encouraging small educational groups which also have a supportive framework. Stress management courses have been shown to produce significant short-term improvements in stress and burnout test scores.[10] Training programmes can encourage doctors' personal development in self-awareness, in sharing feelings and responsibilities, of a personal philosophy and of non-traditional coping skills; they may also encourage doctors to see things from a new perspective and to set limits upon external demands.[11]

Lastly, we as general practitioners can take practical measures, for instance by not taking on too much extra work, or making periodic changes to work patterns, such as attending conferences that interest us or perhaps initiating a new project. We should positively try to foster good working relationships with other members of the practice team and share concerns and anxieties about patients or working regulations. By monitoring our own feelings and behaviour we should be able to detect early negative changes in good time to remedy them.

The profession as a whole has a major challenge before it. Medical institutions are frequently perceived by their members as divorced from the difficulties and stresses of the real world of medical practice. The time has come for urgent, positive and effective action with a concerted plan from medical schools, the royal colleges and the British Medical Association.

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References

1. Mayou R. Burnout [editorial]. *BMJ* 1987; **295:** 284-285.
2. British Medical Association. *Stress and the medical profession.* London: BMA, 1992.
3. Winefield HR, Anstey TJ. Job stress in general practice; practitioner age, sex, and attitudes as predictors. *Fam Pract* 1991; **8:** 140-144.
4. General Medical Council. *Annual report.* London: GMC, 1991.
5. Garden AM. Relationship between burnout and performance. *Psychol Rep* 1991; **68:** 963-977.
6. Gabbard GO. The role of compulsiveness in the normal physician. *JAMA* 1985; **254:** 2926-2929.
7. Howie JGR, Hopton JL, Heaney DJ, Porter AMD. Attitudes to medical care, the organization of work, and stress among general practitioners. *Br J Gen Pract* 1992; **42:** 181-185.
8. Bailey RD. *Coping with stress in caring.* Oxford: Blackwell, 1985.
9. McCrarie E, Brandsma JM. Personality antecedents of burnout among middle-aged physicians. *Behav Med* 1988; spring: 30-36.
10. McCue JD, Sachs CL. A stress management workshop improves residents' coping skills. *Arch Intern Med* 1991; **151:** 2273-2277.
11. Quill TE, Williamson PR. Healthy approaches to physician stress. *Arch Intern Med* 1990; **150:** 1857-1861.

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Exercise and health promotion

PHYSICAL activity is good for doctors and their patients,[1,2] and is of particular benefit in preventing cardiovascular disease.[3] Early studies indicated that physical activity during work or leisure reduced the risk of heart attack,[4–6] a finding subsequently confirmed in many studies including the Framingham heart study.[7] Powell and colleagues, in a review of 43 studies of physical activity, found a consistent inverse association between physical activity and coronary heart disease[8] and a subsequent meta-analysis confirmed the increased risk associated with inactivity in a sedentary population.[9] Berlin and Colditz concluded that lack of physical activity was a potentially modifiable risk factor for coronary heart disease that should receive greater emphasis.[9] There is now increasing interest in the relationship between physical activity and lipid metabolism,[10-12] and population studies show an elevation in high density lipoprotein cholesterol level associated with physical activity.[13] The evidence supporting the benefits of physical activity is convincing, the beneficial effects are dose related to intensity of exercise and there is good evidence that the relationship is causal.[14] The relative risk of physical inactivity may be as great as the accepted risk factors of smoking, hypertension and hypercholesterolaemia for coronary heart disease.[15]

However, the Allied Dunbar national fitness survey found that seven out of 10 men and eight out of 10 women in the age group 16–74 years in England were active at a level below that necessary to achieve cardiovascular benefit.[16] One third of men and two thirds of women had difficulty walking at three miles per hour up a 5% gradient for more than a few minutes and many people aged over 55 years had inadequate strength to carry out the tasks of daily living. This survey also revealed an interesting contradiction in that, although most people believed physical activity was important for health and regarded themselves as fairly fit, only a minority took sufficient exercise.

Clearly there is a need to increase participation in physical activity at all ages among those who are least active. Exercise is included in most health promotion recommendations and strategies,[3,17–19] and while exercise is not included in the targets of *The health of the nation*,[20] it is likely to be introduced in the future. However, it is not enough to recommend to people that they take more exercise, there must be suitable facilities, opportunities, knowledge and expertise available and there must be a culture of participation. Promotion of exercise is an intersectoral responsibility; those involved in education, local authorities, sporting organizations, the regional sports councils and public health bodies all have a part to play, but we as general practitioners also have a role. This need not mean a major change in the consultation or additional intervention in our already busy surgeries, but simply an awareness of the benefits and an acceptance of the value of exercise in health promotion. We could introduce exercise as part of lifestyle counselling, include exercise in the protocol for our health promotion clinics and record exercise participation in patients' notes. We should have some knowledge of the basic principles of exercise, be aware of what is appropriate, and be able to tailor an exercise prescription to meet patients' needs.

The accepted target for beneficial physical activity is 20 minutes aerobic activity on three occasions per week,[21] but recent evidence indicates that exercise need not be vigorous and that moderate levels of physical fitness, attainable by most adults, appear to be protective.[22] Indeed, encouraging moderate physical activity may be more acceptable for patients. Physical activity can be integrated into daily living — walking upstairs rather than taking the lift, walking or cycling to work rather than taking the car and including active tasks into everyday life. Activity may be increased gradually, progressing to active leisure such as gardening and hill walking. As work-related activity declines with modern living, the focus should be on sport and exercise which involve continuous aerobic movements, such as brisk walking, jogging, cycling and swimming. For long term compliance the most important principle is that it should be enjoyable.

In summary, inactivity is a well-recognized risk factor in car-

diovascular disease,[8,9] with increasing evidence of its relevance in other conditions,[23–25] but few of us are sufficiently active. Exercise is safe, inexpensive, accessible, self administered and has few side effects, a form of lifestyle modification that we may all enjoy. The responsibility for promoting physical activity is shared among many agencies but we, as general practitioners, do have a part to play. This is not another plea to include a marginal specialty into the core skills of general practice, but a call to recognize the value and potential benefit of physical activity and realize our potential as general practitioners to influence lifestyle.

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References

1. Fentem P, Bassey J, Turnbull N. *The new case for exercise.* London: Health Education Authority and Sports Council, 1988.
2. Dargie HJ, Grant S. Exercise. *BMJ* 1991; **303:** 910-912.
3. Royal College of Physicians. *Medical aspects of exercise: benefits and risks.* London: RCP, 1991.
4. Morris JN, Heady JA, Rafle PAB, *et al.* Coronary heart disease and physical activity at work. *Lancet* 1953; **2:** 1053-1057, 1111-1120.
5. Paffenbarger RS, Laughlin ME, Gima AS, Black RA. Work activity of longshoremen as related to death from coronary heart disease and stroke. *N Engl J Med* 1970; **282:** 1109-1114.
6. Paffenbarger RS, Wing AL, Hyde RT. Physical activity as an index of heart attack risk in college alumni. *Am J Epidemiol* 1978; **108:** 161-175.
7. Kannel WB, Belanger A, D'Agostino R, Israel I. Physical activity and physical demand on the job and risk of cardiovascular disease and death: the Framingham study. *Am Heart J* 1986; **112:** 820-825.
8. Powell KE, Thompson PD, Casperson CJ, Kenricks JS. Physical activity and the incidence of coronary heart disease. *Annu Rev Public Health* 1987; **8:** 253-287.
9. Berlin JA, Colditz A. A meta-analysis of physical activity in the prevention of coronary heart disease. *Am J Epidemiol* 1990; **132:** 612-627.
10. Krauss RM. Exercise, lipoproteins and coronary artery disease. *Circulation* 1989; **79:** 1143-1145.
11. Lewis B. Diet and exercise as regulators of lipid risk factors. *Drugs* 1990; **40** (Supp1): 19-25.
12. Superko HR. Exercise training, serum lipids, and lipoprotein particles: is there a change threshold? *Med Sci Sports Exerc* 1991; **23:** 677-685.
13. Shaper AG, Wannamethee G. Physical activity and ischaemic heart disease in middle aged British men. *Br Heart J* 1991; **66:** 384-394.
14. Bouchard C, Shephard RJ, Stephens T, *et al* (eds). *Exercise, fitness and health; a consensus of current knowledge.* Champaign, IL: Human Kinetics, 1988.
15. Hardman A. *Exercise and the heart. Report of the British Heart Foundation working group.* London: BHF, 1991.
16. Activity and Health Research. *Allied Dunbar national fitness survey.* London: Health Education Authority and Sports Council, 1992.
17. Working group on coronary prevention. Conclusions and recommendations. *Br Heart J* 1987; **57:** 188-189.
18. Scottish Home and Health Department and Scottish Health Service Advisory Council. *Prevention of coronary heart disease in Scotland. Report of the working group on prevention and health promotion.* Edinburgh: HMSO, 1990.
19. Scottish Home and Health Department. *Health education in Scotland: a national policy statement.* Edinburgh: SHHD, 1991.
20. Secretary of State for Health. *The health of the nation: a strategy for health in England (Cm 1986).* London: HMSO, 1992.
21. American College of Sports Medicine. The recommended quantity and quality of exercise for developing and maintaining fitness in healthy adults. *Med Sci Sports Exerc* 1990; **22:** 265-274.
22. Blair SN, Kohl HW, Paffenbarger RS, *et al.* Physical fitness and all cause mortality: a prospective study of healthy men and women. *JAMA* 1989; **262:** 2395-2401.
23. Chow R, Harrison JE, Notarius C. Effect of two randomized exercise programmes on bone mass of healthy post menopausal women. *BMJ* 1987; **298:** 889-892.
24. Powell KE, Casperson CJ, Koplan JP, Ford ES. Physical activity and chronic diseases. *Am J Clin Nutr* 1989; **49:** 999-1006.
25. Shephard RJ. Does exercise reduce all-cancer death rates? *Br J Sports Med* 1992; **26:** 125-128.

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