This systematic review examines the evidence for the effectiveness of interventions within the scope of occupational therapy that address leisure engagement and social participation among community-dwelling older adults. Eleven Level I, 1 Level II, 1 Level III, and 1 Level IV studies met inclusion criteria. Included articles addressed two themes: interventions supporting social participation and interventions supporting leisure engagement. Strong evidence supports leisure education interventions to enhance leisure engagement, and moderate evidence supports chronic disease self-management programs to support leisure engagement. Mixed evidence exists for community-based group interventions and electronic gaming to support social participation. Routine use of leisure education and chronic disease self-management programs to enhance leisure engagement and selective use of community-based groups and electronic gaming to support social participation are recommended.


Within 30 yr, the population of older adults residing in the United States is expected to reach nearly 84 million (Ortman, Velkoff, & Hogan, 2014). Researchers estimate that 35% of U.S. adults over age 45 are lonely (Wilson & Moulton, 2010). As a population, older adults may experience greater social isolation because they are more likely to live alone, have a chronic illness, lose a significant other, experience transportation or mobility difficulties, have low income, and experience declines in muscle strength (Kharicha et al., 2007; Nicholson, 2009; Wilson & Moulton, 2010).

Older adults who experience loneliness or social isolation have an increased risk of other physical and mental health issues, such as disease, falls, depression, poor nutrition, rehospitalization, cognitive decline, heavy alcohol consumption, high systolic blood pressure, infection, and mortality (Coyle & Dugan, 2012; Lillyman & Land, 2007; Nicholson, 2009; Wilson & Moulton, 2010). Loneliness and social isolation can undermine well-being by leading to feelings of stress and can influence physical, emotional, and psychological health (Coyle & Dugan, 2012; Shankar, McMunn, Banks, & Steptoe, 2011; Wilson & Moulton, 2010). Because health and wellness risks are associated with social isolation and loneliness in older adults, mitigating these health risks may improve not only mental health but also physical health and quality of life (QOL) in this population.

Maintaining social participation and leisure engagement throughout the lifespan is important for enhanced well-being and health (Chang, Wray, & Lin, 2014; Doble & Santha, 2008). Because leisure pursuits often stem from engagement in meaningful occupations identified earlier in life, ensuring that
clients maintain this participation while considering new interests is important (Agahi, Ahacic, & Parker, 2006). Social and leisure interests are often interrelated, leading to improvements in both areas even when addressing only one. Leisure participation has been shown to decrease stress, improve psychosocial well-being, and provide meaning in daily occupations (Carruthers & Hood, 2004). Similarly, enhanced social participation and a strong social network have positive implications for engagement in leisure and enrichment in life (Carruthers & Hood, 2004). Embracing the use of occupation-based interventions aimed at health promotion through socialization can decrease health disparities, improve overall health, and enhance QOL (American Occupational Therapy Association [AOTA], 2013, 2014).

Participation in social and leisure activities is critical to health and well-being (Chang et al., 2014; Doble & Santha, 2008). Older adults, who naturally experience many losses during older adulthood, may benefit from interventions designed to promote engagement in social and leisure activities. Encouraging active participation in social and leisure activities that require cognitive, physical, intellectual, or social skills has been shown to decrease cognitive decline and promote physical health (Karp et al., 2006; Wang, Karp, Winblad, & Fratiglioni, 2002). The purpose of this systematic review was to identify and examine the evidence supporting the role of occupational therapy in promoting social participation and leisure engagement for community-dwelling older adults.

Method

This systematic review was one of six reviews on productive aging supported by the AOTA Evidence-Based Practice (EBP) Project. The method for the reviews was specified in advance and documented in a protocol for review authors.

Search Strategy

Search terms for the review were developed by the methodology consultant to the EBP Project and AOTA staff, in consultation with the review authors for each question, and by an advisory group consisting of expert occupational therapy practitioners and researchers in the area of aging. The search terms were developed not only to capture pertinent records but also to ensure that the terms relevant to the specific thesaurus of each database were included. Supplemental Table 1 (available online at http://otjournal.net; navigate to this article, and click on “Supplemental”) lists the search terms related to the population (community-dwelling older adults), interventions, and study designs included in this systematic review.

A medical research librarian with experience in completing systematic review searches conducted the search and confirmed and improved the search strategies in the following databases: Cochrane Database of Systematic Reviews, CINAHL, Medline, OTseeker, and PsycINFO. The methodology consultant for the EBP Project did the first review of the search results (citations), eliminating all records not relevant to the review scope. The review authors examined reference lists in the articles for potential studies and hand searched selected journals to ensure all appropriate articles were included.

Eligibility Criteria

Several inclusion and exclusion criteria provided the structure for the quality, type, and years of publication of the literature incorporated into the review. This review included peer-reviewed scientific literature published in English between 1995 and 2015. The intervention approaches examined were within the scope of practice of occupational therapy for older adults with an average age ≥65 living in the community, a retirement home, or an assisted living facility or in a rehabilitation, subacute, or hospital setting if they were being discharged to home. Studies were also included if participants were older adults with diabetes, arthritis, cardiac disease, or other chronic conditions, including mild cognitive impairment and mild Alzheimer’s disease.

The review excluded data from presentations, conference proceedings, non–peer-reviewed research literature, dissertations, and theses. Studies were excluded if the average age of participants was <65 or if participants were living in a skilled nursing facility or were in the hospital but not being discharged to home. Additionally, studies were excluded if they were in an AOTA Practice Guideline and included participants with acute or chronic conditions, such as stroke or moderate or severe Alzheimer’s disease. Studies without outcomes related to social participation or leisure engagement were also excluded from this review.

AOTA uses standards of evidence modeled on those developed in evidence-based medicine (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Records included in the review were rated as follows:

- Level I—meta-analyses, systematic reviews, and randomized controlled trials (RCTs)
- Level II—two-group nonrandomized studies (e.g., cohort, case-control)
- Level III—one-group nonrandomized studies (e.g., before and after, pretest–posttest)
Level IV—descriptive studies (single-subject design, case series)

Level V—case reports and expert opinions that include narrative literature reviews and consensus statements.

Studies included in this review provide Level I, II, or III evidence. Level IV evidence was included only when higher levels of evidence in a given theme were not available. No Level V evidence was included in the review.

Data Extraction

The review authors worked collaboratively to evaluate all articles throughout the entire review process. The authors conducted the initial review individually. Collaborative discussion was used to reach a consensus on all articles and to resolve any disagreement. Each article included in the review was summarized in an evidence table (Supplemental Table 2, online). The studies were categorized into themes and subthemes. The AOTA EBP Project methodology consultant reviewed the evidence table for quality control.

Risk of Bias

Each article was individually assessed for risk of selection bias, performance bias, attrition bias, and reporting bias on a scale of low, high, or unclear, as described in the Cochrane risk of bias guidelines (Higgins, Altman, & Sterne, 2011). During the rating process, both authors worked collaboratively to reach consensus in each category of bias. Supplemental Table 3 (online) displays the risk of bias for all studies included in this review.

Analysis

Each theme was analyzed for strength of evidence to assist in determining final recommendations for occupational therapy education, research, and practice. Analysis of study design, findings, and risk of bias determined strength of evidence designations. Number of studies and the strength of evidence they provided were determined in accordance with the U.S. Preventive Services Task Force (2014) recommendations, as follows:

- **Strong evidence** indicates consistent results from well-conducted studies, usually at least two RCTs.
- **Moderate evidence** indicates one RCT or two or more studies with lower levels of evidence. Some inconsistency of findings across individual well-conducted studies could preclude a classification of strong evidence and result in a designation of moderate evidence.
- **Limited evidence** indicates few studies, flaws in the available studies, and some inconsistency in findings across individual studies.
- **Mixed evidence** indicates that the findings were inconsistent across studies in a given category.
- **Insufficient evidence** indicates that the number and quality of studies are too limited to make any clear recommendation.

Results

Figure 1 is a flow diagram of record selection. The review team identified 14 articles for inclusion in the final qualitative synthesis. The articles addressed two themes: (1) interventions supporting social participation (7 studies) and (2) interventions supporting leisure engagement (7 studies). For the theme of social participation, 5 Level I studies, 1 Level II study, and 1 Level III study were identified. For the theme of leisure engagement, 5 Level I studies reported in 6 articles and 1 Level IV study were identified.

Outcome Measures

Outcome measures used in the studies were varied. For the theme of social participation, measurement tools included primarily self-report measures of social and activity participation, health (e.g., SF–12 and SF–36; RAND, 1994–2018), loneliness (UCLA Loneliness Scale; Russell, 1996), and depression (Geriatric Depression Scale; Yesavage et al., 1982–1983). For the theme of leisure engagement, outcome measures included self-reports of frequency of activity participation, performance of occupations including leisure activities, leisure competence and engagement, and life satisfaction.

Interventions Addressing Social Participation

Seven articles included in this review addressed the effectiveness of interventions within the scope of occupational therapy to promote social participation in community-dwelling older adults. Five articles provided Level I evidence (Creswell et al., 2012; Dickens et al., 2011; Kahlbaugh, Sperandio, Carlson, & Hauselt, 2011; Ollonqvist et al., 2008; Routasalo, Tilvis, Kautiainen, & Pirkala, 2009), 1 article provided Level II evidence (Bell et al., 2011), and 1 article provided Level III evidence (Matuska, Giles-Heinz, Flinn, Neighbor, & Bass-Haugen, 2003). Three main intervention approaches—community-based group interventions, community mentoring, and electronic gaming—were identified.

Community-Based Group Interventions. Four studies used a community-based group model of intervention either as part of a multicomponent intervention or as a single-component intervention (Creswell et al., 2012; Matuska et al., 2003; Ollonqvist et al., 2008; Routasalo et al., 2009). Group sessions were usually held weekly,
and programs lasted from 8 wk to 6 mo. In a Level III study, Matuska et al. (2003) found that group sessions run by occupational therapists resulted in increased social and community participation and significant differences in posttest scores on social functioning. However, in a Level I study, Routasalo et al. (2009) studied the effect of 3-mo psychosocial groups on the outcomes of loneliness and social networking. Participants were assigned on the basis of interest to one of three weekly groups: art or other creative activities, group exercise and discussions, or therapeutic writing and group therapy. Intervention participants reported significant increases in number of new friends but nonsignificant differences in loneliness or social networking compared with control participants.

Creswell et al. (2012, Level I) studied an 8-wk stress reduction program and found a significant decline in loneliness. Finally, Ollonqvist et al. (2008, Level I) examined the effectiveness of intensive multidisciplinary group rehabilitation for frail older adults but found no significant difference between groups on the outcome of loneliness. In combination, the 3 Level I studies and 1 Level III study provide mixed evidence for the use of community-based group interventions to improve social participation among community-dwelling older adults.

**Community Mentoring.** One study used a community mentoring model of intervention (Dickens et al., 2011, Level I). Older adults received up to 12 wk of mentoring in self-confidence and engagement in personally meaningful social activities. However, no improvements in the outcomes of social activity or social support resulted from the mentoring relationships. Thus, this study provides moderate evidence against the use of a community mentorship approach to promote social activity and support.
Electronic Gaming. Two studies used an electronic gaming intervention to address social participation (Bell et al., 2011; Kahlbaugh et al., 2011). In a small Level I study, Kahlbaugh et al. (2011) examined the use of a Nintendo Wii game with another person once per week for 10 wk. This intervention decreased social isolation and loneliness for the intervention group compared with the control group, who watched television with another person. In a Level II study, Bell et al. (2011) investigated the effect of Nintendo Wii games with and without fall prevention education over an 8-wk period on the outcomes of social relationships and social support. They found no significant differences between the intervention and control groups. Therefore, these studies provide mixed evidence for the use of electronic gaming to promote social participation.

Interventions for Leisure Engagement

Five Level I studies reported in six articles (Chang, 2014; Garvey, Connolly, Boland, & Smith, 2015; Janssen, 2004; Searle, Mahon, Iso-Ahola, Sdrolias, & Van Dyck, 1995, 1998; Zingmark, Fisher, Rocklöv, & Nilsson, 2014) and 1 Level IV study (Schweitzer, Mann, Nochajski, & Tomita, 1999) provide evidence for the role of occupational therapy in supporting leisure engagement of community-dwelling older adults. Three intervention types—leisure education, self-management of chronic disease, and assistive devices—were identified.

Leisure Education. Four Level I studies reported in five articles used leisure education as the intervention (Chang, 2014; Janssen, 2004; Searle et al., 1995, 1998; Zingmark et al., 2014). Janssen (2004) examined a 6-wk group educational program that focused on leisure appreciation, awareness, self-determination, and decision making related to leisure choices and found significant increases on leisure domains of QOL compared with control participants. In a small RCT, Searle et al. (1995, 1998) examined a modified form of a community reintegration program that included 12 individualized sessions consisting of discussion, paper-and-pencil tasks, role-playing, and recreational activities over approximately 17 wk. This leisure education program led to significant increases in perceived leisure control, leisure competence, and leisure boredom compared with a control group (Searle et al., 1995) that were maintained at follow-up (Searle et al., 1998). However, immediate between-group differences in life satisfaction were not maintained at follow-up.

Building on the work of Searle et al. (1995, 1998), Chang (2014) investigated the effect of a similar 12-wk leisure education program addressing leisure competence (e.g., perceptions, capacity, behaviors) delivered 2x/wk for 3 mo on the outcomes of leisure competence and capacity and found improved competence among the intervention group compared with the control group. Finally, Zingmark et al. (2014) used a four-arm RCT to compare one-to-one, client-centered intervention focused on occupational engagement with a group activity intervention, a discussion group intervention, and no intervention. All groups declined in participation over time; however, leisure participation declined slightly less among intervention group participants, with the one-to-one intervention group showing the highest rate of continued leisure engagement. In general, although the dosage and content of the programs varied, strong evidence supports use of leisure education programs in occupational therapy interventions targeting engagement in leisure activities for community-dwelling older adults.

Self-Management of Chronic Disease. Garvey et al. (2015, Level I) reported on the use of a 6-wk chronic disease self-management program to enhance leisure participation among older adults with multiple chronic conditions. Goal setting, self-management of chronic conditions, and peer support were introduced in weekly meetings that had an occupational therapy emphasis. This intervention led to an increase in activity frequency compared with a control group and improved self-perception of activity performance and satisfaction. This study provides moderate evidence supporting the use of chronic disease self-management programs to address the outcome of leisure activity engagement.

Assistive Devices. One Level IV study examined assistive device use in relation to leisure participation among community-dwelling older adults with physical disabilities that limited home-based leisure activities (Schweitzer et al., 1999). Participants’ home setup, assistive device use, and barriers to leisure participation were reviewed in structured interviews. Then, an appropriate assistive device was provided to each participant to encourage participation in a personally meaningful leisure activity. Provision of assistive devices led to an increased likelihood of attempting leisure pursuits. Because only one low-level study addressed this subtheme, insufficient evidence supports the use of assistive devices to increase home-based leisure engagement for community-dwelling older adults.

Discussion

This systematic review examined the effectiveness of interventions within the scope of occupational therapy to promote leisure engagement and social participation.
among community-dwelling older adults. Results provide strong evidence for the use of leisure education programs and moderate evidence for the use of chronic disease self-management programs to enhance leisure engagement of community-dwelling older adults with chronic health conditions. These interventions should be offered routinely to clients in this population who present with decreased participation in leisure activities. Additionally, mixed evidence was found for community-based group interventions and electronic gaming interventions to improve social participation outcomes; therefore, occupational therapy practitioners should consider these interventions on a case-by-case basis.

Implications for Occupational Therapy Education

The role of occupational therapy in community-based practice is expected to rise to meet the challenge of caring for the growing number of older adults in an ever-changing health care environment (Lamb & Metzler, 2014). Preparing future occupational therapy practitioners to meet the needs of older adults living in the community, including social participation and leisure engagement, should be a focus of occupational therapy educational programs. Curricula should include the following:

- Education regarding the relationship between leisure and social participation and physical, cognitive, and emotional health and well-being
- Education about health conditions and contextual factors that influence participation in social and leisure activities
- Training in the use of formal and informal assessments of leisure and social participation
- Knowledge and skill training in the delivery of effective interventions for social and leisure participation, including leisure education and electronic gaming.

Implications for Occupational Therapy Research

Occupational therapy has the potential to play a significant role in supporting social participation and leisure engagement among community-dwelling older adults. Occupational therapy researchers need to continue to develop and examine interventions for enhancing these occupations. Further research regarding interventions that improve social and leisure participation will be critical to supporting occupational therapy practitioners in this area of practice. Recommendations for strengthening research in this area include the following:

- Use of occupational therapy practitioners as study interventionists
- Improvement in the consistency of interventions included in multicomponent interventions
- Evaluation of intervention dosages (frequency and duration of intervention) needed for efficacy
- Increased consistency in outcome measures used to demonstrate intervention effectiveness
- Review of differences in leisure engagement and social participation among older adults residing in assisted living facilities versus those living at home.

Increased quantity and quality of evidence-based interventions that promote social participation and leisure engagement will guide practitioners in providing best practice to community-dwelling older adults.

Implications for Occupational Therapy Practice

On the basis of the results of this review, the following interventions are recommended as part of routine occupational therapy services to community-dwelling older adults at risk of a decline in social participation and leisure engagement:

- Leisure education programs to enhance leisure participation
- Chronic disease self-management programs to improve leisure participation among those with chronic conditions.

The following interventions should be offered selectively on the basis of individual client characteristics and intervention context:

- Community-based group interventions to support social participation
- Electronic gaming to enhance social participation.

The following intervention requires further research:

- Assistive devices to promote home-based leisure participation for clients with physical disabilities.

Limitations

Although a growing body of literature supports interventions within the scope of occupational therapy practice to promote social participation and leisure engagement in community-dwelling older adults, the available research has several limitations. First, the majority of outcome measures used to collect information on social participation and leisure engagement were self-report measures, which introduce recall bias. Second, interventions, intervention dosages, and outcome tools varied across studies, limiting the extent to which the data could be synthesized.
Third, several included RCTs had small sample sizes. Last, several subthemes did not have enough studies to provide sufficient evidence. Finally, although the interventions described were within the scope of occupational therapy practice, in the majority of studies, the interventionists were not occupational therapy practitioners. Future research addressing these gaps will strengthen the evidence supporting interventions in this area of practice.

Conclusion
Older adults may experience increased social isolation because of the natural losses that occur in this phase of life. Those who experience loneliness and social isolation have an increased risk of other physical and mental health issues. Interventions that support social participation and leisure engagement may mitigate social isolation and loneliness and improve well-being. Strong evidence supports leisure education programs and moderate evidence supports chronic disease self-management programs to enhance leisure engagement. Mixed evidence exists for community-based group programs and electronic gaming interventions to promote social participation.

Occupational therapy practitioners know the value of engaging in meaningful activity in all stages of life and understand the effect of social participation and leisure engagement on older adults’ health and well-being. Practitioners working with community-dwelling older adults are strongly encouraged to integrate effective interventions for social and leisure occupations into routine care for this population. ▲

Acknowledgments
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References

*Indicates studies that were systematically reviewed for this article.*
Supplemental Table 1. Search Terms for the Systematic Review of Interventions Supporting Social Participation and Leisure Engagement for Community-Dwelling Older Adults

<table>
<thead>
<tr>
<th>Category</th>
<th>Key Search Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>aged (80 and over), aged (includes ages 80 and over and frail elderly), aging, elderly, geriatrics, gerontology, late life, older adults, oldest old, pensioner, seniors, 65+, young old</td>
</tr>
<tr>
<td>Rehabilitation information</td>
<td>occupational therapy, rehabilitation, recreation therapy</td>
</tr>
<tr>
<td>Intervention: social participation and leisure engagement</td>
<td>activity participation, civic engagement, civic participation, computer application, computer tablet, computer tablet technology, computer use, clubs, community service, crafts, creative aging, elder hostel, family relations, friends, friendships, games, hobbies, hobby, interpersonal relations, leisure, leisure activities, leisure exploration, leisure participation, mobile application, mobile device, mobile phone, neighbor relations, peer, personal support, reading, recreation, relationships, retirement, retirement planning, retirement preparation, road scholar, senior center, senior games, senior groups, smartphone use, social activity, social adjustment, social capital, social environment, social interaction, social isolation, socialization, socializing, social participation, social skills, social support, sports, tablet technology, third age, travel, vital aging, vitality</td>
</tr>
<tr>
<td>Study and trial designs</td>
<td>appraisal, best practices, case control, case report, case series, clinical guidelines, clinical trial, cohort, comparative study, consensus development conferences, controlled clinical trial, critique, cross over, cross-sectional, double-blind, epidemiology, evaluation study, evidence-based, evidence synthesis, feasibility study, follow-up, health technology assessment, intervention, longitudinal, main outcome measure, meta-analysis, multicenter study, observational study, outcome and process assessment, pilot, practice guidelines, prospective, random allocation, randomized controlled trials, retrospective, sampling, scientific integrity review, single subject design, standard of care, systematic literature review, systematic review, treatment outcome, validation study</td>
</tr>
</tbody>
</table>

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## Supplemental Table 2. Evidence Table for the Systematic Review of Interventions Supporting Social Participation and Leisure Engagement for Community-Dwelling Older Adults

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Design/Participants/Inclusion Criteria</th>
<th>Intervention and Control Groups</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community-Based Group Interventions</strong></td>
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<tr>
<td>Creswell et al. (2012)</td>
<td>Level I 2-arm RCT, N = 40 (M age = 65 yr). Intervention group, n = 20 (M age = 64.35 yr). Control group, n = 20 (M age = 65.16 yr). Inclusion criteria: English-speaking; not practicing any mind–body therapies more than 1×wk; nonsmoker; in good health for past 3 mo; not taking medications that affect immune, cardiovascular, endocrine, or psychiatric functioning</td>
<td>Intervention: Mindfulness-Based Stress Reduction manualized program, consisting of 6 weekly 2-hr group sessions + 1-day retreat in Week 6 or 7. 30 min of daily home mindfulness practice 6 days/wk.</td>
<td>Kentucky Inventory of Mindfulness Skills, UCLA Loneliness Scale. The intervention group showed significant declines in loneliness compared with the control group.</td>
<td></td>
</tr>
<tr>
<td>Matuska, Giles-Heinz, Flinn, Neighbor, &amp; Bass-Haugen (2003)</td>
<td>Level III 1-group pretest–posttest, N = 65 (age range = 70–92 yr). N = 39 with complete pretest and posttest data (95% female). Inclusion criteria: Age ≥65 yr, from 1 of 3 Midwestern senior apartment buildings and nearby homes in urban and suburban communities</td>
<td>Intervention: Designing a Life of Wellness program, consisting of weekly 1.5-hr educational classes taught by occupational therapy professionals for 6 mo. The program focused on participation in meaningful occupations to improve quality of life and strategies to remove personal and environmental barriers to participation. Weekly topics included transportation, aging, safety, fall prevention, stress, lifestyle balance, and communication. Control: No control.</td>
<td>• SF–36 Vitality, Social Functioning, and Mental Health scores improved significantly. Medium effect sizes were found for SF–36 Physical Role Function, General Health, Vitality, Social Function, Role–Emotional, and Mental Health Summary scores. The average number of participants who participated in social or community activities increased from 56% to 66%.</td>
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</tr>
<tr>
<td>Ollonqvist et al. (2008)</td>
<td>Level I 2-arm RCT, N = 708 (M age = 78 yr, age range = 65–96 yr). Intervention group, n = 365 (M age = 78.1 yr ± 6.6). Control group, n = 343 (M age = 78.6 yr ± 6.6). Inclusion criteria: Age ≥65 yr, living at home in Finland, at risk of institutionalization because of decreasing functional capacity, need for assistance, disability or frailty</td>
<td>Intervention: 3 periods of multiprofessional inpatient rehabilitation designed for frail older adults that included inpatient group physical activity, group discussions on topics including problems facing older adults, self-care, counseling, medical care, social services and recreation. Control: Normal routine.</td>
<td>• Loneliness questionnaire, Geriatric Depression Scale. No significant difference between groups was found in change in loneliness; there was a 0.9-fold decrease in loneliness in the intervention group and a 1.1-fold increase in loneliness in the control group. No. of friends decreased in both groups throughout the study; poor subjective health and depressive mood were more prevalent in the control group. The physical rehabilitation program may have reduced emotional loneliness.</td>
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</table>
### Supplemental Table 2. Evidence Table for the Systematic Review of Interventions Supporting Social Participation and Leisure Engagement for Community-Dwelling Older Adults (cont.)

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Level of Evidence/Study</th>
<th>Design/Participants/Inclusion Criteria</th>
<th>Intervention and Control Groups</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
</table>
| Routasalo, Tilvis, Kautiainen, & Pitkala (2009) | Level I 2-arm RCT | N = 235. Intervention group, n = 117 (M age = 80 yr). Control group, n = 118 (M age = 80 yr). Inclusion criteria: Age ≥75 yr, subjective feelings of loneliness, willingness to participate, community dwelling in 6 communities in Finland | Intervention Psychosocial group rehabilitation 1×wk for 3 mo. Groups consisted of 7–8 participants and were closed to new members. Group meetings were goal oriented, activities included art and inspiring activities, group exercise and discussions, or therapeutic writing and group therapy according to participant interest. Control Usual care | • UCLA Loneliness Scale  
• Lubben’s Social Network Scale  
• Psychological well-being charted using a 6-dimensional questionnaire | A significantly larger proportion of the intervention group had found new friends during the follow-up year. 40% of the intervention group continued their group meetings for 1 yr. No differences between groups were found in loneliness or social networks. The intervention group showed significant improvement in psychological well-being score compared with the control group. |

### Community Mentoring
Dickens et al. (2011)

| Level I 2-arm RCT | N = 395. Intervention group, n = 200 (M age = 71.8 yr ± 12.2). Control group, n = 195 (M age = 69.8 yr ± 11.6). Inclusion criteria: Age ≥50 yr, socially isolated or at risk for social isolation, provided informed consent, completed questionnaire without assistance, community dwelling in United Kingdom | Intervention Community-based mentoring service including ≥12 wk of mentoring in self-confidence and engagement in personally meaningful social activities Control Usual care | • SF–12 Mental Health and Physical Health Component scores  
• EuroQol 5 Dimensions  
• Geriatric Depression Scale  
• Social activity  
• Social support and morbidities | No significant differences between groups were found; mentoring did not reduce social isolation in older adults. |

### Electronic Gaming
Bell et al. (2011)

| Level II 3-group pretest–posttest | N = 21 (age range = 60–94 yr). Intervention Group 1, n = 8 (age range = 60–89 yr). Intervention Group 2, n = 6 (age range = 60–90+ yr). Control group, n = 7 (age range = 80–89+ yr). Inclusion criteria: Age ≥60 yr, physically capable of participating, no significant visual or cognitive impairment, independent transportation to sessions, no current injuries, no current participation in Nintendo Wii exercises or fall prevention program | Intervention Group 1: Nintendo Wii bowling + fall prevention education, 8 wk  
Group 2: Nintendo Wii bowling only, 8 wk Control No Nintendo Wii game or fall prevention education | • SPA social relationships and social support items  
• Other outcomes not in scope of this review | No significant differences in SPA scores were found except for 3 isolated items that the researchers reported were likely attributable to chance. |
### Supplemental Table 2. Evidence Table for the Systematic Review of Interventions Supporting Social Participation and Leisure Engagement for Community-Dwelling Older Adults (cont.)

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Level of Evidence/Study</th>
<th>Design/Participants/Inclusion Criteria</th>
<th>Intervention and Control Groups</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kahlbaugh, Sperandio, Carlson, &amp; Hauselt (2011)</td>
<td>Level I</td>
<td>3-arm RCT</td>
<td>Intervention Group 1: Wii game of choice (all chose bowling) played with research assistant, 1 hr/wk for 10 wk</td>
<td>Weekly Physical Activity scale (modified)</td>
<td>There was a significant difference in mood and loneliness between intervention groups at posttest, with the participants in the Wii group having lower loneliness and higher positive mood at posttest than television group participants.</td>
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<td></td>
<td>Group 2: Watching TV with research assistant, 1 hr/wk for 10 wk</td>
<td>UCLA Loneliness Scale</td>
<td>No significant differences between groups were found on measures of life satisfaction and physical activity.</td>
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<td></td>
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<td>Control</td>
<td>Positive and Negative Affect Scale</td>
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<td>Life Satisfaction Scale</td>
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<td>SF-36</td>
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<tr>
<td>Chang (2014)</td>
<td>Level I</td>
<td>2-arm RCT</td>
<td>Intervention</td>
<td>Chang's (2012) leisure competence scale: 6 items measuring older adults' perception of their ability to participate in leisure activities</td>
<td>The intervention group showed significant improvements in leisure competence compared with the control group.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Leisure education program addressing leisure competence and capacity, 12 ~2-hr sessions 2x/wk over 3 mo</td>
<td>Other outcomes not in scope of this review</td>
<td>Leisur education programming fostered leisure competence.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Control</td>
<td>Wait list</td>
<td></td>
</tr>
<tr>
<td>Janssen (2004)</td>
<td>Level I</td>
<td>2-arm RCT</td>
<td>Intervention</td>
<td>Quality of Life Profile: Senior Version including 3 domains (being, belonging, becoming) and several subdomains including leisure</td>
<td>Significant between-group differences were found in the leisure subdomain; intervention group scores increased in all 6 areas of the leisure subdomain, whereas control group scores remained stable.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Leisure education program conducted by therapeutic recreation specialists addressing leisure appreciation, awareness, self-determination, and decision making regarding leisure; 12 60–90 min sessions over 6 wk</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Control</td>
<td>No intervention</td>
<td></td>
</tr>
</tbody>
</table>

**Interventions for Leisure Engagement**

**Leisure Education**

- **Chang (2014)**
  - Level I
  - 2-arm RCT
  - N = 60
  - Interventions group, n = 30 (M age = 70.83 yr).
  - Control group, n = 30 (M age = 70.76 yr).
  - Inclusion criteria: Age ≥65 yr, no previous training in leisure education, literate, no mental health conditions
  - Intervention: Leisure education program addressing leisure competence and capacity, 12 ~2-hr sessions 2x/wk over 3 mo
  - Control: Wait list

- **Janssen (2004)**
  - Level I
  - 2-arm RCT
  - N = 47 (age range = 62–99 yr).
  - Interventions group, n = 23.
  - Control group, n = 24.
  - Inclusion criteria: Older adults living in 1 of 3 residential retirement facilities in Midwestern United States, intact cognition, interest in participation
  - Intervention: Leisure education program conducted by therapeutic recreation specialists addressing leisure appreciation, awareness, self-determination, and decision making regarding leisure; 12 60–90 min sessions over 6 wk
  - Control: No intervention
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Level of Evidence/Study</th>
<th>Design/Participants/Inclusion Criteria</th>
<th>Intervention and Control Groups</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
</table>
| Searle, Mahon, Iso-Ahola, Sdrolias, & Van Dyck (1995) | Level I                 | 2-arm RCT                                                                                               | Intervention: Leisure education using a modified version of the Community Reintegration Program consisting of individual weekly sessions led by a therapeutic recreation specialist and activities such as discussion, paper-and-pencil tasks, role-play, and recreation, 12 sessions over a mean of 17 wk  | • Perceived Leisure Control Scale  
• Perceived Leisure Competence Scale  
• Life Satisfaction Index A  
• Locus of Control Scale  
• Leisure Boredom Scale | Significant between-group differences were found in perceived leisure control, leisure competence, life satisfaction, and leisure boredom. No significant between-group differences were found in locus of control. |
| Searle, Mahon, Iso-Ahola, Sdrolias, & Van Dyck (1998) | Level I                 | 2-arm RCT (follow-up of Searle et al., 1995)                                                           | Intervention: Leisure education program used in Searle et al. (1995), with no additional intervention  | • Perceived Leisure Control Scale  
• Perceived Leisure Competence Scale  
• Life Satisfaction Index A  
• Locus of Control Scale  
• Leisure Boredom Scale | Significant between-group differences in perceived leisure control, leisure competence, and leisure boredom were sustained at 16–18 wk postintervention. Group differences in life satisfaction were no longer significant. A significant difference in locus of control was found between groups in favor of the intervention group. |
| Zingmark, Fisher, Rocklöv, & Nilsson (2014)       | Level I                 | 4-arm RCT                                                                                               | Intervention: All interventions were focused on occupational engagement and health promotion and were delivered by occupational therapists.  
- Group 1: Individual client-centered, occupation-based, and goal-oriented sessions in participants’ home, 3–8 1.5-hr individual sessions over 10 wk  
- Group 2: Occupation-based meaningful activity, weekly 1.5-hr group sessions over 8 wk  
- Group 3: 1 lecture with written handouts on occupational engagement and healthy aging followed by group discussion, total duration of 2 hr  | • Leisure engagement measured by the Modified NPS Interest Checklist  
• Other outcomes not in scope of this review | All groups showed a decline in leisure participation with age. The decline was slightly reduced in the groups receiving the individual (Group 1) and group discussion (Group 3) interventions, but the effect size was small. The individual intervention (Group 1) was most effective in supporting long-term leisure engagement. |
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Level of Evidence/Study</th>
<th>Design/Participants/Inclusion Criteria</th>
<th>Intervention and Control Groups</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Management of Chronic Disease</strong>&lt;br&gt;Garvey, Connolly, Boland, &amp; Smith (2015)&lt;br&gt;<a href="https://doi.org/10.1186/s12875-015-0267-0">https://doi.org/10.1186/s12875-015-0267-0</a></td>
<td>Level I&lt;br&gt;2-arm RCT; feasibility study</td>
<td>Intervention group, $n = 26$ ($\text{Mdn age} = 65$ yr).&lt;br&gt;Control group, $n = 24$ ($\text{Mdn age} = 67.5$ yr).&lt;br&gt;&lt;br&gt;<strong>Inclusion criteria:</strong> Age $\geq 18$ yr, multimorbidity, $\geq 4$ repeat prescriptions</td>
<td><strong>Intervention</strong>&lt;br&gt;Professionally led self-management program to manage multimorbidity, including weekly group meetings, occupational therapy emphasis, peer support, goal setting, and a focus on self-management of chronic conditions, over 6 wk&lt;br&gt;<strong>Control</strong>&lt;br&gt;Wait list</td>
<td>• Frequency of activity participation&lt;br&gt;• Frenchay Activities Index&lt;br&gt;• Canadian Occupational Performance Measure&lt;br&gt;• Other outcomes not included in scope of this review</td>
<td>The intervention group showed significant improvement in frequency of activity participation compared with the control group.&lt;br&gt;Significant improvements were found in perceptions of activity performance and satisfaction.</td>
</tr>
<tr>
<td><strong>Assistive Devices</strong>&lt;br&gt;Schweitzer, Mann, Nochajski, &amp; Tomita (1999)</td>
<td>Level IV&lt;br&gt;1-group pretest-posttest with case examples</td>
<td>$N = 25$ ($M_{\text{age}} = 77.8$ yr; 20 women).&lt;br&gt;&lt;br&gt;<strong>Inclusion criteria:</strong> Community-dwelling older adults, no cognitive impairment or significant depression, physical disability limiting ability to carry out home-based valued leisure activities, identified $\geq 1$ home-based valued leisure activity they would like to do despite the impact of their disability</td>
<td><strong>Intervention</strong>&lt;br&gt;Structured interview to identify leisure activities most missed, assistive device provided to meet the need of this task, and follow-up contact 1 mo after intervention to determine use of the device and ascertain current satisfaction in performing the target leisure activity&lt;br&gt;<strong>Control</strong>&lt;br&gt;No control</td>
<td>• Consumer Assessment Study&lt;br&gt;• Identified a leisure activity that participants most missed because of the impact of their disability</td>
<td>Involvement in $\geq 1$ active leisure options improved from 80% to 96% of participants.&lt;br&gt;When family members or caregivers sanctioned activity involvement using the device, participants were more likely to attempt and succeed in its use.&lt;br&gt;Participants’ intrinsic motivation to develop the habit of incorporating the target leisure activity in their day affected their leisure participation.</td>
</tr>
</tbody>
</table>

*Note. $M = \text{mean}; \text{Mdn} = \text{median}; \text{RCT} = \text{randomized controlled trial}; \text{SF–12} = 12$-item Short Form Health Survey; $\text{SF–36} = 36$-item Short Form Health Survey; SPA = Social Provisions Scale; UCLA = University of California, Los Angeles.*

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### Supplemental Table 3. Risk-of-Bias Analysis for Included Studies on Interventions Supporting Social Participation and Leisure Engagement for Community-Dwelling Older Adults

<table>
<thead>
<tr>
<th>Citation</th>
<th>Selection Bias</th>
<th>Blinding of Participants and Personnel (Performance Bias)</th>
<th>Blinding of Outcome Assessment (Detection Bias)</th>
<th>Incomplete Outcome Data (Attrition Bias)</th>
<th>Short Term (2–6 wk)</th>
<th>Long Term (&gt;6 wk)</th>
<th>Selective Reporting (Reporting Bias)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell et al. (2011)</td>
<td>–</td>
<td>?</td>
<td>?</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Chang (2014)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Dickens et al. (2011)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Garvey, Connolly, Boland, &amp; Smith (2015)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>–</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ollonqvist et al. (2008)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>?</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Routasalo, Tilvis, Kautiainen, &amp; Pitkala (2009)</td>
<td>+</td>
<td>?</td>
<td>+</td>
<td>?</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Schweitzer, Mann, Nochajski, &amp; Tomita (1999)</td>
<td>?</td>
<td>–</td>
<td>–</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

**Note.** Categories for risk of bias: + = low risk of bias; ? = unclear risk of bias; – = high risk of bias.


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