



Effects of Health Plan-Sponsored Fitness Center Benefits on Physical Activity, Health Outcomes, and Health Care Costs and Utilization: A Systematic Review

EXECUTIVE SUMMARY

October 2012

Prepared for:

Department of Veterans Affairs
Veterans Health Administration
Quality Enhancement Research Initiative
Health Services Research & Development Service
Washington, DC 20420

Prepared by:

Evidence-based Synthesis Program (ESP) Center
Durham VA Medical Center
Durham, NC
John W Williams Jr., M.D., M.H.Sc., Director

Investigators:

Co-Principal Investigators:
Heather A. King, Ph.D.
Jennifer M. Gierisch, Ph.D., M.P.H.

Co-Investigators:

John W. Williams Jr., M.D., M.H.Sc.
Matthew L. Maciejewski, Ph.D.

Research Associate:

Avishek Nagi, M.S.

Medical Editor:

Liz Wing, M.A.



VA
HEALTH CARE | Defining
EXCELLENCE
in the 21st Century

PREFACE

Quality Enhancement Research Initiative's (QUERI's) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout VA.

QUERI provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of QUERI Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at nicole.floyd@va.gov.

Recommended citation: King HA, Gierisch JM, Williams JW Jr, Maciejewski ML. Effects of Health Plan-Sponsored Fitness Center Benefits on Physical Activity, Health Outcomes, and Health Care Costs and Utilization: A Systematic Review. VA-ESP Project #09-010; 2012.

This report is based on research conducted by the Evidence-based Synthesis Program (ESP) Center located at the Durham VA Medical Center, Durham, NC, funded by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Health Services Research and Development. The findings and conclusions in this document are those of the author(s) who are responsible for its contents; the findings and conclusions do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (e.g., employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

EXECUTIVE SUMMARY

BACKGROUND

Regular physical activity has many positive health benefits, including protection against chronic disease, improved physical and mental health and cognitive function, and better health-related quality of life. Moreover, lack of physical activity is associated with higher health care costs and utilization. Many Americans, however, do not get the recommended levels of physical activity. For Veterans, Veterans Affairs (VA) health care users are less likely to meet physical activity recommendations and more likely to be physically inactive compared with Veterans who do not use VA health care. Multiple personal, social, and environmental factors influence participation in physical activity. Providing memberships to fitness centers may be a viable option to increase physical activity and the positive health outcomes associated with such activity. Given that most Americans have access to some form of health insurance, health plan promotion of and coverage for fitness center memberships has the potential to address multiple barriers to physical activity (e.g., cost, access) and extend fitness center access to many Americans.

Our objective in this evidence synthesis was to summarize the results of diverse studies of health plan-sponsored fitness center memberships in an effort to understand how these benefits affect physical activity, clinical outcomes, health care costs and utilization, retention of plan members, and member satisfaction.

Key Question 1. What are the effects of policy/benefits packages that include vouchers, rebates, premium reductions, or other economic incentives to encourage physical activity through fitness center memberships on:

- (a) Physical activity participation rates among plan members?
- (b) Health outcomes demonstrated to be improved by physical activity (i.e., weight, pain, glucose, blood pressure, health-related quality of life)?
- (c) Overall health care costs and health care utilization?

Key Question 2. What are the effects of policy/benefits packages that include vouchers, rebates, premium reductions, or other economic incentives to encourage physical activity through fitness center memberships on satisfaction with the health plan and retention of members in the health plan?

Key Question 3. Do the effects of policy/benefits packages to encourage physical activity vary by specific characteristics of the package (premium vs. lump sum) or age, sex, and physical illness of participants?

METHODS

In consultation with a master librarian, we searched MEDLINE® (via PubMed®), Embase®, and the Cochrane Database of Systematic Reviews for peer-reviewed publications comparing health plan-sponsored strategies to encourage physical activity through fitness center memberships with standard benefit plans from database inception through January 2012. We selected free-text terms to search titles and abstracts as well as validated search terms for both randomized controlled trials and relevant observational studies adapted from the Cochrane Effective Practice & Organization of Care Group search, version 1.9. We limited the search to articles published in the English language involving human subjects 18 years of age and older. An updated search for publications was conducted in May 2012. We also evaluated the bibliographies of included primary studies. As a mechanism to assess the risk of publication bias, we searched www.ClinicalTrials.gov for completed but unpublished studies in July 2012.

DATA SYNTHESIS

We critically analyzed studies to compare their characteristics, methods, and findings to determine the feasibility of completing a quantitative synthesis (i.e., meta-analysis) based on the volume of relevant literature, the completeness of the results reported and the conceptual homogeneity of the studies. As quantitative synthesis was not possible, we analyzed the results qualitatively.

RATING THE BODY OF EVIDENCE

In addition to rating the quality of individual studies, we evaluated the overall strength of evidence (SOE) for each Key Question by assessing the following domains: risk of bias, consistency, directness, precision, strength of association (magnitude of effect), and publication bias. These domains were considered qualitatively, and a summary rating of high, moderate, low, or insufficient SOE was assigned.

PEER REVIEW

A draft version of the report was reviewed by technical experts and clinical leadership. A transcript of their comments can be found in the appendix, which elucidates how each comment was considered in the final report.

RESULTS

We identified 3584 unique citations from a combined search of MEDLINE (via PubMed, n=3560), Embase (n=24), and the Cochrane database (n=0). Manual searching of included study bibliographies and review articles identified 5 additional citations for a total of 3589 citations. After applying inclusion/exclusion criteria, 4 articles (representing 1 unique study) were included in this review. Most studies were excluded because they assessed types of physical activity promotion strategies other than fitness center memberships (e.g., worksite wellness). Our search of www.ClinicalTrials.gov did not suggest publication bias. There were no completed studies that were unpublished. In addition, there were no ongoing studies on this topic.

All articles we identified addressed KQ 1; none addressed KQ 2 or KQ 3 (Table ES-1). The main study was a retrospective cohort study rated fair quality that used administrative and claims data to assess the health care and utilization effects of a health plan-sponsored fitness center membership benefit (known as the Silver Sneakers program) among adults 65 years of age and older who were enrolled in the Group Health Cooperative of Puget Sound Medicare Advantage plan. Two companion articles assessed the effect of distance from the fitness center and history of depression on the uptake of fitness center benefits and frequency of use among participants. One additional companion article assessed the effect of this benefit on health care costs and utilization among health plan members with diabetes. The Silver Sneakers program assessed in all analyses allowed eligible health plan enrollees 65 years of age and older to access selected fitness centers and all activities (e.g., structured conditioning classes) and facilities (e.g., exercise equipment, pool) associated with these fitness centers. The health plan covered the full cost of memberships for each year; there were no additional costs to the member for the fitness center membership.

Table ES-1. Overview of articles evaluating effects of fitness center membership

Reference	Study Details	KQ	Included Outcomes
Main study			
Nguyen et al., 2008	Group Health Cooperative Medicare Advantage enrollees ≥ age 65 Selection dates: Jan 1998–Dec 2003 Participants: 4766 benefit users Matched controls: 9035 benefit nonusers	1a 1c	<ul style="list-style-type: none"> Physical activity participation Health care cost Health care utilization
Companion articles			
Berke et al., 2006	Group Health Cooperative Medicare Advantage enrollees ≥ age 65 Selection dates: Jan 2002–Dec 2003 Participants: 1728 benefit users Matched controls: 4838 benefit nonusers	1a	Role of distance from fitness center on: <ul style="list-style-type: none"> Uptake of benefit Frequency of use of benefit
Nguyen et al., 2008	Group Health Cooperative Medicare Advantage enrollees ≥ age 65 Selection dates: Jan 1998–Dec 2003 Participants: 4766 benefit users Matched controls: 9035 benefit nonusers	1a	Role of depression history on: <ul style="list-style-type: none"> Uptake of benefit Frequency of use of benefit, risk of participation lapse
Nguyen et al., 2008	Group Health Cooperative Medicare Advantage enrollees ≥ age 65 Selection dates: Jan 1998–Dec 2003 Participants: 618 benefit users with diabetes Matched controls: 1413 benefit nonusers with diabetes	1a 1c	<ul style="list-style-type: none"> Physical activity participation Health care cost Health care utilization

Key Question 1. What are the effects of policy/benefits packages that include vouchers, rebates, premium reductions, or other economic incentives to encourage physical activity through fitness center memberships on:

- (a) Physical activity participation rates among plan members?**
- (b) Health outcomes demonstrated to be improved by physical activity (i.e., weight, pain, glucose, blood pressure, health-related quality of life)?**
- (c) Overall health care costs and health care utilization?**

KQ 1a: Physical Activity Participation

None of the included articles assessed physical activity as a primary outcome. The only metric of physical activity was the frequency of fitness center visits by participants in the Silver Sneakers program such as that reported in the main study and one companion article. Two additional companion articles assessed the associations between (1) the distance from the fitness center and (2) a history of depression on the uptake and frequency of use of the health plan-sponsored fitness center membership benefit.

In Year 1 of the main study, Silver Sneakers participants averaged 75 visits (median 49; interquartile range [IQR] 11 to 120). In Year 2, the average number of visits declined to 55 (median 12; IQR 0 to 89). While participation dropped in Year 2, 61 percent of participants continued to visit fitness centers. A separate analysis using a subset of members with diabetes from the main study reported similar number of average visits per year (72 visits in Year 1, 49 visits in Year 2).

Two companion articles provided information on other factors associated with uptake and frequency of use. Additional analyses suggest that distance from fitness centers and history of depression influence the uptake of health plan-sponsored fitness center memberships. Enrollment in a fitness center and frequency of use are both associated with distance from gyms. While history of depression is not associated with participation in a fitness center benefit, health plan members with a history of depression made fewer visits and were at greater risk of lapses in their participation compared with nondepressed members.

KQ 1b: Physical Health Outcomes

No identified studies addressed KQ 1b.

KQ 1c: Health Care Costs and Utilization

The main study and one companion article reported the effects of health plan-sponsored fitness center memberships on health care costs and utilization. In adjusted models for Year 1, Nguyen et al. reported that adjusted total health care costs were not different between Silver Sneakers participants and nonparticipants. By the end of Year 2, participants incurred significantly lower total health care costs (-\$500; CI -\$892 to -\$106, $p=0.01$) likely due to fewer inpatient admissions and lower inpatient care costs compared with controls. There was evidence of a dose-response by average number of health club visits. Compared with participants who attended

fitness centers less than one time per week, participants who averaged two to less than three or three or more visits per week over 2 years had lower adjusted health care costs (2 to <3 visits -\$1252, $p < 0.001$; ≥ 3 visits -\$1309, $p = 0.001$).

In another article, participants in Silver Sneakers with diabetes had lower adjusted total health care costs compared with age- and sex-matched nonparticipants with diabetes after 1 year of enrollment in the fitness center program (-\$1633; 95% CI -\$2620 to -\$646, $p = 0.001$). This cost savings was likely due to fewer hospitalizations and lower adjusted inpatient costs. In Year 2, participants accumulated lower total health care costs, but these savings were not statistically significantly different from diabetic nonparticipants (-\$1230; CI -\$2494 to \$33, $p = 0.06$).

Key Question 2. What are the effects of policy/benefits packages that include vouchers, rebates, premium reductions, or other economic incentives to encourage physical activity through fitness center memberships on satisfaction with the health plan and retention of members in the health plan?

No identified studies addressed KQ 2.

Key Question 3. Do the effects of policy/benefits packages to encourage physical activity vary by specific characteristics of the package (premium vs. lump sum) or age, sex, and physical illness of participants?

No identified studies addressed KQ 3.

RECOMMENDATIONS FOR FUTURE RESEARCH

Surprisingly few studies assessed the impact of health plan-sponsored fitness membership benefits. Existing studies lack diversity in included populations, benefits assessed, outcomes collected, and study designs employed. Across included articles in this review, main limitations were the inability to (1) control for confounding from potential selection bias that could not be accounted for through analysis, (2) rule out concurrent exposures to other sources of physical activity that may have biased results, and (3) measure quality and type of physical activity; the number of visits to the fitness center was the only measure of physical activity. However, a strength of the included studies was that they used existing “real world” administrative and claims data.

A variety of study designs can be employed—each having their own strengths and weaknesses. Researchers must carefully weigh the tradeoffs in costs, feasibility, time, quality of evidence, and generalizability, which differ among the various study design options. We used a structured framework to identify gaps in evidence, classify why these gaps exist, and suggest types of studies to consider in future research (Table ES-2).

Table ES-2. Evidence gaps and future research

Evidence Gap	Reason	Type of Studies to Consider
Patients		
Absence of data for patients other than those ≥ age 65	Insufficient information	<ul style="list-style-type: none"> • Multisite cluster RCTs • Quasi-experimental studies • Prospective cohort studies
Interventions		
Silver Sneakers program was the only benefit assessed	Insufficient information	<ul style="list-style-type: none"> • RCTs of head-to-head comparisons of different types of benefit structures • Quasi-experimental studies comparing different types of policy changes that impact benefit structures
Outcomes		
Uncertain effects on: <ul style="list-style-type: none"> • Physical activity levels • Physical health outcomes • Health care costs and utilization 	Insufficient information	<ul style="list-style-type: none"> • Multisite cluster RCTs • Prospective cohort studies • Nonrandomized trials (pre-post designs) • Nonrandomized controlled before-and-after studies
Uncertain effects on health plan member: <ul style="list-style-type: none"> • Satisfaction • Retention 	Insufficient information	<ul style="list-style-type: none"> • Multisite cluster RCTs • Prospective or retrospective cohort studies • Nonrandomized controlled before-and-after studies • Qualitative studies

Abbreviation: RCT = randomized controlled trial

CONCLUSION

Health plan-sponsored fitness center memberships have the potential to increase levels of physical activity and, subsequently, improve health and economic outcomes for Veterans. However, few studies have assessed the impact of health plan-sponsored fitness membership benefits. The evidence base for these claims remains weak due to study design limitations, and insufficient due to the paucity of literature. The limited evidence provides support for reductions in health care costs and utilization when comparing health plan members who choose to participate in health plan-sponsored gym memberships with those who do not—but these results may not be generalizable to Veterans and are based on study designs that could be subject to bias. The existing literature provides little insight into other outcomes such as physical activity, physical health outcomes, or health plan member satisfaction or retention. Thus, further evidence is needed on which to base policy recommendations on the merits of providing health plan-sponsored fitness center memberships.

ABBREVIATIONS TABLE

CI	confidence interval
ES	Executive Summary
IQR	interquartile range
KQ	Key Question
RCT	randomized controlled trial
SOE	strength of evidence
VA	Department of Veterans Affairs