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## Health advantages of physical fitness

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As Americans become more and more enamored of physical fitness, medical researchers are increasingly probing the impact of physical fitness on health. Two of their more interesting findings on the subject are reported in the Sept. 21 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and in *MEDICINE AND SCIENCE IN SPORTS* (Vol. 11, No. 2: 186-189): Whereas superior athletic performance or habitual exercise does not guarantee protection against death by heart disease, vigorous physical exercise does appear capable of keeping one's mind sharp in later years. The former result comes from the work of Paul D. Thompson and his colleagues at Stanford University Medical Center in Stanford, Calif. The latter result comes from that of David E. Sherwood and Dennis J. Selder of San Diego State University in San Diego, Calif.

Various epidemiologic studies have suggested that ample physical activity reduces the incidence of death by heart disease. Americans, however, have been known to die during or right after strenuous exercise, and little was known about the pathology, prior health habits and activity levels of such persons. Thomas and his co-workers studied the medical histories of 17 men and one woman who had died during or right after jogging or running to determine the causes of their deaths, their health status before death, how long they had been exercising, whether they had consulted with a physician regarding exercises, and whether they had ignored crucial health warnings that might have helped to prevent the deaths.

As Thompson and his colleagues report in *JAMA*, 13 of the 18 died from coronary heart disease, three from heart-related dysfunctions, one from heat stroke and one from unknown causes. Six of the subjects had known heart attack risk factors before they died, such as high blood pressure, fibrillation of the heart or a heart attack. All but four of the victims had been exercising regularly for at least a year before their deaths, and three had been running more than 100 miles a month. Fifteen had seen a physician in the year prior to their deaths, and 12 out of the 15 had received their physician's approval regarding jogging or running. Six had experienced warning signs of heart trouble, such as breathing difficulty or stomach pains, yet had ignored them and had continued their usual level of exercise.

Thus it looks as if long-term and strenuous exercise do not necessarily protect people from death by heart disease, Thompson and his co-workers conclude. In fact, exercise appears capable of aggravating heart disease in persons already prone to it. The problem, however, is that

there is no sure-fire way, even with a physician's help, of identifying which persons will die from heart disease while exercising and which won't. Nonetheless, one possible way people can avoid such a calamity is to stop exercising immediately if they note any change in their usual health status and to see a physician about it.

Decreased mental sharpness, which comes with aging, may be due not only to a loss of neurons but also to cardiovascular or cerebrovascular disease. Animal and human studies have suggested that exercise can improve nervous system function and help protect against heart disease deaths.

Because reaction time is known to slow with age, senility and heart disease, and to indicate how well the nervous system is working, Sherwood and Selder studied the reaction times of 32 runners and 32 nonrunners from ages 24 to 59 years. As the investigators report in *MEDICINE AND SCIENCE IN SPORTS*, there was a gradual decline in reaction time performance among nonrunners as their ages increased, but this trend was not evident among runners. So physical activity might well help ward off decreased mental sharpness that tends to come with aging, Sherwood and Selder conclude. □

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## Taste and smell lessen with age

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The senses of taste and smell are inextricably connected, and both can have a profound effect on appetite. In elderly persons, the neurological functions that govern these senses decrease with age as a result of age-related neuron loss, and the elderly lose the intensity of taste and smell that they possessed when younger. This can lead to a concomitant decline in appetite, which may lead to nutritional problems, reported Susan Schiffman of Duke University Medical Center in Durham, N.C., last week at the annual meeting of the American Aging Association in Washington.

Schiffman used an olfactometer to compare the abilities of college students and elderly persons to detect and discriminate odors. The groups were matched as much as possible for background and socioeconomic level, both of which can be important factors in familiarity with tastes and smells.

College students, Schiffman found, are able to detect an odor at much lower concentrations than are elderly people. This change in threshold affects eating not only because odor itself can stimulate appetite, but also because some people notice a bitter taste in foods that they are unable to smell. Schiffman reports that a significantly greater percentage of elderly persons complained of a bitter flavor in foods that tasted normal to younger subjects.

For the elderly, this may mean that foods they once enjoyed no longer taste good.

A decreased sense of smell among elderly persons held true not only for food, but for less pleasant odors as well. Schiffman tested her subjects with urine-like odors, and found that aged subjects had even more difficulty detecting those odors than they did the food smells. She believes that this may account for the tolerance in the elderly of the sometimes malodorous atmosphere of nursing homes and hospitals. Many younger persons, she said, say that they can't stand to work there because of the smell, although older residents seem unbothered.

Schiffman also found that elderly persons lose the ability to discriminate between unlike tastes, as well as to identify familiar ones. She prepared foods to make them identical in consistency, then tested them on blindfolded subjects. For elderly persons, she said, "Things began to taste the same. The person might be able to detect a taste, but not be able to tell what it is." For example, only 55 percent of her elderly subjects recognized the taste of apple, while 81 percent of the college students identified it correctly. Many elderly persons prefer fruit flavors, however, Schiffman said, because the ability to taste these flavors often lingers longer.

The explanation for this decline in sensory ability, Schiffman said, may lie in the fact that tastes are coded across neurons. For example, she said, "There is a difference in the codes for salty tastes and for bitter tastes. With age we drop neurons, and so with age there is less difference between the two patterns. If a person needed a total neural mass of, say ten, to detect taste, he may need a larger mass to discriminate between tastes." □

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## NIH to relax DNA rules

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Approximately 85 percent of the experiments now covered by the National Institutes of Health guidelines on recombinant DNA research would be exempted from most of the rules under a proposal recently approved, by a vote of 10 to 4, by the recombinant DNA Advisory Committee. The proposal would require only minimum (P1) safety conditions for most experiments using *E. coli* K12, a deliberately weakened strain of bacterium. The change proposed would not affect experiments currently prohibited, such as those involving known toxins, or experiments requiring more than 10 liters of culture medium. NIH director Donald Fredrickson is expected to accept the committee's recommendation. In a closed session of the last meeting, the committee also gave special approval for large-scale experiments proposed by Eli Lilly and Genentech. The pharmaceutical company and small research firm are collaborating on efforts to make large amounts of human insulin in bacteria. □