

Secondary Conditions  
Preventions & Treatment:  
B Series—N0.3

# Deconditioning & Weight Gain

**The Research  
and Training  
Center on  
Independent  
Living**



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Research and Training Center on Independent Living, University of Kansas. (1996). *Deconditioning and weight gain*. Lawrence, KS: Author.

**Abstract:** A physical disability need not and should not mean physical inactivity. A disability such as a spinal cord injury may suggest a sedentary lifestyle, but many people with a variety of disabilities work to keep their bodies fit through exercise and healthful eating.

Those who do exercise and eat right are taking charge of their bodies. They are making sure their bodies don't give way to the deconditioning and weight gain that can follow a disabling injury.

Deconditioning and weight gain can affect anyone regardless of physical abilities. Muscles, organs and tissues begin to show signs of atrophy or wasting when the body is inactive even for a short period. Atrophy can happen regardless of a person's age, overall health, or disability. But injuries, illness, and bed rest aren't the only ways bodies become deconditioned. People who spend their days only sitting will get out of shape and overweight whether or not their chairs have wheels.

The expression "Use it or lose it" applies to deconditioning. Physical therapists define deconditioning as the multiple changes in the body's organ systems that are brought on by inactivity and that often can be reversed by activity. It can be further defined as the loss of capacity for sustained activity, again, resulting from inactivity. Deconditioning can have a spiral effect if it is not dealt with properly. Once it begins, it will continue to worsen unless effort is applied to stopping or reversing it.

How do people with SCI prevent or slow deconditioning? The same way anyone does — they exercise regularly, they eat right, and they get enough rest. Depending on their level of injury and the intensity of their exercises, people with a SCI commit themselves to becoming more fit also improve their overall health. The benefits include stronger hearts and lungs, stronger bones, less risk for low blood pressure, less trouble sleeping, less risk for contractures and muscle atrophy, less chance of gaining weight, more control over their spasticity, and improved bowel and bladder function.

The Secondary Conditions Prevention & Treatment series of booklets was written and produced three times yearly by the Research & Training Center on Independent Living, 4089 Dole/ University of Kansas, Lawrence, KS 66045-2930. Supported by a grant from the Education and Training Foundation under the aegis of the Paralyzed Veterans of America.

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## **Take Charge: Deconditioning and Weight Gain**

A physical disability need not and should not mean physical inactivity. A disability such as a spinal cord injury (SCI) may suggest a sedentary lifestyle, but many people with a variety of disabilities work to keep their bodies fit through exercise and healthful eating.

Those who do exercise and eat right are taking charge of their bodies. They are making sure their bodies don't give way to the deconditioning and weight gain that can follow a disabling injury.

Deconditioning and weight gain can affect anyone regardless of physical abilities. Muscles, organs and tissues begin to show signs of atrophy or wasting when the body is inactive even for a short period. Atrophy can happen regardless of a person's age, overall health, or disability. But injuries, illness, and bed rest aren't the only ways bodies become deconditioned. People who spend their days only sitting will get out of shape and overweight whether or not their chairs have wheels.

Today the media is helping to make Americans more aware of fitness and health. So much is being said on the topic that the interest in fitness sometimes seems more like a fashionable trend than an important part of a healthful lifestyle. In spite of all the information, many Americans haven't made the commitment to exercise or to eat sensibly.

For people with a disability, however, exercise and sensible eating can help them protect the health they have. For a person with SCI, fitness is more than just a trend: it is the key to a healthful and more independent life.

Everyone, regardless of their physical ability, must make a commitment to include exercise and healthful eating as part of a daily routine. Following through on this commitment will improve people's overall health and give them the satisfaction of knowing they can and do take care of themselves.

The information in this booklet will help you think about the ways you can improve your health and fitness. Remember, a healthier body through exercise and nutritious eating is possible for anyone.

### **Health and disability**

Physical decline or deconditioning does not have to follow a paralyzing injury nor does a disability signal the end of a person's good health. Inactivity and poor nutrition — for those with and without disabilities — usually is what triggers a decline in health. Many people with physical disabilities consider themselves to be healthy. They see “being healthy” as a great deal more than the simple absence of illness or disability. Health includes such important ideas as the ability to direct one's life and self-care, to continue to grow as a person, and to enjoy satisfying relationships and ties to the community.

If you have a spinal cord injury (SCI), you can do a great deal to keep yourself healthy. Your actions play a major role in whether your body stays fit through exercise and healthful eating.

## **Deconditioning: What is it?**

The expression “Use it or lose it” applies to deconditioning. Physical therapists define deconditioning as the multiple changes in the body’s organ systems that are brought on by inactivity and that often can be reversed by activity. It can be further defined as the loss of capacity for sustained activity, again, resulting from inactivity. Deconditioning can have a spiral effect if it is not dealt with properly. Once it begins, it will continue to worsen unless effort is applied to stopping or reversing it.

So, deconditioning happens when people become less active. For people with SCI, increased movement can remedy this deconditioning in the non- paralyzed muscles.

It is important to note that the presence of a spinal cord injury or physical disability is not the same as deconditioning. Persons with disabilities have some reduced physical capacity that is due to the disability itself. This is not deconditioning, but, rather, the nature of the injury or the disability. Deconditioning occurs in any muscle that is not moved daily and thus, the presence of a physical disability can set the occasion for deconditioning.

There is another common expression that relates to the overuse of certain muscles. This term simply says “Conserve it to preserve it” because people who propel a wheelchair for their mobility are using their arms to do the work that legs were made for. This caution still applies when beginning new activities or exercises to decrease the effects of deconditioning. Part of an exercise routine should address this factor and work on balancing muscle use.

Some amount of deconditioning affects everyone. Starting at about age 20, everyone’s body systems begin to change or to become less conditioned. The body begins to lose some of its reserve capacity for physical work. But the changes are gradual, so most people don’t notice any declines until they get closer to 40. How fast the body begins to change is partly determined by heredity. A person whose grandparents lived to a healthy old age likely will, too.

People who take good care of their bodies can slow down the effects of aging, which is the body’s natural deconditioning process. For example, they don’t abuse alcohol or drugs, including nicotine. They pay attention to what they eat, and they try to stay active.

For example, a 25-year-old who drinks and smokes heavily is more likely to face physical decline sooner than a 50-year-old who doesn’t smoke or drink and who eats healthy. So, although everyone’s body naturally ages and changes, the onset and rate of change is different for everyone and is partly under the individual’s control.

## **Deconditioning and SCI**

For people with SCI, the danger of decline in capacity for physical activity or deconditioning begins immediately after the injury. In those first days of hospitalization and treatment, the proper positioning of the person’s arms and legs and a quick start into SCI-related physical therapy are important. People who start rehabilitation early will have the assistance needed to keep the body moving and to remain healthy. They will experience less deconditioning and will then be better able to prevent deconditioning later.

But how do people with SCI prevent or slow deconditioning? The same way anyone does — they exercise regularly, they eat right, and they get enough rest. Two of

those factors — keeping fit and eating sensibly — are harder for some people. Those who regularly include exercise and healthful eating in their lives have made a commitment to take better care of themselves not just today, but for a lifetime.

In the past few years the daily media have stepped up their coverage of health issues. They routinely write stories about nutrition and exercise. But many people still have not made the commitment to practice good self-care.

What do people with a SCI get in return for that commitment? Plenty. People with paraplegia and those with quadriplegia who manage their own transfers will:

- Have stronger muscles and be better able to negotiate transfers and to maintain proper posture
- Be more flexible and better able to move around and to care for themselves
- Have more energy to take care of themselves and their families and to devote to jobs and homes

Some people with quadriplegia may face challenges in following a fitness program. Their exercises will vary depending on the level and the completeness of injury, but some form of exercise is possible.

Assisted exercise sessions and water workout programs may be available. Passive exercises are done with a personal assistant, friend, or family member who helps move joints in a full range of motion to keep joints as flexible as possible. A breathing program or ventilatory muscle training could be part of a workout plan. Dressing and other daily care activities offer natural stretching and keep the both moving. And activities that keep a person mentally fit — a hobby, books, movies, social interactions — are important as well.

Depending on their level of injury and the intensity of their exercises, people with a SCI commit themselves to becoming more fit also improve their overall health. They have:

- Stronger hearts and lungs
- Stronger bones
- Less risk for low blood pressure
- Less trouble sleeping
- Less risk for contractures and muscle atrophy
- Less chance of gaining weight
- More control over their spasticity
- Improved bowel and bladder function

Exercise and healthful eating also can bring emotional and social benefits. Good health might also reduce health care costs and increase a person's chances of keeping steady employment. So people with SCI who keep fit often are more socially active, less likely to become depressed, less likely to take time off from work, more likely to be independent, and more likely to have confidence and high self-esteem.

The benefits of exercise are clearly too good to ignore! So let's talk about how to improve your overall physical fitness through exercise and healthful eating.

## **Exercise**

Moderate exercise benefits everyone, regardless of age or physical ability. Regular exercise, says the American Association of Retired Persons (AARP), also offers some protection against other chronic diseases such as adult-onset diabetes, arthritis, blood pressure problems, certain cancers, osteoporosis, and depression. In addition, research has shown exercise can ease tension and reduce the amount of stress people feel. To put it simply, exercise is one of the best things you can do for your health.

Wheelchair sports have been gaining increased attention. This type of activity may not be for all, however, many wheelchair users have become involved in local, smaller scale wheelchair sports. You may want to check with your ILC for information about the availability of wheelchair basketball or quad rugby, for example. There may be other group sports activities or, you may want to organize some practices with a group of friends.

If you haven't been exercising regularly, think of exercise as anything that gets you moving more than you do now. Wheeling your chair a few more feet than usual, raising and lowering soup cans over your shoulders for a few minutes in the morning and at night, stretching a rubber exercise band with your arms for a few minutes each day can all be good starts to your fitness program.

Studies show that even the most inactive people can gain significant health benefits if they are physically active for 30 minutes each day. So increasing your activity to that level may be a goal you'll want to set for yourself.

A physical disability may restrict some activities. But most people with disabilities can include exercise into their lives.

### **How to begin?**

The first step in starting your exercise program is to decide that exercise is good for you and that it will make you feel better. You can start today with a few stretching exercises. Tomorrow you can repeat those exercises and add one or two more. Maybe in a week or so you can exercise with a video.

So, an important step is to do something and then to do it again tomorrow and the next day. Whatever way you decide to get started is not so important as the fact that you do get started. Once you've made a promise to yourself to exercise a little each day, you'll probably want to visit your doctor to get a good physical exam. You'll want to know if you have any physical restrictions. You also need to know what parts of your body or what health problems may be especially helped by exercise.

During your exam, be sure to tell your health care professional that you are starting to exercise. The two of you can then talk about your overall health and medications because these can affect your exercise program. Ideally your doctor is someone who knows you, who knows something about exercise, and who knows how to care for people with SCI. Chances are your doctor won't know all of these things. But your doctor may be able to refer you to a health care professional who knows something about disabilities and physical conditioning. A recreational or physical therapist, a personal trainer or a sports fitness specialist who has experience with SCI, or a physiatrist — a doctor who specializes in physical medicine and rehabilitation for persons with disabilities — may be better able to help you with your exercise program. He or she can show you which exercises will help you and can help you decide if you'll

need to wear any protective equipment or bracing while exercising. He or she also may suggest devices that will be especially useful.

For example, a glove with the grip material Velcro can enhance a person's grip on exercise equipment. An ace bandage that wraps the hand to an exercise lever may allow someone with quadriplegia to grip and turn wheels on aerobic fitness equipment. Weights that wrap around the wrist or wrist cuffs with hooks that attach to pulleys also may make it possible for someone to exercise with weights.

The therapist also will be able to show you how each exercise is done and to watch you perform these exercises and give you feedback. If you have a newly acquired injury, it may be helpful to have the therapist assess your:

- Functional range of motion
- Strength
- Balance and trunk stability
- Muscle tone
- Tolerance to aerobic activity

Your therapist may also know about adaptive physical education courses in your area or may suggest a gym or health club where you'll find appropriate exercise facilities.

You may find that the gyms or recreation facilities in your area may not offer equipment, such as the Nautilus weight-lifting machines that can be used or adapted by people with disabilities. Getting usable equipment and exercise space in your community may be an advocacy issue you or your ILC may want to pursue. One approach would be to contact the director of your community's recreation program and let him or her know that you and other people with disabilities want to participate in the health and fitness programs they offer.

Some people prefer to exercise at home. Exercising at home works well for motivated people who value daily exercise. An exercise program done at home is also cheaper, requires little to no special equipment, and avoids the problem of transportation. People with paraplegia or quadriplegia can improve their physical fitness at home with simple equipment like a standing frame. The frame supports the body in an upright position, thereby relieving pressure from being in the sitting position and reducing the chance for pressure sores. It also can improve circulation, breathing, and bladder and bowel function.

Quadriplegics also can use weights to strengthen their breathing. Placing weights on the stomach and chest and then lifting and lowering the weights by breathing in and out can increase a person's lung capacity.

Some people are unable to exercise alone or at home because they need assistance or because they want to use special equipment, such as weight-lifting machines. Others get their exercise through competitive sports such as tennis, track and field or wheelchair racing.

Some people prefer getting out for group exercises at a local gym or fitness center. People in the group encourage each other, and exercising becomes a social as well as a fitness activity.

So when thinking about your exercise program, think about your physical needs and abilities and how much exercise time you want to have with others. Your therapist might know about local exercise groups or clubs or you might get one started through

your parks and recreation department, YMCA or YWCA, privately owned fitness clubs, or independent living center (ILC).

Depending on your physical abilities, the equipment you use or where and how you perform your exercises, your program might include activities that work on:

- Flexibility and posture
- Range of motion
- Strength
- Endurance

### **Flexibility, posture and range of motion**

Stretching exercises help with your flexibility and posture and keep your joints stable. Flexible joints and muscles reduce your chances for contractures and for other injuries. For example, wheelchair users with flexible shoulder joints are less likely to tear their shoulder muscles. Rotator cuff tears in the shoulders are common results from strain and heavy use. Flexible joints and muscles also are essential to good posture, which is so important for those who use wheelchairs.

### **Checking out a fitness facility**

Consider these questions and more that are specific to your needs as you explore options.

- Are staff or trainers knowledgeable about fitness for people with disabilities? Is there a general awareness of disability issues and of people with disabilities as self-directing adults?
- Are there any adaptive programs or classes and are they held at various times to accommodate working individuals? Is there adaptive exercise equipment? Or standard equipment that can be readily used by a person with a disability?
- May I join non-adaptive programs or classes and participate as I am able?
- Can membership fees be pro-rated based on how much of the facility is accessible or equipment is usable?
- Will the management allow a free session or two in order for me to assess the degree to which the facility meets my needs?
- Is there designated handicapped parking? Is the locker room accessible?
- Is there a shower area with grab bars? Is there an accessible restroom on the premises'?
- What type of equipment is available to provide access to the pool? Ask the facility to describe the equipment and how it is operated. Are staff trained in assisting people to use the equipment?
- Is there a budget to maintain equipment?

Research has shown that ROM exercises take joints through their fullest range of stretch and movement, and daily ROM is recommended to keep the joints and muscles flexible and healthy. But some people find they need to go through these joint motions twice or even three times a day. So select the frequency that lets you keep your joints, muscles, and connective tissue supple and flexible.



## **Muscle strength**

Weak muscles affect posture and overall mobility. People with SCI need a careful assessment of their muscle strength so they know where to focus their strength-building exercises. Those with quadriplegia, for example, will have some loss of muscle function in all four extremities. Those with paraplegia may have good muscle function in their upper arms, but weakness in their lower back and leg muscles.

Some people have a muscle imbalance — one part of a muscle group is stronger than the others. For example, the muscles used to propel a wheelchair forward usually are stronger than the muscles used to rotate the arms and shoulders backwards. A good exercise program will help build up weak muscles and maintain strength and balance in others.

Your deconditioned muscles may also hurt when they are moved or exercised. Soreness may be sign that the muscle is weak. So start slowly and carefully. With regular exercise, your muscles should get stronger and less sore.

## **Stronger heart, lungs and muscle**

Your exercises should also include those that build muscle endurance and those that work your heart and lungs, or the cardiorespiratory system. If you've been inactive, your muscles may be weak and may tire more quickly when exercising.

Aerobic exercises strengthen the heart and make it possible for it to pump more blood and oxygen with less effort. People build their muscle and aerobic endurance by lengthening their workout times and increasing their exertion level.

People who get their hearts and lungs working harder when they exercise find that they breathe more easily, tire less quickly and have higher levels of HDL-cholesterol, the good cholesterol. These exercises also will increase their tolerance for exercise, improve endurance, decrease the likelihood of heart disease, increase the lean body mass, and decrease body fat. Your physical therapist or trainer can help you determine what level of aerobic activity you should set as your goal.

People with SCI must put together personal exercise programs that meet their physical needs, build their fitness, and still allow for their limitations. It's not possible, nor advisable, for this booklet to suggest or teach specific exercises. But the following information offers tips that can get you started on your exercise program.

## **Exercising with videos**

A variety of exercise and physical fitness videos have been produced in recent years. In this booklet you'll find a list of videos that have been made especially for people with physical disabilities. Videos are helpful because they show the correct way to do an exercise and offer helpful tips. They're also an enjoyable way to exercise in your own home.

But before using a video tape in your home, be sure you:

- Know your physical limitations and exercise abilities.
- Borrow, preview, or rent the tape before buying it or discuss the return policy with the seller.

In her article "Fit to Be Tried," June Isaacson Kailes suggests you ask yourself some questions when trying to decide if a video is right for you or worth the investment:

- What kind of balance do the exercises require? What types of disabilities are represented?
- Does the instructor have a disability?
- Does the instructor have training or expertise in these types of exercises or with the disabilities presented?
- Is the tape primarily focused on stretching, strength building, aerobic fitness or a combination?
- Does the video provide audio descriptions for those who have poor or no eyesight or captions for people with a hearing loss?
- Are the featured exercises vigorous, moderate, mild or a combination?

Videos can be wonderful teaching tools. They're lively, informative and often entertaining. Remember to start slow, to work at a comfortable pace, and to gradually increase your exercise time to the level that is right for you.

Your local library, ILC, rehabilitation center, or a physical or recreational therapist may have tapes you could borrow. If your library doesn't carry exercise videos for people with disabilities, you might recommend some titles after you've found some you enjoy.

Video titles such as Chair Jazz, Exercise is for Everyone, Sit and Be Fit, Seat-a-Robics, Fitness Is for Everyone, and Keep Fit While You Sit are selections you may want to check out. Look for these and similar titles. There are many varieties of wheelchair exercise videos on the market today and you're very likely to find one that works for you and your specific exercise needs. Publications such as Paraplegia News, Sports & Spokes, New Mobility, and Mainstream may offer some helpful advice on obtaining these types of videos. Disabled Sports USA is another resource you may want to check out.

### **Keeping with your exercise program**

The AARP and the National Institutes of Health offer these tips to help you stick to your exercise program and enjoy a safe workout:

- Take a few minutes to stretch and warm up before starting your exercises.
- Before exercising, empty your bladder or drainage bag and check the placement of your catheter and tubing. A too full bladder or a kinked tube may stress your central nervous system and cause an increase in blood pressure.
- Breathe deeply while exercising.
- Drink water when you exercise. You already need 6 to 8 glasses of water a day. Depending on how long and how hard you exercise, you may need as much as 5 more cups before, during and after exercising. If you perform intermittent catheterization (IC) you will need to balance your fluid intake and the frequency of IC or voiding so that your bladder will not become too full.
- Protect your skin. Be aware of repeated movements or equipment that puts sustained pressure on your skin. Proper padding also will protect the skin from hard or sharp surfaces.
- Change out of your sweaty clothes after your workout. Your skin may break down if it stays too moist.

- Make exercise a part of your daily routine, and set aside a certain time each day to exercise.
- Choose activities you enjoy.
- Wear comfortable clothing that exposes some skin surface to the air. Exposing some skin will help keep the body from heating up.
- Exercise in a cool or temperature-controlled room. Many people with SCI have difficulty controlling their body temperature and can get too hot while exercising.
- In addition to drinking enough water, keep a spray bottle nearby to mist your skin as a way to keep cool.
- Start gradually and increase the amount of time until you are exercising 3-5 days a week.
- Increase your exercise time to 20-30 minutes of vigorous exercise each time you exercise.
- Rest at least one day a week, and rest as needed during your exercises.
- Keep a written log of your progress.
- Exercise to music, a television program or with friends and family.
- Be sure to stretch after your exercises to “cool down” from your routine.
- Set an exercise goal for yourself, something you can work toward and achieve.
- Be patient, it can take several months to build even a limited level of physical fitness.
- Challenge yourself to keep your program going.
- Don’t forget to enjoy how much better you feel.

## **Weight**

If you want to lose weight, you’re definitely not alone. About one quarter to one third of adults in the United States are classified as overweight. At this very moment, an estimated 20 million Americans are now dieting. Most want to lose weight so they can feel and look better and can improve their overall health. For people with a SCI, overall health and mobility are strong reasons for reaching and maintaining a healthful weight.

## **SCI and weight**

Not everyone who has a SCI needs to be concerned about his or her weight. One study of almost 300 people who have a SCI showed the average weight gain was only a pound a year. In 10 or 20 years, however, a pound a year adds up.

Being overweight carries health risks for anyone regardless of disability. No one knows for sure how harmful it can be to carry extra weight, but overweight has been linked to some cancers, heart disease and stroke, back pain, and adult-onset diabetes. For people with SCI, excess weight increases their chances of these weight-related health problems. It also makes it more difficult for them to make transfers. Their personal assistants may also find it harder to assist them.

Accepted weight guidelines for people with SCI have been established. People with paraplegia should weigh 10 to 15 pounds less than the recommended weights on the Metropolitan Life Insurance charts. Those with quadriplegia should weigh 15 to 20 pounds less. A lower-than-average weight may help to compensate for the fact that people with a SCI face higher risks for such things as heart disease and breathing and skin problems.

Others suggest that weight loss may contribute to increases in the occurrence of pressure sores. Less fatty tissue, especially on the buttocks, provides less protection against abrasion or pressure sores. Therefore, weight loss programs for persons with SCI or various physical disabilities should consider a whole life perspective. Wheelchair users have some unique considerations in managing their weight.



To be more healthy and active, some people with a SCI have to lose weight. The goal to weigh less than they did before their injury is hard for many people. Most are less active after their injury, so they need less food to fuel their bodies. However, many now take comfort in food and may eat more than they did before they were injured. This decrease in activity and an increase in food quickly lead to being overweight.

#### **Being overweight**

Most researchers assume the basic reason most people are overweight is that they have an imbalance between the amount of calories they eat and the amount they burn. At its most basic, food is fuel and the body is a machine. Food gives energy, but if the person doesn't burn up

that energy with activity, he or she will store that energy in the form of fat.

For example, if the average person wants to eat an M&M candy, but doesn't want to store the calories, he or she would have to walk the length of a football field to burn the calories in one M&M. If it's a peanut M&M, the person would have to walk the

length of two football fields. If the person eats a slice of pizza, he or she would have to walk 3 miles to burn off the calories. Though most people who read this booklet are wheelchair users, one begins to get the idea of what it takes to burn calories.

People doing the exact same activities will burn their calories differently — some will burn more calories than others. Some people also convert food energy to fat more quickly than others. Why this imbalance between food and energy occurs is unclear. Heredity as well as body makeup, chemistry, and childhood eating habits and nutrition may all play a part in why some people gain too much weight and others don't.

If everything you eat contains calories and everything you do uses calories, then for most people the less you eat and the more you do, the more calories you'll burn and the more weight you'll lose. One pound of fat represents 3,500 calories. To lose a pound of fat in a week, you'd have to eat 500 calories less a day than you are currently eating, or you would have to burn 3,500 extra calories in exercise, or you'd have to try a combination of less food and more exercise.

People are more likely to be successful in their weight loss program, if they find small ways to change their eating and activity habits and then stick with those small changes. Did you know that eating just 100 calories less a day can cause you to lose 10 pounds in a year? A banana or a pear, one tablespoon of peanut butter, a small muffin, or a glass of orange juice each have about 100 calories.

Here are some examples of small changes that can bring noticeable weight losses over time:

- Use less salad dressing.
- Drink a glass of water before your meal or eat more slowly to sense feeling full more quickly.
- Switch from whole milk to 1% milk or skim milk.
- Reduce the amount of fruit juice you drink and replace the liquid with water or a low-calorie soft drink.
- Reduce by just one pat the amount of butter or margarine you use each day.
- Switch from ice cream to low-fat or non-fat frozen yogurt.
- It's not a diet; it's a life change

### **It's not a diet, it's a life change**

Diets are temporary solutions to the permanent problem of being overweight. Many people lose weight on diets, but most of them gain that weight back within two years because they didn't change the way they ate. Permanent weight loss comes from a change in lifestyle. It doesn't come from following a diet for a few weeks or months.

Traditional diet approaches also contain some built-in pitfalls that center on a person's metabolism or the body's chemical and physical processes. People with a fast metabolism burn more calories than people with slow metabolisms. How quickly or slowly your body burns calories, however, can change. The following things can lower your metabolism:

- Eating less
- Being less active
- Losing muscle
- Aging
- Dieting

Here's why. Your body burns about 800 to 1,200 calories a day just to keep itself going. It has to breathe, digest, pump, eliminate, think and move, and all of this takes energy or calories. When you eat fewer than 800 to 1,200 calories, your body draws on its fat reserves for the fuel it needs, and this helps you lose weight. But when you cut back on your calorie intake, you are also sending your body a message: Food may be scarce. Slow down to conserve fuel.

A body with a slower metabolism is a set-up for weight gains when the diet stops. The dieter resumes normal eating, but now he or she has a slower metabolism and gains weight even more rapidly than before the diet. Each diet ends in an even greater weight gain.

A sedentary life also affects your metabolism. If you move less, you send a message to your body that it doesn't need to burn as much energy. So your body will readjust its metabolism to reflect this slower pace. For this reason, many people with a SCI have a slower metabolism because they move less.

When you move less, you send a message to your muscles: I don't need you to do as much because I'm moving less. So your muscles begin to shrink in size. But it's your muscles that burn the calories, so a body with less muscle, burns fewer calories and has a slower metabolism.

As people age, their metabolism also slows down. So they need to eat less than they once did just to maintain their weight.

The list above tells you what can make a metabolism slow down. Moving around and getting regular exercise is what you must do to speed up that metabolism. That's why a diet plan without exercise is a diet plan doomed to failure.

If you move around you build more muscle. If you have more muscle, you burn more calories. If you burn more calories, you lose weight. Weight that comes off because you burn calories is more likely to stay off than the weight loss that causes your metabolism to slow down. So, as you can see, regular exercise and weight are closely linked.

### **Choosing to lose weight**

You and your health care professional may decide that you need to lose weight. To do this you'll need to reduce the amount of calories you eat and increase your activity. Not all approaches to weight loss are alike or equally good. The following weight-loss methods can harm your body and should be avoided:

- Following diet plans that promise quick weight losses.
- Eating less than 1,000 calories a day.
- Fasting
- Smoking to curb your appetite.
- Vomiting or purging.
- Taking diuretics or laxatives.
- Following an all-liquid diet.
- Taking over-the-counter stimulants and appetite suppressants.

Before you decide to change how and what you eat, think about whether you have enough information to put together a healthful, reasonable eating plan and how you would approach it. Recent research suggests that people who lose and then regain large amounts of weight may be putting their bodies at risk. Because weight swings may be

just as harmful as being overweight, it's best to ask yourself: Am I ready to commit myself to losing weight and to keeping the weight off?

The following questions might help you decide if you're ready to change your eating and exercising habits for good.

- Have I thought about my eating and exercising habits?
- Have I found those areas I'd like to improve?
- Do I have ideas on how to make those improvements?
- Am I willing to lose weight slowly?
- Do I want to lose weight to improve my health?
- Am I ready to take some time each week to plan my eating and exercising program?
- Do I want to lose weight to look good?
- Will I feel successful if I lose a lot of weight quickly?
- Will being thinner solve some of my personal problems?
- Does someone else want me to lose weight?
- Will I feel like a failure if I don't reach my goal?
- Will I feel less stressed out if I were thinner?

If you answered yes to all or most of the first six questions and no to all or most of the last six, you're probably ready to commit to a diet plan.

A life-time approach to healthful eating includes the following guidelines:

- Limit the amount of calories you eat from fat to no more than 25 percent.
- Choose a variety of foods, including five servings of fruits and vegetables a day and 10 servings of grains and pasta.
- Use sugar sparingly.
- Use salt and sodium in moderation.
- Drink little or no alcohol.
- Eat foods rich in complex carbohydrates.

## **Nutrition**

Eating the right foods and in the right amounts is as important as exercise in reaching and keeping a healthful body weight. People who don't pay attention to the foods their bodies need can harm their bodies. This is especially true for someone with a SCI whose nutritional needs may change depending on how well he or she is doing physically. Stress, infections, medications, surgery, pressure sores, depression, and bowel and bladder programs can all affect how much, what, and when a person eats.

For example, people with SCI often need more protein. The body of a non-injured person gets its energy from fats and carbohydrates and uses its proteins for routine tissue repair. When a person is injured, however, the body has a high demand for energy and quickly uses up its reserve of carbohydrates. It then turns to the body's proteins to meet its high-energy needs. If proteins are used for energy, then the body needs even more protein if it's to heal from such things as infections, pressure sores, or surgery.

Maintaining healthy skin also is important to someone with SCI; protein, Vitamin C, zinc, and fluids are essential to keeping the skin healthy. Increased Vitamin C can also make the urine more acidic and help prevent urinary tract infections. People with SCI

also must eat foods rich in fiber — such as fruits, vegetables and grains — so that their bowel programs will be successful.

The best way to keep yourself healthy and to maintain your proper weight is to keep learning about nutrition and to put what you learn into practice. The U.S. government, the American Cancer Society, the AARP and many other agencies offer free or inexpensive literature on ways to improve your diet. At the end of this booklet, you'll find several good sources for information on nutrition.

A nutritionist also can help you put together an eating plan that matches the foods you like with the foods you need. He or she can help you balance your need for water, protein, carbohydrates, fats, vitamins, and minerals with whatever special needs that result from your SCI. Here are some things you can do to help you lose weight or maintain a healthful weight:

*Reduce your stress:* When people feel stressed they are more likely to reduce or stop their exercise programs. I have no time. I feel too tired. I'm just not feeling well. These often are what people under stress say when they think about exercise. People who are stressed also tend to eat poorly. They may not take time to shop for nourishing food or to cook or select low-fat, nutritious food. Stress often triggers a desire for junk food, snacks, and binge eating.

*Drink plenty of water:* Water is filling and calorie free; it's also essential to health. A parched body hoards its water, which can contribute to water retention and water weight gain.

*Set a reasonable goal:* With your health care professional, decide on a healthful weight. It's unwise to lose more than a pound a week, so you should not set unreasonable expectations. Remember that it took awhile to gain weight; it may take you several months or a year to lose it. Consistent losing, not speedy losing is best.

*Eat less fat:* No more than 25 percent of your calories should come from fat. Try dropping one fat-rich food at a time from your diet and replacing it with a food rich in carbohydrates. For example, replace your breakfast donut with an English muffin. Did you know that most of the fats we eat are stored directly into our fat cells? But the carbohydrates we eat must first be converted into sugars before they can be stored or used by the body. This conversion burns up some calories, so your body begins burning its carbohydrate calories even before the body gets them for energy.

*Eat more fruits, vegetables and grains:* One reason diets don't succeed is that people look at all the things they can't eat. The stress is on doing without. But a diet that stresses what you must eat keeps you feeling full and boosts your nutrition. By the time you eat all your fruits, vegetables, fiber, fish and dairy, you'll have less room in your stomach or cooking time to devote to non-essential foods.

*Eat more of your calories earlier in the day:* The 500 calories you eat in the morning is less likely to get stored as fat than the 500 calories you eat before bed. The first gets burned up as you start your day. The last get stored while you sleep. Adele Davis, a well-known and often quoted nutritionist of the 1970s, once wrote: Eat breakfast like a king, lunch like a prince and supper like a pauper. Her message: Eat more of your calories earlier in the day.

*Watch your portions:* Portion control is one of the easiest ways to make sure you don't eat more than your body needs. Americans have grown accustomed to large portions of everything. Fast food merchants urge us "Super size it," and well-meaning



friends and family heap our plates and ask if we want seconds. In your own home, here's some tips for controlling your portions:

- Teach yourself to recognize what a portion of beef, a small apple, or a cup of vegetables looks like. Then try and keep to those amounts when serving yourself.
- Use a kitchen scale to measure amounts like ounces of meat.
- Place food on your plate so that nothing touches.
- Use a salad plate instead of the standard dinner plate. You'll feel like you have more.
- Do not put serving dishes on the table; it's too easy to keep spooning up seconds or thirds. Leave the food in the kitchen.

*Weigh yourself regularly:* It helps if you know how much you weigh before you begin your weight-loss program and if you can monitor your progress regularly. Knowing how your weight is changing can help you stay on your diet or nudge you back to a more healthful eating program.

For people in a wheelchair, however, this tip is easier said than done. Finding a scale that will weigh you and your wheelchair will be challenging.

A rehabilitation hospital most likely will have a wheelchair-accessible scale. A local nursing home might also have one. Neither of these choices may be convenient or desirable, but they may be your only option.

Getting a scale for wheelchair users installed at a local fitness center or community recreation facility may be a good advocacy project. Talk to your ILC, your city's parks and recreation director, and your local hospital or physician about the need for such a scale.

Losing weight isn't easy for anyone. Information, practice, and patience are the tools you'll need to change your eating and exercising habits one day at a time. The benefits, however, will be life-enhancing.

In their article "Deconditioning," physical therapists Dan Vorhies and Barbara Riley note that a person's quality of life comes from three major factors:

- Our health
- Our ties to our community
- Our self-esteem

Exercise and healthful eating make all three possible. These three factors depend on each other — without one it is harder to have the others. For people who don't have good health tend to stay home more and to not get around in their communities. They meet fewer people and are less active, so they become less excited about or interested in life. This loss of excitement affects their self-esteem.

In a very real sense then, taking charge of your body through exercise and healthful eating is a way to take charge of your life.

## **Glossary**

*Aerobic* (a-ro'-bik) Dependent on oxygen. Exercises are said to be aerobic when they make a person breath hard while using the large muscle groups at a regular, even pace.

*Atrophy* (at-re-fee) A wasting away of the body or its organs because of disuse.  
*Contracture* (kon-trak'-churs) Reduced range of motion in joints caused by a drawing together or shrinking of the tissues surrounding the joint.

*Deconditioning* (de'-con-dish-e-ning) Changes in the body brought on by prolonged bed rest or inactivity. These changes can often be reversed by activity.

*Osteoporosis* (os'-tee-o-po-ro-sis) Porous or brittle bones caused when calcium leaves the bones and makes them thinner.

*Paraplegia* (par-'a-ple'-je-ah) Damage or loss of movement and feeling to the lower part of the body caused by disease or injury to the nerves within the segments of the spine located in the areas of the chest, lower back, and hips.

*Quadriplegia* (kwod'-re-ple-je-ah) Damage or loss of movement and feeling caused by disease or injury to the nerves within the eight cervical segments of the spine that are located in the neck.

