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How to make exercise counseling more effective: Lessons from rural America

Presenting counseling as a detailed prescription and periodically following up make a big difference

Practice recommendation

- To help overweight patients and those with a sedentary lifestyle to adopt and stick with an exercise regimen, develop a detailed and realistic plan with their help, and follow up with them periodically to see how they're doing.

regression analysis controlling for demographic variables.

Results: Participants who saw a doctor for regular care were 54% more likely to be physically active (adjusted odds ratio [aOR]=1.54; 95% confidence interval [CI], 1.04-2.28). Overweight adults (body mass index [BMI]=25-29.9 kg/m²) who had been advised by their physician to exercise more were nearly 5 times more likely to meet physical activity recommendations if their doctor helped develop an exercise plan (aOR=4.99; 95% CI, 1.69-14.73).

Overweight individuals who received additional follow-up with the exercise plan from their doctor had a 5½-fold increase in likelihood of meeting physical activity recommendations ($P<.05$).

In the overall sample, patients were significantly more likely to initiate ($P=.01$) and maintain ($P=.002$) physical activity when the physician prescribed and followed up on an exercise plan.

Conclusion: This longitudinal study provides evidence that exercise counseling is most effective when the physician presents the counseling as a plan or prescription and when he or she follows up with the patient on it.

IN THIS ARTICLE

What increased the likelihood of exercise?

Page 397

Abstract

Purpose: Exercise counseling by primary care physicians has been shown to improve physical activity in patients. However, the prevalence and effectiveness of physician counseling is unknown in rural populations that are at increased risk for chronic diseases.

Methods: Using a population-based telephone survey at baseline and again at 1-year follow-up, we assessed physical activity behavior among 1141 adults (75% female, 95% white) living within 12 rural communities of Missouri, Tennessee, and Arkansas. We tested the association between physician counseling and patients meeting current physical activity recommendations using logistic

Simply telling sedentary patients that they need to exercise may not help them much. If the goal is to inspire action, a more effective approach would be to help them devise a plan for exercise and then inquire periodically about how it's going. That premise was the basis for our study.

There's good reason to get your patients moving

Physical inactivity is an independent risk factor for the most prevalent chronic diseases, including obesity, cardiovascular disease, and type 2 diabetes. Physical activity at moderate or vigorous intensities reduces stress and depressive symptoms, controls high blood pressure and cholesterol levels, improves sleep, reduces or reverses weight gain, and prevents or controls chronic diseases.¹ Based on these benefits, all physicians are encouraged to counsel sedentary patients to increase activity levels.²

National disease prevention objectives of Healthy People 2010 call for physicians to counsel at-risk patients on health behaviors such as physical activity and diet.³ Knowledge of patients' families, environments, and communities makes primary care physicians uniquely suited to give effective advice,⁴ and physician counseling is known to positively influence patients' health-related behavior.⁵⁻¹²

To date, findings on counseling effectiveness have been mixed. Unfortunately, previous controlled trials of primary care physicians counseling adult patients on physical activity have varied in quality and yielded mixed results.¹³ Therefore, in its Guide to Clinical Preventive Services, the US Preventive Services Task Force did not recommend for or against behavioral counseling in primary care settings to promote physical activity.¹⁴ The guidelines state that existing studies do not provide a clear picture of which counseling components are effective.¹³

A population-based study by Glasgow and colleagues suggests that follow-up support by the physician may be

needed to change physical activity behavior. Generalizations were limited, though, by the cross-sectional study design and post hoc analysis.¹⁵

More research is also needed to determine which strategies help patients stay physically active, a necessary component to sustaining the health benefits of exercise.¹⁶ Unfortunately, few primary care physicians counsel overweight or inactive patients on the benefits of diet and physical activity, let alone assist them with long-term follow-through.^{7,8,11,16-18}

Why we chose to study a rural population

Rural Americans are among the groups at highest risk for chronic diseases. On average they are older, less educated, and poorer than their urban counterparts.^{19,20} And rural residents walk 13% less than suburbanites.²¹ According to the Rural Healthy People 2010 survey, 5 of the top 10 health concerns are chronic conditions that can be prevented or ameliorated with adequate physical activity.²²

Studies have shown that healthy adults believe their health care providers are a credible source of information, and that they are motivated to comply with physician advice.²³ Nondisabled adults believe their physicians want them to be physically active.¹⁹ However, to our knowledge, no study has examined the effects of physician counseling on physical activity behavior for patients at increased risk for chronic diseases in rural areas.

Our objectives. The first objective of this study was to identify the prevalence of specific components of physician counseling in a tri-state sample of at-risk, rural adults using telephone survey data. A second objective was to measure the longitudinal relationship between physician counseling and physical activity.

■ Methods

The Saint Louis University Institutional Review Board approved this study.

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Five of the top 10 health concerns are chronic conditions that can be ameliorated with adequate physical activity

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Individuals who had a doctor for regular care were 54% more likely to be physically active than those who didn't have a doctor

TABLE 1
The population sample

PATIENT CHARACTERISTICS	FOLLOW-UP SURVEY (N =1141) %
Female	74.6
White, non-Hispanic	94.6
Education	
Less than high school	9.7*
High school graduate	30.8
Some college	23.9
College graduate	35.6
Age	
18-24	6.4*
25-44	35.4
45-64	39.1
65+	19.1
Annual household combined income (n=1102)	
< \$25,000	31.7*
≥ \$25,000	68.3
Body mass index (n=1107)	
Normal (<25)	43.7
Overweight (25-29.9)	31.5
Obese (≥ 30)	24.8
Physician encounters/counseling	
Has doctor for regular care	87.8*
In usual year, has seen doctor ≤1 time	28.2*
Has been advised to exercise more	35.1
Doctor helped develop plan to exercise more	33.8
Doctor followed up on plan to exercise more	46.3

* Significant P value <.001 between responders and nonresponders at 1-year follow-up.

Study population and design

This study reports on baseline and 1-year follow-up telephone survey data collected as part of a larger 3-year intervention study in 12 rural communities from Missouri (6), Tennessee (4), and Arkansas (2). Project WOW (Walk the Ozarks to Wellness) aims to promote walking among overweight rural adults by integrating individual, interpersonal, and community-level interventions. Methods and details of the intervention are described in detail elsewhere.²⁴ The target communities ranged in population from 766 to 12,993 adults, and in geographic area from 1.4 to

16.1 square miles.²⁵

At baseline in the summer of 2003, we used a modified version of the Behavioral Risk Factor Surveillance System (BRFSS) interview protocol^{26,27} and randomly dialed telephone numbers to recruit participants residing within a 2-mile radius of a walking trail. In all, 2470 English-speaking adults, ages 18 and older, completed the baseline survey (65.2% response rate).²⁸ Sampling was proportionate to community size.

At follow-up in the summer of 2004, participants identified at baseline completed the same telephone survey used a year earlier. This time, 1531 participants completed the survey (62.0% response rate).²⁸

Demographic variables included age, sex, education, race/ethnicity, and annual combined household income (TABLE 1). Overweight and obesity, based on self-reported height and weight, were defined by a body mass index (BMI) of 25 to 29.9 kg/m² and 30 kg/m² or greater, respectively.

Measurement of dependent and independent variables

The survey instrument incorporated questions from the BRFSS, as well as questions developed by researchers from San Diego; Sumter County, South Carolina; and St. Louis.²⁹⁻³⁴ Psychometric properties of the questions and scales are reported elsewhere.³⁵ The survey instrument contained 106 questions, including skip patterns; the average administration time was 34 minutes.

We assessed physician counseling about exercise with 5 questions from the survey (TABLE 2). These questions were modeled on the “4 As” counseling approach (Ask, Advise, Assist, and Arrange follow-up) recommended by the National Cancer Institute³⁶ and used in a previous, similar BRFSS-based telephone survey.¹⁵ The questions were:

1. Do you have a doctor whom you see for regular health care?
2. In a usual year, how often do you see your doctor?

3. Have you been advised within the last year by a doctor to exercise more?

4. Has your doctor helped you to develop a plan to increase exercise?

5. Has your doctor followed up with you at subsequent visits to see how you increased exercise?

We administered the questions at baseline and at follow-up. For our analyses, we used patient reports of physician counseling at 1-year follow-up, which covered all counseling received in the past 12 months.

We considered respondents to have met recommendations for physical activity if they had engaged in prescribed moderate or vigorous physical activities, or had walked for exercise 150 minutes a week.

Moderate physical activity was defined (according to the current CDC recommendations) as 30 cumulative minutes of moderate-intensity activity (brisk walking or jogging) at least 5 days per week.¹

Vigorous physical activity was defined as 20 minutes of vigorous-intensity activity (running) at least 3 days per week.¹

The sample was limited to participants who completed the baseline and follow-up surveys, and who reported at follow-up that they had no physical impairment that prevented walking (n=1141).

Statistical analysis

To evaluate how physician counseling would change a patient's physical activity between baseline and 1-year follow-up, we used multivariate logistic regression analysis. In accordance with the questions asked in the survey, we defined 5 potential predictors of a patient's decision to start exercising and keep exercising:

1. Patient has seen a doctor for regular care.

2. In a usual year, patient has seen a doctor once or less.

3. Patient has been advised to exercise more.

4. Doctor helped develop a plan to exercise more.

TABLE 2

What increased the likelihood of exercise? Regular medical care, a physician-assisted exercise plan, and physician follow-up (n=1141)

PHYSICIAN ENCOUNTERS/COUNSELING	PATIENTS MEETING PHYSICAL ACTIVITY RECOMMENDATIONS	
	aOR*	95% CI
1. Do you have a doctor whom you see for regular health care?		
Yes	1.54	1.04-2.28
No	Ref	
2. In a usual year, how often do you see your doctor?		
Once a year or less	1.41	1.02-1.95
Twice a year or more	Ref	
3. Have you been advised within the last year by a doctor to exercise more?		
Yes	0.68	0.52-0.90
No	Ref	
Of those advised to exercise more (n=402):		
4. Has your doctor helped you to develop a plan to increase exercise?		
Yes	1.93	1.19-3.15
No	Ref	
5. Has your doctor followed up with you at subsequent visits to see how you increased exercise?		
Yes	2.84	1.78-4.53
No	Ref	

aOR, adjusted odds ratio; CI, confidence interval; Ref, reference group.

*Adjusted for sex, age, educational attainment, and baseline physical activity.

5. Doctor followed up on plan to exercise more

For every patient who met physical activity recommendations at the 1-year follow-up, we performed regression analysis on each of these 5 measures, adjusting for baseline physical activity and potential confounders of age, education, and sex. This method allowed us to examine the independent effect of physician counseling on physical activity at 1-year follow-up.

The number of respondents analyzed differed according to the measure being examined. For example, we included all respondents in analyzing the effect of visit frequency and the effect of

being advised to exercise more (n=1141). However, only those respondents who reported being advised to exercise more were included in the analyses of a physician helping to develop an exercise plan and physician follow-up in supporting exercise behavior (n=402).

To determine whether physician counseling was consistent across BMI categories and income (dichotomized at \$25,000), we performed stratified analyses on the multilevel logistic regressions.

■ Results

The final cohort consisted of 1141 adults (TABLE 2). Those who did not respond to the follow-up survey were significantly more likely to be younger ($P<.001$), have less than a high school education ($P<.001$), and have an annual household combined income $< \$25,000$ ($P<.001$). Those completing the follow-up survey were more likely to have a doctor for regular care ($P<.001$), although they saw their doctor, on average, significantly less per year than nonrespondents ($P<.001$).

Ninety percent of the cohort sample reported having a doctor whom they saw for regular care. Within the last year, 35% had been advised by their doctor to exercise more. Of those who had been so advised, 34% received help from their physician in developing a plan to increase exercise, and 46% were queried at subsequent visits as to how they were progressing with their exercise program.

After adjusting for age, sex, education, and baseline physical activity, we found that those who had a doctor for regular care were 54% more likely to be physically active than those who reported not having a doctor for regular care (aOR=1.54; 95% CI, 1.04-2.28). If the advising physician also developed a plan with the patient to increase exercise, there was nearly a 2-fold increase in physical activity compared with those who received only advice to exercise more (aOR=1.93; 95% CI, 1.19-3.15). If the physician followed up with the

exercise plan at subsequent visits, the likelihood of physical activity increased further (aOR=2.84; 95% CI, 1.78-4.53) compared with those who did not receive follow-up from the physician.

Results of stratified analysis by BMI status are shown in TABLE 3. Individuals at normal weight were significantly more likely to be physically active if they had a physician for regular care (aOR=2.76; 95% CI, 1.49-5.13). Overweight adults (BMI 25-29.9 kg/m²) who had been advised by their physician to exercise more were significantly more likely to attain recommended levels of physical activity if their doctor helped develop an exercise plan than were those given more general advice about exercise (aOR=4.99; 95% CI, 1.69-14.73). Overweight individuals who received further counseling with follow-up inquiries were 5.64 times more likely to be physically active (95% CI, 2.10-15.17). A physician-developed exercise plan did not appreciably improve physical activity in obese adults (BMI ≥ 30 kg/m²); however, benefit in this group was demonstrated when physicians prescribed and followed up with the exercise plan (aOR=2.13; 95% CI, 1.10-4.12). Stratified analysis by income status provided no clear pattern (data not shown).

■ Discussion

Findings from our analyses support the need for more detailed and more frequent exercise counseling (including follow-up) by rural primary care physicians. In our study, physicians' counsel was most effective when presented as a plan or prescription that was followed up with periodic inquiries. Patients' initiation and maintenance of physical activity were significantly associated with physicians' follow-up of exercise plans. Those who were merely "advised" to exercise more were less likely to meet physical activity recommendations. This illustrates the importance of detailed physician counseling over simple advice to exercise more.

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Physician counseling was most effective when presented as a prescription and followed up with periodic inquiries

Over 80% of normal-weight individuals, who comprised more than 40% of the sample, reported that their physician had not suggested they exercise more. There are many possible explanations for these reports. Rural populations are relatively isolated and slow to adopt changes. Thus patients may be unaware of new recommendations for physical activity and their significant benefit for disease prevention, and therefore unlikely to discuss such matters with their physician. Physicians also may perceive normal-weight individuals as healthy regardless of their actual health behaviors. On the other hand, 1 study showed that patients with disease risk factors (eg, high cholesterol, elevated BMI) were more likely to be counseled on preventive health behaviors.³⁷

With overweight patients, who are at increased risk of developing chronic diseases, physician counseling strengthened their resolve significantly. Overweight individuals who received directives from their physician (a plan to increase exercise and subsequent follow-up) were 5½ times more likely to be physically active than those who received less counseling.

Obese patients did not receive counseling as often as overweight patients, or benefit from it as much when given, perhaps due to the presence of comorbidities. However, many studies show that regardless of BMI status, physical activity reduces all-cause mortality.³⁸⁻⁴¹

Interestingly, our results showed that seeing a doctor less than once a year was associated with increases in physical activity. Patients who see their physician once a year may be going for annual wellness exams, providing more opportunity to discuss health behavior.

Overall, patients are counseled less often/thoroughly than needed. Our findings agree with those of a previous statewide study that used Missouri BRFSS data to assess the extent to which overweight or physically inactive people received advice from their physicians concerning these risk factors.⁴² Although most

Missouri residents who were overweight or inactive reported seeing their physician within the past year, less than half said their doctors advised them to alter their risk behavior(s).⁴² Our findings are also consistent with a recent nationwide study by Ma and colleagues that focused on adults with obesity, diabetes, or other related conditions.⁴³ Participants from across the United States reported receiving counseling for physical activity in <30% of visits to private physician offices and hospital outpatient departments.⁴³

Our study was unique in that it examined a tri-state sample of the nation's rural population for both evidence and effectiveness of physician counseling. It is one of very few studies using a longitudinal design, strengthening the associations found. Causality is limited, however, due to the multifaceted design of the intervention program from which the data were obtained. Future research should evaluate varying degrees of physician counseling and other indirect measures of its impact.

Limitations of the study

Our observational cohort design and the large, randomly selected sample resulted in fewer limitations than were seen with previous similar studies. However, our study had several limitations.

- **Recall bias** may be present. We assessed counseling with patient memory alone; we made no attempts to interview physicians or audit charts.

- **Self-reported height and weight data** tend to underestimate the prevalence of obesity.^{44,45} Resultant misclassification of overweight subjects as being at normal weight could have skewed the stratified analysis.

- **The external validity** of the physician-counseling questions we used has not been formally confirmed. Given the demographics of the analytic sample (ie, mostly female, white, low income), it would be appropriate to generalize our findings only to similar, rural populations.

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Overweight patients whose doctors made a plan and followed up on it were 5½ times more likely to be active than those who received less counseling

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TABLE 3

What role does BMI play in patients achieving activity goals? (n=1107)

PHYSICIAN ENCOUNTERS/ COUNSELING	PATIENTS MEETING PHYSICAL ACTIVITY RECOMMENDATIONS* (aOR [95% CI])		
	NORMAL (BMI<25)	OVERWEIGHT (BMI 25-29.9)	OBESE (BMI ≥30)
Has seen a doctor for regular care	2.76 (1.49-5.13)	1.08 (0.51-2.29)	1.34 (0.62-2.91)
In a usual year, has seen a doctor ≤1 time	1.98 (1.13-3.47)	0.95 (0.54-1.68)	0.95 (0.47-1.92)
Has been advised to exercise more	1.02 (0.56-1.85)	0.75 (0.46-1.25)	0.77 (0.46-1.31)
Doctor helped develop a plan to exercise more	0.69 (0.22-2.18)	4.99 (1.69-14.73)	1.76 (0.87-3.56)
Doctor followed up on plan to exercise more	2.59 (0.80-8.36)	5.64 (2.10-15.17)	2.13 (1.10-4.12)

aOR, adjusted odds ratio; BMI, body-mass index; CI, confidence interval.
*Adjusted for sex, age, educational attainment, and baseline physical activity.

Barriers to counseling, and means of removing them

Primary care physicians—rural or urban—are no doubt aware of the health risks associated with physical inactivity. However, the barriers physicians face in counseling at-risk patients overwhelm most efforts. These barriers include lack of time, inadequate provider counseling skills and training, perceived ineffectiveness and nonadherence, patient comorbidities, and lack of organizational support and reimbursement.⁴⁶⁻⁴⁸

Intervention programs and tools have been developed to help health care providers overcome time, skill, and training barriers. These programs, available even to rural providers, have proven effective.^{49,50} (Go to www.paceproject.org/Home.html and click on “Projects” to learn about the PACE program.) However, application of such skills and tools may be more successful if training is incorporated into medical school curricula and residency training programs rather than through CME endeavors.⁴⁹ This would require medical institutions and organizations to prioritize the direct link between healthy lifestyle behaviors and disease prevention and the vital role physicians play in underscoring this link.

Finally, health care policy makers and systems must be persuaded to address the lack of organizational support and reimbursement that prevents physicians from counseling at-risk patients on unhealthy lifestyle behaviors. Responsible payers and providers should aggressively explore low-cost ways to promote physical activity and weight loss in primary care settings, to stem the tide of obesity-related chronic diseases. At the local level, physicians can team up to support policies that may enhance preventive counseling efforts²—increasing access to places for activity, encouraging physical activity programming in communities, schools, and organizations, and physical environment enhancements such as safe sidewalks, adequate lighting, and improved zoning.^{51,52} ■

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Obese patients did not receive counseling as often as overweight patients, or benefit from it as much when given

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Disclosure

The authors reported no potential conflict of interest relevant to this article.

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A PACE kit can help you design a physical activity program for your patient:
www.drjamesallis.sdsu.edu/paceform.pdf

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FAST TRACK

The barriers physicians face in counseling at-risk patients overwhelm most efforts

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