

WEIGHT TRAINING

The major purpose of the weight training program is to provide the student with the opportunity to condition the musculoskeletal system, using a variety of machines, free weights, and exercises which encourage improvement in strength, endurance, and flexibility.

Depending upon individual interest, alternative goals might include:

- Improvement of general appearance
- Increase in size of muscles
- Increase in proportion of lean muscle mass to body fat
- Increase or decrease in weight,
- Supplemental lifts for athletes doing work-outs after the school day
- Injury rehabilitation.

Most students want to increase **MUSCLE STRENGTH** (force) or **MUSCLE ENDURANCE** (length activity).

TO DEVELOP STRENGTH: Use a Low reps/Higher weight workout.

TO DEVELOP ENDURANCE: Use a High reps/Lower weight workout.

TO BE SUCCESSFUL IN THE WEIGHT TRAINING PROGRAM YOU MUST:

1. Set a goal
2. Stick to one program
3. Keep accurate records
4. Rest, limit workouts of the same muscle groups to every other day
5. Limit increases in weight, reps., sets, go for long-term growth
6. Follow the safety rules.

MISCONCEPTIONS ABOUT WEIGHT TRAINING

***Males and females develop the same way through weight training. FALSE!**

Because of the male hormone, testosterone, men develop significantly larger muscles through strength training than women.

***Weight training causes spot reduction or the loss of fat in one area. FALSE!**

If exercise had this effect, the body fat in a tennis player's racket arm would be significantly lower than the non-racket arm. This is NOT the case. Doing 500 sit-ups each day will not eliminate abdominal fat.

***Weight lifting makes you gain a lot of weight. FALSE!**

Calories make you gain weight. On a weight training program you can gain, lose, or maintain your weight while changing the proportion of fat to muscle in your body. Muscle weighs more than fat, so 2 people of the same height and weight might wear a different size because one is fit while the other is fat.

GENERAL VOCABULARY

Aerobic conditioning - Exercising at the upper limits of the body's ability to provide adequate oxygen for muscular activities over an extended period of time (5milerun).

Anaerobic conditioning - Exercising at an intensity so great that the body's demands for oxygen exceed the ability of the heart & lungs to supply it (repeated 200 M dashes).

Barbell - A long bar to which weights can be added.

Curl: 15 pounds

Short Olympic: 35 pounds

French: 25

Olympic: 45 pounds

"Junior Olympic": 20 pounds

Cardiovascular endurance - The combined efficiency of the blood vessels, heart and lungs to provide oxygen and glucose to the muscles for prolonged activity.

Cheating - Too much weight used on an exercise, causing the lifter to rely on surrounding muscle groups for assistance during the movement or a change of joint angles for more leverage (arching the back during bench press).

Contraction

Concentric: The muscle shortens (pull-up).

Eccentric (Also called "Negatives): The muscle lengthens (the down of a push-up).

Plyometric: The muscle is lengthened prior to contraction (bounding).

Exercise

Isokinetic: The muscle contracts maximally at a constant speed over a full range of the joint movement against a variable resistance (Nautilus).

Isometric: The muscle contracts against an immovable resistance (Bent arm hang).

Isotonic: The muscle contracts against a fixed load but the resistance varies due to change in joint angle (free weights).

Free weights - Weights not supported by a machine.

Muscle -Atrophy: The decrease of muscle size through lack of use.

-Hypertrophy: The increase of muscle size through overload.

Muscle Fibers: "I" Red/Slow twitch adapted for endurance activity with a high capacity to use oxygen "II" White/Fast twitch adapted for short-term, high-intensity exercise.

Overload principle: Applying a greater load than normal to a muscle to increase its capability (Milo of Crotona).

Periodization: A cyclical training program that prepares athletes for maximum performance during peak cycles.

Plateau: A point at which increases in weight lifted stop.

Power: The explosive strength a muscle can exert for one quick, total effort (vertical jump).

Specificity: Muscle and nerve adaptations occur during overload most efficiently if the exercise performed most closely resembles the movement required (Shot putters would not greatly benefit from a pitching workout).

Spotting - Partner aided lifts to ensure proper technique &/or safety.

Supersets - System where an exercise for the agonist is followed immediately by one for the antagonist muscle group.

Training -

Circuit training: A combination of strength and endurance exercises performed in sequence at various stations.

Interval: Alternate short periods of intense effort with periods of rest.

Training Effect: Changes in muscle performance due to increased demands.

MOVEMENT VOCABULARY

Abduction - Moving a body part away from the midline (Side leg raises)

Adduction - Moving a body part towards the midline (Side leg lowers)

Agonist - A muscle which contracts concentrically (shortening) to produce a movement at a joint (bicep during curl).

Antagonist - A muscle whose contraction produces a joint action exactly opposite to that of the agonist (tricep during bicep curl).

Dorsi flexion - Toe "Up" toward shin

Plantar flexion - Toe "Down" as in calf raises

Eversion - The sole of the foot moves outward

Inversion - The sole of the foot moves inward

Flexion - Decreasing the angle at a joint (down on squat)

Extension - Increasing the angle at a joint (up on squat)

Hyperextension - Continuation beyond normal extension (arching back)

Pronation - Rotation at the radioulnar joint toward the body (as in a hook in bowling)

Range of motion: The amount or degrees of movement which can take place at a joint.

Supination - Rotation at the radioulnar joint away from the body (as in palms up)

Prone position - Lying face down

Supine position - Lying face up

EQUIPMENT

Free Weights - Barbells & dumbbells used to provide fixed resistance (weight remains the same, effort varies) for isotonic, concentric & eccentric muscle contraction exercises.

Fixed resistance machines - Cables are attached to weight stacks to duplicate free weight lifts, but support the weight should the lifter fail (Universal, most home fitness equipment).

Variable resistance machines - Cams position the weight to provide maximum resistance throughout the full range of motion (Nautilus, dynabands).

Isokinetic - Machines which produce resistance equal to the force exerted. Concentric contractions only (usually found in rehab facilities).

Electronic, variable resistance, individually programmed machines - (Lifecircuit).

Advantages/Disadvantages:

Free weights require balance, thus working adjacent muscle groups and they also allow for very specific training, but require spotters, and take time to adjust.

Fixed resistance machines accommodate a lot of lifters, do not take much time to adjust, and do not require spotters, but they are designed to work only one muscle group.

Variable resistance machines increase demands on the muscles throughout the full range of motion, but still work only one muscle group and are far more expensive.

Isokinetic machines are excellent for rehabilitation, but very specific.

Electronic machines are "State of the Art" for providing maximum benefits in minimal time, but are quite expensive.

SAFETY & GUIDELINES FOR WEIGHT TRAINING

1. Warm up with a light aerobic work-out such as jogging.
2. Perform general stretching.
3. Warm up specific muscles with a few very light reps.
4. Exhale as you lift the weight, inhale as you lower it. Avoid breath holding. Avoid isometrics.
5. The pace of the exercise should be slow and rhythmic. Avoid ballistic movements except when working on power. Do not let gravity speed-up movement.
6. Go through a full range of motion with each exercise to work muscles throughout the joint angle and to improve joint flexibility. Avoid partial movements.
7. Never alter the prescribed lift ("Cheat") in order to enhance performance (i.e. lift more weight).
8. Use collars and spotters at all times with free weights.
9. Never go for an estimated max lift without thorough warm-up.
10. Compete with yourself, not someone else.
11. Train regularly, 3 times per week. Progress gradually. Begin with 2-3 sets, 8 reps.
When you are performing 3 sets, 12 reps., increase by 5% or set new max's.
12. Exercise larger muscle groups before smaller ones (squats before heel raises).
13. Never do successive lifts of the same muscle groups (bench press followed by incline bench).
14. Always wear shoes, never wear jewelry or chew gum.
15. Report any problems with equipment immediately.

THE BASIC PROGRAM:

		ALTERNATIVES:	ADDITIONAL:
U P P E R T O R S O A B D O M I N	BENCH PRESS	INCLINE/DECLINE	PUSH-UPS DIPS
	MILITARY PRESS	UPRIGHT ROWING	SHOULDER SHRUGS ROTATOR SERIES FLIES
	LAT PULLS	BENT OVER ROWING	PALM AWAY PULL-UPS BICEP CURLS
L O W E R B O D Y	SIT-UPS	CURLS W/ WO TWIST ROMAN CHAIR HANGING KNEE RAISES INCLINE BOARD	
	CHEST RAISES		
	SQUATS/LEG PRESS	SINGLE LEG EXTENS.	PLYO STAIRS CROSS JUMPS
	LUNGES	SINGLE LEG CURLS	DYNABAND AB & ADDUCTION
	CALVE MACHINE HEEL RAISES		
			DLK: 9/96

