Poor school progress may be due to linguistic difficulties at school entry and may be an acute problem in an older child who has recently come to Britain. In families who run restaurants the children may be expected to help behind the scenes instead of doing their homework.

Transcultural problems—Older children, particularly teenagers, often have difficulty in reconciling the patterns of behaviour which they learn at school with those required of them at home. Asian girls may be expected to stay at home in the evenings and not to go out to discos. The prospect of an arranged marriage can be deeply disturbing to a girl brought up in the United Kingdom. Children who can be instantly categorised as being “non-European” because of skin colour or facial appearance may have great difficulty in establishing their true identity and gaining acceptance in the community as a whole.

I thank Alix Henley of the department of community medicine,

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Needs and Opportunities in Rehabilitation

Rehabilitation of patients with cardiac conditions

DAPHNE GLOAG

In the gymnasium of a district general hospital a man of 65 told me how he could again walk in the Welsh hills without breathlessness. He had joined the cardiac rehabilitation programme in despair after a severe myocardial infarction. But how much of his success was due to a conditioning effect of the set exercises and how much to the support and counselling that went with them, and consequent changes in his life? This question sums up many of the features of cardiac rehabilitation, in which it may be difficult to pinpoint the physical effect, if any, of modest exercise programmes but easy to sense a gain in general wellbeing. The services I discuss apply chiefly to myocardial infarction but also to heart surgery.

In 1970 a tiny minority of hospitals offered rehabilitation facilities after myocardial infarction.¹ Five years later a joint working party on the subject believed that things had not greatly improved.² Since then there has been a steady growth of both general rehabilitation services and exercise training; in Birmingham, for example, about half the hospitals have formal exercise programmes. In one sense the need for these has become less acute, with early mobilisation and discharge preventing the severe deconditioning and invalidism that used to be the rule.³ But there is more interest in the possibility of speeding full recovery and achieving considerable fitness, if not lessening future risk, with exercise programmes,²⁻⁵ sometimes as part of a broader rehabilitation programme.⁶

Nature of rehabilitation services

After leaving hospital someone who has had a myocardial infarction may be left to take pot luck as regards rehabilitation. On the other hand, serious attempts may be made to change his

goals and life style⁷—or something in between may be offered. Aftercare ranges from occasional outpatient visits to (rarely) residential courses, and structured programmes are arranged both in groups and for the individual to follow at home. Printed schedules for graduated walking and other activities may be used with or without a formal exercise course.

In Britain formal rehabilitation typically consists of exercise sessions with counselling on such matters as diet, smoking, and life style. Classes usually last half an hour to an hour, two or three times a week; they start about a month (or even less) after the infarction and generally go on for a month or two—but sometimes much longer. Pointing out that optimal conditioning of such patients may take one or two years, a report by the American Medical Association advocates supervised training for the first three to six months (more if necessary) and thereafter a programme without medical supervision.⁴

A typical class consists of circuits of exercises; apart from graduated exertion (possibly intermittent at first³), the aim should be to use the types of muscular work of daily life, directed at muscle relaxation as well as strength.⁹ Games are usually included for the essential element of fun. At one class I watched the sense of enjoyment was obvious, and the patients could chat informally about any problems to the sister from the coronary care unit who ran the programme.

The level of exercise varies widely. At Northwick Park Hospital, Harrow, for example, the course starts as little as 17 days after infarction and is therefore very mild, the aim being to create confidence and show the patient what he can do rather than increase fitness. At the other extreme is vigorous exercise that needs monitoring and resuscitation facilities and depends on formal exercise testing; this kind of programme is less usual in Britain. In a Toronto programme a few have graduated to serious running and even marathons.¹⁰ Levels that have been recommended are 70%⁵ and 75-85%^{2,9} of the maximum heart rate and 50-75% of the maximal oxygen uptake⁴ (a slightly lower range). Exercise testing is strongly recommended by the British joint working party² and the American Medical Association⁴ as pro-

viding a basis for a safe yet adequate level of exercise. A do it yourself testing method has been described for those with no access to proper facilities.¹⁰ Patients are always taught to check their heart rates. In general, physical conditioning, if this is the aim, usually calls for at least 20 minutes of dynamic (aerobic) exercise vigorous enough to produce sweating and mild breathlessness, three times a week; but this is not precise enough for patients with heart conditions.

Though the social and "support" elements of a class can be valuable,¹¹ home exercise programmes may be both satisfactory and economic, and suit more people. Relatives' encouragement may be crucial. At Charing Cross Hospital (see below), for example, and at St Vincent's Hospital, Dublin,¹² exercise is prescribed and discussed at regular outpatient visits, and the Toronto Rehabilitation Centre's programme is carried out largely at home.¹⁰ In home exercise programmes, often based on walking, patients may have to keep a "log" including heart rates before and after exercise. A programme in Gothenburg allowed selected patients to do their training at home or at work with a bicycle ergometer, and they did as well as the others.⁸ In a study using regular telephone monitoring of heart rate and electrocardiogram as well as counselling by a nurse home exercise was also as effective as group training.¹³

Clearly rehabilitation should cover much more than exercise. Getting back to valued activities may have a powerful effect; "Rehabilitation is magic," said one man after a visit to a Raphael exhibition. More formally, several elements are included in Northwick Park Hospital's programme (box), which aims to restore confidence and self image as well as physical function.

At the Höhenried Rehabilitation Centre at Bernried in West Germany the residential course includes daily group therapy, muscle relaxation, and individual counselling.¹² In the centre's experience patients learn to adjust to a new life style more easily in new surroundings. Working on a shoestring by contrast, St Vincent's Hospital, Dublin, uses a psychologist and a social worker for individual counselling at follow up visits.¹² At Charing Cross Hospital¹⁴ training is given both to those who have had infarctions and to those with early signs of trouble. But first patients are put on a sleep and rest programme to lower arousal, promote physiological healing and stability, and help them through the common emotions of denial and anger. Then they are given a "trainer," an occupational therapist who helps them explore what has happened to them in the hope of preventing recurrence. She discusses with the patient (and relative) ways of coping with the activities of daily life without self defeating fatigue and tension. Only when he can cope with his daily life is a home exercise schedule prescribed, on the basis of exercise testing, to increase fitness; schedules and other matters are discussed with the trainer at regular intervals. Relaxation methods and correct breathing are taught. Those with low self confidence may join a class run by a remedial gymnast or by a dance therapist, and a social skills group is also available. In general, meditation and biofeedback techniques could more often be used as aids to relaxation¹⁵; the simple yoga/relaxation methods that have been used successfully for hypertension in general practice¹⁵ are applicable here.

Effects of exercise rehabilitation

Doctors and others who have run rehabilitation programmes are usually highly enthusiastic and have a strong impression of the benefits. Most controversy centres on exercise. The main questions are: is exercise training safe; does it reduce cardiovascular deaths and illness; and does it really confer other important objective and subjective benefits?

With regard to safety, there has been a very low incidence of "serious cardiac events" (seldom deaths) in various large series.⁸ Nearly 2% of American patients in a vigorous gymnastic programme had reversible cardiac arrests, but the British joint working party concluded that the less intense training that is more usual here presents no such risks.² There are four possible benefits

Example of a cardiac rehabilitation programme

A varied postcoronary rehabilitation programme that starts 10 days after discharge is offered at Northwick Park Hospital, Harrow (described by E Yates at a Society of Occupational Medicine Research Panel symposium³⁰ on cardiac rehabilitation, London, March 1983). Patients attend from 10 am to 3 pm three times a week for four to six weeks. At each visit there are two sessions of occupational therapy activities and two of physiotherapy (exercises graduated for each individual through the course plus group activities), a relaxation session, and discussion in a "support" group led by an occupational therapist, as well as the chance of individual counselling. A disablement resettlement officer is available. Occupational therapy includes printing, weaving, and woodwork, and requires increasing exertion week by week; unfamiliar activities may lessen frustration at initially poor performance. The support group allows exploration of psychological problems and goals as well as discussion of risk factors and activity levels and the attitude of the family, sex, and various practical matters. Relaxation is based on *Simple Physiological Relaxation by Voluntary Control* by Laura Mitchell (8 Gainsborough Gardens, London NW3 1BJ; cassette also available). Everyone progresses in the various activities at his or her own pace, gradually accepting self responsibility and gaining self confidence; while the group offers mutual support.

of exercise in relation to coronary heart disease (that is, apart from the general experience of well being): (1) primary prevention; (2) secondary prevention (deaths and reinfarction); (3) improvement of the general circulatory response to exercise with reduced heart rate and blood pressure and greater exercise tolerance; and (4) a direct effect on the heart. Only the third is well established scientifically.^{8 16-18} Evidence of real scientific rigour is hard to obtain; for example, there might be life style and other differences between those who do and do not follow an exercise programme or otherwise take exercise.

Trials designed to detect reduction in mortality and in further infarctions have tended to give inconclusive results.^{2 3} Numbers and experimental design have often been inadequate and in some cases, while controls have actually exercised a lot, the subjects have not all fully carried out the intended programme (Kavanagh,¹² Shephard¹⁹). On the other hand, selection of patients and sometimes a high dropout rate could exaggerate benefit. Analysis of the results of some published trials suggested that there might be a particular benefit in the first two years in terms of fewer fatal reinfarctions.¹⁹ Among the interesting studies, a supervised exercise group was found to have much greater physical fitness than the control group as well as significantly less angina²⁰; no significant difference in mortality was found between the groups as a whole, but those with inferior infarcts may have been protected by exercise. In a well conducted Finnish study, after three years' follow up the coronary mortality, notably the sudden death rate, was significantly lower in the "intervention" group than in the controls, though the reinfarction rate was not.⁶ Physical work capacity was similar in the two groups throughout; but blood pressure and serum cholesterol and triglyceride were significantly lower in the intervention group. The programme consisted of health education and discussion of physical problems as well as physical training; and the conclusion was that a "multifactorial" programme could modify risk factors. Probably physical training is just one protective element, and not the largest, in the rehabilitation "package."

Exercise does not, of course, stand or fall according to whether it reduces deaths and reinfarctions. The first aim is to prevent or reverse physical deterioration and increase well being, which are often achieved with modest and informal activity. But real

conditioning, to decrease the myocardial oxygen demand for a given amount of physical work, seems at least as desirable for many coronary patients as for people in general, if only to enable them to do everyday things without getting tired or developing symptoms. There is good evidence that such physical conditioning does occur after myocardial infarction.^{2,3,18,31} It appears to be mediated largely via muscular, metabolic, and other adaptations; but there is some evidence also of a direct effect on cardiac function.^{16,17,21} Brief but fairly strenuous gymnasium sessions produced metabolic effects, including lipid changes.²² However it occurs, conditioning is especially important for patients with angina, who can greatly increase their activity level⁸; but their greater need for supervision may exclude them from many training programmes. In a study in Gothenburg, control patients who said they trained systematically did not in fact improve their physical capacity according to the exercise test.⁸ Those who trained "to fatigue," however, improved by 17% on average, much the same as healthy people.

Clearly fitness should be not so much an end in itself as means to a better quality of life or to "getting back to normal." In the absence of any kind of rehabilitation prolonged depression and invalidism, with unjustified delay in going back to work, are common.^{2,23} At Selly Oak hospital, Birmingham, patients merely receiving advice at follow up visits got back to normal life just as well as those in an exercise programme. In a controlled study comparing an exercise group (eight sessions) with a group receiving regular advice and a control group, the exercise group showed a greater improvement on exercise testing at three months yet was doing no better either then or at 18 months, in terms of work or activity at home.²⁴ But the exercise patients were more satisfied with their "treatment" than were the other groups, finding the sessions both helpful and enjoyable—which is the widespread impression of those running such programmes. The authors point to the possible temporary benefits of exercise during the difficult early weeks, concluding that physical training probably needs to be more individualised and that special attention should be given to anyone with problems in early convalescence. Possibly more intensive and prolonged exercise training would have given different results.

In this study there were no significant differences in mental state between the groups three months after myocardial infarction; but subjective impressions are that exercise is an important weapon against the low morale, depression, and anxiety. A physical conditioning programme, according to Hackett and Cassem,³ is the best means of both arresting and preventing such depression. Among other things, it can increase confidence and motivation, it shows that life is not over and many anxieties are unfounded, and it represents something to do rather than to avoid. Exercise may also be a valuable outlet for the aggressive and "A type" personality so often seen among those who have had myocardial infarctions.^{7,11} One review concludes that "the psychological effect alone can justify training therapy in selected and suitable coronary patients."¹⁸

Psychological components of rehabilitation

Over two thirds of patients have been found to have some emotional disturbance after myocardial infarction.^{24,25} Half the survivors still have symptoms after a year if they are not helped, according to Cay,²⁵ the patients at particular risk being identifiable while still in hospital—but Lloyd and Cawley reached the opposite conclusion²⁶: patients who had not been mentally ill or disturbed before the infarction had only transient symptoms, and those who had been needed psychiatric help rather than counselling linked to cardiac rehabilitation. Being prevented from returning to work within four months seemed to have precipitated later symptoms in some cases. A controlled study of psychological counselling (by a nurse counsellor) did, however, suggest that patients with introverted and neurotic personalities—who did badly in the control group—were genuinely helped.²⁷ Patients having brief group therapy in a small American controlled trial had significantly

Exercise training at East Birmingham Hospital.

lower mortality and morbidity rates and a higher rate of return to work; they fared no better than others in the reduction of conventional coronary risk factors, but they seem to have reduced their overwork and their "time urgency behaviour" significantly more than controls.²⁸ "Group dialogues" centred on health education, even during the period in hospital, have been advocated.²⁹ A good shoe-string idea is a weekly telephone call to patient and family—by a nurse, for example; in a service described by Hackett and Cassem many questions were about sexual activity.³ At Charing Cross Hospital patients are encouraged to keep in touch with their occupational therapist by telephone.

The practicalities

A controlled trial to compare a rehabilitation service with no special aftercare would now be both unnecessary and unethical as well as difficult to achieve, say many cardiologists; but there is ample scope for comparing different forms of rehabilitation and studying the needs of different patients and also families. The crucial requirement is that rehabilitation should be centred on the whole person, taking account of his personality, life style, and problems. This may depend on "the quality and quantity of contact" with "a single devoted doctor," to quote Halhuber and König,¹² or another professional, or else on an organised programme.

The joint working party put forward the idea of "coronary aftercare units,"³² but much can be done with little extra expenditure, as in the Dublin¹² and the Charing Cross Hospital counselling programmes. Properly prescribed and supervised home exercise programmes are perhaps too little used. At East Birmingham Hospital (figure) the cost of running the exercise programme in the first 18 months was completely absorbed, and the patients themselves paid for a bicycle ergometer. A third of all men admitted to hospital with myocardial infarction were suitable for exercise training in one study with stringent criteria,²⁰ so the possible numbers are large. Given the potential for at least a general improvement in health many believe that a rehabilitation programme of some kind is highly cost effective.

In general, exercise should be individually tailored—preferably with discussion of the patient's interests—and prescribed, it has been said, with the same care as a drug.³ A doctor should, it is believed, be present during a very intensive exercise session, and

even the milder courses that are usual in Britain should have resuscitation equipment at hand and a doctor speedily available. Ideally, say some consultants, he should always be there, and if this is impossible some hospitals are deterred from embarking on such programmes. One cardiologist I met felt strongly that a reasonably senior doctor should at least be closely concerned; observing his patients in such a setting, he thought, also gives the clinician a lot of information about them. Others believe that a "well patients' clinic" without a doctor on the spot works better. For the day to day running someone with the right enthusiasm and personality is needed; I met a nurse and occupational therapists who were the moving spirits in their hospitals. The general practitioner should be a good person to supervise rehabilitation, both exercise and all other aspects, at least in an informal way—but only after having specific guidance from the consultant with regard to exercise, said one consultant. Later on, community facilities such as sports centres could be used more. Useful books on exercise for older people include one by Gibbs.³¹

In the last resort, whatever the emphasis and the nature of the rehabilitation, perhaps the key is conviction, on the part of the hospital, general practitioner, relatives, and patient, that life might be better.

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MATERIA NON MEDICA

First footing to the belfry

People must have given the matter a lot of considered thought. I paused to reflect (and, let us not dissemble nor cloke, have a rest), half way up the tower of Winchester cathedral in the biting cold of a winter's night. The subject under consideration was the Anglican church's relationship with pagan ceremonies, the time 11 30 pm on Hogmanay. Why were one of her lord bishops, a dean, and a good few paragraphs of the chapter toiling their way, fortified against all perils and dangers of this night by mulled wine and mince pies, to the belfry to be present at the ringing in of the new year?

The party, to which I had been most kindly invited, had gathered together in the deanery an hour previously. We had passed a two storey Christmas tree in the stairwell, then entered into the magnificent Prior's Hall, bedecked with holly, ivy, and mistletoe. The mincemeat was delicious, the mulled wine mellifluous. Chatter was batted back and forth: a recent concert; the decorative hangings in the nave; the Queen's ban on the scarlet cassocks; the Southern Cathedrals Festival to be here in July; a new bishop? The insubstantial figure I was talking with paused to lend an ear: Trollope, I think he said the name was.

And then—coats, hats, gloves, scarves!—to the belfry. The bells were pealing as we ascended, the mufflers on one side of their clappers meaning that alternate chimes were loud and soft. The ringing chamber is a big, square, high ceilinged room hung about with commemorations of significant peals. They've had cause to let the bells ring out a good few times over the centuries, but sometimes, I gather, they do it just to see how long they can go on getting it right. Some plaques note the achievements, at Winchester, of visiting towers. People step forward from among the seventy or so around the edge of the room to take a turn amongst the circle actually ringing.

Then, at a few minutes to midnight, silence. Someone scuttles up to take the mufflers off the bells. The dean and bishop lead the prayers. And ding-dong, ding-dong, ding-dong, ding-dong! The new year is here.

Is another heathen event being appropriated into the Christian calendar? Will Series V have a service for it, with whisky rather than wine?—VIRGINIA ALUN JONES, clinical research fellow, Cambridge.

Clinical curio: rat eats man—an unusual complication of diabetic peripheral neuropathy

Problems with the feet are a major cause of trouble in diabetic patients with peripheral neuropathy,¹ especially in the tropics, where infection is more common and poor patients walk barefoot or wear flip flop sandals that give no protection against trauma or the entry of foreign bodies. Here I report a more unusual problem.

A 35 year old Dominican with poorly controlled insulin dependent diabetes mellitus and severe sensory peripheral neuropathy presented with a deep and extensive ulcer on his left hallux. He was living in poor circumstances and had awoken that morning to find a rat eating his toe. He said that he had been totally unaware of the rat until he saw it. The rat had eaten about a third of the soft tissue of the toe. The lesion was clean, and a swab was sterile. He was treated with systemic penicillin and dry dressings to the toe. The lesion healed uneventfully.

We now advise our diabetic patients to keep their feet covered while they sleep.—P COOLES, specialist physician, Dominica.

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