

# Changing Physician Practice of Physical Activity Counseling

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**We conducted a prospective controlled trial to determine whether an educational intervention could improve resident physician self-efficacy and counseling behaviors for physical activity and increase their patients' reported activity levels. Forty-eight internal medicine residents who practiced at a Department of Veterans Affairs hospital received either two workshops on physical activity counseling or no intervention. All residents completed questionnaires before and 3 months after the workshops. The 21 intervention physicians reported increased self-efficacy for counseling and increased frequency of counseling compared with the 27 control physicians. Approximately 10 patients of each resident were included in the study and surveyed before and 6 months after the intervention. Of 560 patients, 465 (83%) returned both questionnaires. Following the intervention, there were no significant differences between patients of intervention and control physicians on any outcome measures. We conclude that educational interventions can improve physicians' reported self-efficacy of physical activity counseling but may not increase patient physical activity levels. Alternative approaches that emphasize overcoming the substantial barriers to exercise in chronically ill outpatients clearly will be important for facilitating changes in physical activity.**

**KEY WORDS:** exercise; counseling; health promotion; health behavior; medical education.

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Regular physical activity has extensive health benefits. The Centers for Disease Control and Prevention has recommended that each adult exercise at moderate intensity for 30 minutes or more on most days of the week, yet only about 20% of adults exercise at that level, and at least 40% are completely sedentary.<sup>1,2</sup> Benefits of physical activity counseling by primary care physicians are largely unstudied, and existing evidence is insufficient to conclude that counseling is effective (grade C recommendation).<sup>3-5</sup> The present study was designed to examine whether an educational intervention for changing res-

ident physicians' attitudes and behaviors toward counseling is effective and whether such changes are associated with increased activity levels among their patients with chronic illnesses.

## METHODS

### Participants

All 48 residents of the Oregon Health Sciences University internal medicine residency program who have a weekly clinic at the Department of Veterans Affairs (VA) Medical Center in Portland, Ore, were included in this study. The residents attend clinic the same day each week, and days were randomly assigned to control or experimental conditions. Twenty-one physicians received the intervention, and 27 control physicians received no intervention. Approximately 10 patients were enrolled in the study for each physician who participated. The patient sample was determined by taking each resident's panel of patients and selecting all those scheduled for an appointment during the 3-month physician intervention period (so each patient would have at least one exposure to the intervention). Surveys were then sent to every third patient on this list, which ensured that more than 10 patients of each physician would be included in the sample. All patients signed an informed consent form.

### Questionnaire

Physicians completed surveys before and 3 months after the workshops. Using Likert scales, physicians rated their skill (self-efficacy) in taking an exercise history, assessing patient contraindications to exercise, writing an exercise prescription, and persuading patients to adopt an exercise program (four questions). They also reported the percentage of patients with whom they performed these activities (three questions). Patients were surveyed at the start of the study and 6 months after the physician intervention. The same written questionnaire was used for both patient surveys. It included five items on current health status (taken from the Medical Outcomes Study 20-item Short Form),<sup>6</sup> four items on total activity, and six items on patient perceptions of physical activity counseling by the physician (labeled "physician behavior"). The physician behavior questions asked patients their perceptions of frequency of physical activity counseling by their physician during past outpatient visits using six Likert-type questions (1 = never, 2 = once or twice, 3 = several times, 4 = frequently, and 5 = every visit). These questions were specific to the counseling techniques in the in-

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intervention, including taking an exercise history, writing an exercise prescription, etc.

## Intervention

The workshops were based on the stages-of-change behavioral model that categorizes people as precontemplator, contemplator, or active, and targets counseling specifically to that stage of behavior.<sup>4,7,8</sup> In this model, precontemplators are people who are not currently active and are not considering activity. Contemplators are people who would like to become more active, and active people exercise regularly for at least 20 minutes per day most days of the week.

We taught physicians to use this model for the VA patient population, an elderly population with multiple chronic diseases. All experimental residents attended two 2-hour workshops, facilitated by one of the authors (EE). During the first workshop, physicians learned physical activity counseling skills, with special attention to practical concerns of patients with chronic illnesses such as chronic obstructive pulmonary disease, congestive heart failure, and diabetes. In the second workshop, physicians described their attempts at counseling, and the group brainstormed alternative actions for problems that arose. Several example cases were discussed to practice counseling strategies. Physicians were provided an educational handout summarizing the content of the workshop and a comprehensive list of community resources to give to patients interested in beginning a physical activity program.

## Statistical Analysis

Questionnaire responses of control physicians and those of intervention physicians were compared using

two-tailed Student's *t* tests. Patient responses included the four assessed domains of interest: health status, total activity, stage of change, and physician behavior change. Two-tailed Student's *t* tests were performed comparing responses of patients of control physicians and responses of patients of intervention physicians for each of the three summative scales: total activity, physician behavior, and perception of current health status. Results are shown as mean differences [(Intervention, after – Intervention, before) – (Control, after – Control, before)].

Because patients were recruited from the panels of resident physicians who were the subjects of the study, patient-level data were analyzed using regression analysis that allowed use of the Huber-White/sandwich estimator to account for the clustering observations. The dependent variable was calculated as change over time. The independent variable was group (intervention or control). The only covariate was the baseline value of the variable. For the continuous dependent variables (physician behavior change, activity level, and perceptions of health status), a multiple regression routine was used.

## RESULTS

### Physicians

All 48 physicians completed both questionnaires. There were no significant differences between control and intervention physicians for any demographic characteristics. Thirty-one percent of physicians were in their first year of residency, 40% were in their second year, and 29% were in their third year. The physicians who participated in the workshops reported increased self-efficacy for writing exercise prescriptions and persuading patients to begin exercise compared with control physicians.

Table 1. Resident Attitudes and Practices Regarding Physical Activity\*

Question	Control Scores (n = 27)		Intervention Scores (n = 21)		Mean Diff. Between Change Score (SD)	p Value for Change
	Before	After	Before	After		
<b>Behavior<sup>†</sup></b>						
What percentage of patients do you question about physical activity habits?	3.56	3.59	3.57	4.05	0.45 (0.88)	.087
What percentage of patients do you advise to engage in regular physical activity as part of treatment for their disease conditions?	3.52	3.26	3.48	3.86	0.64 (0.86)	.02
For what percentage of patients do you write an exercise prescription?	2.41	2.44	2.86	3.33	0.44 (0.87)	.087
<b>Self-efficacy<sup>‡</sup></b>						
Rate your skill at taking a history about physical activity.	2.44	2.52	2.33	2.71	0.3 (0.59)	.124
Rate your skill at assessing a patient's contraindications to exercise.	2.00	2.30	2.24	2.62	0.08 (0.74)	.66
Rate your skill at writing an exercise prescription.	1.96	2.19	2.05	2.76	0.48 (0.95)	.045
Rate your ability to persuade patients to begin regular physical activity when appropriate.	3.30	3.19	3.14	3.67	0.64 (0.98)	.02

\*Scores after intervention are compared between groups after controlling for scores before intervention.

<sup>†</sup>For behavior questions, 1 = <10%, 2 = 10%–25%, 3 = 26%–50%, 4 = 51%–75%, and 5 = 76%–100%.

<sup>‡</sup>For self-efficacy questions, 1 = poor, 2 = fair, 3 = good, and 4 = excellent.

**Table 2. Patient Perceptions of Physical Activity, Physician Behaviors, and Health Status**

Patient Perception	Control		Intervention		Mean Difference (SD)	<i>p</i> Value for Change
	Before	After	Before	After		
Total activity: Do you do some regular exercise? If so, how often? (range, 0–12 based on frequency and duration)	4.8	4.1	4.5	4.1	0.3 (3.3)	.82
Physician behavior (range, 6–30)	14.3*	15.2	15.7*	16.5	−0.1 (6.7)	.25
Current health status from SF-20 (range 5–25)	12.3	12.9	12.2	12.7	−0.1 (4.3)	.51

\**p* < .03 for comparison of baseline data.

Workshop physicians also reported increased mean frequency of exercise counseling compared with control physicians (Table 1).

## Patients

Of the 905 patients who were sent questionnaires, 560 (62.4%) completed and returned the first questionnaire. Of these respondents, 465 (83%) completed both questionnaires, and it is these patients who are included in the analysis. No statistically significant demographic differences were found between patients of intervention physicians and patients of control physicians. Patients had a mean age of 62, tended to perceive their health as “fair,” and reported exercising on average once a week. Following the intervention, there were no statistically significant differences between the mean responses of patients of intervention and control physicians for any of the outcome measures of total activity, physician behavior, and the perception of current health status scale (Table 2).

## DISCUSSION

We found that an educational intervention improved resident physicians' self-efficacy and self-reported rates of physical activity counseling. However, the intervention did not affect patient perceptions about physician counseling or their physical activity behaviors as reported on a short-term follow-up survey. Previous interventions in physical activity have demonstrated the stages-of-change behavioral model to be useful in promoting exercise adherence in young, healthy patients.<sup>9</sup> Our study used this model in a primary care setting with older, ill patients. The physicians who participated in the study reported increased self-efficacy for counseling and believed they had changed their behavior, incorporating several effective counseling strategies into routine outpatient visits. This type of workshop, which was effective at changing physician self-efficacy over a 3-month period, could easily be replicated in other educational settings in many health promotion areas.

Older people with chronic diseases have much to gain by participating in regular physical activity. Previous studies have led experts to recommend that, “A physi-

cian's active interest and encouragement in how the patient is succeeding in becoming more physically active can be very helpful in increasing adherence [to exercise].<sup>10</sup> However, this study found no increased patient adherence to exercise with physician support. A logical path for further research in this area is to explore ways for physicians and patients with chronic diseases to work together to minimize barriers to performing regular physical activity. Interventions may need to consider specific attitudes toward physical activity, benefits of physical activity, barriers to physical activity, and factors that facilitate physical activity that are unique to the elderly and chronically ill.

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## REFERENCES

- Harris SS, Caspersen CJ, DeFries GH, Estes EH. Physical activity counseling for healthy adults as a primary preventive intervention in the clinical setting. *JAMA*. 1989;261:3590–8.
- Pate RR, Pratt M, Blair SN, et al. Physical activity and public health: a recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA*. 1995;273:402–7.
- United States Preventive Services Task Force. Guide to Clinical Preventive Services. 2nd ed. Alexandria, Va: International Medical Publishing; 1996:611–24.
- Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: applications to addictive behaviors. *Am Psychologist*. 1992;47:1102–14.
- Calfas KJ, Long BJ, Sallis JF, Wooten WJ, Pratt M, Patrick K. A controlled trial of physician counseling to promote the adoption of physical activity. *Prev Med*. 1996;25:225–33.
- Stewart AL, Hays RD, Ware JE. The MOS Short-form General Health Survey. *Med Care*. 1988;26:724–35.
- Marcus BH, Rakowski W, Rossi JS. Assessing motivational readiness and decision making for exercise. *Health Psychol*. 1994;11:257–61.
- Pender NJ, Sallis JF, Long BJ, Calfas KJ. Health care provider counseling to promote physical activity. In: Dishman RK, ed. *Advances in Exercise Adherence*. Champaign, Ill: Human Kinetics; 1994:213–34.
- Marcus BH, Simkin LR. The stages of exercise behavior. *J Sports Med Phys Fitness*. 1993;33:83–8.
- Andersen RE, Blair SN, Cheskin LJ, Barlett SJ. Encouraging patients to become more physically active: the physician's role. *Ann Intern Med*. 1997;127:395–400.