We describe the results of a systematic review of the literature on occupation- and activity-based health management and maintenance interventions for productive aging. We found moderate to strong evidence that client-centered occupational therapy improved physical functioning and occupational performance related to health management in community-dwelling older adults, as well as in adults with osteoarthritis and macular degeneration. We found moderate evidence that health education programs reduce pain and increase physical activity and that individualized health action plans improve activities of daily living function and participation in physical activities. The evidence that self-management programs result in a decrease in pain and disability and that incorporating cognitive–behavioral principles into physical activity improves long-term participation in exercise was also moderate. Although the evidence for skill-specific training in isolation is limited, effectiveness increases when skill-specific training is combined with health management programs. The implications for practice, education, and research are discussed.


The objectives of this review were to systematically search the literature and critically appraise and synthesize the applicable findings to address the following focused question: “What is the evidence for the effect of occupation- and activity-based health management and maintenance interventions on the performance of community-dwelling older adults?” For the purposes of this review, we operationalized the scope of health management and maintenance as “developing, managing, and maintaining routines for health and wellness promotion, such as physical fitness, nutrition, decreasing health risk behaviors, and medication routines” (American Occupational Therapy Association [AOTA], 2008, p. 631).

Background and Statement of the Problem

During the aging process, older adults may face challenges in occupational performance as a result of chronic health conditions such as diabetes, cardiovascular disease, stroke, arthritis, osteoporosis, and low vision. Managing one’s health and being involved in health-promoting activities can have a positive impact on health, mortality, and quality of life. The results of several cross-sectional surveys (Hamer, Bates, & Mishra, 2011; Liao et al., 2011; McGuire, Strine, Okoro, Ahluwalia, & Ford, 2007; Nakanishi et al., 1998) have indicated that engaging in daily health-enhancing practices contributes to a variety of outcomes, including a reduction in mortality, disability, and frequent mental distress.

Occupational therapy practitioners are instrumental in helping older adults retain performance in all areas of occupation when participation suffers as a result of chronic health conditions.
of a decline in health. One area that occupational therapy practitioners address is the instrumental activity of daily living (IADL) of health management and maintenance by assisting older adults with developing routines that help enhance self-efficacy in illness management. The development of health routines incorporates learning and adopting appropriate strategies; problem solving to overcome barriers; and enlisting the support of family, friends, and other caregivers. In this systematic review, we evaluated and synthesized evidence for interventions commonly used in occupational therapy to restore, modify, and maintain performance in the important IADL of health management and maintenance.

**Methodology**

The articles included in this review were the result of database searches on articles published from 1990 through November 2010. In addition, we reviewed bibliographies of selected articles for potentially relevant articles. Search terms for the review included disease management, health behavior, health education, health maintenance, health management, health promotion, lifestyle, and patient education. Articles selected for review included studies in which the focus was older adults living in the community. In addition, the interventions studied were within the scope of practice of occupational therapy and included an activity-based or occupation-based component. This component was operationally defined as health management and maintenance programs that were individualized and incorporated into the participant’s daily life through problem solving and the development of routines. Detailed information about the methodology and a complete list of search terms for the entire project dedicated to productive aging can be found in the article “Methodology for the Systematic Reviews on Occupation- and Activity-Based Intervention Related to Productive Aging” in this issue (Arbesman & Lieberman, 2012).

**Results**

We reviewed 1,095 abstracts as a result of the database searches, and 28 articles were included in the final results of the review. Twenty-four articles were Level I randomized controlled trials (RCTs), systematic reviews, or meta-analyses. Three articles were Level II nonrandomized controlled trials, and 1 article was a Level III pretest–posttest design. Supplemental Table 1 (available online at http://ajot.aotapress.net; navigate to this article, and click on “supplemental materials”) summarizes all the studies included in the systematic review and provides the objectives, design, a description of the interventions and outcome measures, and summaries of the results and limitations of each study. Four mutually exclusive programmatic themes resulted from the review of the literature: occupational therapy programs, group health education programs led by educators and other health professionals, self-management programs (either an individualized program by medical staff or group peer-led programs), and programs targeting specific skills, such as habit retraining.

**Occupational Therapy Programs**

Six articles based on 4 Level I RCTs contained moderate to strong evidence that occupational therapy improves health management in community-dwelling older adults. Two articles described varying periods of follow-up for one study of an occupational therapy health program for adults with macular degeneration (Dahlin Ivanoff, Sonn, & Svensson, 2002; Eklund, Sonn, & Dahlin Ivanoff, 2004). The study results indicated that participants in the occupational therapy program reported more confidence and security in their performance of 20 daily occupations than did control participants. Clark et al. (1997, 2001) described different aspects of a 6-mo follow-up of a RCT in which older adults living independently received a 9-mo program of occupational therapy intervention that focused on helping participants incorporate positive changes in their ongoing lifestyles (Lifestyle Redesign®). The study had two control groups, one a social activity group and the other a no-intervention group. The study results indicated that at follow-up, participants in the Lifestyle Redesign group had improved physical functioning and role functioning domains related to health management compared with the social activities and no-intervention groups.

A randomized pilot study compared an exercise and activity strategy training program with an exercise and health education program for older adults with knee or hip osteoarthritis (Murphy et al., 2008). The activity strategy training program, conducted by occupational therapists, included active practice of procedures such as joint protection and behavioral strategies such as activity pacing and incorporating meaningful activities into daily routines. The results indicated that at follow-up, statistically significant higher peak physical activity (measured objectively by a wrist-worn accelerometer during a 5-day home monitoring period) with a small to moderate effect size was found for those in the exercise and activity strategy training group compared with the exercise and health education group. A small RCT examined the effects of an occupational therapy practitioner–led behavioral symptom management program (tailored activity...
The second type of self-management programs are often peer-led programs that include information on a selected diagnosis or clinical condition, information on medication management, and a component teaching problem-solving skills, modeling, social strategies, and in some cases energy conservation. Five Level I systematic reviews and meta-analyses (Chodosh et al., 2005; Foster, Taylor, Eldridge, Ramsay, & Griffiths, 2007; Newbould, Taylor, & Bury, 2006; Reid et al., 2008; Warsi, Wang, LaValley, Avorn, & Solomon, 2004), four Level I RCTs (Jerant, Moore-Hill, & Franks, 2009; King et al., 2006; Lorig, Ritter, & Gonzalez, 2003; Lorig, Ritter, Laurent, & Fries, 2004), 1 Level II (Lorig et al., 2001) non-randomized controlled trial, and 1 Level III pretest–posttest design study (Gitlin et al., 2008) were included in this section. The results indicated moderate evidence for those studies looking at chronic pain as an outcome. Although the results were positive, the degree of decrease in pain and disability reduction varied widely, which limits the strength of the results.

Warsi et al. (2004) reported small to moderate effects for self-management programs targeting people with diabetes, asthma, and hypertension, but none for arthritis. They reported better outcomes for those studies including face-to-face contact. Chodosh et al. (2005) examined self-management programs for people with hypertension, osteoarthritis, and diabetes and found minimal but statistically significant reductions in pain and improvements in function. Jerant et al. (2009) compared individualized home-based and telephone support for people with one or more chronic illnesses. The results indicated no differences at 1 yr for physical and mental health outcome scores. A statistically significant difference was found on a visual analog scale of quality of life at 1 yr and at 6 mo for self-efficacy for those in the home-based group. King et al. (2006) evaluated the effectiveness of an individually tailored physical activity program that incorporated rote, sport, purposeful, and lifestyle activities with computer-assisted coaching and telephone support for people with diabetes. Results indicated that the individualized program and support resulted in more physical activity in the tailored activity program than in the comparison group at follow-up.

**Programs Targeting Specific Skills**

Five studies were included in the interventions targeting specific skills. One Level I systematic review (Montgomery & Dennis, 2003) and 2 Level I RCTs (Brawley, Rejeski, & Lutes, 2000; Rejeski et al., 2003) examined the impact of cognitive–behavioral intervention for older adults. Limited evidence was found that this intervention can improve...
adherence to a physical activity program among community-dwelling older adults (Brawley et al., 2000) and older adults in a cardiac rehabilitation program (Rejeski et al., 2003). The evidence that cognitive–behavioral intervention can improve the sleep of older adults with insomnia is also limited, with modest effects on sleep duration and night waking that diminish over time (Montgomery & Dennis, 2003).

A Level I RCT (Bartels et al., 2004) comparing a community-based health management program with a combined health management program and skills training component for community-dwelling older adults with severe mental illness reported better functional outcomes for independent living skills, social skills, and health management for those in the combined group at 1-yr follow-up. At 2-yr follow-up, participants in both groups had improved preventive health care practices. Ostaszkiewicz, Chestney, and Roe (2004) found limited evidence that habit retraining was effective in improving toileting routines for older adults with incontinence, and the results indicated that the habit retraining regimen may be difficult for caregivers providing assistance to older adults.

Individual studies or those incorporated into systematic reviews and meta-analyses included in this review may be limited by small sample size, limited follow-up, high dropout rate, limited number of databases included in the searches for systematic reviews, and lack of blinding to treatment status. In addition, a wide range of diagnoses and clinical conditions may have been included in the systematic reviews and meta-analyses in the current review. Although the inclusion of systematic reviews and meta-analyses may in and of itself be a limitation of the review, it was done to build on existing evidence and to incorporate the wide range of studies that needed to be included in the systematic review. As noted in Arbesman and Lieberman (2012), individual articles published after the initial set of articles included in this systematic review were added to the review.

Discussion

Estimates are that 48% of Medicare beneficiaries have at least three medical conditions and that 21% have five or more conditions (Partnership for Solutions, 2004). In a review of the consequences of comorbidity, Gijsen et al. (2001) indicated that multiple chronic conditions may result in increased mortality and complications of treatment, as well as decreased functional status and quality of life. These findings indicate that developing health routines is imperative for all older adults. According to Backman and Hentinen (1999), performance of self-care is not just a rational way to maintain health but also indicative of a person’s attitude toward health care, illness, and the way in which he or she lives. The interconnectedness of physical health to emotional and social factors is also reflected in the results of a meta-analysis of studies analyzing the predictors of positive health practices (Yarcheski, Mahon, Yarcheski, & Cannella, 2004). Predictors such as loneliness, social support, perceived health status, and self-efficacy had moderate effect sizes, whereas other predictors, such as stress, income, age, and sex, had small effect sizes. According to Bayliss et al. (2007), self-management programs are most effective when they are individualized and can accommodate changes over time.

Outcomes of studies analyzing the effectiveness of interventions targeting health routines reflect these research findings. The evidence stresses that programs with face-to-face encounters are stronger than programs without this component. In addition, effectiveness appears to be higher for client-centered programs that are tailored to the preferences of the program participant. As described by Gray (2004), individualization of self-management programs includes providing health-related information to the client, reflecting on available options, and then developing a program according to the client’s preferences. Evidence also supports the use of culturally or linguistically relevant self-management programs to enhance health behaviors, health status, and self-efficacy while decreasing health care utilization (Gitlin et al., 2008; Lorig et al., 2003). These themes are at the core of the client-centered practice of occupational therapy, and strong evidence exists for this approach’s effectiveness in improving occupational performance in community-dwelling older adults (Clark et al., 2001; Gitlin et al., 2006).

Moderate to strong evidence exists that client-centered occupational therapy improves physical functioning and occupational performance related to health management in frail older adults as well as in adults with osteoarthritis and macular degeneration. The evidence that health education programs reduce pain and increase physical activity and that individualized health action plans improve ADL function and participation in physical activities is also moderate, as is evidence that self-management programs result in a decrease in pain and disability. Although the evidence that incorporating cognitive–behavioral principles in physical activity improves long-term participation in exercise is moderate, the effectiveness of incorporating these methods in programs to reduce insomnia in older adults is more limited. The evidence supporting the use of skill-specific training in isolation is limited, but it indicates more effectiveness when combined with health management programs.

Occupational therapy educators can emphasize the influence of health management and maintenance by integrating such content into program curricula and research activities. Findings from this review indicate that an emphasis
on contextually relevant practice through selected evidence-based interventions to develop routines and habits for health and wellness promotion among older adults can positively influence their well-being and continued participation in occupations. Regardless of the setting in which they practice, occupational therapy practitioners can incorporate effective health management strategies throughout the occupational therapy process from evaluation to intervention planning and implementation and outcome review.

Implications for Occupational Therapy Practice
The findings from this systematic review have the following implications for occupational therapy practice:

- The development of health routines is imperative for all older adults.
- There is moderate to strong evidence that client-centered occupational therapy interventions improve physical functioning and occupational performance related to health management in frail older adults as well as in adults with osteoarthritis and macular degeneration.
- There is moderate evidence that health education programs reduce pain and increase physical activity and that individualized health action plans improve ADL function and participation in physical activities.
- There is moderate evidence that self-management programs result in a decrease in pain and disability.
- There is moderate evidence that incorporating cognitive–behavioral principles in physical activity improves long-term participation in exercise.
- There is limited evidence that incorporating cognitive–behavioral principles to reduce insomnia in older adults is effective.

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*Indicates studies that were systematically reviewed for this article.


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