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Sedentary Lifestyle as a Risk Factor for Self-Reported Poor Physical and Mental Health

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PURPOSE

Persons who exercise regularly have lower incidence rates of heart disease, hypertension, non-insulin-dependent diabetes, cancer, anxiety, and depression than those who are sedentary.¹ Physical activity is associated with measures of functional status (such as the number of days that elderly people are sick in bed² and the number of days that employees are absent from their jobs³) and with the ability to perform activities of daily living and live independently.⁴

Although physical activity has been correlated with the incidence of specific diseases and the ability to perform specific tasks, little is known about the effects of recreational physical activity on day-to-day perceived health status. It is not known whether people who engage in regular physical activity actually experience fewer days of perceived poor health than people who are sedentary.

This study investigates the relationship between physical activity and perceived physical health, mental health, and restricted activity. Restricted activity, like measures of functional status, absenteeism, and independent living, reflects the presence of health conditions that limit a person's ability to perform certain tasks. Measures of perceived physical and mental health, in contrast, also assess health problems that allow a person to engage in regular activities but still produce subjective feelings of compromised health. These more minor health problems may reflect subtle differences in quality of life.

Although studies of the relationship between physical activity and functional status typically involve older populations, self-perceived poor health and restricted activity occur in people of all age groups. This study of a random sample of California residents ranging in age from 18 to 93

years evaluates the evidence for a relationship between physical activity and day-to-day perceived health across age groups. I hypothesized that sedentary persons would be at increased risk for experiencing poor physical and mental health relative to those who engaged in recreational physical activity.

METHODS

Design and Sample

This study used a cross-sectional design. The data used in these analyses are from the 1993 California Behavioral Risk Factor Surveillance System (BRFSS),⁵ a telephone survey of randomly selected adults that was conducted by the California Department of Health Services in collaboration with the Centers for Disease Control and Prevention and the California Public Health Foundation. The objective of the California BRFSS is to assess the prevalence of and trends in health-related behaviors in the California population aged 18 years and older.

The subjects in this present analysis are the 3610 adults (56.5% women, 43.5% men) who participated in the California BRFSS survey in 1993. The average age of the subjects was 44.6 years (SD = 17.1 years). The majority (73.9%) of the subjects identified themselves as "White" on a question assessing race, followed by "Other" (11.3%), "Asian/Pacific Islander" (7.1%), "Black" (6.0%), and "American Indian/Alaska native" (1.5%). Of the subjects who identified themselves as "Other," 81.4% (9.2% of the entire sample) identified themselves as "Hispanic" in a previous question assessing ethnic identification. The majority of the subjects (60.2%) were employed or self-employed, and 16.2% were retired. The median education level was 1 to 3 years of college, and the median household income was between \$25,000 and \$35,000 per year.

Measurement

Cluster sampling techniques were used to generate a random sample of all California households with telephones. One resident over 18 years of age was selected from each household to become the respondent. Respondents were interviewed by telephone by trained interviewers using a computer-assisted telephone interview system.

Exercise behavior was assessed with a single dichotomous item: "During the past month, did you participate in any physical activities or exercises such as running, calis-

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Table 1
Percent of Subjects Reporting Each Health Outcome

Health Outcome	Men			Women		
	Less Than 35 Years	35-49 Years	More Than 50 Years	Less Than 35 Years	35-49 Years	More Than 50 Years
More than 2 days poor physical health in past month	19.5*	14.4*	22.6 [†]	25.7	26.9	28.4
More than 2 days restricted activity in past month	11.4*	11.2*	13.0	16.8	19.9	16.7
More than 2 days poor mental health in past month	28.3*	24.0*	16.3 [‡]	41.6	34.4 [†]	20.2 [‡]

* Significantly different from women of the same age group, $p < .05$.

[†] Significantly different from <35 age group, $p < .05$.

[‡] Significantly different from 35-49 age group, $p < .05$.

tenics, golf, gardening, or walking for exercise?" Subjects who answered no to this question (18.2% of the sample, SD = 38.6%) were classified as sedentary.

The measures of day-to-day health status asked how many days in the past month the subject reported experiencing poor physical health (physical illness and injury), poor mental health (stress, depression, and problems with emotions), and restricted activity (self-care, work, or recreation). The percentages of subjects reporting each health outcome were 23.4% for poor physical health (SD = 42.4%), 27.9% for poor mental health (SD = 44.9%), and 15.2% for restricted activity (SD = 35.9%).

Although the reliability and validity of these specific measures are unknown, previous studies^{6,7} have found measures similar to these to be reliable and valid.

Analysis

Because the distributions of the health status variables were skewed, dichotomous indicators of perceived health status were created. Subjects were divided into those who reported more than 2 days of compromised or restricted health in the past month and those who did not. This classification corresponds with the US Surgeon General's goal of a 20% reduction in the average annual number of days of restricted activity resulting from acute and chronic conditions.⁸ Depending on the definition of restricted activity, this goal translates into approximately 2 to 2.5 days of restricted activity per month.⁷

Subjects were divided into three age groups: under 35 (n = 1208), 35 to 49 (n = 1173), and 50 and over (n = 1229). By means of logistic regression, the health status variables were regressed on physical activity status. Odds ratios were calculated from the parameter estimates obtained in the logistic regression analyses.

RESULTS

Overall, a significantly greater percentage of women (20.3%) than men (15.6%) reported being sedentary in the past month ($\chi^2 = 13.01$, $p < .001$). The proportions of subjects classified as sedentary were 17.8% in the under 35 age group, 16.1% in the 35 to 49 age group, and 20.8% in

the 50 and older group ($\chi^2 = 9.15$, $p < .05$).

Table 1 shows the proportion of subjects who reported experiencing more than 2 days of poor physical or mental health or restricted activity in the past month. In general, the prevalences of these indicators of poor day-to-day perceived health were higher for women than for men, but most of the age differences were nonsignificant.

Table 2 shows the relative risk of experiencing each of these outcomes for subjects who were sedentary relative to those who engaged in physical activity in the past month. These odds ratios indicate how many times more likely sedentary persons than active persons were to experience the health outcome. For men of all age groups, sedentary behavior was associated with a higher risk of reporting more than 2 days of poor physical health or restricted activity. For women, these relationships were significant only in the older age groups. Sedentary behavior was associated with an elevated risk of reporting more than 2 days of poor mental health for men and women in the 50 and older age group.

DISCUSSION

Summary and Interpretation

In this random sample of adults in California, living a sedentary lifestyle was associated with an increased risk of experiencing poor day-to-day perceived health, especially for older subjects. Sedentary men and women in the age group over 50 years were approximately twice as likely as their more active counterparts to have experienced more than 2 days of poor physical and mental health and restricted activity in the past month. In addition, sedentary behavior was a risk factor for poor physical health and restricted activity in younger men. Increased risks associated with sedentary behavior for women were evident mainly in the over 50 age group.

Significance

These results suggest that sedentary behavior has negative consequences for day-to-day ratings of health status in addition to its consequences for objectively diagnosed medical conditions and functional status. Living

Table 2
Relative Risk of Experiencing Health Outcomes (by Age Group) for Sedentary Persons
Compared with Those who Engaged in Physical Activity in the Past Month*

Outcome		Younger Than 35	35-49	50 and Older
Men	More than 2 days poor physical health	1.89 [†] (1.00, 3.24)	1.85 (1.00, 3.43)	1.66 (1.00, 2.74)
	More than 2 days restricted activity	2.09 [†] (1.11, 3.98)	2.38 [†] (1.25, 4.56)	2.11 [†] (1.17, 3.82)
	More than 2 days poor mental health	1.12 (0.67, 1.89)	1.57 (0.91, 2.69)	2.19 [†] (1.27, 3.77)
Women	More than 2 days poor physical health	1.47 (0.97, 2.23)	1.81 [†] (1.78, 2.78)	1.94 [†] (1.33, 2.82)
	More than 2 days restricted activity	1.45 (0.91, 2.34)	1.40 (0.87, 2.26)	2.90 [†] (1.91, 4.41)
	More than 2 days poor mental health	1.30 (0.86, 1.90)	1.06 (0.89, 1.82)	1.99 [†] (1.33, 2.99)

* Lower and upper bounds of the 95% confidence intervals are shown in parentheses.

† Odds ratios with confidence intervals that do not include 1, which are significant at $p < .05$.

a sedentary lifestyle may put people at risk for experiencing feelings of poor physical and mental health. Regardless of whether these subjective feelings are reflected in higher incidence rates of disease or measurable disabilities to perform specific tasks, subjective ratings of perceived health status reflect quality of life. Because the ultimate goal of health promotion programs is to improve quality of life, reducing subjective feelings of poor physical and mental health is an important component of health promotion. To achieve this objective, health promotion programs should encourage physically active lifestyles.

These results indicate that large amounts of physical activity are not necessary for higher day-to-day perceived health status. Subjects who reported engaging in any physical activity in the past month, including less strenuous activities such as golf, gardening, or walking, experienced significantly fewer days of compromised health than their sedentary counterparts.

Limitations

Because these data are cross-sectional, they cannot establish causality. These results are also consistent with the very plausible hypothesis that having a high health status leads to higher levels of physical activity. Longitudinal data are needed to clarify the direction of the relationship between physical activity and health status.

The subjects in this study were adults with telephones in their homes who agreed to participate in a survey of health behaviors. Although the response rates for the California BRFSS surveys are typically above 80% and the demographic distribution of BRFSS subjects closely resembles that of the California population,⁵ these results may not be representative of those who declined to participate or do not have telephones in their homes.

Because the BRFSS surveys are cross-sectional and do not involve physiologic validation measures, it is impossible to assess the reliability and validity of the specific measures used in this analysis. However, other studies^{6,7} have reported good psychometric properties for measures similar to those used in the BRFSS survey.

The 1993 BRFSS survey did not assess type, frequency, or intensity of physical activity. Therefore, it is impossible to determine from these data whether a certain level of activity is necessary to produce benefits for quality of life. These results do indicate, however, that persons who do not engage in any physical activity are at increased risk of experiencing poor perceived physical and mental health relative to those who engage in even moderate activity.

Although previous research⁷ has shown positive relationships between physical activity and psychologic health across age groups, the present study found this effect only in the oldest age group. Sedentary subjects in the over-50 age group were approximately twice as likely to report more than 2 days of poor mental health in the past month as subjects who engaged in physical activity in the past month. Perhaps more frequent or strenuous activity is necessary to produce changes in psychologic well-being in younger subjects.

These results have implications for health promotion practitioners, suggesting that encouraging sedentary persons to engage in mild physical activity may lead to improvements in their self-reported day-to-day physical and mental health.

References

1. Dubbert P. Exercise in behavioral medicine. *J Consult Clin Psychol* 1992;60:613-8.
2. Leigh J, Fries J. Health habits, health care use and costs in a sample of retirees. *Inquiry* 1992;29:44-54.
3. Berters R. The effects of workplace health promotion on absenteeism and employment costs in a large industrial population. *Am J Public Health* 1990;80:1101-5.
4. Shephard R. Exercise and aging: extending independence in older adults. *Geriatrics* 1993;48:61-4.
5. California Department of Health Services. California Behavioral Risk Factor Surveillance System: SAS dataset documentation and technical report. Sacramento, California: Department of Health Services, 1994.
6. Kosorok M, Omenn G, Diehr P, Koepsell T, Patrick D. Restricted activity days among older adults. *Am J Public Health* 1992;82:1263-7.
7. McAuley E. Physical activity and psychosocial outcomes. In: Bouchard C, Shephard R, Stephens T, editors. *Physical activity, fitness, and health*. Champaign, Illinois: Human Kinetics Publishers, 1994:551-68.
8. US Department of Health, Education, and Welfare. *Healthy people: the Surgeon General's report on health promotion and disease prevention*. 1979. DHEW publication PHS 79-55071.