Program Description

EnhanceFitness is a multicomponent, group physical activity program that aims to help older adults at all levels of fitness become more active, energized, and empowered to sustain independent lives and prevent functional decline. The program includes 1-hour classes that are held two or three times per week in a variety of settings, including community centers, senior housing facilities, YMCA facilities, and retirement communities. Each class, which can accommodate groups of up to 25, includes a workout session that is conducted by certified, trained exercise instructors. Each session includes a 5- to 10-minute warmup phase that incorporates balance exercises to stimulate blood flow to muscles, 15–20 minutes of strength training with soft ankle and wrist weights, 20 minutes of walking or aerobic activity, and a flexibility and cooldown phase. Fitness checks are conducted at baseline and 4-month intervals to measure participant progress in upper- and lower-body strength and endurance.

To participate in the program, interested individuals must register and receive clearance from their personal physician. Instructors must be certified by a nationally recognized fitness association and attend a 1.5-day EnhanceFitness instructor training.

Descriptive Information

Areas of Interest	Health and wellness
Outcomes	**Review Date: December 2011** ▸ Functional health and well-being ▸ Depressive symptoms ▸ Health care costs
Ages	▸ 61–74 (Older adult) ▸ 75–84 (Older adult) ▸ 85+ (Older adult)
Genders	▸ Female ▸ Male
Races/Ethnicities	▸ White ▸ Race/ethnicity unspecified
Settings	▸ Community-based organization ▸ Senior center ▸ Other community settings
Geographic Locations	Suburban
Funding	Partially/fully funded by Administration on Aging
Adverse Effects	No adverse effects, concerns, or unintended consequences were identified by the developer.

Implementation History	The EnhanceFitness pilot study began in 1993 at Northshore Senior Center in Bothell, Washington, and the program was first implemented in 1995. The intervention was disseminated across Washington State, beginning in 1997, and then in other States, beginning in 2000. Approximately 550 sites across 32 States have implemented EnhanceFitness with over 25,000 participants.
Adaptations	No population- or culture-specific adaptations were identified by the developer.

Quality of Research

Review Date: December 2011

Documents Reviewed

The documents below were reviewed for Quality of Research. The research point of contact can provide information regarding the studies reviewed and the availability of additional materials, including those from more recent studies that may have been conducted.

Study 1

Wallace, J. I., Buchner, D. M., Grothaus, L., Leveille, S., Tyll, L., LaCroix, A. Z., & Wagner, E. H. (1998). Implementation and effectiveness of a community-based health promotion program for older adults. *Journal of Gerontology: Medical Sciences*, *53A*(4), M301–M306. PubMed abstract available at http://www.ncbi.nlm.nih.gov/pubmed/18314570

Study 2

Ackermann, R. T., Cheadle, A., Sandhu, N., Madsen, L., Wagner, E. H., & LoGerfo, J. P. (2003). Community exercise program use and changes in healthcare costs for older adults. *American Journal of Preventive Medicine*, *25*(3), 232–237. PubMed abstract available at http://www.ncbi.nlm.nih.gov/pubmed/14507530

Outcomes

Outcome 1: Functional Health and Well-Being	
Description of Measures	Functional health and well-being were assessed with the 36-Item Short Form Health Survey (SF-36). The SF-36 is composed of eight scales: ▸ Physical functioning. Respondents indicated the extent that their health now limited them in activities that might be done during a typical day (e.g., lifting groceries, climbing stairs, bending or kneeling, walking, bathing or dressing), with response options ranging from "no, not limited at all" to "yes, limited a lot." ▸ Role limitations due to physical health. Respondents indicated whether they had problems with their work or other regular daily activities as a result of their physical health during the past 4 weeks. Respondents answered "yes" or "no" to scale items asking whether they cut down the amount of time spent on work or other activities, accomplished less than they would like, were limited in the kind of work or other activities, and had difficulty performing the work or other activities. ▸ Role limitations due to emotional problems. Respondents indicated whether they had problems with their work or other regular daily activities as a result of any

	emotional problems (e.g., feeling depressed or anxious) during the past 4 weeks. Respondents answered "yes" or "no" to scale items asking whether they cut down the amount of time spent on work or other activities, accomplished less than they would like, and did not do work or other activities as carefully as usual. ▸ Social functioning. Respondents rated the extent that physical health or emotional problems interfered with their normal social activities during the past 4 weeks, with response options ranging from "not at all" to "extremely." ▸ Bodily pain. Respondents rated how much bodily pain they had during the past 4 weeks, with response options ranging from "none" to "very severe," and how much the pain interfered with normal work, with response options ranging from "not at all" to "extremely." ▸ Emotional well-being. Respondents rated the extent that they felt nervous, down in the dumps, calm and peaceful, downhearted and blue, and happy during the past 4 weeks, with response options ranging from "none of the time" to "all of the time." ▸ Energy/fatigue. Respondents rated the extent that they felt full of pep, had a lot of energy, felt worn out, and felt tired during the past 4 weeks, with response options ranging from "none of the time" to "all of the time." General health perceptions. Respondents rated their general health, with response options ranging from "poor" to "excellent," and whether they got sick a little easier than others, were as healthy as anybody they knew, expected their health to get worse, and had excellent health, with response options ranging from "definitely false" to "definitely true."
Key Findings	In a randomized controlled trial (RCT), individuals at a senior center were randomly assigned to an intervention group, which participated in the 6-month EnhanceFitness program, or a wait-list control group. After the 6-month period, participants in the control group were allowed to join the workout sessions, and participants in the intervention group were allowed to continue, as desired. At the 6-month follow-up, after controlling for baseline levels of functional health and well-being as well as demographic variables, intervention group participants had better functional health and well-being relative to control group participants in six of the eight scales of the SF-36: role limitations due to physical health ($p = .007$), role limitations due to emotional problems ($p = .02$), social functioning ($p = .006$), emotional well-being ($p = .001$), energy/fatigue ($p = .02$), and general health perceptions ($p = .001$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating (0.0–4.0 scale)	3.5

Outcome 2: Depressive Symptoms	
Description of Measures	Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), a 20-item self-report instrument designed to measure common symptoms that have occurred during the past week, such as poor appetite, hopelessness, pessimism, and fatigue. Respondents rated each item on a scale from 0 (no presence of symptoms) to 3 (presence of symptoms most or all of the time). Scores range from 0 to 60, with lower scores indicating the presence of fewer symptoms.
Key Findings	In an RCT, individuals at a senior center were randomly assigned to an intervention group, which participated in the 6-month EnhanceFitness program, or a wait-list control group. After the 6-month period, participants in the control group were allowed to join the workout sessions, and participants in the intervention group were allowed to continue, as desired. At the 6-month follow-up, after controlling for baseline levels of depressive symptoms and demographic variables, intervention group participants had lower scores on the CES-D than control group participants ($p = .001$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating (0.0–4.0 scale)	3.5

Outcome 3: Health Care Costs	
Description of Measures	Health care costs were assessed through inpatient utilizations (i.e., percentage of individuals hospitalized), number of primary care visits, and three summary cost variables: total, inpatient, and primary care costs. Primary care costs were all direct and indirect costs associated with visits or telephone calls (by primary care or preventive medicine personnel) that were related to direct patient care or to preventive services or risk factor reduction counseling. Data were obtained from the administrative database of a health maintenance organization (HMO). All costs and utilizations occurring between a patient's first EnhanceFitness class visit (i.e., the index date, which occurred in October 1998 or later) and December 31, 2000, were used. Participants in the control group were assigned an index date that was identical to that of their matched participant.
Key Findings	In a retrospective study, two matched cohorts—an exposure cohort and a control cohort—were sampled from patients who were aged 65 or older and continuously enrolled in a large, mixed-model HMO in Washington State. The exposure cohort included all eligible HMO enrollees who participated in EnhanceFitness at least once. A frequency matching procedure based on age and gender was used to select three enrollees who had never participated in EnhanceFitness to serve as controls for each program participant.

	The average increase in annual total health care costs per patient was less for the exposure cohort ($642) than for the control cohort ($1,175) ($p$ = .05). After adjusting for differences in age, gender, enrollment date, comorbidity index, and preexposure cost and utilization levels, total health care costs for the exposure cohort were 94.1% that of the costs for the control cohort. However, for patients in the exposure cohort who participated in EnhanceFitness once or more weekly (on average), total adjusted follow-up costs were 79.3% that of patients in the control cohort.
Studies Measuring Outcome	Study 2
Study Designs	Quasi-experimental
Quality of Research Rating (0.0–4.0 scale)	3.6

Study Populations

The following populations were identified in the studies reviewed for Quality of Research.

Study	Age	Gender	Race/Ethnicity
Study 1	▸ 61–74 (Older adult) ▸ 75–84 (Older adult) ▸ 85+ (Older adult)	▸ 73% Female ▸ 27% Male	▸ 99% White ▸ 1% Race/ethnicity unspecified
Study 2	▸ 61–74 (Older adult) ▸ 75–84 (Older adult) ▸ 85+ (Older adult)	▸ 75.3% Female ▸ 24.7% Male	Data not reported/available

Quality of Research Ratings by Criteria (0.0–4.0 scale)

Criterion	Ratings		
	Outcome 1	Outcome 2	Outcome 3
Reliability of Measures	3.6	3.6	3.6
Validity of Measures	3.6	3.6	3.5
Intervention Fidelity	3.2	3.2	3.8
Missing Data and Attrition	3.4	3.4	3.5
Potential Confounding Variables	3.4	3.4	3.6

Criterion	Ratings		
	Outcome 1	Outcome 2	Outcome 3
Appropriateness of Analysis	3.8	3.8	3.9
Overall Rating	**3.5**	**3.5**	**3.6**

Study Strengths

In the RCT, well-known and well-referenced instruments with good reliability and validity were used. In the retrospective study, administrative data, which are generally reliable, were collected from an HMO. Data on utilization and cost have strong validity. Fidelity was maximized through multiple methods, including the use of a standardized tool to provide annual assessments of instructors' performances, participant evaluations, class protocols, trainer and coordinator manuals, in-person training of instructors and master trainers, annual instructor workshops, a video, and Web-based modules of the actual class and fitness checks. In the RCT, fidelity checks of new instructors demonstrated that adherence to the intervention protocol was excellent. The retrospective study controlled for the dose of the intervention by separately examining intervention participants who attended class at least once per week and intervention participants who attended class less than once per week. Attrition and missing data in the RCT were minimal, and appropriate analytical techniques were used to address them. Also in the RCT, baseline health and functional status comparisons between study completers and noncompleters indicated no significant differences between the groups with the exception of social functioning scale scores, which were substantially lower for noncompleters. Because the retrospective study used administrative data, there were no issues regarding missing data and attrition. In the RCT, most of the confounding variables were controlled for, including important demographic characteristics and most prior health care utilization patterns. EnhanceFitness was offered to all participants after the 6-month trial, which helped to mitigate sample selection bias. In the retrospective study, three control individuals were matched to each intervention participant by age and gender. Potential confounds were considered, including baseline lifestyle, readiness to change lifestyle, preexposure cost and utilization variables, health status, and comorbidity. Cost data were collected over a baseline period of at least 1 year before the HMO began offering the intervention. Appropriate methods were used to analyze the data in both studies.

Study Weaknesses

In the RCT, Cronbach's alpha values for the study sample were not assessed. Although the retrospective study used administrative data, which are generally reliable, there was no discussion about how the HMO assesses the reliability of its administrative data. The authors of the study article for the RCT did not adequately describe how participants were randomized to the intervention or control group. The retrospective study compared those who enrolled in the intervention with matched HMO members who were not enrolled in the intervention during the same time period. However, because data were unavailable, certain important variables that impact cost analysis (e.g., participant's weight, diet, and use of tobacco) could not be used in matching or controlled for in analyses. There were no controls for economic status, which could affect outcomes.

Readiness for Dissemination

Review Date: December 2011

Materials Reviewed

The materials below were reviewed for Readiness for Dissemination. The implementation point of contact can provide information regarding implementation of the program and the availability of additional, updated, or new materials.

Program Web site, http://www.projectenhance.org/enhance%C2%AEfitness_.aspx

Senior Services, Project Enhance. (2005). *EnhanceFitness attendance sheet* [Form]. Seattle, WA: Author.

Senior Services, Project Enhance. (2006). *EnhanceFitness health history form.* Seattle, WA: Author.

Senior Services, Project Enhance. (2006). *EnhanceFitness program evaluation* [Form]. Seattle, WA: Author.

Senior Services, Project Enhance. (2007). *EnhanceFitness fitness checks* [Form]. Seattle, WA: Author.

Senior Services, Project Enhance. (2007). *EnhanceFitness participant information form.* Seattle, WA: Author.

Senior Services, Project Enhance. (2009). *EnhanceFitness: A guide to successfully implementing EnhanceFitness, EF I & II / 2009 edition.* Seattle, WA: Author.

Senior Services, Project Enhance. (2009). *EnhanceFitness: Instructor manual, EF I & II / 2009 edition.* Seattle, WA: Author.

Senior Services, Project Enhance. (2009). *EnhanceFitness: Master trainer curriculum, EF I & II / 2009 edition.* Seattle, WA. Author.

Senior Services, Project Enhance. (2009). *Preparing your site for EnhanceFitness.* Seattle, WA: Author.

Readiness for Dissemination Ratings by Criteria (0.0–4.0 scale)

Criterion	Rating
Implementation Materials	4.0
Training and Support	4.0
Quality Assurance	3.8
Overall Rating	**3.9**

Dissemination Strengths
The comprehensive manuals developed for instructors, master trainers, and site coordinators are detailed and user friendly. Roles are clearly defined for program administrators and other program staff. Forms, activity guidelines, and task instructions for effective program implementation are well organized. Marketing materials, funding strategies, and tips for recruitment are well developed and presented for use. Training provides many opportunities for participants to practice program concepts before implementation. The online training materials are well organized and easy to download. Training materials also include clear differentiation of the roles and responsibilities for instructors, master trainers, and site coordinators. The program requires the use of a database to track participant outcomes at baseline and every 4 months thereafter. Implementer self-assessment forms are provided to support fidelity monitoring. Ongoing support for master trainers helps to ensure program fidelity.

Dissemination Weaknesses
The importance of fidelity and procedures for ensuring fidelity are not emphasized throughout all materials.

Costs

The cost information below was provided by the developer. Although this cost information may have been updated by the developer since the time of review, it may not reflect the current costs or availability of items (including newly developed or discontinued items). The implementation point of contact can provide current information and discuss implementation requirements.

Implementation Materials

Item Description	Cost	Required by Developer
EnhanceFitness license (includes 1.5-day, on- or off-site instructor training for up to 15 participants; instructor manual; site coordinator manual; participant forms; and instructor review forms)	$3,000 per site, plus trainer travel expenses if necessary	Yes
Annual fee for sites providing classes	$500 per site for the first year; $50 per site for each subsequent year	Yes
Soft wrist and ankle weights for 21–27 participants	$800 per site	Yes
Annual Online Data Entry System user fee	$200 per user	No

Item Description	Cost	Required by Developer
2-day, on- or off-site master trainer training	$2,000 per site (up to 15 participants), plus trainer travel expenses if necessary	Yes
2-day, online training modules	Included in cost of license	No
Annual instructor workshop	Included in cost of license	No
Technical assistance via Webinar, phone, or email at any time or in person at the time of the on-site training	Included in cost of license	No
Quarterly conference calls	Included in cost of license	No
Program evaluation consultation	Included in cost of license	No

Other Citations

Athena Healthcare Communications. (2000). *Models of care for senior health*. Chicago, IL: Author.

Belza, B., Snyder, S., Thompson, M., & LoGerfo, J. (2010). From research to practice: EnhanceFitness, an innovative community-based senior exercise program. *Topics in Geriatric Rehabilitation, 26*(4), 299–309.

Cress, M. E., Moore, T. L., Johnson, M. A., & Quinn, M. E. (2003). Community-based aerobic and strength training improves physical function in underserved elders. *Medicine and Science in Sports and Exercise, 35*(5, Suppl.), S195.

Kaplan, A. (2002, May). Reversing the trend: Chronically ill seniors' health improves in community program. In P. Q. Schoeni (Ed.), *Accelerating change today for America's health* (pp. 32–34). Washington, DC: National Coalition on Health Care and Institute for Healthcare Improvement.

Moore, T. L., Cress, M. E., Johnson, M. A., & Quinn, M. E. (2003). Physical function and health status in underserved older adults. *Medicine and Science in Sports and Exercise, 35*(5, Suppl.), S224.

Moore, T. L., McCamey, M. A., Johnson, M. A., Quinn, M. E., & Cress, M. E. (2004). An evidence-based exercise program can be implemented in a community of underserved elders. *Medicine and Science in Sports and Exercise, 36*(5, Suppl.), S193.

Moore-Harrison, T. L., Johnson, M. A., Quinn, M. E., & Cress, M. E. (2009). An evidence-based exercise program implemented in congregate-meal sites. *Journal of Physical Activity and Health, 6*(2), 247–251. PubMed abstract available at http://www.ncbi.nlm.nih.gov/pubmed/19420403

Snyder, S., & Belza, B. (2005, April). Eliminating disparities in communities of color through the Lifetime Fitness Program [Abstract]. *Preventing Chronic Disease, 2*(2). Available at http://www.cdc.gov/pcd/issues/2005/apr/04_0142j.htm

Translational Work

EnhanceFitness was started through a research study by Senior Services in collaboration with the University of Washington Health Promotion Research Center. The pilot study began in 1993 at Northshore Senior Center in Bothell, Washington, and was supported in part by grants from the Centers for Disease Control and Prevention, the National Institute on Aging, and the Health Services Research and Development Service of the Department of Veterans Affairs. As a result of subsequent training grants and feasibility studies, EnhanceFitness was disseminated beyond study sites in King County, Washington, in 1997 and nationally in 2000 to hundreds of locations in a wide variety of facilities. Expansion was facilitated by the program's turnkey package, which provides all tools needed for successful implementation. EnhanceFitness has been recognized through awards from the U.S. Department of Health and Human Services, the U. S. Administration on Aging (AoA), the Washington Coalition for Promoting Physical Activity, and the National Council on Aging. Three implementations of EnhanceFitness have been documented: the adoption of EnhanceFitness for use (1) among low-income populations in 12 southern States, (2) at six sites on the island of Kaua'i, and (3) by a large nutrition provider for implementation at 15 congregate meal sites for senior citizens in Portland, Oregon. Two of the implementers—the 12 southern States and Kaua'i—received 3-year grants from AoA to plan and implement the adoption of EnhanceFitness in their communities. The implementation among congregate meal sites was part of Arthritis in Focus, a study funded by a grant from the Northwest Health Foundation. Additional partners comprise multiple individuals and organizations, including hospitals, universities, and other national associations (the National Council on Aging, the United Way, and the Area Agency on Aging).

EnhanceFitness classes are held in existing locations within communities, including community centers, senior housing facilities, places of worship, and county buildings. Participants are recruited through informational sessions and distribution of print materials (e.g., flyers, brochures, door hangers, table signs, newspaper articles). The program also is promoted through monthly calendars, Web sites, and newsletters. Most sites tend to implement EnhanceFitness with fidelity and offer 1-hour classes several times per week. Some sites make small adaptations to the program. For example, participants in southern States received additional physical health assessments. Positive outcomes in physical functioning and well-being were reported for all implementation sites, either anecdotally or through statistical analyses of data. These outcomes included improvements in participants' agility and balance, upper-body strength, and lower-body strength. Participants reported that they felt better, had more energy and agility, and experienced fewer aches and pains, and implementers reported seeing improved flexibility, increased physical activity, and increased camaraderie among program participants. Maintenance and dissemination of EnhanceFitness in these sites continue through the use of presentations, brochures, and Web-based announcements. Maintaining existing partnerships and collaborations is key, including keeping partners aware of the program's progress. To support the program, sites

may seek new grant funds; charge participant fees; secure donations from local gyms, hospitals, businesses, and other senior agencies; and offer corporate sponsorships as an employee benefit.

Site With Translational Work	Articles Describing Site's Translational Work, by Category					
	Planning/ Partners	Adoption	Reach/ Recruitment	Implementation	Effectiveness	Maintenance
Southern States	Article 1	Article 1	Article 1	Article 1	Article 1	Article 1
Kaua'i	Article 2	Article 2	Article 2	Article 2	Article 2	Article 2
Congregate meal sites in Portland, OR	Article 3	—	Article 3	Article 3	Article 3	Article 3

Article Number	Article Reference
1	Neighborhood Centers Inc. (n.d.). *Replication report: Activity Centers for Seniors.* Bellaire, TX: Author.
2	Sugihara, N., Watanabe, M., Tomioka, M., Braun, K. L., & Pang, L. (2011). Cost-benefit estimates of an elderly exercise program on Kaua'i. *Hawai'i Medical Journal, 70*(6), 116–120. PubMed abstract available at http://www.ncbi.nlm.nih.gov/pubmed/22162608
3	Roth, E. (2008). *Implementing a community-based exercise program in congregate meal sites: Perspectives from site managers* (Unpublished master's thesis). University of Washington, Seattle.

Contacts

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Additional program information can be obtained through the following Web site(s):

http://www.projectenhance.org/enhance%C2%AEfitness_.aspx