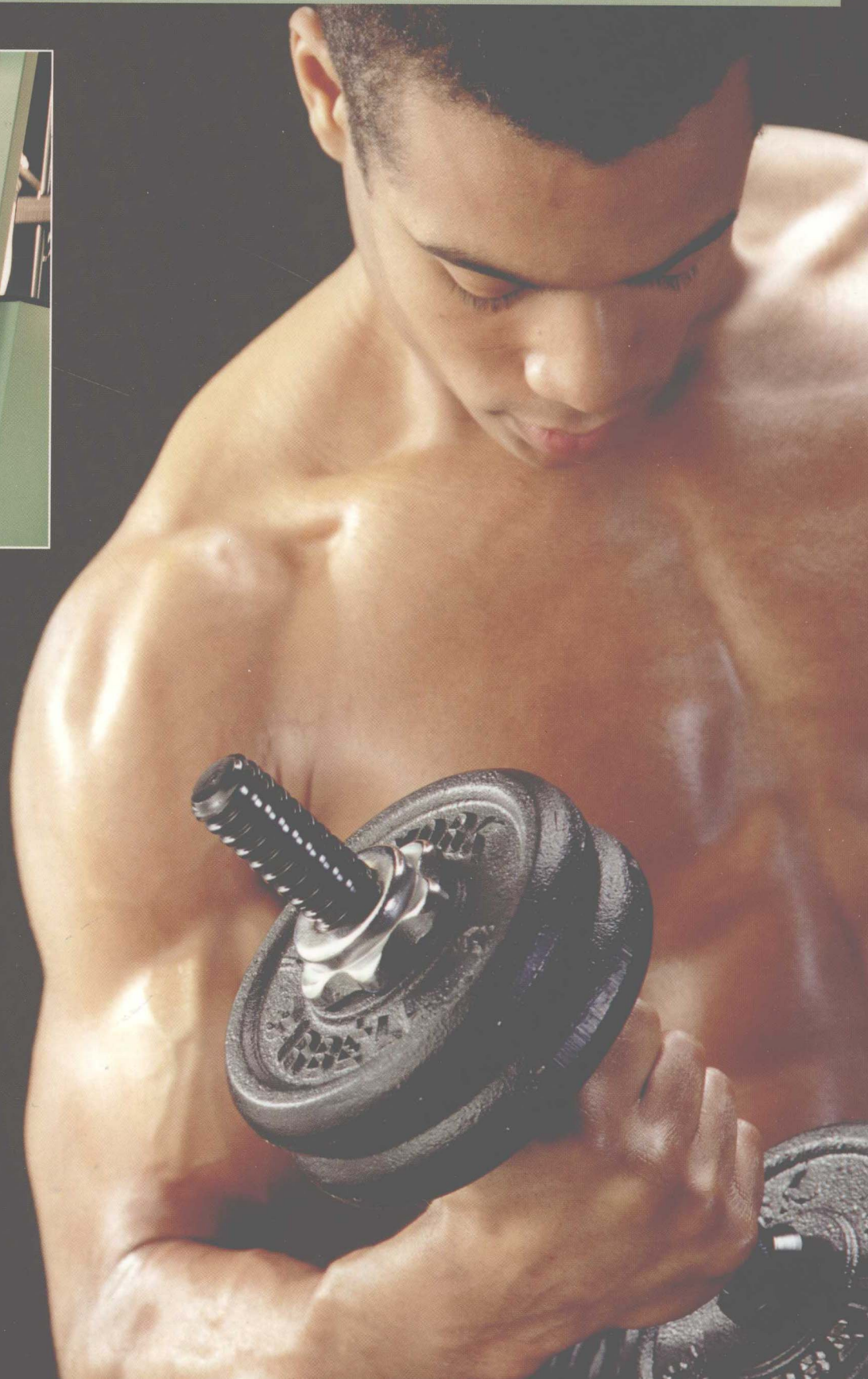
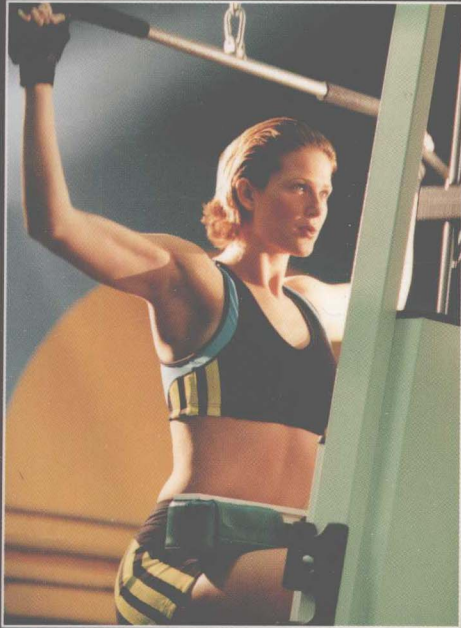


Weight Training for Life

EIGHTH EDITION

JAMES L. HESSON



Weight Training for Life

Eighth Edition

James L. Hesson

Black Hills State University

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Weight Training for Life, Eighth Edition
James L. Hesson

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Dedication

To the wind beneath my wings, the creator of all that is, the source of my inspiration and strength, the source of my knowledge and wisdom, the great spirit that lives within all of us, and the great spirit through which we are all joined as one in the endless cycle of life.

To Margie, Jennifer, and David, with love.

To all of the teachers, coaches, friends, and colleagues who have shared their time, energy, and knowledge with me.

To all of my students who have taught me, and who continue to teach me, how to help them learn.

To my parents, Jack and Gladys Hesson, who taught me the basic values and attitudes that have made all other learning and accomplishment possible.

Preface

To the Student

Weight Training for Life has been written to you and for you. Learning about weight training by the trial-and-error method is difficult, embarrassing, and confusing. We hope this book will make learning simple, easy, and fun.

The purpose of this book is to help you build a solid foundation of current knowledge and practice in beginning weight training. All exercise information in this book is consistent with the recommendations of the National Strength and Conditioning Association (NSCA) and the American College of Sports Medicine (ACSM).

This book does not attempt to include everything there is to know about weight training. It is a book for beginners, not for exercise physiologists, strength coaches, or advanced-strength athletes although one chapter is devoted to advanced weight training. This is a book to help you get started *weight training for life*.

To the Instructor

Weight Training for Life has been written to help you and to help your students. It does not attempt to cover everything that you know about weight training, but it does attempt to organize some basic information for you and your students.

One common challenge for most weight training teachers is time. Answer the following questions quickly.

- Do you have enough class time to tell your students all that you wish you could about weight training?
- Are your students always present, on time, and alert for your weight training lectures?
- Do you have other classes to prepare for?
- Are you paid for talking or for helping students learn?
- Do you ever get bored presenting the same beginning weight training information year after year and class after class?
- Have you ever forgotten to mention some basic information that you wanted your students to know?
- Could you be more productive if you didn't have to repeat the same basic information again and again?
- Would your students learn more effectively if they were required to actively seek information?
- Do you have enough class time to lecture and lift?
- Do you teach more than one weight training class?
- Have you ever noticed how the right tool can help you complete a task easier, faster, and better?

This book is a tool that can help you perform your task of teaching weight training. It can make your performance of this task better and, at the same time, easier. A book will never replace you as a teacher because your

role is much more important, dynamic, and complex. Your responsibility is to create a stimulating learning environment, to motivate, to provide direction, and to give feedback.

THE MATERIAL IN THIS BOOK CAN BE COVERED IN ANY ORDER YOU CHOOSE. YOU ALSO ARE ENCOURAGED TO ADD OR DELETE ANY MATERIAL YOU WISH. Based on the feedback I have received, there seems to be an infinite variety of ways to help beginners learn about weight training.

This tool can be more effective if we work together. As you use the book, let me know how we can improve it to help you and your students. To those of you who used the first seven editions and sent your suggestions for improvements, you will find most of these in this eighth edition. Thank you for making this revision possible and for making it better.

The **Instructor's Manual** and Test Bank for this book includes

- A philosophy of teaching *Weight Training for Life* based on the author's 42 years of experience.
- An example of a class schedule (what to do each day).
- A quiz for each chapter that you can photocopy and use.
- A final exam that you can photocopy and use.
- An evaluation form for the course and teacher that you can photocopy and use.

- A plan for grading *Weight Training for Life*.
- A form to record points earned by students to determine their course grade.
- An invitation to share your best ideas to improve this book and Instructor's Manual.

Acknowledgments

I would like to thank everyone who helped make this eighth edition possible. Special appreciation is given to the following individuals.

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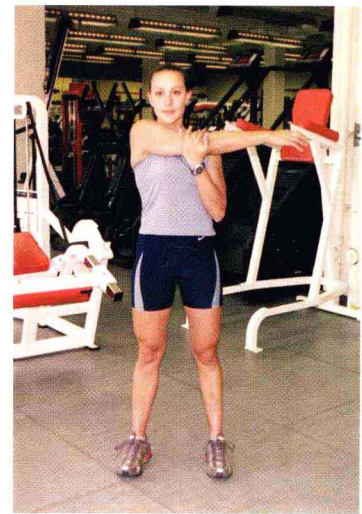
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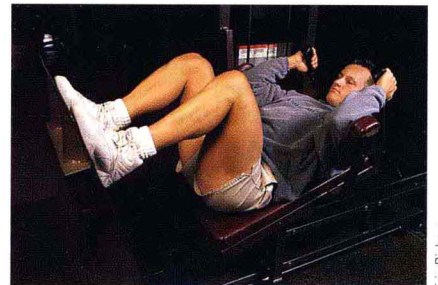
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Kristin Dillworth



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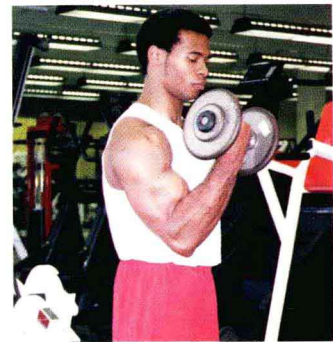
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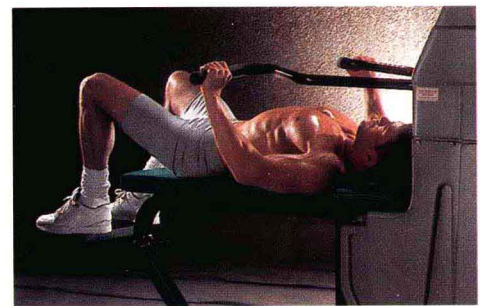
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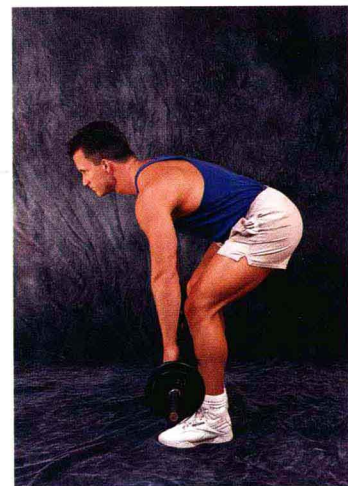
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Kristin Dilworth



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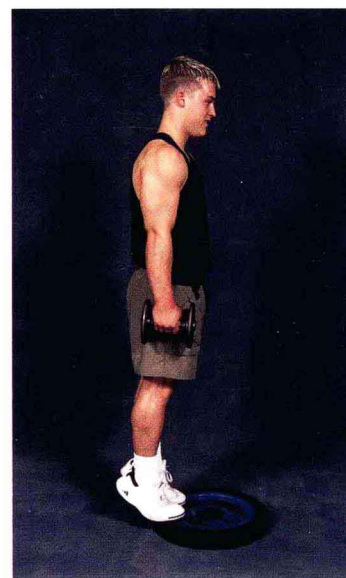
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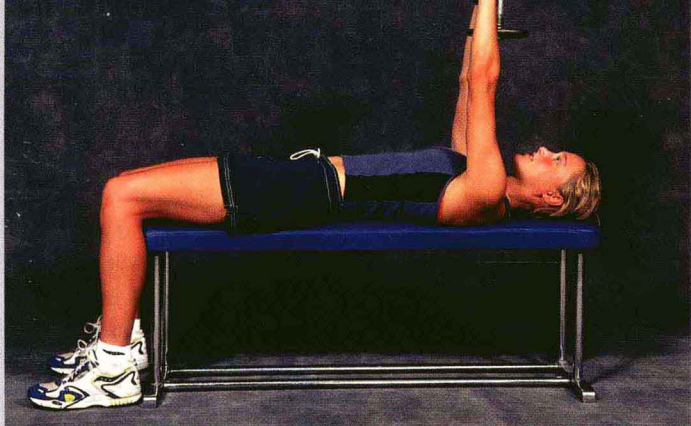
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Jon Kelley



Eric Risberg

1

What, Who, and Why

You have an opportunity to participate in your own creation.

The process of your creation did not end with your birth; it continues throughout your life. All of the living cells in your body have a time limit. Millions of your cells die and are replaced every day. In terms of living cells, you are not the same person you were last year, yesterday, an hour ago, or even 5 minutes ago. You are in a continual process of changing, and being re-created. What will you be like tomorrow, next week, or next year?

Your attitude, behavior, and lifestyle choices have a significant impact on who you are and who you will become. Through weight training and healthy eating you start to change your body. You will find, however, that as your body changes, your life begins to change. I challenge you to follow a well-planned weight training program, along with a healthy eating program, for 1 year and see for yourself. After a year of disciplined weight training and healthy eating, you will see such a

dramatic difference, I believe, that you also will believe in *weight training for life*.

What Is Weight Training?

Weight training is a form of **progressive resistance exercise**. Weight can be added to or taken from the total load to arrive at the correct resistance for you for each exercise and each muscle group. Weight training exercises are done for different reasons. The categories of weight trainers discussed next will help you understand why there are so many different kinds of weight training programs.

Who Trains with Weights?

Those who train with weights include Olympic lifters, power lifters, bodybuilders, athletes, medical patients, physical fitness enthusiasts, and weight trainers.

Olympic Lifters

Olympic-style weight lifting is a competitive sport. The objective in Olympic-style lifting is to see who can lift the most total weight overhead using two different lifts: the snatch and the clean-and-jerk.

1. The **snatch lift** requires lifting the weight in one continuous movement from the floor to a position in which the weight is overhead and both arms are straight. The lifter may drop below the weight to catch it overhead but must rise to a stationary standing position to complete the lift.

2. In the **clean-and-jerk lift**, the weight must first be brought from the floor to a position on the upper chest and shoulders (clean). Then, from a standing position, the weight is thrust overhead to a straight-arm finish (jerk).

The winner is the individual with the highest total when the snatch and the clean-and-jerk lifts are added together. The competitors are grouped into different body weight classifications so that they are competing against others who are approximately the same size.

Power Lifters

Power lifters compete in three lifts: the **bench press**, the **squat**, and the **dead lift**. The winner is the lifter with the highest total for the three lifts. The competitors are grouped by body weight so that they are competing against other lifters who are approximately the same size.

Bodybuilders

Bodybuilders participate in competition that is more art than sport. Through weight training, they create a living sculpture using the human body as the clay. Bodybuilders attempt to develop maximum **muscular size** while maintaining a balanced appearance (**symmetry**) and a high degree of muscular visibility (**definition**). In this competition, the appearance of the body is most important.

Athletes

Ever since the rehabilitation work of Dr. Thomas DeLorme following World War II, progressive resistance exercise has gradually gained acceptance by the medical profession and the coaching profession. This form of exercise has changed dramatically during the last 50 years. In the 1950s and early 1960s, most coaches told their athletes that they should not lift weights. During the 1970s, lifting became more acceptable for athletes. In the 1980s and 1990s, most coaches required their athletes to lift weights.

Most top-level athletes now use some form of weight training to improve their sports performance and to recover from sports injuries. Because skeletal muscles are responsible for voluntary human movement, athletes who increase the functional ability of their muscular system almost always improve their sports performance.

Recently there has been increased focus on opposing muscle groups. In the early years of weight training to improve athletic performance, much of the emphasis was placed on the muscles that produce the successful sports movements. Although the training did strengthen the desired muscles and improve performance, this type of training often created an imbalance of strength surrounding a joint. Occasionally, the more strongly developed muscles on one side of the joint overpowered and injured the weaker, undeveloped muscles on the other side of the joint. Good weight training programs for athletes now include exercises for balanced development to improve performance and reduce the risk of injury.

Patients

Physicians and physical therapists frequently prescribe progressive resistance exercise as a part of the rehabilitation program for people who have been injured. By training with weights, these patients regain strength, muscle size, and functional ability after an injury.

Physical Fitness Enthusiasts

Many people who exercise for health and physical fitness have discovered the benefits of weight training. The people in this category want to look better, feel better, and be healthier.

Weight training to increase muscle tissue should be an important part of any fat-loss program. Many people have overlooked the benefits of weight training for fat loss because of the attention to calories spent during an exercise session. Although you might spend more calories during an aerobic training session than a weight training session, the increased muscle mass from weight training increases your **metabolic rate**.

You might use as many as 75 calories per day to support the energy needs of 1 pound of muscle tissue. You might use as few as 3 calories per day to support the energy needs of 1 pound of fat tissue. Because muscle is active tissue that burns calories and fat is inactive tissue that stores calories, those who are trying to lose body fat should increase their muscle mass.

Weight Trainers

Anyone who trains with weights could be considered a weight trainer. This book has been written primarily for those who are just beginning to lift weights and for the physical fitness enthusiast, with the hope that if they get off to a good start, they will participate in *weight training for life*.

Who Should Participate in Weight Training?

Everyone who has a muscular system can benefit from a regular program of progressive resistance exercise. Therefore, almost everyone should participate in *weight training for life*—men, women, and children of all ages, including people with disabilities.

Men and Women

The benefits of weight training for men and women include greater strength, increased muscle size, greater muscle endurance, improved appearance, higher self-esteem, and better sports performance. The location and function of the skeletal muscles is the same in men and women. Research during the last three decades has indicated that the weight training principles, methods, programs, and exercises that have worked well for men work equally well for women.

Weight training exercises are the same for men and women. There are no “men’s exercises” or “women’s exercises.” Men and women, however, may choose to develop different muscle groups in different ways, which may affect their selection of exercises. As a result of a well-planned weight training program, men and women alike develop a strong, firm, healthy, attractive appearance.

Is weight training an appropriate activity for girls and women? Absolutely! All women achieve increases in muscular strength when they participate in properly planned weight training programs. Most women, however, do not experience as much of an increase in muscle size as most men on the same training program. This seems to be related to lower levels of the hormone testosterone and a lower number of muscle fibers in women.

Weight training will not make a woman appear masculine or cause a woman to develop any secondary male characteristics such as a deeper voice, facial hair, or thicker body hair. Secondary gender characteristics are caused by hormones. During puberty boys begin producing higher levels of male hormones, which produce the secondary gender characteristics that we associate with males. At puberty girls begin producing higher levels of female hormones, which produce the secondary gender characteristics that we associate with females. This hormone production varies from one person to another.

Although weight training can be beneficial during pregnancy for both mother and baby, there are some cautions. Any kind of exercise during pregnancy should be discussed with your doctor. When weight training is done during pregnancy, you should avoid

- Holding your breath and straining to lift a heavy weight.
- Exercises that include excessive compression of the abdomen.
- Exercises that cause an increase in core body temperature.
- High-intensity exercise.
- Long-duration exercise.
- High-impact exercise.

In other words, exercise during pregnancy should be light to moderate in intensity and duration and regular in frequency.

Children

Children can gain important benefits through a carefully planned and closely supervised weight training program. Those who participate in weight training can gain strength, improve their self-image, increase their level of physical fitness, improve their sports performance, and possibly reduce their risk of youth sport injury.

The risk of injury from weight training during participation in a carefully planned and closely supervised weight training program for children is low. The few injuries that have been reported usually have occurred during improperly performed overhead lifts. Contributing factors include too much weight, improper technique, poorly planned programs, and a lack of supervision.

Those responsible for planning and supervising weight training programs for children must be trained and qualified in this area. Each exercise, along with the spotting techniques for that exercise, must be taught and demonstrated correctly. Young weight trainers should not be allowed to train alone without proper adult supervision and a trained spotter. The training area should be clean, bright, attractive, and large

enough for the child to perform each lift safely. Training programs for children should focus on all-around physical development, not just strength training. Strength is only one aspect of physical development.

Children should train with moderate to light weights with which they can handle a fairly high number of repetitions. The National Strength and Conditioning Association recommends 6 to 15 repetitions in each set. This means that a child should not be allowed to lift a weight unless he or she can complete at least 6 correct repetitions using that weight. One-repetition maximum lifts are not recommended for children.

Weight training for children should be on a voluntary basis. If young children are forced to participate in weight training, they are more likely to develop a negative attitude toward this beneficial activity. If they develop a negative attitude, they probably will not participate in *weight training for life*.

After puberty and during adolescence, with the accompanying hormonal changes, children begin to undergo greater physical changes as a result of a weight training program. During this time they should maintain strict exercise form, and close qualified adult supervision is critical. Boys at this age seem to have an overwhelming urge to find out who can lift the most weight one time. Of course, what they often find out is how much they cannot lift one time. The risk of injury is too high.

As young people approach full growth and full physical maturity, weight training can have its most dramatic positive effects on physical performance, appearance, and self-confidence. This is a time when they can handle heavier exercise loads and more intense exercise programs. To maximize safety and progress, however, the emphasis must remain on correct exercise technique. Many young men resort to poor exercise technique to move a heavier weight. This can result in injury. Weight training exercises performed correctly rarely result in injury.

Adults

During the aging process, strength and muscle mass decline. How much of this decrease is a result of aging, and how much is a result of a sedentary lifestyle? Very little of the decline in strength during the adult years is a result of aging. Individuals living in societies that are advanced in technology and automation reveal a much greater loss of strength and mobility as they get older. This is usually the result of inactivity and failure to maintain the muscular system.

Many individuals in the wage-earning adult years think they don't have time for weight training. Weight training actually is an efficient form of exercise. With weight training, a muscle group can be isolated and worked very hard in an extremely short time. A stimulus strong enough to maintain strength or to cause a gain in the strength of a muscle group may be achieved in about a minute with some weight training programs. This can be a greater strength-gain stimulus than the same muscle group would achieve in hours of participating in some adult recreational activities.

All the major muscles in the body can be exercised in 15 to 20 minutes. If a person adheres to this weight training program two or three times each week, it is an investment of 30 to 60 minutes a week. Each week has 168 hours, and you could maintain your strength during your adult years by investing approximately 1 hour per week in weight training. If you have limited time for exercise, weight training is one of the fastest ways to maintain or increase the functioning of your muscular system. It is important for adults to continue *weight training for life*.

Older Adults

At what age should adults stop weight training? Never! Humans should not use age as an excuse to stop weight training. Some physicians advise older adults to stop weight training because of medical problems, but as long as a

person has no medical reason to quit, there is no reason to stop weight training at any certain age. Weight training programs, however, do have to be modified with age.

Sometime in their 60s, 70s, 80s, or 90s, most older adults undergo a more rapid decline in physical performance. How much of this decline is a result of the decrease in physical activity that often accompanies retirement or how much relates to a person's deciding that it is time to get old and to act old is difficult to determine. In either case, older adults must maintain their muscular system if they wish to retain their freedom and mobility. Therefore, older adults should participate in *weight training for life*.

People with Disabilities

Many people with disabilities can participate in weight training if they focus on their abilities. There certainly are exercises that they cannot do; however, there are often exercises that they can do. Each person with a disability needs to find out what he or she can do.

Everyone

Weight training is an efficient form of exercise to develop and maintain your muscular system. Though your goals and training programs will change as you progress through life, weight training is a valuable lifetime activity that you should continue. Everyone should participate in some form of *weight training for life*.

Why Weight Training?

The need for exercise has been underscored by the Office of the Surgeon General. The benefits are many and affect all areas of human development—physical, mental, social, emotional, and spiritual.

Surgeon General's Report

The Centers for Disease Control and Prevention (CDC) published *Physical*

Activity and Health: A Report of the Surgeon General. One of the findings reported was that "Approximately 15 percent of U. S. adults engage regularly (3 times a week for at least 20 minutes) in vigorous physical activity during leisure time." This means that 85% do not. One of the major conclusions in the report was that "people of all ages, both male and female, benefit from regular physical activity." Also, "significant health benefits can be obtained by including a moderate amount of physical activity on most, if not all, days of the week."

According to the Surgeon General's report, regular physical activity that is performed on most days of the week reduces the risk of developing or dying from some of the leading causes of illness and death in the United States. Regular physical activity improves health by

- Reducing the risk of dying prematurely.
 - Reducing the risk of dying prematurely from heart disease.
 - Reducing the risk of developing diabetes.
 - Reducing the risk of developing high blood pressure.
 - Helping to reduce blood pressure in people who have high blood pressure already.
 - Reducing the risk of developing colon cancer.
 - Reducing feelings of depression and anxiety.
 - Helping to control weight.
 - Helping to build and maintain healthy bones, muscles, and joints.
 - Helping older adults become stronger and better able to move about without falling.
 - Promoting psychological well-being.
- Regular physical activity should include cardiovascular exercise, resistance exercise (weight training), and flexibility exercise.

Personal Development

Personal development encompasses physical, mental, social, emotional, and spiritual development. Weight training can contribute to all of these areas of personal development.

Physical Development

Weight training makes its most obvious contributions in the area of physical development. All of the following can be improved with a well-planned weight training program:

- Muscle strength
- Tendon strength
- Ligament strength
- Bone strength
- Muscle size
- Muscle tone
- Appearance
- Posture
- Flexibility
- Metabolism
- Joint stability
- Muscle endurance
- Power
- Sports performance
- Lean body mass
- Physical fitness
- Health

Weight training is a lifetime activity that can help you maintain fitness, reduce body fat, and reduce the risk and rate of injury.

Mental Development

A successful weight training program requires

- Knowledge about how your body functions.
- Knowledge about how your body responds to exercise.
- Knowledge about correct exercise technique.

- Knowledge about which exercises develop which muscles.
- Intelligent exercise program planning.
- Consistent self-discipline to follow your plan.
- Continual analysis of your progress and your plan.
- Insightful, intelligent problem solving.

Social Development

Weight training is an activity that can be done alone, with one training partner, or with a group. Positive social qualities can be developed through weight training with others—among them, sharing, caring, encouraging, and helping. The workouts provide a time to participate with others in an activity that produces positive results for all participants. In contrast to many recreational games, which must result in a winner and a loser, everyone is a winner in weight training.

Weight training provides a common activity in which to participate and a common topic to discuss, as well as a time to be together. It can be an excellent activity for family members or friends because everyone can be together while performing their own individual training program at their own level without interfering with anyone else's progress.

A good weight training program includes the achievement of goals. Sharing your goals with others and helping others achieve their goals is rewarding. A bond often develops among those who do activities together.

Emotional Development

Weight training can help a person release emotional stress and tension. A measurable decrease in neuromuscular

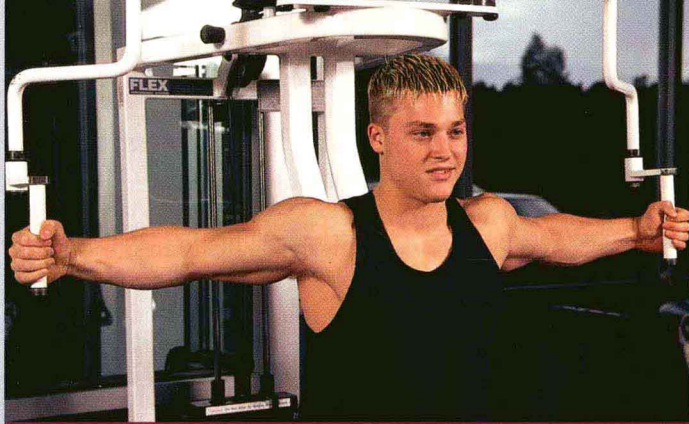
tension occurs following a weight training session. It also provides an opportunity to release anger and frustration in a socially acceptable and healthy manner—intense physical activity that is not directed at another person.

Because weight training involves overcoming physical challenges during each training session, some regular participants seem to adopt a more objective and positive approach to other challenges in their lives. This produces greater emotional stability.

Measurable and noticeable changes in physical appearance result from a well-planned weight training program. Increased muscle size or muscle tone, or both, create a firm, shapely appearance for men and women alike. That firm, trim, athletic look can never be achieved by diet alone. Also, posture improves. These physical improvements tend to be accompanied by an enhanced self-image and greater self-esteem. Those who lift weights often look better and feel better about themselves.

Spiritual Development

The spirit refers to the soul or the life force within each living human. It is one of the intangible and invisible things in life that cannot be accurately measured or adequately described. Yet, somehow you know the life force is there. Those who increase the strength of their body and their mind also seem to become stronger in spirit. Stronger people have greater resiliency, a greater life force, a stronger spirit. Many can “talk the talk” but few can “walk the walk.” *Weight training for life* can help you become a “can do” person with a strong spirit.



Jon Kelley

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Frequently Asked Questions

I don't want to get too big, so can I just tone my muscles?

Yes. You can design your training program so you don't get too big. If you use moderate to light resistance (60% to 80% of your 1 repetition maximum) for relatively high repetitions (12 to 15 repetitions) and relatively few sets (1 or 2 sets) of relatively few exercises (1 exercise per muscle group) performed relatively few days per week (2 or 3 days per week), your strength and muscle tone will improve and your muscles will not increase much in size. Actually, a lot of hard work is necessary for most men and women to increase the size of their muscles.

If I build muscle, will it turn to fat when I stop weight training?

No. Muscle tissue and fat tissue are two distinctly different kinds of tissue in the human body, and muscle tissue cannot become fat tissue. If you stop training,

however, you could accumulate more body fat.

Muscle tissue adapts to the demands placed upon it. When you stop training, your muscles will adapt to the new demand. If the new demand is much less than it was before, the muscles will respond by getting smaller and weaker (**atrophy**). If you continue eating the same as you did when you were training hard every day, the extra calories will now be stored as body fat. Even if you manage to stay at the same body weight, you will have less muscle and more fat, leaving you with the outward appearance that your muscles have turned to fat. Because fat tissue is not as dense as muscle tissue, you can expect to gain inches in your body circumference measurements.

To make matters worse, as you lose metabolically active muscle tissue, your ability to use calories is reduced. Muscle cells are active calorie-burning cells. As these calorie-burning cells atrophy, your metabolic rate slows

down, and you need even fewer calories than before. You cannot maintain a trim, muscular, shapely appearance by diet alone. Are you beginning to realize the importance of *weight training for life*?

Are nutrition and rest important for weight training progress?

Yes. Weight training workouts provide a stimulus for positive changes to occur in your body, but without adequate nutrition and rest the changes may be slow or may not occur at all. Your weight training workouts could be a waste of time if you do not eat and sleep properly. This is a common problem for high school and college students. For more details, read the Chapter 7 discussion on nutrition and rest.

Will weight training “firm up” a specific part of my body?

Yes. Weight training exercises for a specific body part will firm up weak, sagging muscles and result in a trimmer appearance.

With weight training, can I remove excess body fat from a specific part of my body?

No. The idea of losing body fat from a specific part of your body is known as **spot reduction**. Examples of spot reduction are sit-ups to lose fat from the abdomen and hip extensions to lose fat from the hips. The research on spot reduction indicates that it does not work. Losing body fat from a specific body part requires a reduction in total body fat. This is best accomplished by reducing caloric intake while increasing caloric expenditure.

Is aerobic exercise the best way to lose excess body fat?

No. The best way to lose body fat is a combination of **aerobic exercise, weight training, and healthy eating**. Aerobic exercise is a good way to burn calories and develop your cardiovascular system. Weight training is a good way to build muscle tissue, which

increases your ability to burn calories and reshape your body. Healthy eating is necessary to avoid excess caloric intake and ensure an adequate supply of the nutrients that you need to rebuild your body. The combination of these three is the best way to lose body fat.

Weight training is an important component of the fat-loss process. The increase in muscle tissue will help with fat loss by building more active muscle tissue that is capable of using calories and by increasing your resting metabolic rate so that you will use more calories even when you are resting. If you want to improve the shape of your body, you need to include *weight training for life*.

What if I don't have time for weight training?

Everyone has 168 hours a week; nobody gets more or less. “Having time” is really about prioritizing. What is most important to you? If you don't have time for weight training, you either have set your weight training goals too high (requiring too much time) or too many things in your life are more important to you. Keep a time log for a week and see where you are spending time, investing time, and wasting time. Many Americans watch television 3 to 4 hours a day but don't have time to exercise.

Does weight training require many hours of training each week?

No. Weight training is an efficient form of exercise. All the major muscle groups in your body can be trained in 15 to 20 minutes, two or three times each week. This is a minimal program, but it may be more than you are doing now and it is certainly better than doing nothing.

The amount of time you need to spend training with weights is related to the goals you set for yourself. Bodybuilders, Olympic lifters, and power lifters do spend many hours each week training with weights; however, that is what they enjoy doing, and they have set some very high goals.

Which supplements and drugs should I take?

None. *Weight Training for Life* is based on healthy moderate exercise, healthy moderate eating, healthy moderate rest, and healthy lifestyle choices. Optimal health is based on moderation, not excess.

Will weight training damage my joints?

No. If done correctly, weight training exercises will increase joint strength. Exercises should be performed in a smooth, continuous manner. Weight training exercises done improperly could damage your joints.

Will weight training make a woman look masculine?

No. Hormones, not weight training, determine if a person appears more masculine or more feminine. Men usually produce much more testosterone than women. The higher levels of testosterone contribute to the secondary characteristics that we generally consider as masculine. Women who participate in weight training develop healthy, shapely, trim female figures.

Will weight training make me muscle bound?

No. If you follow correct weight training principles, weight training will not make you muscle-bound. **Muscle-bound** people have a limited range of joint motion. One weight training principle is to train each muscle through a full range of motion. Each muscle should be exercised from full extension to full contraction. Another principle is that opposing muscles should receive an equal amount of exercise so that the muscles on one side of a joint do not develop more than muscles on the other side. When these principles are followed, flexibility and joint mobility will tend to increase rather than decrease.

The United States has many more **fat-bound** people than muscle-bound people. Their range of motion is limited by an excessive accumulation of stored body fat.