.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Health-related quality of life: 1 or more of the 10 components of the Medical Outcomes Study 36-Item Short Form Health Survey (physical component summary, mental component summary, physical function, role limitations because of physical health, bodily pain, general health perceptions, vitality, social function, role limitations because of emotional problems, and mental health).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults >50</td><td>Author-Stated Funding Source: Centers for Disease Control and Prevention; Association of American Medical Colleges.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Lambert SD, Duncan LR, Kapellas S, et al. A descriptive systematic review of physical activity interventions for caregivers: effects on caregivers' and care recipients' psychosocial outcomes, physical activity levels, and physical health. Ann Behav Med. 2016;50(6):907-919.</td></tr>
<tr><td>Purpose: To examine the effects of PA interventions on caregivers' psychosocial outcomes, PA levels, and physical health and, if reported, on the care recipients' outcomes as well.</td><td rowspan="4">Abstract: BACKGROUND: Caregiving can adversely impact individuals' psychosocial and physical well-being. An important task in health research is to find effective ways to enhance caregivers' health and functioning. PURPOSE: To provide a systematic review of the efficacy of physical activity (PA) interventions for caregivers on their and the care recipients' psychosocial outcomes, PA levels, and physical health. METHODS: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist, a descriptive systematic review of studies examining the effects of PA interventions for caregivers on their outcomes and those of the care recipients was conducted. Studies were primarily identified through searching electronic databases. RESULTS: Fourteen studies were reviewed. PA interventions significantly decreased caregivers' distress and increased their well-being, quality of life, sleep quality, PA levels, self-efficacy for caregiving or exercise, and readiness for exercise. Most PA interventions targeted the caregiver alone. Two studies examined the impact of the intervention on the care recipient and found no significant effect. CONCLUSIONS: PA interventions hold promise in improving caregivers' outcomes. However, more high quality trials are needed before definitive conclusions can be drawn.</td></tr>
<tr><td>Timeframe: 1985–December 2014</td></tr>
<tr><td>Total # of Studies: 14</td></tr>
<tr><td>Exposure Definition: PA interventions, including occupational activities, yoga, walking, hiking, and strength training, and/or lifestyle PA such as gardening, housework, stair climbing, and dancing. Interventions varied in length and frequency, most ranging from 6 weeks to 12 months, and once a week to daily exercise.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Psychological well-being: depression, stress, anxiety, distress, well-being, quality of life (QOL), and anger control. Social functioning: social support, social relationships. Studies included a wide range of tools to measure the outcomes.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults; mean age range 41–73.7</td><td>Author-Stated Funding Source: Prostate Cancer Canada.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Pooled Analysis
Citation: Morey MC, Sloane R, Pieper CF, et al. Effect of physical activity guidelines on physical function in older adults. J Am Geriatr Soc. 2008;56(10):1873-1878. doi:10.1111/j.1532-5415.2008.01937.x.</td></tr>
<tr><td>Purpose: To determine whether elderly people who meet national guidelines have higher physical function scores than those who do not, and the effect on functional trajectory when PA levels change from above to below this threshold, or vice versa.</td><td rowspan="5">Abstract: OBJECTIVES: To determine whether elderly people who meet national guidelines have higher physical function (PF) scores than those who do not and the effect on functional trajectory when physical activity (PA) levels change from above to below this threshold, or vice versa. DESIGN: Pooled data. SETTING: Two 6-month randomized controlled trials aimed at increasing PA in adults. PARTICIPANTS: Adults aged 65 to 94 (N=357). INTERVENTION: PA counseling over the telephone and through mailed materials. MEASUREMENTS: Self-reported PA dichotomized at 150 minutes/week and PF using the Medical Outcomes Study 36-item Short Form Questionnaire PF subscale. RESULTS: At baseline, individuals reporting 150 minutes or more of moderate PA/week had mean PF scores that were 20.3 points higher than those who did not (P<.001). Change in PA minutes from above threshold to below threshold or from below threshold to above threshold from baseline to 6 months resulted in an average change in PF of -11.18 (P<.001) and +5.10 (P=.05), respectively. CONCLUSION: These findings suggest that PA is an important predictor of functional status. Older sedentary adults can improve PF by meeting recommended PA levels. Conversely, dropping below recommended PA levels has a deleterious effect on PF. Given the importance of PF in maintenance of independence and quality of life in older adults, adherence to recommended PA guidelines should be endorsed.</td></tr>
<tr><td>Timeframe: Not applicable</td></tr>
<tr><td>Total # of Studies: 2</td></tr>
<tr><td>Exposure Definition: PA counseling over the phone and through mailed materials. Self-reported PA dichotomized at 150 minutes/week.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Health-related quality of life.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults 65–94</td><td>Author-Stated Funding Source: Department of Veterans Affairs Rehabilitation Research and Development; National Institutes of Health.</td></tr>
</table>

<table>
<tr><th colspan="2">Dementia</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Ojagbemi A, Akin-Ojagbemi N. Exercise and quality of life in dementia. J Appl Gerontol. Feb 2017:733464817693374. doi:10.1177/0733464817693374.</td></tr>
<tr><td>Purpose: To synthesize the results of available clinical trials of exercise-based interventions for quality of life in persons with dementia.</td><td rowspan="4">Abstract: This study appraises evidence for the effectiveness of exercise in improving quality of life (QoL) in persons with dementia (PwDs). The Cochrane, Medline, EMBASE, PsycINFO, and Cumulative Index to Nursing and Allied Health Literature databases were searched for peer-reviewed clinical trials of exercise in PwD. Additional searches of the PubMed for ahead-of-print citations and reference lists of articles were undertaken. Studies not including QoL as an outcome were excluded. Thirteen studies comprising 903 PwDs were identified. Random effects meta-analyses indicate that aerobic exercises may produce larger effect on QoL in PwD. However, overall postintervention results suggest exercise interventions led to small and nonsignificant improvement in QoL. Due to studies showing inconsistent results, the evidence for beneficial effects of exercise on QoL in PwD is inconclusive at this time. Future trials should tailor specific types of exercise programs for well-defined cohorts of PwDs.</td></tr>
<tr><td>Timeframe: Inception–February 2016</td></tr>
<tr><td>Total # of Studies: 13 (6 in meta-analysis)</td></tr>
<tr><td>Exposure Definition: Physical exercise therapy as exercise techniques or combination of techniques aimed at improving strength, endurance, flexibility, balance, and mobility.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life measures: validated questionnaires.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Dementia</td><td>Author-Stated Funding Source: No funding source used.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Orgeta V, Miranda-Castillo C. Does physical activity reduce burden in carers of people with dementia? A literature review. Int J Geriatr Psychiatry. 2014;29(8):771-783.</td></tr>
<tr><td>Purpose: To systematically review the effects of PA interventions in improving psychological well-being in carers of people with dementia.</td><td rowspan="4">Abstract: OBJECTIVES: Physical exercise has been associated with a range of positive outcomes including improvements in psychological well-being. The aim of the present study was to review current evidence on the effects of physical activity interventions for carers of people with dementia. METHODS: Systematic review. We searched electronic databases and key articles of studies that have evaluated the effectiveness of physical activity interventions in improving psychological well-being in carers of people with dementia. Relevant papers were scored according to established criteria set by the Cochrane Review Group. Selection criteria for studies were a randomized controlled trial (RCT) design, and comparing physical activity with a control group receiving no specific physical activity intervention. Two reviewers worked independently to select trials, extract data, and assess risk of bias. RESULTS: A total of four RCTs met the inclusion criteria. Studies evaluated home-based supervised physical activity of low to moderate intensity, which included either aerobic exercise, or endurance training.Pooled data showed that physical activity reduced subjective caregiver burden in carers, standardized mean difference -0.43; 95% confidence interval (CI) -0.81 to -0.04, in comparison to a control group of usual care. CONCLUSIONS: There is evidence from two RCTs that physical activity reduces subjective caregiver burden for carers of people with dementia. Although statistically significant, the observed benefits should be interpreted with caution as the studies conducted so far have limitations. Further high-quality trials are needed for evaluating the effectiveness of physical activity in improving psychological well-being in carers of people with dementia.</td></tr>
<tr><td>Timeframe: Inception–February 2013</td></tr>
<tr><td>Total # of Studies: 4</td></tr>
<tr><td>Exposure Definition: PA intervention defined as any intervention that aimed toward promoting PA in carers of people with dementia or who are diagnosed with dementia of any type, people with Alzheimer's disease, people with organic brain syndrome, or people with a comparable condition. Both individual and group-based interventions were included.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Psychological well-being: caregiver burden (Screen for Caregiver Burden), depression (Beck Depression Inventory, 11-item Iowa short form of the Center for Epidemiologic Studies Depression Scale), anxiety (Taylor Manifest Anxiety Scale), quality of life, or stress (Perceived Stress Scale).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Park SH, Han KS, Kang CB. Effects of exercise programs on depressive symptoms, quality of life, and self-esteem in older people: a systematic review of randomized controlled trials. Appl Nurs Res. 2014;27(4):219-226. doi:10.1016/j.apnr.2014.01.004.</td></tr>
<tr><td>Purpose: To suggest evidence for the use of exercise programs as nursing interventions to reduce depressive symptoms and improve the quality of life and self-esteem in older people.</td><td rowspan="5">Abstract: OBJECTIVE: This study attempted to show evidence of exercise programs as intervention to decrease depressive symptoms and to improve quality of life and self-esteem in older people. DESIGN: Systematic review of randomized controlled trials. DATA SOURCES: Electronic databases of KoreaMed, Korea Scientific and Technological Intelligence Center, Korean Society of Nursing Science, Korean Academy of Psychiatric Mental Health Nursing, Ovid-Medline and Embase were searched up to May 25th, 2012 for relevant articles. REVIEW: We searched studies of randomized controlled trials involving exercise programs administered to participants aged 65 years or over. Of 461 publications identified, 18 met the inclusion criteria for the meta-analysis. Quality assessment of the studies utilized Cochrane's Risk of Bias. RESULTS: Exercise therapy in older people was effective, as evidenced by a decrease in depressive symptoms [standardized mean difference (SMD) -0.36; 95% confidence interval (CI) -0.64, -0.08], and improvements in quality of life (SMD 0.86; 95% CI 0.11, 1.62) and self-esteem (SMD 0.49; 95% CI 0.09, 0.88). The changes were significant statistically, with no heterogeneity. CONCLUSIONS: Exercise programs in older people are effective in improving depressive symptoms, quality of life and self-esteem. Development and efficient use of tailored exercise programs for elderly people is a prudent strategy.</td></tr>
<tr><td>Timeframe: Inception–May 2013</td></tr>
<tr><td>Total # of Studies: 18</td></tr>
<tr><td>Exposure Definition: Any type of exercise programs, including walking, muscle strengthening, balance-keeping, qigong physical exercise, tai chi, and dance. Exercise sessions were 30 to 60 minutes long and held 1 to 3 times per week. Sessions were continued for 3 months or more.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: PGCMS, SF-36, EuroQol, DqoL. Self-esteem: Rosenberg self-esteem scale, Adult sources of self-esteem instrument. Depressive symptoms: Geriatric Depression scale, Hospital Anxiety and Depression Scale, Center for Epidemiological Studies Depression Scale, Zung Self-Rating Depression Scale.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥65</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Patel NK, Newstead AH, Ferrer RL. The effects of yoga on physical functioning and health related quality of life in older adults: a systematic review and meta-analysis. J Altern Complement Med. 2012;18(10):902-917. doi:10.1089/acm.2011.0473.</td></tr>
<tr><td>Purpose: To assess whether yoga is superior to other PA with respect to its effect on physical functioning measures and health-related quality of life among older adults in community and institutional settings.</td><td rowspan="4">Abstract: OBJECTIVE: The goal was to review systematically the comparative effectiveness of yoga, compared with other exercise interventions, for older adults as shown on measures of health and physical functioning. DESIGN: This was a systematic review with both narrative synthesis and meta-analysis. DATA SOURCES: Searches were conducted in MEDLINE(R)/PUBMED, PSYCINFO, CINAHL, Web of Science, and SCOPUS; bibliographies of selected articles; and one systematic review on the effects of yoga on cardiovascular disease. METHODS: Original studies from 1950 to November 2010 were sought, evaluating the effects of yoga on older adults. The search was restricted to randomized controlled trials of yoga in subjects >/=age 60, and published in English. Data were extracted and evaluated regarding setting, population size and characteristics, intervention type and duration, comparison group, outcome assessment, data analysis, follow-up, key results, and the quality of each study according to specific predetermined criteria. RESULTS: The search yielded 18 eligible studies (N=649). The studies reported on older adults across a range of settings, intervention intensity, and outcome measures. The majority of the studies had<35 participants (range 9-77). Quantitative and qualitative synthesis of the studies suggested that the benefits of yoga may exceed those of conventional exercise interventions for self-rated health status, aerobic fitness, and strength. However, the effect sizes were modest, and the evidence was mixed for yoga's effect on depression, sleep, and bone-mineral density. Studies did not find an effect on cognition. CONCLUSIONS: Small studies with mixed methodological quality suggested that yoga may be superior to conventional physical-activity interventions in elderly people. The precision of the estimates remains low. Larger studies are necessary to define better the intersection of populations, settings, and interventions in which yoga is most beneficial.</td></tr>
<tr><td>Timeframe: 1950–November 2010</td></tr>
<tr><td>Total # of Studies: 11</td></tr>
<tr><td>Exposure Definition: Randomized controlled trials of yoga. Interventions varied from 1 to 2 times per week, were 55 minutes to 2 hours in duration, and lasted 12 weeks to 14 months. Setting: community settings, institutional or senior communities. Type: yoga (light, Ayurveda, Iyengar, hatha), aerobic exercise, resistance training.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Standardized mean difference in health-related quality of life: Short Form-36 (SF-36).
Examine Cardiorespiratory Fitness as Outcome: Yes</td><td></td></tr>
<tr><td>Populations Analyzed: Adults ≥60 (mean age 63.5–77.5)</td><td>Author-Stated Funding Source: Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, and the John A. Hartford Foundation Center for Excellence in Geriatrics Education.</td></tr>
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<table>
<tr><th colspan="2">Dementia</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Potter R, Ellard D, Rees K, Thorogood M. A systematic review of the effects of physical activity on physical functioning, quality of life and depression in older people with dementia. Int J Geriatr Psychiatry. 2011;26(10):1000-1011. doi:10.1002/gps.2641.</td></tr>
<tr><td>Purpose: To evaluate the evidence of PA interventions that address physical functioning, quality of life, and depression in people with cognitive impairment or dementia.</td><td rowspan="4">Abstract: BACKGROUND: Depression is common in older people with dementia. Physical activity is effective in reducing depression in adults but there is limited evidence about its effectiveness in people with dementia. DESIGN AND METHODS: A systematic review and partial meta-analysis of physical activity interventions in people with dementia is reported. We searched eight databases for English language papers and reference lists of relevant papers. Included studies reported a physical activity intervention lasting at least 12 weeks in which participants were older and had a diagnosis of dementia. Studies compared the intervention with a non-active or a no-intervention control and reported at least one outcome related to physical function, quality of life or depression. At least two authors independently assessed each paper for inclusion and for study quality and extracted data. RESULTS: We included 13 randomised controlled trials with 896 participants. Three of six trials that reported walking as an outcome found an improvement, as did four of the five trials reporting timed get up and go tests. Only one of the four trials that reported depression as an outcome found a positive effect. Both trials that reported quality of life found an improvement. CONCLUSIONS: There is some evidence that physical activity interventions improve physical function in older people with dementia. Evidence for an effect on depression and quality of life is limited.</td></tr>
<tr><td>Timeframe: Inception–February 2009</td></tr>
<tr><td>Total # of Studies: 15</td></tr>
<tr><td>Exposure Definition: Interventions with either strength, flexibility, or balance training were included. Most interventions lasted 12–16 weeks, but intensity and frequency of the sessions varied. Exercise sessions ranged from 2 times per week to every day, and were 30 to 75 minutes in duration.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: observed affect scale, Short Form-36 Health Survey, dementia mood assessment scale, and Alzheimer's mood scale.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥60, Cognitive impairment, Dementia</td><td>Author-Stated Funding Source: Advantage West Midlands.</td></tr>
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<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Pucci GC, Rech CR, Fermino RC, Reis RS. Association between physical activity and quality of life in adults. Rev Saude Publica. 2012;46(1):166-179.</td></tr>
<tr><td>Purpose: To summarize and analyze evidence of the association between PA and perception of quality of life in adults.</td><td rowspan="4">Abstract: OBJECTIVE: To summarize and analyze evidences of the association between physical activity and quality of life. METHODS: Systematic literature review in three electronic databases -PubMed, Lilacs and SciELO- using the following descriptors: "physical activity," "motor activity," "exercise," "walking," "running," "physical fitness," "sport," "life style," "quality of life," "WHOQOL" and "SF." There were selected 38 studies published between 1980 and 2010 that used any instrument to measure physical activity and any version of the Medical Outcomes Study 36-Item Short-Form Health Survey or the World Health Organization Quality of Life to assess quality of life. RESULTS: Most studies reviewed were cross-sectional (68%), 18% experimental, 8% prospective follow-up cohort and 5% mixed-design (cross-sectional and longitudinal). The most widely used questionnaire to assess quality of life was SF-36 (71%), and physical activity was self-reported in 82% of the studies reviewed. Higher level of physical activity was associated with better perception of quality of life in the elderly, apparently healthy adults and individuals with different clinical conditions. CONCLUSIONS: There is a positive association between physical activity and quality of life that varies according to the domain analyzed.</td></tr>
<tr><td>Timeframe: 1980–August 2010</td></tr>
<tr><td>Total # of Studies: 38</td></tr>
<tr><td>Exposure Definition: PA mainly self-reported using IPAQ and Godin Leisure-Time Exercise questionnaires. A few studies directly measured PA using accelerometer and/or pedometer data. Half of the studies measured PA overall, while others restricted measurement to leisure time.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), SF-12, World Health Organization Quality of Life Survey (WHOQOL)-BREF, SF-8, WHOQOL-OLD.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥18</td><td>Author-Stated Funding Source: Not reported.</td></tr>
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<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Raymond MJ, Bramley-Tzerefos RE, Jeffs KJ, Winter A, Holland AE. Systematic review of high-intensity progressive resistance strength training of the lower limb compared with other intensities of strength training in older adults. Arch Phys Med Rehabil. 2013;94(8):1458-1472. doi:10.1016/j.apmr.2013.02.022.</td></tr>
<tr><td>Purpose: To examine the effectiveness of high-intensity progressive resistance strength training (HIPRST) in older adults in improving strength, endurance, and functional performance and assess its safety compared with other intensities of progressive resistance s</td><td rowspan="5">Abstract: OBJECTIVE: To examine the effect of high-intensity progressive resistance strength training (HIPRST) on strength, function, mood, quality of life, and adverse events compared with other intensities in older adults. DATA SOURCES: Online databases were searched from their inception to July 2012. STUDY SELECTION: Randomized controlled trials of HIPRST of the lower limb compared with other intensities of progressive resistance strength training (PRST) in older adults (mean age >/= 65y) were identified. DATA EXTRACTION: Two reviewers independently completed quality assessment using the Physiotherapy Evidence Database (PEDro) scale and data extraction using a prepared checklist. DATA SYNTHESIS: Twenty-one trials were included. Study quality was fair to moderate (PEDro scale range, 3-7). Studies had small sample sizes (18-84), and participants were generally healthy. Meta-analyses revealed HIPRST improved lower-limb strength greater than moderate- and low-intensity PRST (standardized mean difference [SMD]=.79; 95% confidence interval [CI], .40 to 1.17 and SMD=.83; 95% CI, -.02 to 1.68, respectively). Studies where groups performed equivalent training volumes resulted in similar improvements in leg strength, regardless of training intensity. Similar improvements were found across intensities for functional performance and disability. The effect of intensity of PRST on mood was inconsistent across studies. Adverse events were poorly reported, however, no correlation was found between training intensity and severity of adverse events. CONCLUSIONS: HIPRST improves lower-limb strength more than lesser training intensities, although it may not be required to improve functional performance. Training volume is also an important variable. HIPRST appears to be a safe mode of exercise in older adults. Further research into its effects on older adults with chronic health conditions across the care continuum is required.</td></tr>
<tr><td>Timeframe: Inception–July 2012</td></tr>
<tr><td>Total # of Studies: 21</td></tr>
<tr><td>Exposure Definition: Exercise interventions included progressive resistance strength training at low (<50% 1 repetition maximum [RM]), moderate (50% to 69% 1RM), and high intensity (70% to 89% of 1RM), in combination or alone. Training sessions ranged from 45 to 90 minutes in duration, 8 to 52 weeks in length, and 2 to 3 times per week in frequency.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: Medical Outcomes Study 36-Item Short-Form Health Survey.
Examine Cardiorespiratory Fitness as Outcome: Yes</td></tr>
<tr><td>Populations Analyzed: Adults ≥60</td><td>Author-Stated Funding Source: Caulfield Research Trust, Alfred Health.</td></tr>
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<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Soga M, Gaston KJ, Yamaura Y. Gardening is beneficial for health: a meta-analysis. Prev Med Rep. 2017;5:92-99. doi:10.1016/j.pmedr.2016.11.007.</td></tr>
<tr><td>Purpose: To examine the effects of gardening, including horticultural therapy, on health.</td><td rowspan="5">Abstract: There is increasing evidence that gardening provides substantial human health benefits. However, no formal statistical assessment has been conducted to test this assertion. Here, we present the results of a meta-analysis of research examining the effects of gardening, including horticultural therapy, on health. We performed a literature search to collect studies that compared health outcomes in control (before participating in gardening or non-gardeners) and treatment groups (after participating in gardening or gardeners) in January 2016. The mean difference in health outcomes between the two groups was calculated for each study, and then the weighted effect size determined both across all and sets of subgroup studies. Twenty-two case studies (published after 2001) were included in the meta-analysis, which comprised 76 comparisons between control and treatment groups. Most studies came from the United States, followed by Europe, Asia, and the Middle East. Studies reported a wide range of health outcomes, such as reductions in depression, anxiety, and body mass index, as well as increases in life satisfaction, quality of life, and sense of community. Meta-analytic estimates showed a significant positive effect of gardening on the health outcomes both for all and sets of subgroup studies, whilst effect sizes differed among eight subgroups. Although Egger's test indicated the presence of publication bias, significant positive effects of gardening remained after adjusting for this using trim and fill analysis. This study has provided robust evidence for the positive effects of gardening on health. A regular dose of gardening can improve public health.</td></tr>
<tr><td>Timeframe: 2001–January 2016</td></tr>
<tr><td>Total # of Studies: 22</td></tr>
<tr><td>Exposure Definition: Gardening, including horticultural therapy, experimental short-term gardening, and daily gardening.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Mean difference of quality of life.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Mean age range 8.5–84.7</td><td>Author-Stated Funding Source: Japan Society of Promotion of Science, Natural Environment Research Council, JSPS KAKENHI.</td></tr>
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<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Stevens Z, Barlow C, Kendrick D, et al. Effectiveness of general practice-based physical activity promotion for older adults: systematic review. Prim Health Care Res Dev. 2014;15(2):190-201. doi:10.1017/S1463423613000017.</td></tr>
<tr><td>Purpose: To evaluate the effectiveness of general practice-based tailored PA interventions in older adults, whereby participants' baseline PA levels are assessed to provide individualized PA recommendations.</td><td rowspan="4">Abstract: AIM: To review the effectiveness of physical activity interventions for adults aged 50 and above, delivered through general practice. BACKGROUND: Physical activity has beneficial effects on the common disorders of later life. General practice is a potentially important setting for promotion of physical activity among older adults, but the effectiveness of such interventions is presently unknown. METHODS: Studies published between January 1998 and July 2011 were identified from electronic databases. We searched for studies of tailored physical activity interventions to older adults through general practice. The search and selection process was not restricted to any outcome measures but only included studies comparing two or more groups prospectively. Two reviewers screened the studies and obtained full texts of eligible studies. Included studies were assessed for their methodological quality and public health impact. FINDINGS: Altogether, 4170 studies met the initial search criteria but only six were included in the review, with a total of 1522 participants. The interventions ranged from six weeks to six months. One study showed a statistically significant increase in physical activity in the intervention compared with the control group (P < or = 0.007). Four studies measured quality of life using the SF-36, of which three reported inconsistent results. This review shows some evidence of the effectiveness of physical activity promotion for older adults through general practice, but not enough to warrant widespread commissioning and implementation. Large-scale developmental projects with long follow-up (beyond two years), objective measures of physical activity and comprehensive documentation of resource use, should now be conducted.</td></tr>
<tr><td>Timeframe: 1998–July 2011</td></tr>
<tr><td>Total # of Studies: 6</td></tr>
<tr><td>Exposure Definition: Exercise interventions were tailored to individuals through general practice, including aerobic, strength, and balance exercises. Interventions ranged from 3 weeks to 6 months, 2–3 times per week.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: SF-36
Examine Cardiorespiratory Fitness as Outcome: Yes</td></tr>
<tr><td>Populations Analyzed: Adults ≥50</td><td>Author-Stated Funding Source: National Institute for Health Research Health Technology Assessment program.</td></tr>
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<tr><th colspan="2">Youth</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Suchert V, Hanewinkel R, Isensee B. Sedentary behavior and indicators of mental health in school-aged children and adolescents: a systematic review. Prev Med. 2015;76:48-57. doi:10.1016/j.ypmed.2015.03.026.</td></tr>
<tr><td>Purpose: To assess the relationship between sedentary behavior and indicators of mental health in school-aged children and adolescents.</td><td rowspan="4">Abstract: OBJECTIVE: The presented systematic review aims at giving a comprehensive overview of studies assessing the relationship between sedentary behavior and indicators of mental health in school-aged children and adolescents. METHODS: Six online databases (MEDLINE, EMBASE, PsycINFO, PsycARTICLES, CINAHL and SPORTDiscus) as well as personal libraries and reference lists of existing literature were searched for eligible studies. RESULTS: Ninety-one studies met all inclusion criteria. There was strong evidence that high levels of screen time were associated with more hyperactivity/inattention problems and internalizing problems as well as with less psychological well-being and perceived quality of life. Concerning depressive symptoms, self-esteem, eating disorder symptoms, and anxiety symptoms, no clear conclusion could be drawn. But, taking quality assessment into account, self-esteem was negatively associated with sedentary behavior, i.e. high levels of time engaging in screen-based sedentary behavior were linked to lower scores in self-esteem. CONCLUSIONS: Overall, the association between sedentary behavior and mental health indicators was rather indeterminate. Future studies of high quality and with an objective measure of sedentary behavior will be necessary to further examine this association as well as to investigate longitudinal relationships and the direction of causality. Furthermore, more studies are needed to identify moderating and mediating variables.</td></tr>
<tr><td>Timeframe: Inception–October 2013</td></tr>
<tr><td>Total # of Studies: 91 (14 only addressing quality of life outcome)</td></tr>
<tr><td>Exposure Definition: Sedentary behavior: composite scores of overall sedentary behavior and particular sedentary activities (e.g., TV, screen time, video game) included.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Well-being and quality of life.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Mean age range 5–18</td><td>Author-Stated Funding Source: German Cancer Aid.</td></tr>
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<table>
<tr><th colspan="2">Depression and Dementia</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Tavares BB, Moraes H, Deslandes AC, Laks J. Impact of physical exercise on quality of life of older adults with depression or Alzheimer’s disease: a systematic review. Trends Psychiatry Psychother. 2014;36(3):134-139. doi:10.1590/2237-6089-2013-0064.</td></tr>
<tr><td>Purpose: To evaluate the effect of physical exercise on quality of life in individuals with a clinical diagnosis of depression or Alzheimer's disease.</td><td rowspan="4">Abstract: INTRODUCTION: Physical exercise has been associated with improvement of quality of live (QoL), but its effect among the elderly with depression and Alzheimer's disease (AD) is still unclear. This systematic review evaluated randomized and controlled studies about the effect of physical exercise on QoL of older individuals with a clinical diagnosis of depression and AD. METHODS: We searched PubMed, ISI, SciELO and Scopus from December 2011 to June 2013 using the following keywords: physical exercise, quality of life, elderly, depression, Alzheimer's disease. Only six studies met inclusion criteria: two examined patients with AD and four, patients with depression. RESULTS: The studies used different methods to prescribe exercise and evaluate QoL, but all had high quality methods. Findings of most studies with individuals with depression suggested that exercise training improved QoL, but studies with patients with AD had divergent results. CONCLUSIONS: Although different methods were used, results suggested that physical exercise is an effective non-pharmacological intervention to improve the QoL of elderly individuals with depression and AD. Future studies should investigate the effect of other factors, such as the use of specific scales for the elderly, controlled exercise prescriptions and type of control groups.</td></tr>
<tr><td>Timeframe: Inception–June 2013</td></tr>
<tr><td>Total # of Studies: 6</td></tr>
<tr><td>Exposure Definition: PA included tai chi, strength, and combined exercise (strength, balance, aerobic, and flexibility training). Interventions lasted at least 8 weeks, and varied in intensity and session length.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: Short Form Health survey (SF-36) and Alzheimer's Disease Related Quality of Life (ADQRL).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults >60, Alzheimer's disease, Depression</td><td>Author-Stated Funding Source: No funding source used.</td></tr>
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<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Vagetti GC, Barbosa Filho VC, Moreira NB, Oliveira Vd, Mazzardo O, Campos Wd. Association between physical activity and quality of life in the elderly: a systematic review, 2000-2012. Rev Bras Psiquiatr. 2014;36(1):76-88.</td></tr>
<tr><td>Purpose: To systematically review information regarding the association of PA with specific domains of quality of life in the elderly and to identify the study designs and measurement instruments most commonly used for the assessment of PA and quality of life in the elderly.</td><td rowspan="4">Abstract: OBJECTIVE: To review information regarding the association of physical activity (PA) with quality of life (QoL) in the elderly and to identify the study designs and measurement instruments most commonly used in its assessment, in the period 2000-2012. METHODS: Relevant articles were identified by a search of four electronic databases and cross-reference lists and by contact with the authors of the included manuscripts. Original studies on the association between PA and QoL in individuals aged 60 years or older were examined. The quality of studies as well as the direction and the consistency of the association between PA and QoL were evaluated. RESULTS: A total of 10,019 articles were identified as potentially relevant, but only 42 (0.42%) met the inclusion criteria and were retrieved and examined. Most studies demonstrated a positive association between PA and QoL in the elderly. PA had a consistent association with the following QoL domains: functional capacity; general QoL; autonomy; past, present and future activities; death and dying; intimacy; mental health; vitality; and psychological. CONCLUSION: PA was positively and consistently associated with some QoL domains among older individuals, supporting the notion that promoting PA in the elderly may have an impact beyond physical health. However, the associations between PA and other QoL domains were moderate to inconsistent and require further investigation.</td></tr>
<tr><td>Timeframe: 2000–November 2012</td></tr>
<tr><td>Total # of Studies: 42</td></tr>
<tr><td>Exposure Definition: PA was measured in a variety of ways in the included studies, either by self-report or objectively. Duration of PA exposure ranged from 3 to 12 months, session duration ranged from 30 to 90 minutes, and the weekly frequency ranged from 1 to 5 sessions per week.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life: measured with multiple tools, including Short Form-36 (SF-36), World Health Organization Quality of Life Assessment –– Abbreviated Version (WHOQoL-Bref), Short Form-12 (SF-12), World Health Organization Quality of Life Assessment –– Module for Older Adults (WHOQoL-Old), Satisfaction with Life Scale (SWLS), a questionnaire developed for the Behavioral Risk Factor Surveillance System (BRFSS), and the World Health Organization Quality of Life (WHOQoL-100), and other scales and questionnaires.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥60</td><td>Author-Stated Funding Source: Fundacao Araucaria and Coordenacao de Aperfeicoamento de Pessoal de Nivel Superior.</td></tr>
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<tr><th colspan="2">Schizophrenia</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Vancampfort D, Probst M, Helvik Skjaerven L, et al. Systematic review of the benefits of physical therapy within a multidisciplinary care approach for people with schizophrenia. Phys Ther. 2012;92(1):11-23. doi:10.2522/ptj.20110218.</td></tr>
<tr><td>Purpose: To evaluate the methodological quality of and summarize the evidence from randomized controlled trials examining the effectiveness of physical therapy interventions in the multidisciplinary management of schizophrenia among adults.</td><td rowspan="4">Abstract: BACKGROUND: Although schizophrenia is the fifth leading cause of disability-adjusted life years worldwide in people aged 15 to 44 years, the clinical evidence of physical therapy as a complementary treatment remains largely unknown. PURPOSE: The purpose of this study was to systematically review randomized controlled trials (RCTs) evaluating the effectiveness of physical therapy for people with schizophrenia. DATA SOURCES: EMBASE, PsycINFO, PubMed, ISI Web of Science, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Physiotherapy Evidence Database (PEDro), and the Cochrane Library were searched from their inception until July 1, 2011, for relevant RCTs. In addition, manual search strategies were used. STUDY SELECTION: Two reviewers independently determined study eligibility on the basis of inclusion criteria. DATA EXTRACTION: Reviewers rated study quality and extracted information about study methods, design, intervention, and results. DATA SYNTHESIS: Ten RCTs met all selection criteria; 6 of these studies addressed the use of aerobic and strength exercises. In 2 of these studies, yoga techniques also were investigated. Four studies addressed the use of progressive muscle relaxation. There is evidence that aerobic and strength exercises and yoga reduce psychiatric symptoms, state anxiety, and psychological distress and improve health-related quality of life, that aerobic exercise improves short-term memory, and that progressive muscle relaxation reduces state anxiety and psychological distress. LIMITATIONS: The heterogeneity of the interventions and the small sample sizes of the included studies limit overall conclusions and highlight the need for further research. CONCLUSIONS: Physical therapy offers added value in the multidisciplinary care of people with schizophrenia.</td></tr>
<tr><td>Timeframe: Inception–July 2011</td></tr>
<tr><td>Total # of Studies: 10</td></tr>
<tr><td>Exposure Definition: Physical therapy interventions could comprise aerobic exercises, strength exercises, relaxation training, basic body awareness exercises, or a combination of these in accordance with the World Confederation for Physical Therapy position statement. Physical therapy interventions varied in length from a single session to 16 weeks, from 25 to 90 minutes in session duration, and 1–5 days per week in frequency, generally at a moderate intensity.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Health-related Quality of Life: World Health Organization Quality of Life BREF version (WHOQOL-BREF).
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults 18–63, Schizophrenia</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Vendramin B, Bergamin M, Gobbo S, et al. Health benefits of Zumba fitness training: a systematic review. PM R. 2016;8(12):1181-1200. doi:10.1016/j.pmrj.2016.06.010.</td></tr>
<tr><td>Purpose: To examine the effects of Zumba fitness interventions on physical function, fitness, and well-being.</td><td rowspan="4">Abstract: OBJECTIVE: As an alternative to the traditional approach to physical exercise, new kinds of organized physical activity have been developed designed to engage large segments of the population. Among these, Zumba fitness is extremely popular, with a growing number of participants. This article aims to summarize and analyze the body of evidence on the effects of Zumba fitness interventions on physical function, fitness, and wellbeing. TYPE: Systematic review. LITERATURE SURVEY: Keyword "Zumba" was identified as term for the literature research in MEDLINE, Scopus, Bandolier, PEDro, and Web of Science. Only studies published in peer-reviewed journals written in English language were considered. METHODOLOGY: Eleven manuscripts were classified as eligible with 586 total participants, ranging in age from 18 to 65 years. After a quality appraisal, we classified 4 studies as high-quality investigations and 7 as low quality. Results were summarized in several domains: "anthropometric parameters and body composition," "hormonal and metabolic profiles," "aerobic and cardiovascular performance," "muscular fitness parameters," and "quality of life, pain score and physical activity questionnaire." SYNTHESIS: Results from this systematic review indicated that Zumba fitness could be considered an effective type of physical activity able to improve aerobic capacity. Small but positive benefits were noted for reducing body weight and other body measurements. Furthermore, other effects, including psychological and social benefits on quality of life, were found after Zumba fitness interventions. Otherwise, limited evidence described positive effects on muscular strength and flexibility. CONCLUSIONS: Zumba fitness could be considered an effective type of physical activity able to improve aerobic capacity. Limited evidence described positive effects on muscular strength and flexibility. LEVEL OF EVIDENCE: II.</td></tr>
<tr><td>Timeframe: Inception–May 2015</td></tr>
<tr><td>Total # of Studies: 16 (11 only addressing quality of life outcome)</td></tr>
<tr><td>Exposure Definition: Zumba fitness: a dance exercise program. Studies ranged from 8 to 40 weeks, with sessions lasting 60 minutes and performed 2–3 times per week.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of Life: Short Form - 36 and World Health Organization questionnaire.
Examine Cardiorespiratory Fitness as Outcome: No</td><td></td></tr>
<tr><td>Populations Analyzed: Mean age range: 18–65</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Schizophrenia</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Vera-Garcia E, Mayoral-Cleries F, Vancampfort D, Stubbs B, Cuesta-Vargas AI. A systematic review of the benefits of physical therapy within a multidisciplinary care approach for people with schizophrenia: An update. Psychiatry Res. 2015;229(3):828-839. doi:10.1016/j.psychres.2015.07.083.</td></tr>
<tr><td>Purpose: To examine the effectiveness of physical therapy interventions in the multidisciplinary management of schizophrenia.</td><td rowspan="4">Abstract: This systematic review summarizes the most recent evidence from randomized controlled trials (RCTs) considering the effectiveness of physical therapy interventions (aerobic exercises, strength exercises, relaxation training, basic body awareness exercises, or a combination of these) within the multidisciplinary management of schizophrenia. Two authors searched PubMed, PsycINFO, EMBASE, Web of Science, Physiotherapy Evidence Database (PEDro), and the Cochrane Library considering RCTs published from July 1, 2011-October 1, 2014. Thirteen RCTs representing 549 participants met the inclusion criteria. Overall, the results demonstrate that aerobic exercise significantly reduces psychiatric symptoms, potentially improves mental and physical quality of life and reduces metabolic risk and weight. Specifically, yoga reduces psychiatric symptoms, whilst Tai-chi and progressive muscle relaxation may also have benefits to patients. Two RCTs reported on adverse events. No adverse event was observed supporting the notion that physical therapy is safe in people with schizophrenia. There was considerable heterogeneity in the design, implementation and outcomes in the included studies precluding a meaningful meta-analysis. In general, the quality of physical therapy RCTS is improving and current research demonstrates that physical therapy approaches are valuable interventions and can help improve the psychiatric, physical and quality of life of people with schizophrenia.</td></tr>
<tr><td>Timeframe: July 2011–October 2014</td></tr>
<tr><td>Total # of Studies: 13</td></tr>
<tr><td>Exposure Definition: Physical exercise, including aerobic exercises, strength exercises, relaxation training, tai chi, yoga, or basic body awareness exercises.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of Life: Euro Quality of Life questionnaire (EQ-SD), Short Form -12, and World Health Organization Quality of Life BREF questionnaire. Subjective well-being also assessed.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Mean age range 22–64, Schizophrenia</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

<table>
<tr><th colspan="2">Adults</th></tr>
<tr><td colspan="2">Meta-Analysis
Citation: Wang F, Man JK, Lee EK, et al. The effects of Qigong on anxiety, depression, and psychological well-being: a systematic review and meta-analysis. Evid Based Complement Alternat Med. 2013;2013:152738. doi:10.1155/2013/152738.</td></tr>
<tr><td>Purpose: To review the effects of qigong on anxiety, depression, and psychological well-being outcomes.</td><td rowspan="5">Abstract: Introduction. The effect of Qigong on psychological well-being is relatively unknown. This study systematically reviewed the effects of Qigong on anxiety, depression, and psychological well-being. Methods. Using fifteen studies published between 2001 and 2011, a systematic review was carried out and meta-analyses were performed on studies with appropriate homogeneity. The quality of the outcome measures was also assessed. Results. We categorized these studies into three groups based on the type of subjects involved as follows: (1) healthy subjects, (2) subjects with chronic illnesses, and (3) subjects with depression. Based on the heterogeneity assessment of available studies, meta-analyses were conducted in three studies of patients with type II diabetes in the second group, which suggested that Qigong was effective in reducing depression (ES = -0.29; 95% CI, -0.58-0.00) and anxiety (ES = -0.37; 95% CI, -0.66-0.08), as measured by Symptom Checklist 90, and in improving psychological well-being (ES = -0.58; 95% CI, -0.91-0.25) as measured by Diabetes Specific Quality of Life Scale. Overall, the quality of research methodology of existing studies was poor. Conclusions. Preliminary evidence suggests that Gigong may have positive effects on psychological well-being among patients with chronic illnesses. However the published studies generally had significant methodological limitations. More high-quality studies are needed.</td></tr>
<tr><td>Timeframe: Inception–2011</td></tr>
<tr><td>Total # of Studies: 15</td></tr>
<tr><td>Exposure Definition: Interventions involving qigong were included. Most interventions ranged from 70 minutes to 4 months.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of Life (e.g., Short Form - 36 health survey)
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥18, Depression, Chronic illnesses</td><td>Author-Stated Funding Source: U.S. Centers for Disease Control and Prevention; Ministry of Science and Technology of the People's Republic of China.</td></tr>
</table>

<table>
<tr><th colspan="2">Older Adults</th></tr>
<tr><td colspan="2">Systematic Review
Citation: Weening-Dijksterhuis E, de Greef MH, Scherder EJ, Slaets JP, van der Schans CP. Frail institutionalized older persons: a comprehensive review on physical exercise, physical fitness, activities of daily living, and quality-of-life. Am J Phys Med Rehabil. 2011;90(2):156-168. doi:10.1097/PHM.0b013e3181f703ef.</td></tr>
<tr><td>Purpose: To propose criteria for an evidence-based exercise protocol aimed at frail institutionalized older people.</td><td rowspan="4">Abstract: The objective of this study was to perform a systematic review on training outcomes influencing physical fitness, activity of daily living performance, and quality-of-life in institutionalized older people. We reviewed 27 studies on older people (age, >/=70 yrs) in long-term care facilities and nursing homes. Our ultimate goal was to propose criteria for an evidence-based exercise protocol aimed at improving physical fitness, activity of daily living performance, and quality-of-life of frail institutionalized older people. The interventions, described in the reviewed studies that showed strong or very strong effect sizes were used to form an exercise prescription. The conclusion is that there is firm evidence for training effects on physical fitness, functional performance, activity of daily living performance, and quality-of-life. The training should contain a combination of progressive resistance training, balance training, and functional training. The proposed intensity is moderate to high, assessed on a 0-10 scale for muscle strengthening activities. The training frequency was three times a week, and the total duration was at least 10 wks.</td></tr>
<tr><td>Timeframe: 1955–2008</td></tr>
<tr><td>Total # of Studies: 27</td></tr>
<tr><td>Exposure Definition: Exercises included balance, strength training, functional performance, gait, tai chi, and flexibility. Most interventions lasted for at least 4 months and were performed 2 times a week for 45–60 minutes.
Measures Steps: No
Measures Bouts: No
Examines HIIT: No</td></tr>
<tr><td>Outcomes Addressed: Quality of life, operationalized as depression, vitality, and perceived health.
Examine Cardiorespiratory Fitness as Outcome: No</td></tr>
<tr><td>Populations Analyzed: Adults ≥70, Frail</td><td>Author-Stated Funding Source: Not reported.</td></tr>
</table>

Table 3. Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis Quality Assessment Chart

AMSTARExBP: SR/MA	Baker, 2007	Bize, 2007	Bouaziz, 2016	Bouaziz, 2017	Brown, 2011	Bullo, 2015	Chao, 2015
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	No	No	No	No	No	No	No
Comprehensive literature search performed.	Yes	Yes	Yes	Yes	Yes	Yes	Partially Yes
Duplicate study selection and data extraction performed.	No	Yes	No	Yes	No	No	No
Search strategy clearly described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relevant grey literature included in review.	No	No	No	No	No	No	No
List of studies (included and excluded) provided.	No	Yes	No	No	No	No	No
Characteristics of included studies provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FITT defined and examined in relation to outcome effect sizes.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	Partially Yes	Yes	Partially Yes	No	Yes	No
Results depended on study quality, either overall, or in interaction with moderators.	No	Yes	Yes	No	N/A	Yes	N/A
Scientific quality used appropriately in formulating conclusions.	Yes	Yes	Yes	Yes	N/A	Yes	N/A
Data appropriately synthesized and if applicable, heterogeneity assessed.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect size index chosen justified, statistically.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Individual-level meta-analysis used.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	No	No	No	No	No	No	No
Conflict of interest disclosed.	No	Yes	No	No	Yes	No	Yes

AMSTARExBP: SR/MA	Chou, 2012	Clegg, 2012	Cooney, 2013	Cramer, 2013	Dauwan, 2016	Forsman, 2011	Gillison, 2009
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	No	No	No	No	Yes	No	No
Comprehensive literature search performed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Duplicate study selection and data extraction performed.	No	Yes	Yes	Yes	No	Yes	No
Search strategy clearly described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relevant grey literature included in review.	No	No	Yes	Yes	No	No	No
List of studies (included and excluded) provided.	Yes	No	Yes	Yes	No	No	No
Characteristics of included studies provided.	Yes	Yes	Yes	Yes	Yes	No	Yes
FITT defined and examined in relation to outcome effect sizes.	No	N/A	Yes	No	No	No	Yes
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	Yes	Yes	Yes	Yes	Yes	No
Results depended on study quality, either overall, or in interaction with moderators.	No	Yes	Yes	No	Yes	Yes	N/A
Scientific quality used appropriately in formulating conclusions.	Yes	Yes	Yes	Yes	Yes	Yes	N/A
Data appropriately synthesized and if applicable, heterogeneity assessed.	Yes	N/A	Yes	Yes	Yes	Yes	Yes
Effect size index chosen justified, statistically.	Yes	N/A	Yes	Yes	Yes	Yes	Yes
Individual-level meta-analysis used.	No	N/A	No	No	No	No	No
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	No	No	Yes	No	Yes	No	No
Conflict of interest disclosed.	No	Yes	Yes	No	No	No	No

AMSTARExBP: SR/MA	Jahnke, 2010	Kelley, 2009	Lambert, 2016	Morey, 2008	Ojagbemi, 2017	Orgeta, 2014	Park, 2014
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	No	No	No	Yes	No	Yes	No
Comprehensive literature search performed.	Yes	Yes	Yes	N/A	Yes	Yes	Yes
Duplicate study selection and data extraction performed.	No	Yes	Yes	N/A	Yes	Yes	Yes
Search strategy clearly described.	Yes	No	Yes	N/A	Yes	Yes	Yes
Relevant grey literature included in review.	No	Yes	No	N/A	No	No	No
List of studies (included and excluded) provided.	No	No	No	N/A	Yes	No	No
Characteristics of included studies provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FITT defined and examined in relation to outcome effect sizes.	N/A	No	N/A	No	No	N/A	No
Scientific quality (risk of bias) of included studies assessed and documented.	No	Yes	Yes	No	Yes	Yes	Yes
Results depended on study quality, either overall, or in interaction with moderators.	N/A	Yes	No	N/A	No	Yes	No
Scientific quality used appropriately in formulating conclusions.	N/A	Yes	Yes	N/A	Yes	Yes	No
Data appropriately synthesized and if applicable, heterogeneity assessed.	N/A	Yes	N/A	No	Yes	N/A	Yes
Effect size index chosen justified, statistically.	N/A	Yes	N/A	Yes	Yes	N/A	Yes
Individual-level meta-analysis used.	N/A	No	N/A	No	No	N/A	No
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	No	Yes	No	N/A	No	No	Yes
Conflict of interest disclosed.	No	No	Yes	Yes	Yes	No	No

AMSTARExBP: SR/MA	Patel, 2012	Potter, 2011	Pucci, 2012	Raymond, 2013	Soga, 2017	Stevens, 2014	Suchert, 2015
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	No	No	No	No	No	No	No
Comprehensive literature search performed.	Yes	Yes	Partially Yes	Yes	Partially Yes	Yes	Yes
Duplicate study selection and data extraction performed.	Yes	Yes	Yes	No	No	Yes	No
Search strategy clearly described.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Relevant grey literature included in review.	No	No	No	Yes	No	No	No
List of studies (included and excluded) provided.	No	No	No	No	No	No	No
Characteristics of included studies provided.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FITT defined and examined in relation to outcome effect sizes.	No	No	N/A	Yes	No	N/A	N/A
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	Yes	No	Yes	No	Partially Yes	Yes
Results depended on study quality, either overall, or in interaction with moderators.	No	No	N/A	Yes	N/A	Yes	Yes
Scientific quality used appropriately in formulating conclusions.	Yes	Yes	N/A	Yes	N/A	No	Yes
Data appropriately synthesized and if applicable, heterogeneity assessed.	Yes	Yes	N/A	Yes	Yes	N/A	N/A
Effect size index chosen justified, statistically.	Yes	Yes	N/A	Yes	Yes	N/A	N/A
Individual-level meta-analysis used.	No	No	N/A	No	No	N/A	N/A
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	No	No	No	No	Yes	No	No
Conflict of interest disclosed.	Yes	Yes	No	No	No	Yes	Yes

AMSTARExBP: SR/MA	Tavares, 2014	Vagetti, 2014	Vancamp fort, 2012	Vendramin, 2016	Vera-Garcia, 2015	Wang, 2013	Weening-Dijkster huis, 2011
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	No	Yes	Yes	No	No	Yes	No
Comprehensive literature search performed.	Yes	Yes	Yes	Yes	Yes	Partially Yes	Yes
Duplicate study selection and data extraction performed.	No	No	Yes	Yes	No	Yes	No
Search strategy clearly described.	Yes	Yes	Yes	No	Yes	Yes	Yes
Relevant grey literature included in review.	No	No	Yes	No	Yes	No	No
List of studies (included and excluded) provided.	No	No	Yes	No	No	Yes	No
Characteristics of included studies provided.	Yes	No	Yes	Yes	Yes	Yes	Yes
FITT defined and examined in relation to outcome effect sizes.	N/A	N/A	N/A	N/A	N/A	No	N/A
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Results depended on study quality, either overall, or in interaction with moderators.	No	No	Yes	No	No	Yes	Yes
Scientific quality used appropriately in formulating conclusions.	Yes	Yes	Yes	No	Yes	Yes	Yes
Data appropriately synthesized and if applicable, heterogeneity assessed.	N/A	N/A	N/A	N/A	N/A	Yes	N/A
Effect size index chosen justified, statistically.	N/A	N/A	N/A	N/A	N/A	Yes	N/A
Individual-level meta-analysis used.	N/A	N/A	N/A	N/A	N/A	No	N/A
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	No	No	No	No	No	No	No
Conflict of interest disclosed.	Yes	Yes	No	No	No	Yes	Yes

Appendices

Appendix A: Analytical Framework

Topic Area
Brain Health

Systematic Review Questions

What is the relationship between physical activity and quality-of-life?

a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?

Population
People of all ages, including healthy people and people with psychiatric disorders or cognitive impairment

Exposure
All types and intensities of physical activity, including free-living activities, sedentary behavior, and play

Comparison
People who participate in varying levels of physical activity

Endpoint Health Outcomes

- Quality of Life
  - General references to the topic of "quality of life"
  - Health-Related Quality of Life (HRQoL)
  - Social Quality of Life
  - Life satisfaction/Satisfaction with life

Key Definitions

- Quality of Life: "Quality of life, rather than being a description of patients' health status, is a reflection of the way that patients perceive and react to their health status and to other, nonmedical aspects of their lives" (Source: Gill TM, Feinstein AR. A critical appraisal of the quality of quality-of-life measurements. *JAMA*. 1994;272(8):619-626.)

Appendix B: Final Search Strategy

Search Strategy: PubMed (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: PubMed; Date of Search: 3-27-17; 1,627 results

Set	Search Terms
Limit: Language	(English[lang])
Limit: Exclude animal only	NOT ("Animals"[Mesh] NOT ("Animals"[Mesh] AND "Humans"[Mesh]))
Limit: Publication Date (SR/MA)	AND ("2006/01/01"[PDAT] : "3000/12/31"[PDAT])
Limit: Publication Type Include (SR/MA)	AND (systematic[sb] OR meta-analysis[pt] OR "systematic review"[tiab] OR "systematic literature review"[tiab] OR metaanalysis[tiab] OR "meta analysis"[tiab] OR metanalyses[tiab] OR "meta analyses"[tiab] OR "pooled analysis"[tiab] OR "pooled analyses"[tiab] OR "pooled data"[tiab])
Limit: Publication Type Exclude (SR/MA)	NOT ("comment"[Publication Type] OR "editorial"[Publication Type])
Physical Activity	AND (("Exercise"[mh] OR "Exercise"[tiab] OR "Physical activity"[tiab] OR "Sedentary lifestyle"[mh] OR "Lifestyle activities"[tiab] OR "Lifestyle activity"[tiab] OR "Recreational activities"[tiab] OR "Recreational activity"[tiab] OR "Tai ji"[mh] OR "Yoga"[mh] OR "Balance training"[tiab] OR "Qigong"[mh] OR "Functional training"[tiab] OR ("Recess" AND ("Child" OR "Youth")) OR "Physical education and Training"[mh] OR "Free living activities"[tiab] OR "Free living activity"[tiab] OR "motor skills"[mh] OR "motor performance"[tiab] OR "Computer time"[tiab] OR "Computer use"[tiab] OR "Screen time"[tiab] OR "Sitting"[tiab] OR "Television"[tiab] OR "TV viewing"[tiab] OR "TV watching"[tiab] OR "Video game"[tiab] OR "Video gaming"[tiab]) OR (("Aerobic activities"[tiab] OR "Aerobic activity"[tiab] OR "Cardiovascular activities"[tiab] OR "Cardiovascular activity"[tiab] OR "Endurance activities"[tiab] OR "Endurance activity"[tiab] OR "Physical activities"[tiab] OR "Physical conditioning"[tiab] OR "Resistance training"[tiab] OR "strength training"[tiab] OR "Sedentary"[tiab] OR "Tai chi"[tiab] OR "Tai ji"[tiab] OR "Yoga"[tiab] OR "Walk"[tiab] OR "Walking"[tiab] OR "Chi kung"[tiab] OR "Qigong"[tiab] OR "stretching"[tiab] OR "Physical education"[tiab] OR "motor skills"[tiab] OR "motor skill"[tiab] OR "Inactivity"[tiab] OR "Physically inactive"[tiab] OR "Sedentarism"[tiab]) NOT medline[sb]))
Quality of Life	AND ("HRQOL"[tiab] OR "Quality of life"[tiab] OR "Quality of life"[mh] OR "Life quality"[tiab] OR "life satisfaction"[tiab] OR "Satisfaction with life"[tiab])

Search Strategy: CINAHL (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: CINAHL; Date of Search: 3-27-17; 35 results
Terms searched in title or abstract

Set	Search Terms
Physical Activity	("Aerobic activities" OR "Aerobic activity" OR "Cardiovascular activities" OR "Cardiovascular activity" OR "Endurance activities" OR "Endurance activity" OR "Exercise" OR "Physical activity" OR "Physical activities" OR "Physical conditioning" OR "Resistance training" OR "strength training" OR "Sedentary" OR "Lifestyle activities" OR "Lifestyle activity" OR "Recreational activities" OR "Recreational activity" OR "Tai chi" OR "Tai ji" OR "Yoga" OR "Walk" OR "Walking" OR "Balance training" OR "Chi kung" OR "Qigong" OR "Functional training" OR "stretching" OR (Recess AND (Child OR Youth)) OR “Physical education” OR "Free living activities" OR "Free living activity" OR "motor skills" OR "motor skills" OR "motor skill" OR "motor performance" OR "Inactivity" OR "Physically inactive" OR “Sedentarism” OR "Computer time" OR "Computer use" OR "Screen time" OR "Sitting" OR "Television" OR "TV viewing" OR "TV watching" OR "Video game" OR "Video gaming")
Quality of Life	AND ("HRQOL" OR "Quality of life" OR "Life quality" OR "life satisfaction" OR "Satisfaction with life")
Limit: Publication Type Include (SR/MA)	AND (“systematic review” OR “systematic literature review” OR "metaanalysis" OR "meta analysis" OR metanalyses OR "meta analyses" OR "pooled analysis" OR “pooled analyses” OR "pooled data")
Limits	2006-present English language Peer reviewed Exclude Medline records Human

Search Strategy: Cochrane (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: Cochrane; Date of Search: 3-30-17, 455 results
Terms searched in title, abstract, or keywords

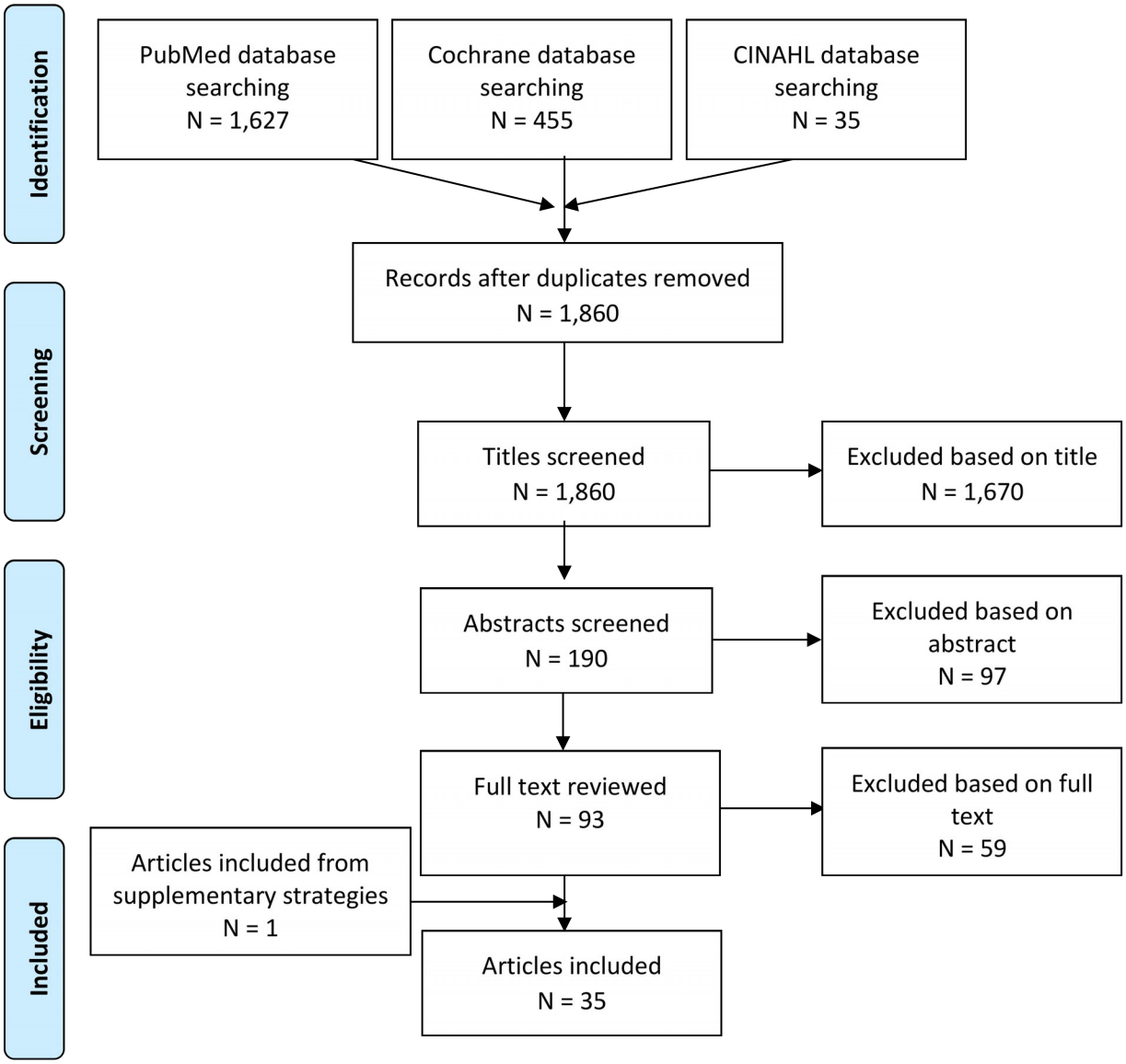
Set	Search Terms
Physical Activity	("Aerobic activities" OR "Aerobic activity" OR "Cardiovascular activities" OR "Cardiovascular activity" OR "Endurance activities" OR "Endurance activity" OR "Exercise" OR "Physical activity" OR "Physical activities" OR "Physical conditioning" OR "Resistance training" OR "strength training" OR "Sedentary" OR "Lifestyle activities" OR "Lifestyle activity" OR "Recreational activities" OR "Recreational activity" OR "Tai chi" OR "Tai ji" OR "Yoga" OR "Walk" OR "Walking" OR "Balance training" OR "Chi kung" OR "Qigong" OR "Functional training" OR "stretching" OR (Recess AND (Child OR Youth)) OR "Physical education" OR "Free living activities" OR "Free living activity" OR "motor skills" OR "motor skills" OR "motor skill" OR "motor performance" OR "Inactivity" OR "Physically inactive" OR "Sedentarism" OR "Computer time" OR "Computer use" OR "Screen time" OR "Sitting" OR "Television" OR "TV viewing" OR "TV watching" OR "Video game" OR "Video gaming")
Quality of Life	AND ("HRQOL" OR "Quality of life" OR "Life quality" OR "life satisfaction" OR "Satisfaction with life")
Limits	2006-present Word variations not searched Cochrane Reviews (Reviews) and Other Reviews

Supplementary Strategies

At full text review members of the Physical Activity Guidelines Brain Health Subcommittee identified one relevant article[27] that was not captured by the search strategies.

Appendix C: Literature Tree

Existing Systematic Reviews, Meta-Analyses, Pooled Analyses, and Reports Literature Tree



Appendix D: Inclusion/Exclusion Criteria

Brain Health Subcommittee

Q2: What is the relationship between physical activity and quality-of-life?

a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?

Category	Inclusion/Exclusion Criteria	Notes/Rationale
Publication Language	**Include:** • Studies published with full text in English	
Publication Status	**Include:** • Studies published in peer-reviewed journals • Reports determined to have appropriate suitability and quality by PAGAC **Exclude:** • Grey literature, including unpublished data, manuscripts, abstracts, conference proceedings	
Research Type	**Include:** • Original research • Meta-analyses • Systematic reviews • Pooled analysis • Reports determined to have appropriate suitability and quality by PAGAC	
Study Subjects	**Include:** • Human subjects	
Age of Study Subjects	**Include:** • People of all ages	
Health Status of Study Subjects	**Include:** • Healthy people • People with psychiatric disorders or cognitive impairment **Exclude:** • People with chronic conditions only (other than psychiatric conditions) • Hospitalized patients only • Athletes only	Sample disorders include: anxiety, mood, depression, schizophrenia, ADHD, dementia, mild cognitive impairment.
Comparison	**Exclude:** • Studies comparing athlete types (e.g., comparing runners to soccer players)	
Date of Publication	**Include:** • Original research published since 2006 • Systematic reviews, meta-analyses, pooled analyses, and reports published since 2006	The subcommittee revised inclusion dates from 2006–2017 to 2011–2017 after

		the search strategy was implemented due to substantial amount of relevant recent literature.
Study Design	**Include:** • Randomized controlled trials • Non-randomized controlled trials • Prospective cohort studies • Retrospective cohort studies • Case-control studies • Before-and-after studies • Time series studies • Systematic reviews • Meta-analyses • Pooled analysis • Report **Exclude:** • Cross-sectional studies • Narrative reviews • Commentaries • Editorials	
Intervention/ Exposure	**Include studies in which the exposure or intervention is:** All types and intensities of physical activity, including: • Free-living activities • Play • Sedentary behavior **Exclude:** • Studies that do not include physical activity • Studies with single, acute bouts of exercise as the exposure • Studies with physical fitness as the exposure • Studies of a specific therapeutic exercise delivered by a medical professional (e.g., physical therapist) • Studies of multimodal interventions that do not present data on physical activity alone • Studies where physical activity is only used as a confounding variable	

Outcome	**Include studies in which the outcome is:**
	• Quality of life, including:
	  ○ General references to the topic of "quality of life"
	  ○ Health-Related Quality of Life (HRQoL)	

	○ Social Quality of Life ○ Life satisfaction/satisfaction with life **Exclude studies in which the outcome is:** • Financial quality of life • Exclude "well-being" or its derivatives, such as subjective well-being, positive well-being, or psychological well-being as those concepts typically blend cognitive/evaluative and affective components and this question is limited to the cognitive/evaluative aspects.	

Appendix E: Rationale for Exclusion at Abstract or Full-Text Triage for Existing Systematic Reviews, Meta-Analyses, Pooled Analyses, and Reports

The table below lists the excluded articles with at least one reason for exclusion, but may not reflect all possible reasons.

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Health Quality Ontario. Social isolation in community-dwelling seniors: an evidence-based analysis. *Ont Health Technol Assess Ser.* 2008;8(5):1-49.				X		
Abariga S, Wang C. P04.29. Tai chi and health related quality of life: a systematic review and meta-analysis of randomized controlled trials. *BMC Complement Altern Med.* 2012;12(Suppl 1):1-1. doi:10.1186/1472-6882-12-S1-P299.			X			
Ambrosino N, Janah N, Gabbrielli L. Assessing the benefits: outcome and future directions. *Eur J Phys Rehabil Med.* 2011;47(3):499-505.				X		
Amorim JS, Salla S, Trelha CS. Factors associated with work ability in the elderly: systematic review. *Rev Bras Epidemiol.* 2014;17(4):830-841.				X		
Arteburn DE. Obesity in children. *BMJ Clin Evid.* 2007;2007:pii:0325.	X					
Baillot A, Romain AJ, Boisvert-Vigneault K, et al. Effects of lifestyle interventions that include a physical activity component in class II and III obese individuals: a systematic review and meta-analysis. *PLoS One.* 2015;10(4):e0119017. https://doi.org/10.1371/journal.pone.0119017.				X		
Bain E, Crane M, Tieu J, Han S, Crowther CA, Middleton P. Diet and exercise interventions for preventing gestational diabetes mellitus. *Cochrane Database Syst Rev.* 2015;(4):Cd010443. doi:10.1002/14651858.CD010443.pub2.				X		
Baker G, Gray SR, Wright A, et al; Scottish Physical Activity Research Collaboration. The effect of a pedometer-based community walking intervention "Walking for Wellbeing in the West" on physical activity levels and health outcomes: a 12-week randomized controlled trial. *Int J Behav Nutr Phys Act.* 2008;5:44. doi:10.1186/1479-5868-5-44.			X			
Bartlo P, Klein PJ. Physical activity benefits and needs in adults with intellectual disabilities: systematic review of the literature. *Am J Intellect Dev Disabil.* 2011;116(3):220-232. doi:10.1352/1944-7558-116.3.220.		X				
Batsis JA, Gill LE, Masutani RK, et al. Weight loss interventions in older adults with obesity: a systematic review of randomized controlled trials since 2005. *J Am Geriatr Soc.* 2017;65(2):257-268. doi:10.1111/jgs.14514.				X		

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Bolle S, van Weert JC, Daams JG, Loos EF, de Haes HC, Smets EM. Online health information tool effectiveness for older patients: a systematic review of the literature. *J Health Commun.* 2015;20(9):1067-1083.				X		
Bray NW, Smart RR, Jakobi JM, Jones GR. Exercise prescription to reverse frailty. *Appl Physiol Nutr Metab.* 2016;41(10):1112-1116. https://doi.org/10.1139/apnm-2016-0226.			X			
Broderick J, Knowles A, Chadwick J, Vancampfort D. Yoga versus standard care for schizophrenia. *Cochrane Database Syst Rev.* 2015;(10):Cd010554. doi:10.1002/14651858.CD010554.pub2.					X	
Buchan DS, Ollis S, Thomas NE, Baker JS. The influence of a high intensity physical activity intervention on a selection of health related outcomes: an ecological approach. *BMC Public Health.* 2010;10:8. doi:10.1186/1471-2458-10-8.			X			
Caddick N, Smith B. The impact of sport and physical activity on the well-being of combat veterans: a systematic review. *Psychol Sport Exerc.* 2014;15(1):9-18.			X			
Campbell F, Holmes M, Everson-Hock E. A systematic review and economic evaluation of exercise referral schemes in primary care: a short report. *Health Technol Assess.* 2015;19(60):1-110. doi:10.3310/hta19600.	X					
Campos RR, Dias JM, Pereira LM, et al. Effect of the Pilates method on physical conditioning of healthy subjects: a systematic review and meta-analysis. *J Sports Med Phys Fitness.* 2016;56(7-8):864-873.					X	
Canoy D, Bundred P. Obesity in children. *BMJ Clin Evid.* April 2011. pii: 0325.	X					
Carr SM, Lhussier M, Forster N, et al. An evidence synthesis of qualitative and quantitative research on component intervention techniques, effectiveness, cost-effectiveness, equity and acceptability of different versions of health-related lifestyle advisor role in improving health. *Health Technol Assess.* 2011;15(9):iii-iv, 1-284. doi:10.3310/hta15090.	X					
Chalder M, Wiles NJ, Campbell J, et al. A pragmatic randomised controlled trial to evaluate the cost-effectiveness of a physical activity intervention as a treatment for depression: the treating depression with physical activity (TREAD) trial. *Health Technol Assess.* 2012;16(10):1-164, iii-iv. doi:10.3310/hta16100.			X			

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Chan WC, Yeung JW, Wong CS, et al. Efficacy of physical exercise in preventing falls in older adults with cognitive impairment: a systematic review and meta-analysis. *J Am Med Dir Assoc.* 2015;16(2):149-154. doi:10.1016/j.jamda.2014.08.007.	X					
Cheng C, Cheung MW, Lo BC. Relationship of health locus of control with specific health behaviours and global health appraisal: a meta-analysis and effects of moderators. *Health Psychol Rev.* 2016;10(4):460-477.doi:http://dx.doi.org/10.1080/17437199.2016.1219672				X		
Chou CH, Hwang CL, Wu YT. Effect of exercise on physical function, daily living activities, and quality of life in the frail older adults: a meta-analysis. *Arch Phys Med Rehabil.* 2012;93(2):237-244. doi:10.1016/j.apmr.2011.08.042.		X				
Clegg AP, Barber SE, Young JB, Forster A, Iliffe SJ. Do home-based exercise interventions improve outcomes for frail older people? Findings from a systematic review. *Rev Clin Gerontol.* 2012;22(1):68-78. doi:10.1017/S0959259811000165.		X				
Colquitt JL, Loveman E, O'Malley C, et al. Diet, physical activity, and behavioural interventions for the treatment of overweight or obesity in preschool children up to the age of 6 years. *Cochrane Database Syst Rev.* 2016;3:Cd012105. doi:10.1002/14651858.CD012105.	X					
Conn VS, Hafdahl AR, Brown LM. Meta-analysis of quality-of-life outcomes from physical activity interventions. *Nurs Res.* 2009;58(3):175-183. doi:10.1097/NNR.0b013e318199b53a.		X				
Conn VS, Hafdahl AR, Cooper PS, Brown LM, Lusk SL. Meta-analysis of workplace physical activity interventions. *Am J Prev Med.* 2009;37(4):330-339. doi:10.1016/j.amepre.2009.06.008.	X			X		
Cooper C, Mukadam N, Katona C, et al; World Federation of Biological Psychiatry – Old Age Taskforce. Systematic review of the effectiveness of non-pharmacological interventions to improve quality of life of people with dementia. *Int Psychogeriatr.* 2012;24(6):856-870. doi:10.1017/S1041610211002614.				X		
Cortese S, Tessari L. Attention-deficit/hyperactivity disorder (ADHD) and obesity: update 2016. *Curr Psychiatry Rep.* 2017;19(1):4. doi:10.1007/s11920-017-0754-1.	X			X		

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Cramer H, Lauche R, Haller H, Dobos G. A systematic review and meta-analysis of yoga for low back pain. *Clin J Pain.* 2013;29(5):450-460. doi:10.1097/AJP.0b013e31825e1492.		X				
Cramer H, Lauche R, Klose P, Langhorst J, Dobos G. Yoga for schizophrenia: a systematic review and meta-analysis. *BMC Psychiatry.* 2013;13:32. doi:10.1186/1471-244X-13-32.						
Curtis K, Weinrib A, Katz J. Systematic review of yoga for pregnant women: current status and future directions. *Evid Based Complement Alternat Med.* August 2012:715942. doi:10.1155/2012/715942.		X				
de Souza Moura AM, Lamego MK, Paes F, et al. Comparison among aerobic exercise and other types of interventions to treat depression: a systematic review. *CNS Neurol Disord Drug Targets.* 2015;14(9):1171-1183. doi:10.2174/1871527315666151111120714.	X					
de Vries NM, van Ravensberg CD, Hobbelen JS, et al. The Coach2Move approach: development and acceptability of an individually tailored physical therapy strategy to increase activity levels in older adults with mobility problems. *J Geriatr Phys Ther.* 2015;38(4):169-182. doi:10.1519/JPT.0000000000000038.	X					
Ebrahim S, Adamson J, Ayis S, Beswick A, Gooberman-Hill R. Locomotor disability: meaning, causes and effects of interventions. *J Health Serv Res Policy.* 2008;13(Suppl 3):38-46. doi:10.1258/jhsrp.2008.008013.			X			
Feltner C, Peterson K, Palmieri Weber R, et al. The effectiveness of total worker health interventions: a systematic review for a National Institutes of Health Pathways to Prevention workshop. *Ann Intern Med.* 2016;165(4):262-269. doi:10.7326/M16-0626.				X		
Fernández-Argüelles EL, Rodríguez-Mansilla J, Antunez LE, Garrido-Ardila EM, Muñoz RP. Effects of dancing on the risk of falling related factors of healthy older adults: a systematic review. *Arch Gerontol Geriatr.* 2015;60(1):1-8. doi:10.1016/j.archger.2014.10.003.	X					
Forbes D, Thiessen EJ, Blake CM, Forbes SC, Forbes S. Exercise programs for people with dementia. *Cochrane Database Syst Rev.* 2015;(4):Cd006489. doi:10.1002/14651858.CD006489.pub3.	X					
Forbes D, Forbes S, Morgan DG, Markle-Reid M, Wood J, Culum I. Physical activity programs for persons with dementia. *Cochrane Database Syst Rev.* 2008;(3):Cd006489. doi:10.1002/14651858.CD006489.pub2.	X					

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Forbes D, Thiessen EJ, Blake CM, Forbes SC, Forbes S. Exercise programs for people with dementia. *Cochrane Database Syst Rev.* 2013;(12):Cd006489. doi:10.1002/14651858.CD006489.pub3.		X				
Forsman AK, Schierenbeck I, Wahlbeck K. Psychosocial interventions for the prevention of depression in older adults: systematic review and meta-analysis. *J Aging Health.* 2011;23(3):387-416. doi:10.1177/0898264310378041.				X		
Fox B, Hodgkinson B, Parker D. The effects of physical exercise on functional performance, quality of life, cognitive impairment and physical activity levels for older adults aged 65 years and older with a diagnosis of dementia: a systematic review. *JBI Database System Rev Implement Rep.* 2014;12(9):158-276. doi:10.11124/jbisrir-2014-1714.					X	
Freak-Poli RL, Cumpston M, Peeters A, Clemes SA. Workplace pedometer interventions for increasing physical activity. *Cochrane Database Syst Rev.* 2013;(4):Cd009209. doi:10.1002/14651858.CD009209.pub2.	X					
Fritschi JO, Brown WJ, Laukkanen R, van Uffelen JG. The effects of pole walking on health in adults: a systematic review. *Scand J Med Sci Sports.* 2012;22(5):e70-e8. doi:10.1111/j.1600-0838.2012.01495.x.		X				
Galantino ML, Galbavy R, Quinn L. Therapeutic effects of yoga for children: a systematic review of the literature. *Pediatr Phys Ther.* 2008;20(1):66-80. doi:10.1097/PEP.0b013e31815f1208.				X		
Galaviz KI, Harden SM, Smith E, et al. Physical activity promotion in Latin American populations: a systematic review on issues of internal and external validity. *Int J Behav Nutr Phys Act.* 2014;11:77. doi:10.1186/1479-5868-11-77.	X					
Garbers S, McDonnell S, Fogel C, et al. Aging, weight, and health among adult lesbian and bisexual women: a metasynthesis of the multisite "Healthy Weight Initiative" focus groups. *LGBT Health.* 2015;2(2):176-187. doi:10.1089/lgbt.2014.0082.			X			
Gartlehner G, Gaynes BN, Amick HR, et al. AHRQ comparative effectiveness reviews. *Nonpharmacological versus pharmacological treatments for adult patients with major depressive disorder*. Rockville, MD: Agency for Healthcare Research and Quality; 2015. Report No.: 15(16)-EHC031-EF.	X					

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Garvey WT, Mechanick JI, Brett EM, et al. American Association of Clinical Endocrinologists and American College of Endocrinology comprehensive clinical practice guidelines for medical care of patients with obesity. *Endocr Pract.* 2016;22(Suppl 3):1-203. doi:10.4158/EP161365.GL.	X					
Gates S, Fisher JD, Cooke MW, Carter YH, Lamb SE. Multifactorial assessment and targeted intervention for preventing falls and injuries among older people in community and emergency care settings: systematic review and meta-analysis. *BMJ.* 2008;336(7636):130-133. doi:https://doi.org/10.1136/bmj.39412.525243.BE.				X		
Gómez-Cabello A, Ara I, González-Agüero A, Casajús JA, Vicente-Rodriguez G. Effects of training on bone mass in older adults: a systematic review. *Sports Med.* 2012;42(4):301-25. doi:10.2165/11597670-000000000-00000.	X					
Goodman JM, Burr JF, Banks L, Thomas SG. The acute risks of exercise in apparently healthy adults and relevance for prevention of cardiovascular events. *Can J Cardiol.* 2016;32(4):523-532. doi:10.1016/j.cjca.2016.01.019.	X					
Goodman JM, Thomas SG, Burr J. Evidence-based risk assessment and recommendations for exercise testing and physical activity clearance in apparently healthy individuals. *Appl Physiol Nutr Metab.* 2011;36(Suppl 1):S14-S32. doi:10.1139/h11-048.	X					
Gorczynski P, Faulkner G. Exercise therapy for schizophrenia. *Cochrane Database Syst Rev.* 2010;(5):Cd004412. doi:10.1002/14651858.CD004412.pub2.						X
Gorczynski P, Faulkner G. Exercise therapy for schizophrenia. *Schizophr Bull.* 2010;36(4):665-666. doi:10.1093/schbul/sbq049.						X
Graveling R, Crawford JO, Cowie H, Amati C, Vohra S. A review of workplace interventions that promote mental wellbeing in the workplace. *Database of Abstracts of Reviews of Effects.* 2008;(2):1.				X		
Hagen KB, Dagfinrud H, Moe RH, et al. Exercise therapy for bone and muscle health: an overview of systematic reviews. *BMC Med.* 2012;10:167. doi:10.1186/1741-7015-10-167.	X					
Han TS, Tajar A, Lean ME. Obesity and weight management in the elderly. *Br Med Bull.* 2011;97:169-196. doi:10.1093/bmb/ldr002.	X					

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Hartley L, Dyakova M, Holmes J, et al. Yoga for the primary prevention of cardiovascular disease. *Cochrane Database Syst Rev.* 2014;(5):Cd010072. doi:10.1002/14651858.CD010072.pub2.					X	
Hartley L, Flowers N, Lee MS, Ernst E, Rees K. Tai chi for primary prevention of cardiovascular disease. *Cochrane Database Syst Rev.* 2014;(4):Cd010366. doi:10.1002/14651858.CD010366.pub2.					X	
Hartley L, Lee MS, Kwong JS, et al. Qigong for the primary prevention of cardiovascular disease. *Cochrane Database Syst Rev.* 2015;(6):Cd010390. doi:10.1002/14651858.CD010390.pub2.	X					
Hartmann-Boyce J, Johns DJ, Jebb SA, Summerbell C, Aveyard P; Behavioural Weight Management Review Group. Behavioural weight management programmes for adults assessed by trials conducted in everyday contexts: systematic review and meta-analysis. *Obes Rev.* 2014;15(11):920-932. doi:10.1111/obr.12220.				X		
Hempel S, Taylor SL, Solloway MR, et al. VA Evidence-based Synthesis Program Reports. *Evidence Map of Tai Chi.* 2014.			X			
Hind D, Scott EJ, Copeland R, et al. A randomised controlled trial and cost-effectiveness evaluation of "booster" interventions to sustain increases in physical activity in middle-aged adults in deprived urban neighbourhoods. *BMC Public Health.* 2010;10:3. doi:10.1186/1471-2458-10-3.			X			
Horr T, Messinger-Rapport B, Pillai JA. Systematic review of strengths and limitations of randomized controlled trials for non-pharmacological interventions in mild cognitive impairment: focus on Alzheimer's disease. *J Nutr Health Aging.* 2015;19(2):141-153. doi:10.1007/s12603-014-0565-6.	X		X			
Hosking J, Macmillan A, Connor J, Bullen C, Ameratunga S. Organisational travel plans for improving health. *Cochrane Database Syst Rev.* 2010;(3):Cd005575. doi:10.1002/14651858.CD005575.pub3.						X
Hua Y, Wang B, Wallen GR, Shao P, Ni C, Hua Q. Health-promoting lifestyles and depression in urban elderly Chinese. *PLoS One.* 2015;10(3):e0117998. https://doi.org/10.1371/journal.pone.0117998			X			

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Hughes AR, Stewart L, Chapple J, et al. Randomized, controlled trial of a best-practice individualized behavioral program for treatment of childhood overweight: Scottish Childhood Overweight Treatment Trial (SCOTT). *J Pediatr*. 2008. 121(3):e539-e546. doi:10.1542/peds.2007-1786.	X					
Husk K, Lovell R, Cooper C, Stahl-Timmins W, Garside R. Participation in environmental enhancement and conservation activities for health and well-being in adults: a review of quantitative and qualitative evidence. *Cochrane Database Syst Rev.* 2016;(5):Cd010351. doi:10.1002/14651858.CD010351.pub2.				X		
Hutfless S, Gudzune KA, Maruthur N, et al. Strategies to prevent weight gain in adults: a systematic review. *Am J Prev Med.* 2013;45(6):e41-e51. doi:10.1016/j.amepre.2013.07.013.	X					
Iliffe S, Kendrick D, Morris R, et al. Multicentre cluster randomised trial comparing a community group exercise programme and home-based exercise with usual care for people aged 65 years and over in primary care. *Health Technol Assess.* 2014;18(49):vii-xxvii, 1-105. doi:10.3310/hta18490.			X			
Irwin ML, Fabian C, McTiernan A. Risk reduction from weight management and physical activity interventions. *Adv Exp Med Biol.* 2015;862:193-212. doi:10.1007/978-3-319-16366-6_13.		X				
Isaacs AJ, Critchley JA, Tai SS, et al. Exercise Evaluation Randomised Trial (EXERT): a randomised trial comparing GP referral for leisure centre-based exercise, community-based walking and advice only. *Health Technol Assess.* 2007;11(10):1-165, iii-iv.			X			
Ishigaki EY, Ramos LG, Carvalho ES, Lunardi AC. Effectiveness of muscle strengthening and description of protocols for preventing falls in the elderly: a systematic review. *Braz J Phys Ther.* 2014;18(2):111-118. doi:10.1590/S1413-35552012005000148.	X					
Iwasaki Y, Coyle CP, Shank JW. Leisure as a context for active living, recovery, health and life quality for persons with mental illness in a global context. *Health Promot Int.* 2010;25(4):483-494. doi:10.1093/heapro/daq037.			X			
Jackson CF, Makin SM, Marson AG, Kerr M. Non-pharmacological interventions for people with epilepsy and intellectual disabilities. *Cochrane Database of Systematic Reviews.* 2015;(9). Art. No.: CD005502. doi:10.1002/14651858.CD005502.pub3.				X		

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Jago R, Edwards MJ, Sebire SJ, et al. Bristol Girls Dance Project: a cluster randomised controlled trial of an after-school dance programme to increase physical activity among 11- to 12-year-old girls. *Public Health Research.* 2016.			X			
James EL, Ewald B, Johnson N, et al. Efficacy of GP referral of insufficiently active patients for expert physical activity counseling: protocol for a pragmatic randomized trial (The NewCOACH trial). *BMC Fam Pract.* 2014;15:218.			X			
Jones WS, Schmit KM, Vemulapalli S, et al. AHRQ Comparative Effectiveness Reviews. *Treatment strategies for patients with peripheral artery disease.* 2013. Available from: https://www.ncbi.nlm.nih.gov/books/NBK42934		X				
Jones GL, Sutton A. Quality of life in obese postmenopausal women. *Menopause Int.* 2008;14(1):26-32. doi:10.1258/mi.2007.007034.				X		
Kansagara D, Dyer E, Englander H, Fu R, Freeman M, Kagen D. VA Evidence-based Synthesis Program Reports. Treatment of anemia in patients with heart disease: a systematic review. 2011. doi:10.7326/0003-4819-159-11-201312030-00007.		X				
Katalinic OM, Harvey LA, Herbert RD. Effectiveness of stretch for the treatment and prevention of contractures in people with neurological conditions: a systematic review. *Phys Ther.* 2011;91(1):11-24. doi:10.2522/ptj.20100265.	X					
Kjaer M. Retraction. The relationship between physical activity and health-related quality of life: a systematic review of current evidence. *Scand J Med Sci Sports.* 2010;20(2):366. doi:10.1111/j.1600-0838.2010.01113.x						X
Klavestrand J, Vingard E. Retraction. The relationship between physical activity and health-related quality of life: a systematic review of current evidence. *Scand J Med Sci Sports.* 2009;19(3):300-12. doi:10.1111/j.1600-0838.2009.00939.x.					X	
Knapen J, Vancampfort D, Morien Y, Marchal Y. Exercise therapy improves both mental and physical health in patients with major depression. *Disabil Rehabil.* 2015;37(16):1490-1495. doi:10.3109/09638288.2014.972579.			X			
Kothari A, Gore D, MacDonald M, Bursey G, Allan D, Scarr J; Renewal of Public Health Systems Research Team. Chronic disease prevention policy in British Columbia and Ontario in light of public health renewal: a comparative policy analysis. *BMC Public Health.* 2013;13:934. doi: 10.1186/1471-2458-13-934.			X			

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Kuramoto AM. Therapeutic benefits of Tai Chi exercise: research review. *WMJ.* 2006;105(7):42-46.					X	
Lach HW, Harrison BE, Phongphanngam S. Falls and fall prevention in older adults with early-stage dementia: an integrative review. *Res Gerontol Nurs.* 2016;10(3):1-10. doi:10.3928/19404921-20160908-01.	X					
Lin JS, O'Connor E, Evans CV, Senger CA, Rowland MG, Groom HC. *U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews.* Behavioral counseling to promote a healthy lifestyle for cardiovascular disease prevention in persons with cardiovascular risk factors: an updated systematic evidence review for the U.S. Preventive Services Task Force. 2014.				X		
Littbrand H, Stenvall M, Rosendahl E. Applicability and effects of physical exercise on physical and cognitive functions and activities of daily living among people with dementia: a systematic review. *Am J Phys Med Rehabil*. 2011;90(6):495-518. doi:10.1097/PHM.0b013e318214de26.	X					
Ljubuncic P, Globerson A, Reznick AZ. Evidence-based roads to the promotion of health in old age*. J Nutr Health Aging.* 2008;12(2):139-143.			X			
Loitz CC, Potter RJ, Walker JL, McLeod NC, Johnston NJ. The effectiveness of workplace interventions to increase physical activity and decrease sedentary behaviour in adults: protocol for a systematic review. *Syst Rev*. 2015;4:178. doi.org/10.1186/s13643-015-0166-4.			X			
Malchow B, Reich-Erkelenz D, Oertel-Knochel V, et al. The effects of physical exercise in schizophrenia and affective disorders. *Eur Arch Psychiatry Clin Neurosci.* 2013;263(6):451-467. doi:10.1007/s00406-013-0423-2.			X			
Mammen G, Faulkner G. Physical activity and the prevention of depression: a systematic review of prospective studies. *Am J Prev Med.* 2013;45(5):649-657. doi:10.1016/j.amepre.2013.08.001.	X					
Mastellos N, Gunn LH, Felix LM, Car J, Majeed A. Transtheoretical model stages of change for dietary and physical exercise modification in weight loss management for overweight and obese adults. *Cochrane Database Syst Rev.* 2014;(2):Cd008066. doi:10.1002/14651858.CD008066.pub3.	X					
Meekums B, Karkou V, Nelson EA. Dance movement therapy for depression (Review). *Cochrane Database Syst Rev.* 2015;(2). doi:10.1002/14651858.CD009895.pub2.				X		

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
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Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Peirson L, Fitzpatrick-Lewis D, Morrison K, Warren R, Usman Ali M, Raina P. Treatment of overweight and obesity in children and youth: a systematic review and meta-analysis. *CMAJ Open*. 2015;3(1):E35-E46. doi:10.9778/cmajo.20140047.				X		
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Sharifah WW, Nur HH, Ruzita AT, Roslee R, Reilly JJ. The Malaysian Childhood Obesity Treatment Trial (MASCOT). *Malays J Nutr.* 2011;17(2):229-236.			X			
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Uhlig K, Balk EM, Earley A, et al. *AHRQ Technology Assessments.* Assessment on implantable defibrillators and the evidence for primary prevention of sudden cardiac death. 2013.				X		
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