

Weight Training by **DESIGN**



CREATE YOUR OWN

**Individualized Workout Plan Using the
Revolutionary BAM Superset™ System**

DALE GREENWALD, CSCS & ERIK MILLER, CPT

WEIGHT TRAINING BY DESIGN

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WEIGHT TRAINING BY DESIGN

foreword

Numerous books and handbooks have been written regarding strength training and conditioning. But there are few that combine sound scientific principles and simple instructions in a very easy-to-read and practical format as *Weight Training by Design* does. Dale Greenwald and Erik Miller have combined their expertise to provide a guide on how to design and perform workouts in a safe and effective manner. The authors are knowledgeable and accurate in their anatomy, biomechanics, and applied physiology directed at fundamental principles in strength and conditioning.

Through the years I have taken care of many elite athletes as well as recreational athletes. They typically see me once they have had an injury. Consistently, they tend to share that they are looking for guidance on how to prevent injuries. I have not come across a more pertinent book than this to respond to that need. The discussion of proper techniques in training throughout the book is extremely helpful. I particularly like Chapter 2, "The Chapter of Lists," which provides a very good explanation of what to avoid when setting out on a training program.

The BAM Superset is a new concept to most athletes and makes good common sense. By combining various opposing muscle groups, the body gets an excellent workout without early fatigue. This is important for anyone

who sets out to do an efficient weight training and conditioning program. It also applies to the majority of sporting activities since not one single muscle group is isolated, but in reality a combination of muscle groups are utilized for active movements.

Easy to understand, *Weight Training by Design* is quite applicable to all: from the novice in the weight room to the master athlete who has extensive experience in lifting and training; from the executive with only a few hours a week to work out to the athlete who lives and breathes working out; and from the high school athlete to the professional athlete.

I believe this book will become a well-used reference in all fitness and weight room facilities. I wholeheartedly recommend it and look forward to incorporating these principles in the training of the athletes I take care of, as well as in my own personal workouts. I tip my hat to these authors for their contributions in advancing the science and communication of strength training through this book.

—Eric McCarty, M.D.

Chief, Sports Medicine and Shoulder Surgery, and
Associate Professor, University of Colorado School of
Medicine; Head Team Physician, University of Colorado
and University of Denver

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introduction

During the past 20 years of observing and instructing people in gyms and health clubs, we have seen the ways in which individuals go about their workouts. We have seen people who measure their success by the amount of weight they can lift, often sacrificing proper form, which can reduce the effective targeting of muscles and can be unsafe. We have met people who, because of an injury, shy away from a weight training program. We have also encountered people who have given up on their workouts because they became discouraged by their inability to obtain the goals that they desire. Many of these people were not sure how to properly design and implement their workouts.

The goal of this book is to provide a “road map” for you to effectively design and perform your own individualized workout, one that will enable you to attain the goals you desire and to see real results. In addition, this book can be an extremely useful tool for those who are recovering from injuries and may be reluctant to continue with or to start a resistive training program.

Regardless of the best intentions, you are bound to encounter several hurdles in your attempt to achieve your desired fitness goals. Obstacles typically encountered include time schedules, muscle soreness, and injuries. By implementing an appropriate workout design, you can overcome these obstacles. The key element in our design is what we call the Balanced Antagonistic Muscle (BAM) Superset. This is not the traditional superset.

The standard definition of a *superset* is the combination of two to three different exercises to be performed consecutively. These supersets are often composed of similar exercises, working and fatiguing the same group of muscles. The BAM Superset model we utilize is superior to this standard superset in that our technique highlights combining opposing muscle group exercises. Examples of

BAM Supersets include supersetting the biceps with the triceps or supersetting the quadriceps with the hamstrings.

There are many benefits to the BAM Superset approach. The foremost of these is the efficient use of time. Utilizing the BAM Superset technique eliminates the need for prolonged rest between sets. After performing a given exercise in the superset, the muscle tissue just being trained recovers while the opposing muscles are worked in a complementary exercise. This technique also produces a more balanced muscle fatigue across a given joint, helping to reduce muscle soreness. In addition, the balanced muscular development that is achieved will help to reduce the likelihood of injury.

Regardless of time constraints, skill level, or desired goals, the BAM Superset technique can be utilized in a wide variety of workouts. It allows for flexibility and variation in any workout design. Examples of BAM Superset exercise combinations are provided in Chapter 11, “Designing Your Own Workout.” The specific weekly workout designs presented in that chapter provide several BAM Superset options.

From our perspective, the largest hurdle in a successful resistive training program is a general lack of understanding and knowledge. Improper technique and the inability to isolate specific muscle groups are the most common shortcomings. Because of this, the majority of this book emphasizes proper techniques for a wide range of machine* and free-weight exercises. These exercises cover all of the major body parts and will help you to design a complete workout regimen. We have selected the exercises that we feel are best suited to provide both a biomechanically correct and effectively sound workout without sacrificing safety or putting any undue stresses on the body.

Introduction

We are confident that the flexibility and variation in workout design associated with the BAM Superset technique will allow you to design a workout that works for you. That personalized workout, coupled with the additional information on nutrition, posture, and lifestyle provided in this book, will enable you to achieve the goals you desire.

*We have selected Cybex equipment for the majority of the machine exercises in this book. We feel that Cybex is the most efficient equipment on the market due to its superior biomechanical design. However, if you do not have access to Cybex equipment, the techniques presented in this book can be applied to other brands of exercise equipment.

WEIGHT TRAINING BY DESIGN

contents

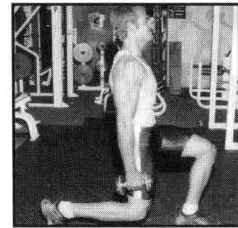
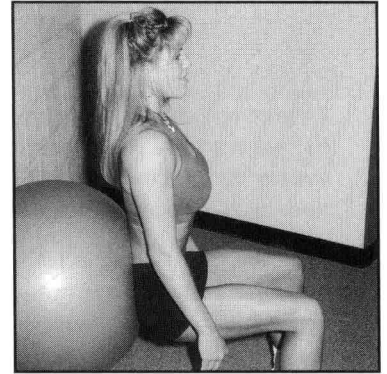
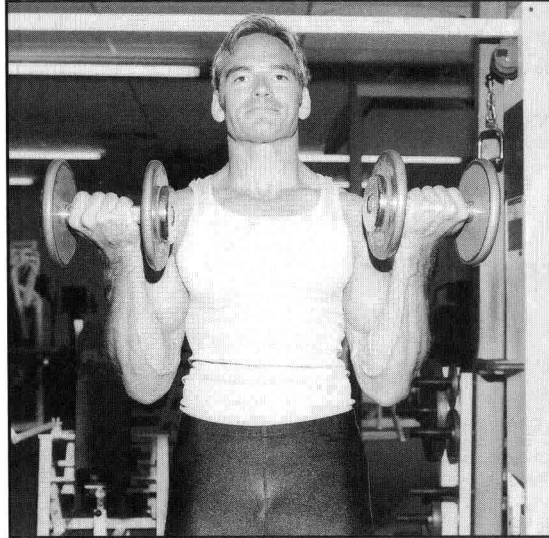
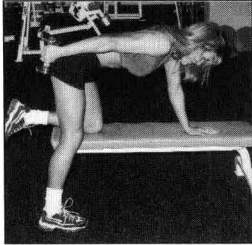
FOREWORD		vii
ACKNOWLEDGMENTS		ix
INTRODUCTION		xi
CHAPTER ONE	3 KEYS TO A SUCCESSFUL EXERCISE PROGRAM	1
	CARDIOVASCULAR TRAINING	
	DIET: NO-NONSENSE INFORMATION	
	3-DAY SAMPLE EATING SCHEDULE	
	IMPORTANCE OF REST	
CHAPTER TWO	THE CHAPTER OF LISTS	7
	THE "TOP TEN" COMMON MISTAKES	
	LITTLE THINGS MEAN A LOT	
	IMPORTANT LITTLE DETAILS OFTEN OVERLOOKED	
	BENEFITS OF RESISTANCE AND CARDIOVASCULAR TRAINING	
	GYM ETIQUETTE AND BASIC GUIDELINES IN HEALTH CLUBS	
	THE "TOP FIVE" COMMON MYTHS	
	EXERCISES TO AVOID AND WHY	
CHAPTER THREE	POSTURE AND ERGONOMICS	13
	DEFINING POSTURE	
	MOVING FROM POOR POSTURE TO GOOD POSTURE	
	THREE POINTS TO REMEMBER IN FINDING CORRECT POSTURE	
	BREAKDOWN OF THREE STATIC POSTURE POSITIONS	
	WHILE SITTING IN AN OFFICE CHAIR	
	WHILE SITTING ON A SWISS BALL	
	WHILE STANDING	
	UNDERSTANDING YOUR FOOT CENTERS	
	THE DAILY DOZEN™ EXERCISES	
	PROPER ERGONOMICS AT A COMPUTER WORKSTATION	
CHAPTER FOUR	STRETCHING	43
	UPPER TRAP/NECK STRETCH	
	ONE-LEGGED HAMSTRING STRETCH ON THE FLAT BENCH	
	PSOAS/HIP FLEXOR STRETCH	
	GLUTE AND PIRIFORMIS STRETCH	
	LAT STRETCH	
	CHEST STRETCH	

CHAPTER FIVE	THE CHEST MUSCLES	51
	CYBEX® VR-2 CHEST PRESS DUMBBELL INCLINE PRESS PEC-DEC FLY CABLE CROSSOVERS FLAT BENCH PRESS INCLINE BENCH PRESS	
CHAPTER SIX	THE UPPER BACK MUSCLES	67
	HAMMER STRENGTH® ISO-LATERAL FRONT PULLDOWNS STANDARD LAT FRONT PULLDOWNS CLOSE GRIP FRONT PULLDOWNS CYBEX® ROW SEATED CABLE ROW ONE-ARM DUMBBELL ROW	
CHAPTER SEVEN	THE SHOULDER MUSCLES	83
	ARNOLDS CYBEX® VR-2 OVERHEAD PRESS PEC-DEC REVERSE FLY DUMBBELL REVERSE FLY CYBEX® VR-2 REVERSE FLY CYBEX® VR-2 REVERSE BOX DUMBBELL LATERAL RAISES DUMBBELL ROTATORS	
CHAPTER EIGHT	THE ARM MUSCLES	103
	TRICEP ROPE PULLDOWNS DUMBBELL TRICEP KICKBACKS DUMBBELL CURLS HAMMER CURLS CYBEX® ARM CURL MACHINE	

CHAPTER NINE	THE LEG MUSCLES	117
	<ul style="list-style-type: none"> CYBEX® SEATED LEG CURLS PRONE LEG CURLS CYBEX® HIP ABDUCTION CYBEX® HIP ADDUCTION STANDING CABLE HIP ABDUCTION STANDING CABLE HIP ADDUCTION CYBEX® LEG EXTENSIONS CYBEX® SEATED LEG PRESS PLATE-LOADED LEG PRESS BUTT BLASTER® CYBEX® ROTARY CALF SWISS BALL SQUATS SMITH MACHINE SQUATS DUMBBELL LUNGES 	
CHAPTER TEN	THE ABDOMINAL AND LOWER BACK MUSCLES	153
	<ul style="list-style-type: none"> LOWER AB ROLL UPS ON THE ABDOMINAL BENCH LOWER AB ROLL UPS OFF THE FLOOR UPPER AB ROLL UPS ON THE ABDOMINAL BENCH UPPER AB ROLL UPS OFF THE FLOOR CYBEX® ROTARY TORSO CYBEX® 45-DEGREE ANGLE HYPEREXTENSIONS 	
CHAPTER ELEVEN	DESIGNING YOUR OWN WORKOUT	169
	<ul style="list-style-type: none"> PUTTING IT ALL TOGETHER FREQUENCY DURATION WHEN TO INCREASE RESISTANCE—THE “8-TO-15” RULE VARYING SETS AND REPETITIONS SELECTING BAM SUPERSET™ COMBINATIONS TAILORING YOUR WORKOUT FOR SPECIFIC NEEDS WEEKLY WORKOUT SAMPLES: <ul style="list-style-type: none"> THE BEGINNER PROGRAM THE ADVANCED WEIGHT-LOSS AND TONE PROGRAMS THE ADVANCED POWER AND STRENGTH PROGRAMS 	
GLOSSARY		207
PRODUCT INFORMATION		212
INDEX		213

chapter one

3 keys to a successful exercise program



THINGS YOU WILL LEARN IN THIS CHAPTER:

CARDIOVASCULAR TRAINING

DIET: NO NONSENSE INFORMATION

3-DAY SAMPLE EATING SCHEDULE

IMPORTANCE OF REST

3 keys to a successful exercise program

Three components are necessary in order to achieve success in any exercise program: resistive training, cardiovascular training (cardio), and a healthy diet. To enhance these three components, adequate rest is necessary.

As a starting point, this chapter highlights cardio, diet, and rest. Resistive training is emphasized throughout the rest of the book.

CARDIOVASCULAR TRAINING

Cardiovascular exercise (exercise involving the heart, vascular system, and lungs) is essential to any fitness program and to maintaining a healthy lifestyle. Two key factors to consider are (1) frequency and duration and (2) variations in intensity and the type of exercise selected.

FREQUENCY AND DURATION

We recommend doing some form of cardio daily. The duration should vary with a minimum of 30 minutes in any one session. However, if you are just beginning an exercise program or have any health or physical limitations, the frequency is the most important factor. It is best to do some form of cardio exercise daily, building up the duration and intensity levels gradually as individual limitations allow.

VARIATIONS IN INTENSITY AND EXERCISE SELECTION

When performing your daily cardio, we recommend implementing a variation in intensity level coupled with a variation in exercise selection. Cardio or aerobic intensity is typically gauged with respect to heart rate, specifically gauged with respect to the percentage of maximum heart rate.

Maximum heart rate varies from individual to individual and significantly between males and females of the same age. Because of this, we will not present any of the available general formulas for maximum heart rate as they do not handle this variability well. Maximum heart rate can be determined by testing under professionally supervised conditions. One method is to determine your lactate threshold and extrapolate from there. This is accomplished by drawing and analyzing blood during a graded exercise test.

Intense cardio training (where the heart rate can go above 85 percent maximum heart rate), such as high-intensity interval training, spinning, intense running, hard elliptical machine work, and high-impact aerobics, should be performed no more than two to three times a week.

During these intense cardio workouts, the body can cross the anaerobic threshold, or lactate threshold. At this point, the body can no longer metabolize blood lactate fast enough and that blood lactate level rises suddenly. This buildup is detrimental to muscle tissue, function, and recovery. If recovery time is not sufficient, training results will be counterproductive ("overtraining").

The remaining cardio days (four to five days a week) should be at a lower intensity, staying below or well below the anaerobic threshold (generally below 80 percent maximum heart rate). These days might include brisk walking, jogging (treadmill or outdoor), hiking, or biking (stationary bike or outdoor).

To achieve the maximum benefit, it is important to accurately monitor your heart rate throughout your workout. We highly recommend using a digital heart rate monitor, such as those made by Polar. Digital heart rate monitors help to eliminate the guesswork, or uncertainty, that can occur

when you attempt to determine your heart rate by taking your own pulse.

COMBINING CARDIO WITH RESISTANCE TRAINING

A frequently asked question is whether one should do cardio exercise or resistance training (weight lifting) first. In general, if cardio is done first, strength levels will be reduced by an average of 15 percent. However, if you have injuries or find it difficult to warm up your body prior to lifting, starting with cardio might be a wise choice. We advise against doing intense cardio sessions on the days that you lift, as there is not enough energy stored in your body to do both.

If you choose to lift first, it is important to warm up your body by doing five to ten minutes of cardio first. Warming up not only helps prevent injuries, it helps your muscles work more efficiently—similar to warming up your car on a cold day.

DIET: NO-NONSENSE INFORMATION

It should be noted that we are not registered dietitians, nor do we claim to be. However, we would like to present a useful, straightforward approach to healthy eating to enhance your exercise program. If you need more information on diet, we recommend you consult a registered dietitian.

HYDRATION

One of the most important things you can do for your body is stay hydrated. The best source of hydration is

water, not soft drinks and not juices. On average, an adult should drink 64 to 100 ounces of water per day.

Maintaining hydration levels during exercise is especially important as it helps to prevent cramping and headaches and it helps to sustain your energy level.

PROTEINS

In resistance training, the muscle tissue is actually being broken down during the workout. Following the workout, the muscle tissue needs to undergo recovery and growth. Proteins contain amino acids, which are the building blocks required for this recovery and growth. The timing of the protein intake following an exercise routine is critical. You should ingest protein within 30 to 60 minutes of completing a workout. The best sources of protein are organic meats, fish, and poultry, as well as that found in isolate whey protein supplements. If you are a vegetarian, whey protein supplements are a good alternative.

GOOD FAT/BAD FAT

Essential fatty acids (EFAs), namely Omega acids 3 and 6, are just that—essential to your body's function. The absence of these EFAs in your diet will have an adverse affect on muscle function. Excellent sources of EFAs are cold-water fish and free-range beef and game. Cod liver oil and flaxseed oil supplements are also good sources of EFAs.

Partially hydrogenated oils (trans-fatty acids) and processed saturated fats are detrimental to body function and performance and should be avoided.

GOOD CARBS/BAD CARBS

Carbohydrates are used by the body as an energy source, and it is important to provide the body with adequate

energy from carbohydrate sources. However, the quality of the carbohydrates is important. Examples of high-quality carbohydrate sources are whole-grain products, vegetables, and fruits. With regard to whole-grain products, we recommend quinoa, basmati rice, millet, and barley. Select darker green and colored vegetables and eat them raw or slightly steamed. Fruits are better eaten whole, not as a juice. As with meats, we recommend organic products over highly processed alternatives. A combination of these good carbohydrates will provide your body with adequate energy for exercise and day-to-day activities.

In contrast, bad carbohydrates will drive up insulin levels, increase body fat, and decrease energy levels. In addition, because there is no substantial nutrition from the bad carbohydrates, the body will crave more food, leading to over-eating. Examples of these detrimental carbohydrates include candy, pastries, soft drinks, and chips, as well as pasta and breads made with bleached or processed flour.

EATING SCHEDULE

To keep the body functioning at optimal levels, it is important to keep the blood sugar levels nearly constant (to keep insulin levels from spiking). To achieve this, it is helpful to eat smaller meals more frequently throughout the day (never go longer than three hours without eating). Fill the void between the conventional breakfast, lunch, and dinner schedule with nutritious snacks. Healthy snacks include nuts, fruits, raw vegetables, organic cheese (not processed), and some high protein/low carbohydrate “sports” supplement bars.

SUPPLEMENTS

If you are eating a nutritious, organic, well-balanced diet, the need for supplements is minimal. However, if your eating habits are typical of most Americans, then you might consider supplements. The supplements we recommend are a quality multimineral multivitamin; liquid essential fatty acids (fish or flax oil); and other high-quality specific supplements that your health care provider might suggest.

3-DAY SAMPLE EATING SCHEDULE
Modified for three different workout times

DAY 1

LUNCHTIME WORKOUT

- 7:30 A.M.

BREAKFAST
16 oz herbal tea
2 scrambled eggs
2 turkey sausage links
Take appropriate supplements.
- 10:00 A.M.

SNACK
Peach or banana
3 oz almonds
16 oz water
- 11:30 A.M.

PREWORKOUT MEAL
Light salad with tuna or chicken
(raspberry vinaigrette dressing)
16 oz water
- 12:30 P.M.

WORKOUT
Sport drink or water during workout
- 2:30 P.M.

POSTWORKOUT MEAL
Whey protein with 1% milk or water
(add fruit such as a banana or blueberries if desired)
- 4:00 P.M.

SNACK
Protein bar
16 oz water
- 6:00 P.M.

DINNER
Salmon and basmati rice
Steamed vegetables
16 oz water
Take nighttime supplements as necessary.

DAY 2

MORNING WORKOUT

- 6:00 A.M. **PREWORKOUT MEAL**
16 oz herbal tea
2 eggs and 6 oz cottage cheese
Take appropriate supplements.
- 7:00 A.M. **WORKOUT**
Sport drink or water during workout
- 9:00 A.M. **POSTWORKOUT MEAL**
Whey protein drink blended with a banana in 1% milk or water
- 10:30 A.M. **SNACK**
Pear or apple
3 oz cashews
16 oz water
- 12:30 P.M. **LUNCH**
Chicken breast (no skin)
Steamed vegetables
Long-grain rice
16 oz water
- 3:30 P.M. **SNACK**
Low-fat yogurt
16 oz water
- 6:00 P.M. **DINNER**
Organic fillet (red meat)
Steamed vegetables
Salad (balsamic dressing)
16 oz water
Take nighttime supplements as necessary.

DAY 3

EVENING WORKOUT

- 7:30 A.M. **BREAKFAST**
16 oz herbal tea
7-grain breakfast mush
Take appropriate supplements.
- 10:00 A.M. **SNACK**
Whey protein drink blended with a banana in 1% milk or water
- 12:00 P.M. **LUNCH**
Buffalo burger (no bun)
Large salad (oil and vinegar dressing)
16 oz water
- 2:30 P.M. **SNACK**
Cottage cheese and peaches
- 4:00 P.M. **PREWORKOUT MEAL**
Protein bar
16 oz water
- 5:00 P.M. **WORKOUT**
Sport drink or water during workout
- 7:00 P.M. **DINNER**
1–2 chicken breasts (no skin)
Basmati rice
Steamed vegetables
16 oz water
Take nighttime supplements as necessary.
- NOTE: If you are hungry at night, we recommend a low-carbohydrate/high-protein energy bar.*