

Chapter 9

Fitness and health programmes

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Nature of modern-day disease

The nature of disease in Britain has changed considerably over the last century. At one time a combination of poverty, deficient diet and inadequate sanitation bred infectious diseases. Nowadays, however, affluence has brought an overindulgent lifestyle and a whole catalogue of chronic ailments. As a result, typhoid and TB have given way to heart disease and cancer as the major causes of premature disability in our society. However, rather than being problems of old age, these current diseases often ravage those who are still young and productive. The result carries a heavy price. It has been estimated that coronary heart disease (CHD) cost the nation over £1 billion in 1985, with 50 million working days being lost as a direct result of cigarette smoking (Ashton, 1990). The purpose of a fitness and health programme is to confront this modern epidemic and give employees the chance to fight back.

Risk factors

The corporate fitness centre should be part of an overall health promotion strategy which addresses the various risk

Table 9.1 Risk factors

Coronary heart disease

Smoking
High fat diet
High triglyceride levels (high LDL, low HDL)
High blood pressure
Physical inactivity
Obesity
Diabetes (especially with onset before age 40)
Inability to cope with stress
Coronary-prone personality
Family history of coronary heart disease or stroke

Low back pain

Inadequate trunk muscle endurance
Inadequate leg muscle endurance
Lack of flexibility in midtrunk and hamstrings
Poor posture
Faulty body mechanics
Poor ability in lifting techniques
Low cardiopulmonary fitness levels

LDL, low density lipoprotein, HDL, high density lipoprotein.

factors associated with disease, especially CHD. Risk factors for CHD and low back pain are shown in Table 9.1. The corporate fitness centre can act as the hub of a more general health promotion programme aimed at reducing the risk of disease in the workforce. General health screening (see below), dietary advice and weight reduction, smoking cessation, stress control and relaxation training must all be addressed.

Health benefits of exercise

A full discussion of the benefits of exercise is outside the scope of this chapter, but some understanding of the useful adaptations to be gained from regular exercise will help the occupational health physiotherapist argue the case for exercise as part of a health care programme. Some of the benefits

Table 9.2 (Continued)

<i>Physiological improvement</i>	<i>'Prevention'/amelioration of disease</i>
Metabolic function	
Body weight control; regulation of energy balance	<ul style="list-style-type: none"> • 'Prevents' obesity-related disease and excessive weight gain
Carbohydrate tolerance	<ul style="list-style-type: none"> • Improves carbohydrate tolerance; ameliorates late-onset diabetes
Lipid and lipoprotein metabolism	<ul style="list-style-type: none"> • 'Prevents' coronary vessel disease
Inhibition of blood clotting processes and platelet aggregation	<ul style="list-style-type: none"> • Counters acute precipitants of 'heart attack'
Psychological function	
Mood	<ul style="list-style-type: none"> • Reduces mild anxiety and depression
Self-esteem	<ul style="list-style-type: none"> • Influences mood favourably
Psychomotor development	<ul style="list-style-type: none"> • Contributes to quality of care for the mentally handicapped
Memory	<ul style="list-style-type: none"> • Improves memory in the elderly
Stress reduction	<ul style="list-style-type: none"> • Ameliorates stress-related conditions

CVD, cerebrovascular disease; BP, blood pressure. From Fentem, 1992.

shown to be an accurate predictor of the likelihood of developing back pain (Biering-Sorensen, 1984). Musculoskeletal pain is a condition which has a multifactorial aetiology, and it seems likely that the various components of physical fitness are important co-factors.

Additional benefits to a company

In addition to the direct health benefits of exercise, a corporate fitness centre offers many other indirect benefits to a company in terms of work performance, absenteeism, job satisfaction, recruitment and company image. An employee who is fitter may be more efficient and achieve a greater

productivity level. An association exists between participation in a corporate fitness programme and absenteeism (Donoghue, 1977; Bowne et al. 1984, Baun et al., 1986). However, whether the association is causal is not certain. Certainly, it is easy to think that an employee who is more physically fit may be less likely to suffer from illness resulting in absenteeism. However, a certain amount of self-selection exists whereby employees who tend to join a fitness scheme may be the type who have less absence anyway. Actual participation in a corporate fitness programme on a regular basis has been shown to give a greater positive change in work attendance (Lynch et al., 1990) but the reason for this change could be attributed to the physiological benefits of exercise or more general social and psychological factors.

Participation in a corporate fitness programme can improve job satisfaction. Exercise has been shown to enhance self-confidence, self-esteem, and body image (Vincent, 1976; Sonstroem, 1984) and reductions in anxiety, depression, stress and tension have also been demonstrated (Cooper, 1982). Reductions in stress and anxiety have been reported lasting 2-5 hours after the cessation of training (Morgan, 1985), and weight training programmes have been shown to enhance self-concept in male participants (Dishman and Gettman, 1981; Tucker, 1982) as well as female ones (Brown and Harrison, 1986). Employee attitudes have been shown to change positively following participation in a health promotion programme (Holzbach et al., 1990). Significant changes in attitudes to organizational commitment, working conditions, pay and fringe benefits, and job security were noted.

Establishing a corporate fitness centre can enhance company image and may make job recruitment easier. An individual interested in health and fitness may favour a company which offers such facilities (Ashton, 1989). In addition, this type of individual is likely to place a high value on health and fitness facilities. This can be an important factor when thinking of moving to another company and may result in a reduction in staff turnover.

Because employees exercise in a corporate fitness centre together, the facility can enhance group cohesion and team-

building. Employees get the opportunity to meet others from all levels of the company. This can make those higher up in a company seem less remote and enable managers to relate more easily to staff.

Exercise type and quantity

In order to produce a training effect, the body must be worked harder by exercise than it would be during everyday activities. To do this an overload stimulus is required. In general, the greater the overload the greater the training effect. However, there is a minimum amount of activity required to produce a training effect capable of improving health. Similarly, an overload which is too great may have an adverse effect on the body, giving rise to a greater number of injuries and reducing the effectiveness of the immune system (Nieman and Nehlsen-Cannarella, 1992). The correct frequency, intensity and duration of training is therefore essential. The American College of Sports Medicine (ACSM, 1978) recommended the quantity and quality of exercise required to develop and maintain aerobic fitness and body composition. A training frequency of 3–5 days per week is required, at an intensity of 60–90% maximum heart rate reserve or 50–85% maximal oxygen uptake ($\dot{V}O_2\text{max}$). This should be carried out for a duration of 15–60 min, and be continuous and rhythmical in nature. These recommendations were later updated (ACSM, 1990) to include the provision of resistance training sufficient to develop and maintain fat-free weight in the adult. One set of eight to 12 repetitions of between eight and ten exercises that condition the major muscle groups should be used at least twice each week.

Specialist bodybuilding programmes should be generally avoided in the corporate fitness setting, as they concentrate on strength alone and do not give a balanced fitness programme. In addition, they may reduce flexibility and lead to postural imbalances. Programmes which last longer than 60 min per training session tend to have higher dropout rates than shorter exercise periods (Pollock, 1988).

An exercise programme should generally begin with a warm-up period designed to induce mild sweating and take the major joints through their full range of motion. The main part of the exercise programme should involve the major muscle groups and be controlled and rhythmical in nature. Examples of exercise types include circuit weight training, aerobic dance and callinetics. At the end of the exercise period a cool down should be performed to allow the body to return to resting levels slowly.

Fitness facilities

Once an organization recognizes the benefits of exercise, the method used to bring about these benefits must be decided. Various approaches may be taken depending on the commitment of the company and the finances available (Table 9.3). In its simplest form, activity may be encouraged by supporting the formation of sports clubs and sections outside working hours. Football and running clubs, for example, can be identified with the company through the use of the company logo on sportswear. Reduced membership fees may be negotiated at local council or privately run health clubs. Exercise tapes or videos may be purchased for use in a casual aerobics class in the dinner hour or after work.

This type of involvement in exercise promotion is very low cost, but tends to encourage the individual who is already participating in exercise simply to change venue. One of the main aims of a corporate fitness centre is to improve the overall health of the workforce. To achieve this, those individuals who are in the high-risk group for CHD must be encouraged to participate in controlled exercise. Therefore a major target market for the corporate fitness centre is the individual who does not exercise regularly, and often sees no reason to do so. To be of benefit to these individuals and to ensure the provision of safe exercise, the corporate fitness facility must be seen as part of the medical, rather than recreational, facilities of a company.

To encourage the less motivated individual to exercise, a fitness programme must be convenient. An on-site facility is likely to achieve better compliance. It should provide an

Table 9.3 Fitness facilities

Level one

Shower cubicle in toilet block
 Walk/jogging route
 Exercise tape/video in large room or corridor
 Encourage use of local leisure centres, block booking and/or reduced fees
 Literature on health factors at key points

Level two

As above plus:
 Room with exercise cycles
 Exercise teacher to take aerobics class
 Blood pressure monitoring and health questionnaire by nurse

Level three

Separate changing and showering facilities
 Small on-site gymnasium with multigym unit and exercise cycles
 Exercise classes with teacher
 Sessional physiotherapist for basic fitness/health screening and exercise prescription to unfit employees; basic rehabilitation and treatment

Level four

Full on-site corporate fitness facility
 Comprehensive health and fitness screening including resting ECG.
 Sessional or full-time physiotherapist for rehabilitation and treatment service
 Health promotion service

Level five

Full on-site facilities including gym, sauna and pool, squash courts
 Full-time physiotherapist
 Health screening, fitness testing and treadmill ECG under medical supervision
 Full health promotion including well woman and well man

ECG, electrocardiogram.

appealing environment in which to exercise, with clean changing and showering facilities, user-friendly apparatus, a convenient location, suitable staffing, and good programme administration.

The room chosen should have easy access, with good car parking, and be on a commonly used route, for example near the staff restaurant. The facility should provide separate male and female changing rooms of the type found in a top class leisure complex. Individual cubicles and lockers are generally preferred by self-conscious individuals.

The equipment chosen should aim at improving cardiopulmonary fitness and be suitable for basic muscle toning and bodyshaping. Examples of cardiopulmonary apparatus include static cycles, running machines (treadmills), rowing machines, step climbers, skiing machines and rebounders. Weight training apparatus is used for muscle toning, and can be used to maintain cardiopulmonary fitness (Gettman et al., 1978). The type of apparatus chosen must reflect the nature of the corporate fitness centre as a fitness, rather than competitive sporting, facility. Apparatus should be safe and effective, convenient to use and visually appealing. Multi-stack weight training apparatus is probably more suitable, and various types are available (Table 9.4). Weight training apparatus and technique has been detailed elsewhere (Norris, 1993).

Small apparatus such as skipping ropes, light dumbbells, flexibands and ankle weights can be used to introduce variety into an exercise programme. The use of mirrors helps with exercise technique and the environment itself should be appealing, with music, plants, carpeting, pastel shades of decor, and instructional posters and charts.

Health evaluation

Health evaluation or 'screening' has a number of important functions (Howley and Franks, 1986). First, it may be used to establish if an employee has a history of any relevant medical problems. Second, any signs and symptoms which may indicate underlying health problems can be recorded. Third, health risk factors may be identified and behavioural traits associated with health can be catalogued. An additional function of health evaluation is to use the test results as

Table 9.4 Checklist for selecting exercise equipment**Ease of operation**

- Is the apparatus self explanatory?
- Can the weight be adjusted from the exercising position?
- Are the pulleys and weights smooth in operation?
- Is the machine comfortable to use?
- Can the machine be adjusted to suit a wide variety of users?

Durability

- Is the machine construction suited to heavy corporate usage?
- Can the machine be cleaned easily?
- What is the machine's recommended life?

Safety

- Are all moving parts enclosed?
- Can fingers/limbs be trapped easily if the machine is used incorrectly?
- Is the machine stable?
- Does the unit pass the current safety standards?

Aesthetics

- Is the unit visually appealing?
- Is the appearance of the machine daunting to novice users?
- Will the machine appeal to a wide range of users?

Support and documentation

- What is the guarantee period on the unit?
- Is a maintenance contract included or available?
- What is the call-out period for maintenance?
- Is a well presented user's manual included?

Company reputation

- Does the manufacturer have a good reputation?
- How long has the manufacturer been in business?
- What is the financial position of the company?

Biomechanical suitability

- Is the machine based on sound biomechanical principles?
- Is the unit designed correctly for the body part to be exercised?
- Are the minimum starting weights and weight increments suitable for rehabilitation usage?

Adapted from Storlie et al., 1992.

motivators for lifestyle changes which address any identified risk factors.

Screening can vary, from the use of simple questionnaires designed to give an employee a quantifiable score of his or her risk factors, to full clinical tests of the cardiopulmonary system. A full medical questionnaire is normally completed and various biometric measurements are taken, such as blood pressure, body fat, height and weight, lung capacity and blood lipids. Behavioural variables such as activity and exercise habits, smoking, alcohol usage and diet are assessed. A 'stress questionnaire' may be used relating to recent changes in life/home situation and attitudinal variables such as general well-being, self image, job satisfaction and relationships with fellow workers.

From the initial subjective assessment and basic biometric tests, employees are classified as low or high cardiopulmonary risk. Those at low risk may proceed to a fitness test and exercise programme while being continually monitored by the occupational health physiotherapist. The high-risk employees should be referred to the occupational health physician who can then decide if the employee should be investigated by a cardiologist, or alternatively, is safe to proceed to the exercise programme. All employees, whether low or high risk, may receive a health education programme. High-risk employees may require a weight loss programme and medication to control other risk factors such as hypertension and hyperlipidaemia before proceedings to a modified exercise programme.

An exercise test may be used to determine fitness level expressed as predicted $\dot{V}O_2\text{max}$ using cycle ergometry or a more simple step test. Treadmill testing may be used for both fitness testing and clinical evaluation of cardiopulmonary variables. Field tests may be utilized for strength and flexibility, and physiotherapy evaluation used to assess the musculoskeletal system.

Periodic reassessments are performed to monitor progress and maintain employee motivation. Reassessments may be performed as regularly as every 2-4 weeks for very unfit employees. Not all tests are performed, but the idea is to show the employee that some progress is being made to maintain his or her motivation. Well motivated employees, especially athletes, will only need reassessments every 6-12

months; they do not require the same level of individual attention as the unfit individual and their interest in the scheme can be more easily maintained through promotional events.

Running the scheme

Staffing

For a corporate fitness centre to run safely and effectively, some degree of supervision is necessary. Corporate fitness staff have a number of functions. They can prescribe exercise programmes, motivate employees, and have an administrative function which may also include promoting the centre within the company. If the centre is to run effectively, one of the staff members should be a chartered physiotherapist. This is because a large proportion of the centre users will be unfit adults, and as such may already be suffering from clinical conditions which can be easily exacerbated by incorrectly prescribed or poorly executed exercise. Such conditions typically include back pain, chronic soft tissue injuries, and cardiopulmonary problems. However, it is essential that the chartered physiotherapist update his or her knowledge of exercise with additional study in a sports science discipline which includes exercise physiology, biomechanics, and sports psychology.

There is sometimes a tendency for companies to want unsupervised fitness centres which may simply have a number of instructional wall posters. This type of facility lacks precise exercise prescription and leadership, and employees quickly lose motivation to attend. A centre of this type rapidly becomes a poorly attended recreational facility attracting individuals who would normally use the local sports centre.

Management of the scheme can be carried out by an administrator (who may also be a physiotherapist or nurse with management training). It is their function to oversee the everyday running of the centre, and to administer any promotions which may be run.

Local exercise teachers can be recruited to run classes such as aerobics and yoga. If the exercise specialist in charge of the scheme had the expertise to run these, it may still be better to get an outside tutor, as a 'change of face' can often motivate people to attend. Classes involving employees of low fitness levels should be taught by a physiotherapist. Once an employee's fitness level has improved sufficiently they may be transferred to another class. Similarly, contractors may be used for health promotion classes such as smoking cessation, weight watching and relaxation courses. It is important that the physiotherapist in charge of the corporate fitness centre keeps a tight rein on classes run by external agencies, to ensure standards of professionalism and class content.

Ensuring participant adherence

To continue to gain benefit from the corporate fitness centres, employees must exercise regularly. Unfortunately many individuals start with good intentions, but then typically about half will stop coming (Franklin, 1984). Ensuring that employees continue to use the fitness facilities is an important leadership challenge for fitness centre staff, and involves a basic understanding of client motivation techniques.

Factors which act as motivation will fulfil a 'need' in the employee and these needs will continually change. For example, one of the needs may be to lose several inches from around the waist. This will not be as large a motivating factor in the week before Christmas as it is in the week before the employee's summer holiday on a beach. Consequently, the first stage in the motivation process should be to assess an employee's needs during a one-to-one consultation.

Having identified the needs, these must be acted on and a motivator chosen. This will normally be a combination of both intrinsic and extrinsic factors. Intrinsic motivators rely on a client's feelings and are personal to them, while extrinsic motivators rely on something external such as a prize or trophy. One effective form of motivation is goal setting. A goal may be either long- or short-term, but must be specific. For example, it is more effective to encourage an employee to try to run a certain distance and time on a treadmill by a

particular date rather than simply trying to 'improve'. At the same time, a goal must stretch the employees if it is to give them something to aim at, but not be so difficult that it is out of their reach. Goals are set individually, and it is often helpful to have a form printed which the employee signs and dates as a symbol of commitment.

Promotional activities (Table 9.5) are used to maintain a high profile for the fitness centre. A calendar of events should be drawn up to plan the whole year (Figure 9.1). Events may be linked with specific periods such as Easter and Christmas, or to dates such as Valentine's day and bonfire night. Seasonal events for body toning before the summer holidays and weight loss in the new year are normally popular. Workshops on common sports such as tennis and jogging may be linked to media coverage of Wimbledon and the London marathon, for example.

Showing success can be an important method of fitness centre promotion. Featuring employees in the company newspaper who have reached specific targets with weight loss, body fat, or body measurements, for example, can be successful providing their permission is sought first. This type of coverage will usually have the effect of motivating others, who may think 'if they can do it, so can I'.

A single sponsored charity event can be highly successful and has a number of advantages. Specific employees can be given the responsibility of organizing the event. This has a knock-on effect of developing project management and management skills in these individuals. The event can be organized through departments to instigate a teambuilding process. The event itself runs for a defined timescale and gradually builds interest as it grows. When a pre-determined target is achieved, a senior executive in the company should then present the cheque to charity with the individuals who organized the event. This gives recognition to the efforts of all involved, and provides positive local media coverage for the company.

Table 9.5 Promotional activities

Newsletter produced on a desk-top publishing system, to include articles on health and fitness and features on employees who have been successful in losing weight, etc.

Health fair stands on health and fitness topics, e.g. blood pressure and body fat measuring; demonstrations on cooking and nutritional content of food; measurement of lung capacity; heart rate monitoring on static cycles

Electronic mail. Use of company E-mail system to announce future events and keep a running timetable of activities

Posters produced in house or bought in. Competitions for best logo or feature, etc.

Flyers. Handouts featuring single fitness events to hand out or include in wage packets

Display boards featuring a single theme such as back pain, accompanied by posters and leaflets. Display moved around the site, spending 1 week in each department

Canteen table displays advertising health events

Single seminars and videos aimed at particular target markets, e.g. 'back pain and gardening'

Courses limited to 4-6 sessions only, developing specific aspects of fitness, e.g. 'jogging for fun'; 'tummy toning'

Workout classes. Ongoing, such as aerobics, step, circuit training, stretch and relax

Incentive and awards system. Different coloured tee shirts after 10, 20, 50 workouts. Prizes when set goals are achieved. Gym member of the month. Gold award for achievement

Buddy system. Once instructed to use the gym, an employee exercises with a training partner with similar aims who has been using the gym for some time

Goal setting. Goals agreed at time of physical assessment, on performance or physical measurements such as body fat and weight loss

Exercise trail. Jogging trail with exercise stations to perform simple callanetics, mobility and balance

Computer self-assessment. Testing an employee's knowledge of healthy lifestyle, for example

Fitness challenge. Points gained for attendance at certain events or performing exercise off-site. Winner achieves set number of points first

Sponsored events, e.g. 24-hour sponsored static cycle ride; Land's End to John O'Groats run on treadmills; total 500 hours of exercising, graphing progress in the gym

Fun run, usually as a conclusion of other event such as health fare or fitness challenge, involving the whole family. Prizes for different age groups

Quiz on nutrition or lifestyle to involve Company and family members together in teams

Evaluating the scheme

One important question we must be able to answer is: 'Does it work?'. Continual monitoring of standards and effectiveness enables us to carry on justifying the centre and to argue for greater funding in the future.

Three factors should be considered: outcome, impact and process evaluation (Storlie et al., 1992). Outcome evaluation looks at the results which were achieved. For example, was there a reduction in average blood pressure, or a general decline in body weight of centre participants? Such physiological variables are readily available from fitness assessments and may be used to compare the effectiveness of various schemes over a period of time. For example, was average weight loss greater from weight training programmes or aerobics classes? Impact evaluation measures how behaviour and attitude were affected by the scheme. Assessment is generally made by questionnaires completed before attending the fitness centre and after exercising for a certain period. Process evaluation looks at qualitative aspects of programme delivery in terms of participant satisfaction. For example, which teaching methods are better liked when instructing in the gym?

Statistics must be gathered periodically. These may be

[illegible]

Fig. 9.1 Calendar of fitness events.

monthly, quarterly or annual, and summarize centre utilization (total numbers in each scheme, age and sex distribution, regularity of attendance) as well as other factors identified by the fitness centre staff.

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