

Exercise

COMPONENTS OF FITNESS

- CV Endurance: “the ability of the heart, lung, and blood vessels to deliver adequate amount of O₂ to working cells to meet the demand of prolonged exercise.”
- Muscular Strength: “the ability of a muscle (or muscle group) to express maximal force against a resistance”
- Muscular Endurance: “ability of a muscle (or group of muscle) to sustain repeated contractions against a sub maximal load”
- Flexibility: “the ability of a joint to move freely through its full range of motion”
- Body Composition: “refers to the fat and non-fat components of body weight”

Training Variables

- For all fitness components, there are common variables which must be manipulated throughout an exercise program in order to induce a proper training effect. These variables are:
- Intensity: “the effort put forth during a particular training”
- Duration: “the time period of a training bout”
- Frequency: “ the number of weekly (or daily) training sessions”
- Volume: “the quantity of training done towards the improvement of fitness component”
- Mode: “the specific modality (equipment) used during training”
- Relief Interval: “the recovery period between sets/ reps”

Energy Systems (ATP Production)

- Anaerobic Pathways
 - Phosphagen System (ATP/ CP)
 - Support all-out activities (up to 30 sec)
- Anaerobic Glycolysis (lactic acid system)
 - Supports high- intensity activities 30-180 sec)
- Aerobic Pathways (lactic systems)
 - Aerobic Glycolysis
 - Oxidation of Fatty Acids

Exercise

	SIZE	STRENGTH	ENDURANCE
# of ex/ muscle	3 to 4	1 to 2	1 to 2
# of sets/ exercise	4 to 5	3 to 4	3 to 4
# of reps/ set	10 to 15	5 to 10	20 to 30
Weight used	less heavy	heavy	light-moderate
Rest interval	2 to 3 min	2.5 to 3 min	3 to 4 min
Session/ week	split routines	3	3

CH→BA→SH→QUAD→HAM→GAST→ABS→ OBL→ LB→BI→TRI

Repetition Continuum

Training Objective	Suggested # of reps/ sets
1ry=strength/2ry=size	5 to 10
1ry=size/2ry=strength	10 to 15
1ry= muscular endurance 2ry= strength/size	20 to 30
General conditioning*	5 to 12

Muscle Groups

- Chest
- Back
- Shoulders
- Quadriceps
- Hamstrings
- Lower leg/Gastroc.
- Abdominals
- Gluteals
- Biceps
- Triceps
- Websites:
 - www.weight-training-exercises.com
 - www.muscleandstrength.com
 - www.exrx.net/Exercise

Training Methods

Total Body Workouts (for development of strength, muscular endurance)

- If within a given resistive exercise routine you end up imposing adequate to all major muscle groups, you have completed a “Total Body Workout (TBW).” The advantage of this type of routine is the execution of complete workouts during an exercise session, and thus, less visits to the gym. This is very appropriate for persons with very heavy schedules or those who also want to incorporate into their lifestyles other kinds of physical activity such as step aerobics, running, cycling, etc.
- The sequence in which you exercise the body’s major muscle groups during TBW is important as it might influence the outcome of the program (e.g., strength, size). What follows is an explanation of the various muscle sequences that may be employed within TBWs.

→ TBW: 1st muscle sequence:

- CH→BA→SH→QUAD→HAM→GAST→ABS→ OBL→ LB→BI→TRI
- Why the sequence of CH→BA→SH? BA will allow partial recovery of SH and TRI used during CH. This will allow for a more intense SH workout.
- Why leave arms for the end of the workout? Arm muscles (BI and TRI) assist big muscles such as (CH, BA, and SH) during the performance of corresponding exercises. Fatiguing the arms will decrease the performance during most important, multi-jointing exercises.
- Why is BI the first arm muscle to be exercised? In the TBW of this nature the last upper body muscle exercised (i.e., SH) most likely required the assistance of TRI. Therefore, BI is always first in order to maximize the recovery period of the TRI, and thus allow for more intense TRI workout.

→ TBW: 2nd muscle sequence:

- CH→QUAD→
BA→HAM→SH→GAST→ABS→OBL→LB→BI→TRI
- This muscle sequence alternates upper and lower body muscle groups (except for midsection and arms). This allows exercised muscles to recover more fully and perhaps, to diminish the possible carry over fatigued between opposing muscle groups (eg., CH and BA; QUAD and HAM). For example, QUAD, BA, and HAM are not between CH and SH. This sequence allows for a more complete recovery of SH and TRI used during CH (thus, a more intense SH workout). Because the big emphasis placed on rest and recovery, this muscle is mostly used for strength development.

Split Routines (for bodybuilding purposes)

- Serious weight lifters (mostly body builders) usually train with a greater variety of exercises (and volume) than they can accomplish in one training session, so they apply the above principles to individual muscle groups by splitting their total routine in 2 or 3 groups of exercise, and alternate among these groups on successive days. This strategy allows for daily resistance training; yet, individual muscle groups get adequate rest between workouts. There are several methods of logically dividing the total routine into groups of exercises; the most common will be represented below.

Split Routine Method #1: Upper Body/Lower Body

Mon	Tu	Wed	Th	Fri	Sat	Su	Mon
Chest	Quadriceps	R	R	Chest	R	Quadriceps	R
Back	Hamstrings	E	E	Back	E	Hamstrings	E
Shoulders	Lower Leg	S	S	Shoulders	S	Lower Leg	S
Arms	Mid. Sect.	T	T	Arms	T	Mid. Sect.	T

Split Routine Method #2

Mon	Tu	Wed	Th	Fri	Sat	Su	Mon
			R				R
Chest	Legs	Back	E	Chest	Legs	Back	E
Shoulders	Mid. Sect.	Biceps	S	Shoulders	Mid. Sect.	Biceps	S
Triceps			T	Triceps			T

Split Routine Method #3

Mon	Tu	Wed	Th	Fri	Sat	Su	Mon
			R				R
Chest	Legs	Shoulders	E	Chest	Legs	Shoulders	E
Back	Mid. Sect.	Arms	S	Back	Mid. Sect.	Arms	S
			T				T

Over Use

- The training stimulus produced by heavy resistance training will persist for about 2-3 days, and will not be enhanced by daily training. In fact, daily high intensity training of the same muscle will result in cumulative fatigue, and eventually in a decrease in performance. For these reasons it is unwise to train the same muscle groups every day. At least one day of rest should intervene between training sessions so that muscles can recover fully and adapt to the training stimulus given by the previous workout. You don't gain strength while you are working out; you gain strength while you are resting and recovering between workouts. It is important to give yourself time to grow before fatiguing yourself again with another workout. This is why TBWs should be done no more than 3x per week with at least one day of rest in between in order to induce a proper training stimulus.