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## CHAPTER 28

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# CARDIAC REHABILITATION

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## INTRODUCTION

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All too often, general discussions of heart attacks or cardiac disease focus on risk factors and statistics, particularly on mortality. Of course, there is considerable justification for this emphasis—after all, cardiovascular disease remains the major cause of death in the United States and worldwide. Consequently, an overriding objective of cardiovascular medicine is to reduce risk and lower death rates. And there is no doubt that tremendous gains have been made in recent decades in lowering mortality from cardiovascular disease. But with this major emphasis on initially saving lives, many may overlook the short- and long-term prospects for the million or so people who survive heart attacks each year. Fortunately, this view has changed, and the change continues.

Rehabilitation initially focused primarily on patients who had had a heart attack. It is now clear that the rehabilitation process is equally important in patients who have undergone surgery or angioplasty, as well as in those who have stable coronary disease.

Obviously, simply surviving a heart attack or other major cardiovascular event is just the beginning of a long process. Physicians' objectives are to minimize the effects of the heart attack or other manifestation of cardiovascular disease and, as much as possible,

to prevent future events in the setting of optimal quality of life. From a patient perspective, however, surviving the heart attack sets in motion a whole series of concerns and, at times, anxieties. After a heart attack, the big questions are: "How am I going to live the rest of my life?" and "What changes are going to be necessary?"

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## HISTORICAL PERSPECTIVE

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Only a few decades ago, a heart attack often was viewed as the end to productive life—a harsh outlook for the typically middle-aged male patient. The heart attack survivor was told that from now on, he or she would have to "take it easy." Treatment usually consisted of weeks of bed rest. When the patient was finally allowed out of bed, he or she would feel extraordinarily weak. Often, this weakness was a result of the prolonged bedrest (a situation known as "deconditioning"). The patient would often misinterpret this state as a consequence of the heart attack, and become even more fearful of resuming former activities. In short, the person ran the risk of becoming a cardiac cripple, afraid to return to work or do anything that might provoke another heart attack.

The turning point came in the 1950s, as doctors

and patients alike came to realize that a heart attack was not necessarily the end of an active, productive life. The late Dr. Paul Dudley White and his most famous patient, President Dwight D. Eisenhower, did much to demonstrate this fact. After Eisenhower suffered a serious heart attack, Dr. White encouraged him to continue as President of the United States—perhaps one of the hardest, most tension-ridden jobs in the world—and to stay physically active. By fishing with his grandson, playing golf, or walking, President Eisenhower was setting an example for millions of fellow heart patients.

This is not meant to indicate that a heart attack is not serious. However, the patient can pick up and even enhance life afterward. Today, it is known that the majority of heart attack, surgical, and angioplasty patients can return to work, enjoy an active sex life, and resume other normal activities. For many, an acute event such as a heart attack can mark a vital turning point toward a more healthful life-style. As a result of cardiac rehabilitation, in recent years we have seen patients alter their diets, stop smoking, and change other detrimental habits. They have also become more physically active and have learned to cope better with stress. Along the way, many patients have gained a renewed sense of well-being and a better perspective of what is really important. Many of these patients actually enjoy better health after a heart attack than before! These results are the essence of successful cardiac rehabilitation.

Although rehabilitation must be tailored to each person's individual needs, virtually every heart attack patient can benefit from it. It can also benefit people with other forms of cardiovascular disease, including angina, heart failure, and impaired circulation, such as intermittent claudication. This chapter describes the basic principles of cardiac rehabilitation. Although virtually all heart attack patients can benefit from a rehabilitation program that includes physical activity, a word of caution is in order. Patients should not attempt to devise their own exercise program. Instead, a cardiologist or a specialist in cardiac rehabilitation should work with the individual to develop a program that takes into consideration particular circumstances. Furthermore, exercise is only one portion of the rehabilitation program. The process of rehabilitation involves the patient as a totality and also must include education, diet and nutrition consultation, stress modification and management, and emphasis on *permanent* modification of life-style. The patient on the program must always keep in mind the need for motivation and long-term maintenance of the program and its goals.

## EMOTIONAL DOUBTS AND RESPONSES

People often assume that heart attack rehabilitation focuses mostly on physical activity. While exercise is an important part of cardiac rehabilitation, adjustment to the psychological impact of a heart attack may be the most important aspect affecting long-term goals.

A heart attack is a devastating event, not only for the patient, but also for the family and other loved ones. Often a heart attack strikes without prior symptoms and suddenly forces the patient to face his or her mortality. Because many heart attacks also occur with little or no warning, the typical patient is filled with denial and disbelief: "This couldn't be a heart attack—it must be a touch of indigestion or some other minor problem." (This type of denial could result in fatal delays in seeking emergency treatment.)

The real questions and doubts, however, come during the recovery period. The patient may ponder such questions as "Am I going to be able to go back to work, and if so, when?" "How is this event going to change my life?" "What are my chances of having another heart attack?" Indeed, the fear of having another heart attack can paralyze the patient and hinder successful rehabilitation. Thus, many rehabilitation specialists recommend confronting underlying fears at the outset. In this regard, it should be noted that fear and worry are not confined to the patient; his or her spouse or companion is also likely to be fearful. Both the patient and spouse should consider appropriate professional counseling if these fears become dominant. Such counseling is often quite brief and extremely beneficial.

Many patients make the mistake of trying to suppress their fear and anxiety. They are reluctant to ask troubling questions, and thereby deny themselves opportunities for assurance. Remember, simply knowing what has happened and what to expect goes a long way toward allaying fear. This aspect of cardiac rehabilitation should start in the coronary care unit. Being hooked up to various monitors and undergoing high-tech lifesaving procedures can be frightening. With so much going on, doctors, nurses, and technicians don't always take the time to explain what is happening, and patients are often too frightened or ill to ask. When the immediate danger is past, however, the doctor should describe what has happened and what lies ahead. At this time, patients should begin to ask questions and express their con-

terns. Many persons are reluctant or embarrassed to do so, especially regarding subjects such as sex. (See box, "Sex After a Heart Attack.") The doctor or nurse may or may not anticipate unasked questions: "Are you concerned about whether this is going to affect your professional life, personal relationships, favorite pursuits?" Health care personnel should be able and available to discuss these issues, however, with little prompting from a patient. Today's approach to treating heart attacks helps put many of these fears to rest. They must at least begin to be addressed before discharge from the hospital.

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## THE HOSPITAL PHASE OF THE REHABILITATION PROCESS

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Cardiac rehabilitation begins during hospitalization, not after discharge. Today's heart-attack patient who is free of complications is likely to be up and about in a day or two. At first, this activity may entail sitting up with feet dangling over the side of the bed or moving to a bedside chair while an aide remakes the bed. The patient may also be encouraged to do simple range-of-motion exercises, such as lifting and lowering the arms and legs. These exercises, which can be done sitting in bed, in a chair, or when standing, help prevent muscle and joint stiffness and the formation of blood clots, especially in the legs. Often a physical therapist will help with these exercises, at least initially. During this time, heart rate will also be monitored.

In a short time the patient will be encouraged to take a few steps around the hospital room, and then to take short walks in the hallway. A simple act like walking to the bathroom or strolling up and down the hall is reassuring. Early activity (ambulation) also prevents the muscle weakness and reconditioning that comes with prolonged bedrest.

Even though early ambulation is encouraged during the hospital stay, there will also be careful monitoring and, if needed, various interventions to treat or prevent complications. These interventions, varying from simple medication to angioplasty or bypass surgery, may be frightening; but it's important to know that they are now routine aspects of modern treatment and do not necessarily signal a turn for the worse. For example, disturbances in the heart's natural rhythm or pulse are common in the first few days or weeks after a heart attack. These rhythm disturb-

### "Sex After a Heart Attack"

Despite society's increased openness regarding sex, this is, one subject that is often, neglected in planning rehabilitation after a heart attack. All too often, patients and spouses are embarrassed to ask their doctors about sex. Doctors are either equally embarrassed or mistakenly assume that, if a patient doesn't ask, there is no problem.

Studies indicate that there is a decrease in sexual activity after a heart attack or coronary bypass operation. This decline is more often due to anxiety or fear on the part of the patient and partner than to any physical incapacity. Many people mistakenly assume that sexual intercourse is likely to precipitate another heart attack. This very rarely happens; in fact, a study by a team of Harvard researchers found that heart attack patients who were sexually active actually had a reduced risk of future heart attacks.

Just when is it safe to resume sexual activity?

Although every situation must be individualized, we generally recommend that sexual intercourse may be resumed during the second week after hospital discharge. There are exceptions in both directions. Indeed, in the absence of actual intercourse, kissing, petting, and other expressions of physical closeness may begin immediately after hospital discharge, if the patient so desires.

Typically, intercourse raises the heart rate to about 130 beats per minute. (Studies show it may go somewhat higher in extramarital sex.) Blood pressure also rises, but only modestly. In general, sexual intercourse should be safe for any patient who can climb 20 stairs in 10 or 15 seconds without the heart rate going more than 20 to 30 beats per minute above the resting heart rate or provoking other symptoms, such as shortness of breath or chest pain. No one position for sexual intercourse is advantageous from a cardiovascular standpoint. In any case, severe fatigue or shortness of breath should be avoided. If intercourse provokes angina or other warning signs, the physician should be notified. Nitroglycerine can at times be taken beforehand as a preventive measure. Conversely, some medications used to treat angina, high blood pressure, and other forms of heart disease can interfere with sexual function. Any reduction in sexual desire or persistent dysfunction should be discussed with your doctor. If medication is the problem, an alternative drug may be prescribed.

Not uncommonly, it is a spouse who is reluctant to resume sexual activity out of fear of causing harm. These anxieties should be recognized and discussed with the doctor.

ances may be due to damage to the heart's electrical system, the natural pacemaker cells that control the rhythmic contractions of heart muscle. Continual electrocardiographic (ECG) monitoring can detect abnormal changes prior to development of a severe arrhythmia or can warn of another impending heart attack. Medication may be given to stabilize the heart-beat. Don't hesitate to ask your doctor or nurse what is going on—simply knowing what is being done and why can be reassuring, and can help in achieving the peace of mind that is essential to full recovery.

Increasingly, the hospital rehabilitation phase also includes patient education sessions regarding lifestyle, diet, and detrimental habits, such as smoking. If the patient has smoked, this is the ideal time to stop. Most hospitals now ban smoking, so there probably will be no choice but to forgo cigarettes during this time. Unfortunately, many patients return to smoking after leaving the hospital. Numerous studies show that continued cigarette use increases the risk of a subsequent heart attack. Thus if the temptation exists to resume a cigarette habit after discharge from the hospital, patients should be referred to a smoking cessation program. There are many approaches to smoking cessation—the self-quiz in Chapter 6 can help the individual focus on which one is most appropriate. If possible, smoking cessation should be incorporated into the initial phase of the rehabilitation program. It may well be one of the most important steps taken in preventing a future heart attack or another life-threatening disease.

While the patient is in the hospital, meals will be provided. There may be some menu choices, but on the whole, hospital food does not rate culinary stars. Often patients say they look forward to eating “real food again, and for many, this means the typical American diet, high in fat and calories. While it is not necessary or appropriate for patients to adopt a life-long hospital diet, returning to former faulty eating habits is absolutely contrary to the total approach to cardiac rehabilitation. Patient education sessions should also involve direct interaction with a dietitian, either in a group session or in an individual consultation. In either case, these sessions should also include the patient's spouse, or whoever is responsible for food shopping and meal preparation.

Before the patient leaves the hospital, a dietitian should consult with him or her to work out an exact eating program that can be followed at home. This program should take into account any nutrition-related health problems, such as obesity, osteoporosis, or diabetes, as well as individual preferences and religious or ethnic food restrictions. (See Chapter

5 for a more detailed discussion of diet and heart disease.)

Also before leaving the hospital, the patient, if sufficiently stable, should generally undergo a modified exercise tolerance (or stress) test. This test entails exercising on a treadmill or stationary cycle while the heart's electrical activity (ECG) and blood pressure are monitored. It differs from a standard exercise tolerance test in that the patient will not be allowed to exercise to his or her peak tolerance. Instead, the goal is to make sure the patient can safely engage in normal activities, such as walking up a flight of stairs, without provoking symptoms. In addition, this test may uncover patients who are at high risk for further heart attacks and therefore should be treated more aggressively. Other studies such as a thallium scan (see Chapter 10) are frequently done at this time in conjunction with the routine exercise stress testing.

Using a modified exercise test as a guideline, the doctor can prepare an exercise prescription to be followed initially at home and used in the next rehabilitation phase. Generally, following hospital discharge, the patient is referred to a supervised exercise program as part of the total cardiac rehabilitation plan. Such programs are widely available at facilities such as hospital outpatient units, clinics, or organizations such as the YMCA. (See box, “Criteria for Judging a Rehabilitation Program.”)

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## GOALS OF EXERCISE OR REHABILITATION

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As stated previously, exercise, although important, is only one component of total rehabilitation. There are many misconceptions regarding what an exercise conditioning program can and cannot do. For example, several long-term medical studies have shown that groups of people who are physically active live longer than their more sedentary counterparts. But these statistics are for population groups, and thus there is no guarantee that any one person who undertakes an exercise program will enjoy increased longevity. Similarly, there is no guarantee that cardiovascular exercise conditioning will prevent a subsequent heart attack. Still, there are clear and well-documented benefits that generally enhance the quality of life for most people. These include

## Criteria for Judging a Rehabilitation Program

Questions patients should ask when considering a formal cardiac rehabilitation program include:

- Who is in charge? An organized cardiac rehabilitation program should be directed by a qualified physician. When the doctor is not present, a nurse or other health professional with training in rehabilitation and emergency cardiovascular procedures should be on hand.
- *What role will my own doctor play?* At the least, the program should require referral from your personal physician. The program should also require a medical examination before enrollment, and your medical record should be reviewed, especially if you have had a recent heart attack, coronary bypass surgery, or other significant cardiovascular event. A pre-enrollment exercise test may be performed under your physician's supervision or under one at the rehabilitation facility itself.
- *What sort of exercise facilities do you have?* There should be a track, either indoor or outdoor, where participants can walk or jog. Stationary bicycle machines and/or treadmills are part of the Phase II program. A track is usually part of the Phase III program. Otherwise, elaborate exercise machines and facilities are not necessary. The knowledge and guidance of the program leaders are more important than expensive gear.
- *How will my program be developed?* At the very least, it should be individualized to meet your particular needs. It may be based on your doctor's exercise and rehabilitation prescription, or on one that is developed by the program physician after you undergo a medical examination. This individualization is the major difference between a medically supervised cardiac

rehabilitation program and commercial fitness programs, which often assume all participants will follow the same regimen.

- *What provisions are there for handling emergencies?* In addition to trained medical personnel, emergency equipment such as a defibrillator should be on hand in the exercise area. This equipment should be inspected periodically to make sure that it is in good working order.
- *Who actually directs the exercise sessions and what sort of training does he or she have?* The exercise director should be trained to work with heart patients.
- *Are the participants monitored during exercise sessions?* For most participants, periodic checks of pulse rate and blood pressure are all that is needed. Most participants can quickly learn how to do these checks themselves. For high-risk patients, continuous ECG (Halter) monitoring may be advised for the first few sessions to determine whether exercise provokes changes in the heart's rhythm.
- *Do you concentrate solely on exercise, or do you address other life-style factors as well?* As emphasized throughout this chapter, exercise conditioning is only one aspect of the total approach to cardiac rehabilitation. Modification of other risk factors, including weight control, dietary changes, smoking cessation, and stress management, is also important. Some rehabilitation programs offer counseling sessions for both heart patients and family members, occupational therapy, behavior modification and/or stress-management training, and weight control programs.

- Improved endurance and strength
- Increased sense of well-being
- Improved weight control
- Enhanced self-image

In addition, the exercise component of a total approach to rehabilitation helps overcome the fears and anxieties that so many people experience after a heart attack. Simply knowing that you can walk or jog around a track or work out on an exercise cycle provides the confidence that you can safely undertake other normal activities, including going back to work, resuming sexual relations, or enjoying a family outing.

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## DESIGNING AN EXERCISE REHABILITATION PROGRAM

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First and foremost, any exercise component of cardiac rehabilitation must be tailored to the individual participant. There are general guidelines, but no one program applies to all persons. (See box, "Typical Exercise Session.")

Ideally, cardiovascular exercise conditioning should be derived from a physician's prescription based on the following considerations:

- The results of a thorough physical examination

## Typical Exercise Session

There is no one exercise program or session that is ideal for all persons who have had a heart attack, angioplasty, or coronary bypass surgery. Instead, there are many variations and levels of intensity. Your doctor is the best judge of what is the most appropriate for you. In general, however, each exercise session is divided into three parts:

- **Warm-up** (five to ten minutes). All exercise sessions should begin with a few minutes of warm-up or stretching calisthenics. These range-of-motion exercises, which are designed to tone and stretch muscles and manipulate joints, are important in preventing orthopedic injuries.
- **Aerobic conditioning** (up to 30 minutes or more depending upon the activity and exercise prescription). Walking, jogging, cycling, swimming, climbing stairs, and working out on a rowing or climbing machine are all excellent aerobic activities.
- **Cool-down** (five to seven minutes). These are transitional exercises, which may be similar to the warm-up routine or simply a slow-paced continuation of the aerobic activity. They are designed to help muscles readjust to a resting state and to prevent cramping and other problems that may follow a vigorous workout.

that includes an exercise stress, or tolerance, test and assessment of cardiovascular risk factors

- Overall state of health, including physical fitness and previous exercise history
- Individual preferences and physical limitations (For example, arthritis or previous stroke can limit capabilities in certain types of exercise.)

In general, for an exercise program to improve cardiovascular fitness, it should (1) be sufficiently intense to have a conditioning effect, and (2) be undertaken at least three times a week, with each session lasting at least 20 to 30 minutes. Of course, it may take time to achieve the objectives. For example, in the beginning, a previously sedentary person who is in poor physical condition may be able to exercise for only a few minutes at a relatively low level of intensity. But most patients find that after a few weeks of gradually increasing the intensity and duration of each exercise session, they begin to experience a marked improvement in endurance.

## ORGANIZED VS. HOME EXERCISE PROGRAMS

In recent years, there has been a marked increase in the number of medically supervised exercise programs for heart patients. Many of these programs are offered by hospital or medical center outpatient departments or research laboratories; others are offered by fitness centers or organizations such as the YMCA. Still others are commercial programs. Some are covered by insurance and some are not. (See box, "Insurance Reimbursement.")

Some experts contend that there is no need for a formal cardiac rehabilitation program for the majority of low-risk persons, and that such patients can accomplish what needs to be done on their own after two or three instructional sessions with a physician or rehabilitation specialist. At these sessions, which may begin in the hospital before discharge or on an outpatient basis in the first few weeks of at-home recuperation, the person learns how to monitor his or her pulse rate and how to do the basic warm-up and cool-down exercises. (See box, "How to Take Your Pulse," and Figures 28.1 and 28.2.)

The person will be instructed to follow an exercise prescription for a graduated cardiovascular conditioning program that includes exercises for muscle toning and strength building as well as aerobic activity such as walking, swimming, cycling, or a combination of exercises. Pick an activity that is enjoyable—one is more apt to continue an exercise if it is fun and not drudgery. Also, pick one that is convenient. Figure 28.3 shows a stationary cycle that may be used at a health club or at home. Many people become overly preoccupied with taking their pulse rates, blood pressure, and other aspects of self-mon-

## Insurance Reimbursement

Insurance coverage for medically supervised cardiac rehabilitation varies considerably from state to state and company to company. Some policies cover only a limited number of outpatient sessions; others will pick up the tab for an entire 12-week program. Check with your insurance carrier to determine precisely what is and is not covered.

## How to Take Your Pulse

1. Place palm up.
2. Use first two fingers of opposite hand. Do not use thumb.
3. Place first two fingers of opposite hand on the wrist in line with the thumb and feel the pulsation. This is the radial artery.
4. Count the number of pulsations you feel in 15 seconds and multiply by four for the heart rate (pulse).

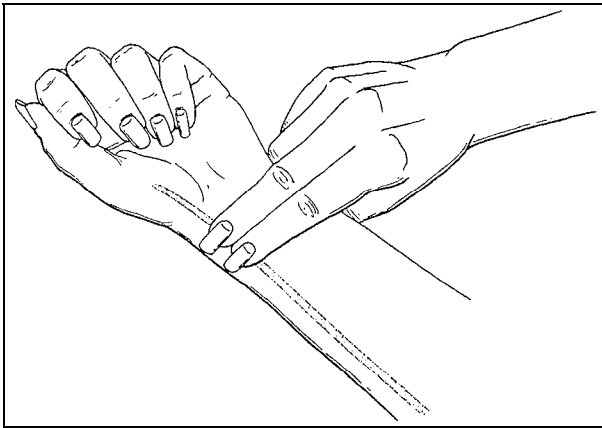


Figure 28.1  
Taking the pulse using the radial artery.

itoring. After a few sessions, the individual should be able to judge without constantly stopping to take the pulse whether the exercise is vigorous enough or whether he or she is overdoing it. (See box, "Guidelines for Home Exercise Conditioning.")

The organized rehabilitation is more structured and more closely monitored. Proponents of organized programs point to a number of advantages that are lacking with home programs:

- *Exercise is done under direct medical supervision.* This is more important for high-risk patients, such as those who experience angina during physical activity or who have disturbances in cardiac rhythm or a drop in systolic blood pressure when exercising. Unsupervised exercise may also be risky for a survivor of a cardiac arrest. Since recurrent heart attacks are more common in the weeks or first few months after the initial one, medical supervision during exercise may be more important during this period than later. In addition, the presence of a

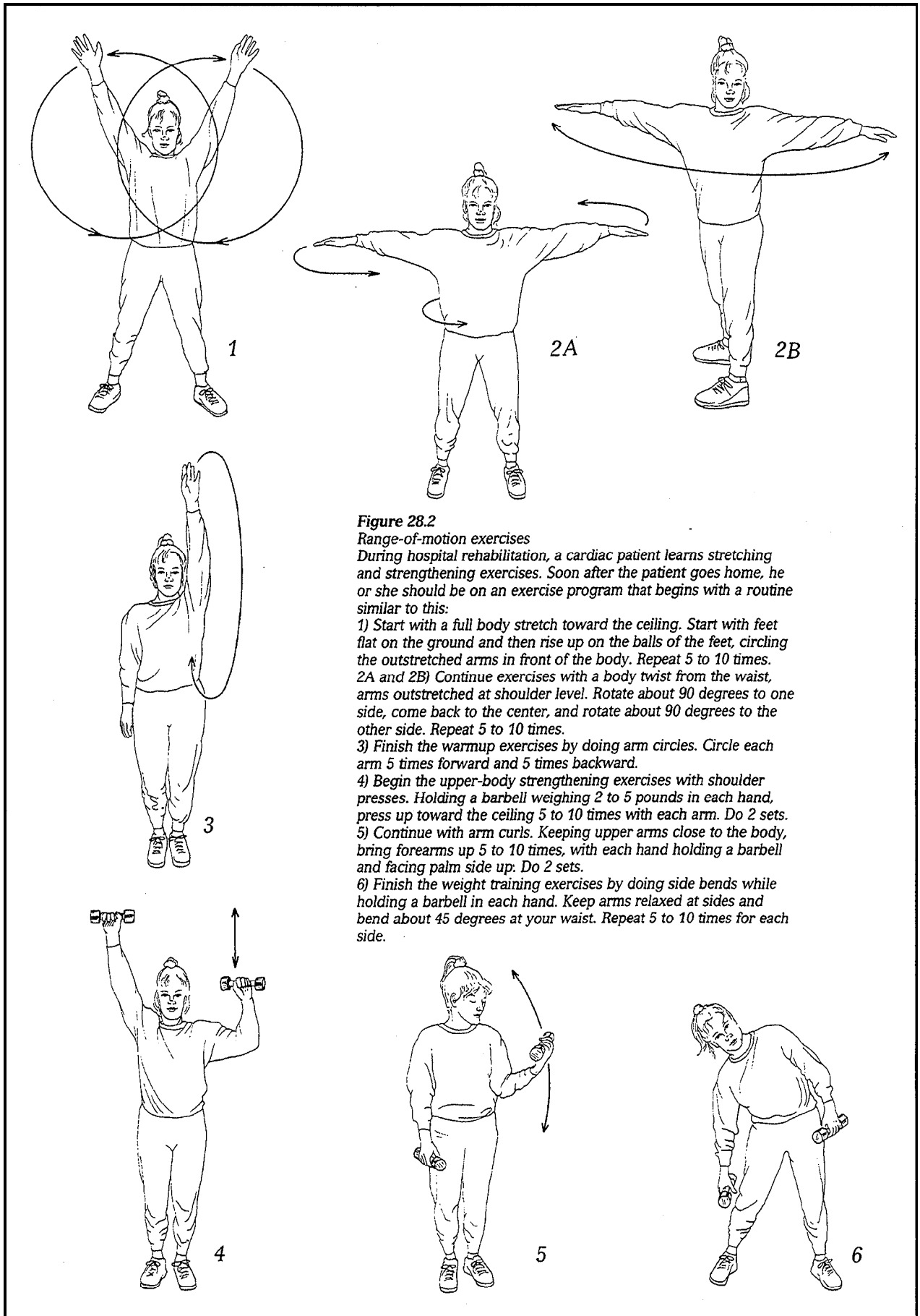
physician or other medical personnel helps overcome the fear that many patients experience in starting an exercise program.

- *There are psychological benefits in group activity.* Many participants in cardiac rehabilitation programs describe the importance of realizing that they are not alone, and that their fears are shared by others who have had similar experiences. Seeing the determination and progress of fellow patients, some of whom may be severely affected, provides extra encouragement. Also, the camaraderie of a group effort makes exercise more enjoyable.
- *An organized program may provide extra motivation to "stick with it."* All too often, a person leaves the hospital after a heart attack filled with determination to change his or her ways, to lose weight, stop smoking, start exercising, and so forth. Typically, the determination lasts for a few weeks, and then, as the fear recedes and life settles back into normal routine, the person begins to backslide into former habits. This is not as likely to happen if the person participates in an organized program. Also, if a person is paying to participate in a rehabilitation, he or she may be more compliant.

For these reasons, we generally favor organized rather than at-home rehabilitation programs. Since the strides taken at this time may influence the remainder of the patient's life, the most rigorous and careful monitoring and motivating are essential.

This latter point brings up the question of how long the rehabilitation program should last. There is no clear agreement among cardiologists and rehabilitation specialists. At Yale, we generally approach cardiac rehabilitation as a three-phase process.

- *The in-hospital phase (Phase I).* As soon as the patient is out of acute danger, he or she begins passive range-of-motion exercises, which progress over several days to early ambulation. The patient is expected to sit up and, as soon as possible, begin to walk and perform simple self-care tasks. Patient education is an important aspect of this phase, with input from physicians, nurses, dietitians, and other caregivers. By the time the patient leaves the hospital (typically five to nine days after the heart attack and a bit longer after coronary bypass surgery), he or she will have the basics of an at-home program for recuperation and rehabilitation.



**Figure 28.2**

**Range-of-motion exercises**

During hospital rehabilitation, a cardiac patient learns stretching and strengthening exercises. Soon after the patient goes home, he or she should be on an exercise program that begins with a routine similar to this:

1) Start with a full body stretch toward the ceiling. Start with feet flat on the ground and then rise up on the balls of the feet, circling the outstretched arms in front of the body. Repeat 5 to 10 times.

2A and 2B) Continue exercises with a body twist from the waist, arms outstretched at shoulder level. Rotate about 90 degrees to one side, come back to the center, and rotate about 90 degrees to the other side. Repeat 5 to 10 times.

3) Finish the warmup exercises by doing arm circles. Circle each arm 5 times forward and 5 times backward.

4) Begin the upper-body strengthening exercises with shoulder presses. Holding a barbell weighing 2 to 5 pounds in each hand, press up toward the ceiling 5 to 10 times with each arm. Do 2 sets.

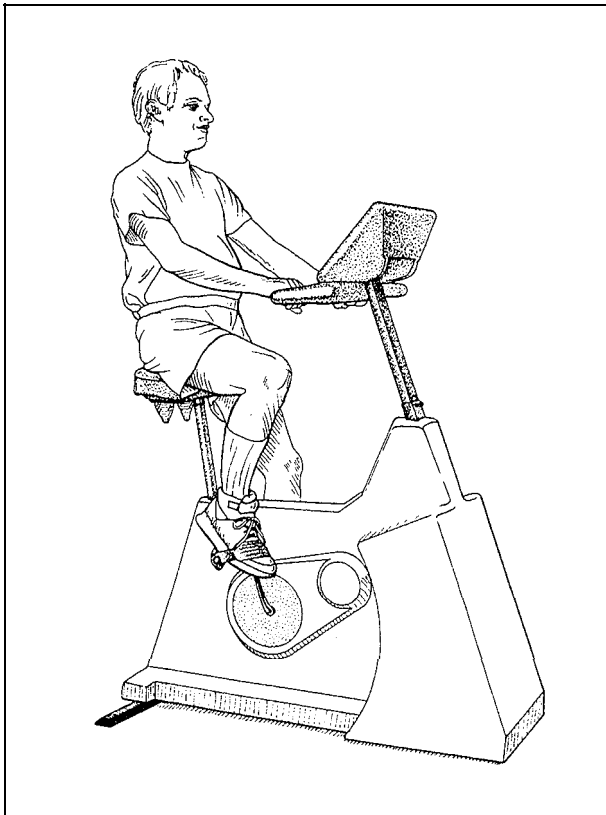
5) Continue with arm curls. Keeping upper arms close to the body, bring forearms up 5 to 10 times, with each hand holding a barbell and facing palm side up. Do 2 sets.

6) Finish the weight training exercises by doing side bends while holding a barbell in each hand. Keep arms relaxed at sides and bend about 45 degrees at your waist. Repeat 5 to 10 times for each side.

- The outpatient phase (Phase II). After two or three weeks of at-home recuperation, most patients have recovered sufficiently to be referred to an advanced rehabilitation program. These programs vary considerably. The ones offered at Yale generally call for three or four medically supervised group exercise sessions a week, each lasting 30 to 60 minutes. Depending upon the individual patient, there will also be extra sessions for smoking cessation, weight control, cholesterol control, stress modification, and special counseling. This outpatient program usually continues for an average of two months.
- The community **phase** (Phase III). By this time, the typical patient has recovered sufficiently to return to work or resume other normal day-to-day activities. Further rehabilitation is often needed to achieve the lasting life-style modifications that reduce the risk of subsequent heart attacks or other cardiovascular events. There may no longer be a need for a medically supervised program, but the person still can benefit from participating in a group effort. Appropriate programs are now available in most communities. Some are offered in a medical set-

Figure 28.3

Many cardiac patients find that a stationary cycle provides a convenient way to work out.



## Guidelines for Home Exercise Conditioning

Almost anything that you do in an organized exercise or fitness program can be accomplished on your own at home. You don't need to invest in a home gym, although you may want to have a stationary cycle or treadmill that you can use indoors when the weather is not suited for outdoor exercise. Your doctor or rehabilitation therapist can work with you to draw up a specific regimen, but here are practical tips to get you started.

- Set aside a specific time to exercise three or four times a week and stick to it. Some people prefer to work out in the early morning; others find that a session at the end of the workday helps change gears and relax. The time of day is not as important as making it a part of your regular routine.
- Wear loose-fitting, comfortable clothing that is appropriate for the temperature and weather.
- Pay particular attention to your shoes. Invest in a good pair of exercise shoes that are designed specifically for your chosen activity (for example, walking or jogging).
- Always include warm-up and cool-down exercises in each session. These help prevent the orthopedic problems that put many exercisers on the sidelines.
- Do not exercise immediately after a meal; wait at least 30 to 60 minutes.
- When it is hot and humid, plan your exercise for the coolest part of the day, or exercise in an air-conditioned indoor area.
- Avoid exercising outdoors during periods of smog or heavy air pollution.
- Avoid exercising outdoors when temperatures fall below freezing or when there is excessive wind.

ting; organizations such as Mended Hearts, Inc and the YMCA offer other programs. Some fitness clubs also have special programs for heart patients. Programs are also offered by some employee health departments. This phase generally lasts 6 to 12 months.

A large number of heart attack patients find that by this stage, they no longer need to participate in a group rehabilitation effort. Instead, they have modified their life-styles sufficiently to include all of the aspects offered in an organized program. If a patient falls into this category and is sufficiently motivated

to follow through on his or her own, there may be no reason to join a group unless the patient truly enjoys the camaraderie or other benefits of a more organized effort. The aspect of group interaction and support should not be underemphasized and maybe of great value to particular individuals.

Regardless of whether the rehabilitation is self-directed or carried out in a medically supervised setting, it is important that the individual learn to listen to his or her body in order to recognize possible warning signs. The majority of patients who survive a heart attack make a good recovery and are able to safely participate in a common-sense exercise program. But after a heart attack, there is always an increased risk of a recurrence; this risk exists in both sedentary and active patients. The patient should know when to stop and seek medical attention. (See box, "Important Warnings to Stop Exercising.")

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## GOING FORWARD

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For most people, a heart attack or other major cardiovascular event marks an important turning point. Some emerge fearful and resigned to fate, convinced that it's too late to make any meaningful changes. Others regard the event as an opportunity to make a new beginning. Obviously, we would prefer that all our patients (as well as readers of this book) fall into this latter category. We are realistic enough to recognize that a heart attack is a life-threatening event. But for the majority of persons who have heart attacks each year, it is not the end to life. And it can mark a new beginning.

It's important to remember that no matter how determined one is to mend one's ways, one should not attempt to change 40 or 50 years of sedentary

### **Important Warnings to Stop Exercising**

Stop exercising if you experience any of the following symptoms. Rest for a few minutes, and if the symptom persists, seek immediate medical attention.

- Chest pain
- Pain that spreads to the arms, ear, jaws, or back
- Light-headedness or dizziness
- Excessive fatigue
- Shortness of breath
- Excessive sweating
- Nausea or vomiting
- Irregular pulse
- Increased pulse rate that persists for more than five or six minutes after you stop exercising

In addition, stop exercising if you experience any unusual joint or muscle pain that may indicate an orthopedic injury.

living and other possible detrimental habits overnight. A gradual, common sense program to modify life-style is more apt to succeed than a go-for-broke approach. The patient should work out a list of priorities with his or her doctor and then tackle the most important one or two at a time. It is neither realistic nor desirable to do everything at once. Expect an occasional lapse, forgive yourself, and go forward from there. Even though the patient is responsible for a comeback from a heart attack, it's important to remember that he or she does not function alone. The doctor, family, and loved ones must be considered a part of the individual's rehabilitation team.