
Personal Fitness Trainer Course
NAFTA TRAINING
DAY 3
NAFTA
NATIONAL AEROBICS & FITNESS TRAINERS ASSOCIATION

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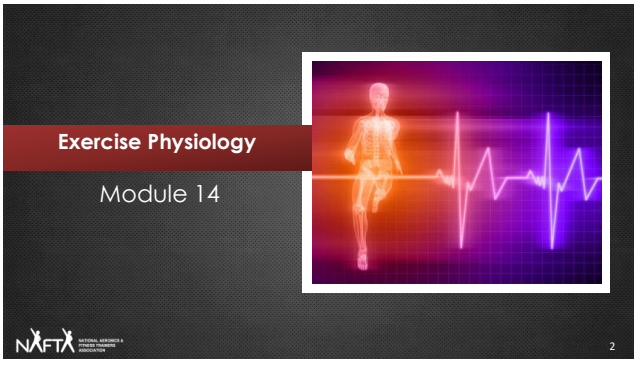
Exercise Physiology
Module 14
NAFTA
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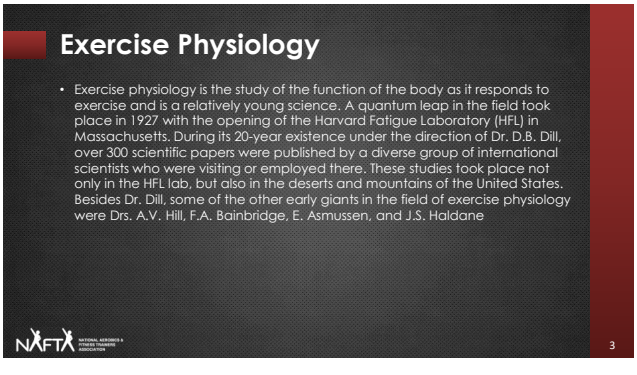
Exercise Physiology
• Exercise physiology is the study of the function of the body as it responds to exercise and is a relatively young science. A quantum leap in the field took place in 1927 with the opening of the Harvard Fatigue Laboratory (HFL) in Massachusetts. During its 20-year existence under the direction of Dr. D.B. Dill, over 300 scientific papers were published by a diverse group of international scientists who were visiting or employed there. These studies took place not only in the HFL lab, but also in the deserts and mountains of the United States. Besides Dr. Dill, some of the other early giants in the field of exercise physiology were Drs. A.V. Hill, F.A. Bainbridge, E. Asmussen, and J.S. Haldane
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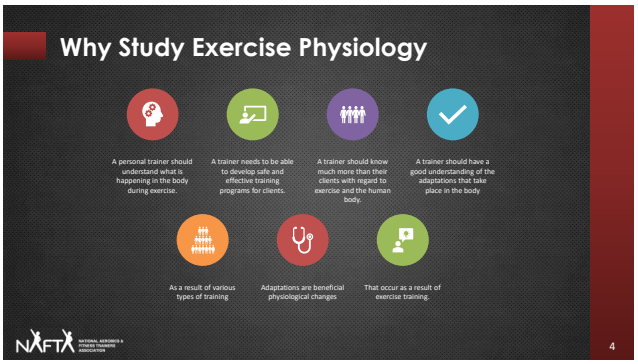
Why Study Exercise Physiology
A personal trainer should understand what is happening in the body during exercise.
A trainer needs to be able to develop safe and effective training programs for clients.
A trainer should know much more than their clients with regard to exercise and the human body.
A trainer should have a good understanding of the adaptations that take place in the body
As a result of various types of training
Adaptations are beneficial physiological changes
That occur as a result of exercise training.
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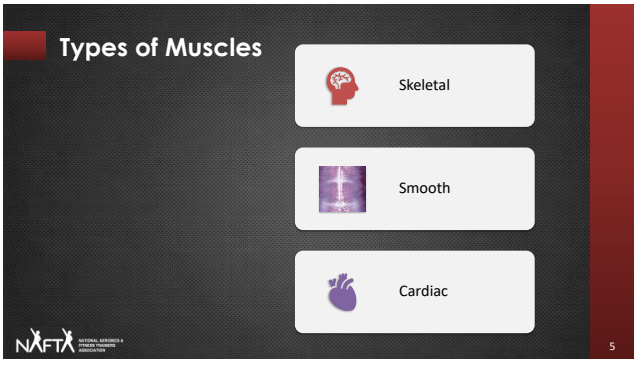
Types of Muscles
Skeletal
Smooth
Cardiac
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Terminology
ENERGY
METABOLISM
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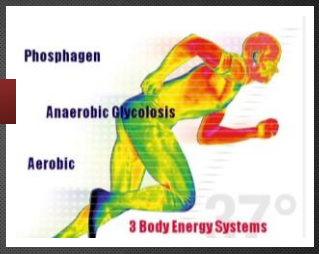
Energy Systems



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Energy Systems: Objectives

- Understand the three energy systems
- Differentiate aerobic and anaerobic energy systems
- Understand how the body uses fat & carbohydrates for energy
- Understand energy expenditure and its expressions: calories, oxygen consumption, & METs

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Energy Sources

- Carbohydrate 4 kcals/gram
  - Broken down to glucose
  - Stored as glycogen in the liver and muscles
  - Excess stored as Fat
- Fat 9 kcal/gram
  - Stored as Triglyceride in Adipose Tissue and small amounts in Skeletal Muscle
- Protein 4 kcals/gram
  - Function to build and repair tissue
  - Backup energy source (when carbohydrates are low)
  - Excess stored as Fat

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Three Energy Systems

- Immediate Anaerobic (ATP-CP) System
- Short Term Anaerobic (Lactic Acid) System
- Long Term Aerobic (Oxidative) System

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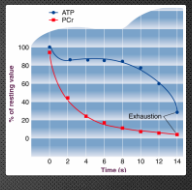
1. Immediate Anaerobic (ATP-CP) Energy System

- Immediate Energy System
- Stored in the Muscle
  - ATP
  - Creatine Phospate (CP)
- Short, intense activity 1-15 seconds
  - Short sprint, 1 RM, shot put, long jump
- Is active in the start of all exercise regardless of intensity



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Short Term Energy System (Lactic Acid)

- Anaerobic
- Intense activities lasting 30 seconds to 3 minutes:
  - Sprinting or hill climbs in a group cycle class
  - One set (8-12 reps) of a strength training exercise
  - Muscle conditioning exercises (group strength classes)
  - Certain power yoga poses (plank, side plank, stick, etc.)
- Uses glucose or glycogen
- Partially breaks down glucose
  - Generates 2 ATP
  - Results in production of lactic acid

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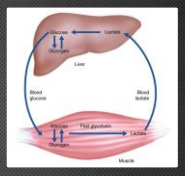
Lactic Acid

- With anaerobic activity, lactic acid builds up in the muscle
- Inhibits muscle contraction – leads to fatigue
- Lactic acid diffuses into blood stream and is circulated to the liver where it is recycled and converted back to glucose



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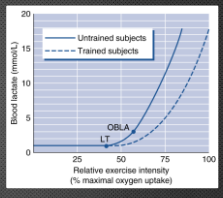
Anaerobic (Lactate) Threshold

- The point at which lactic acid builds up in the blood stream
  - Have to slow down
- Threshold for endurance activities
- What effects the Lactate Threshold
  - Genetics
  - Training



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Long Term Aerobic Energy System (Oxidative)

- Requires Oxygen
- Predominates in activities lasting
- greater that 3 minutes
- Generates 36-100+ ATP
- End products: CO_2 and H_2O
- Uses a mixture of carbohydrate and fat

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Effect of Duration & Intensity on Primary Energy System

Duration	Intensity	Primary energy system(s)	Examples
0-15s	Very Intense	Phosphagens (ATP & CP)	High jump, shot put, power lift, 1 RM, tennis serve, golf swing
15-90s	Intense	Lactic Acid	Sprints, fast breaks, football line play
90s – 3 min	Moderate	Lactic Acid & Oxidative	200-400 meter dash 100 meter swim
> 3min	Light	Oxidative	> 800 meter run

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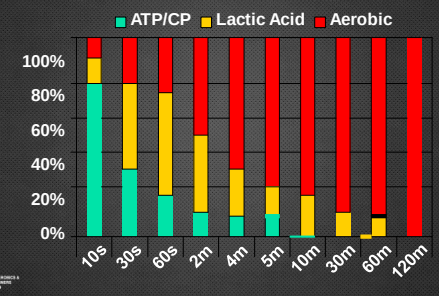
Energy Use During Exercise



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Name the Predominant Energy System

1. Leg extensions to failure in 10 reps?
2. Swimming for 20 minutes?
3. 15 sec sprint at the end of a 2 mile run?
4. Abdominal crunches to failure in 1 min?
5. One rep max bench press?
6. Timed 1.5 mile run?

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What is the best way to "burn" fat?

- There are many myths regarding fat burning
  - The critical issue is total caloric expenditure
  - Lower intensity exercise uses a higher percentage of fat, but "burns" fewer total calories.
    - Appropriate for novice, overweight, or unfit individuals
    - Longer duration
- Higher intensity exercise uses a lower percentage of fat, but "burns" more total calories
  - Interval training is a good way to increase the intensity and the caloric expenditure for fit individuals

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Cardiovascular & Respiratory System

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The Cardiovascular System

- Outline:
  - Structure and Function
  - Responses to Exercise
  - Training Guidelines
  - Adaptations to Training

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The Cardiovascular System

- Function: transport nutrients and O2 to cells
- Components:
  - Heart - pump
  - Blood - transportation medium
  - Blood vessels - distribution channel

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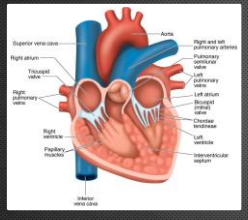
Anatomy of the Heart



- Muscular Organ
  - Size of fist
  - Weighs < 1 lb
- 4 Chambers
  - Atria
  - Ventricles
- Right side
  - Pulmonary circulation
- Left side
  - Systemic circulation

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Blood Pressure Response to Exercise

- Cardiovascular Exercise
  - Systolic BP increases in direct proportion to increased exercise intensity
  - Diastolic BP changes little, if any, during endurance exercise, regardless of intensity
  - During steady state exercise in the target training zone, systolic increases ~30-40%, no change in diastolic
- Resistance Exercise (following ACSM guidelines of
- 8-12 reps)
  - Both systolic and diastolic increase ~30-50%

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Heart Rate

- Resting Heart Rate
  - Averages 60 to 90 beats per minute (bpm)
  - Can range from 28 to above 100 bpm
- Maximal Heart Rate
  - Related to age
  - Estimated by 220 - age (±15 bpm)
- Steady State Heart Rate
  - Heart rate plateau reached during constant rate submaximal work
  - Takes 2-3 minutes to achieve

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Cardiovascular Response to Exercise

- Heart rate (HR) and stroke volume (SV) increase, resulting in increased cardiac output (Q):
  - Q = 5 L/min at rest
  - Q = 20–40 L/min at maximum intensity
  - Increases as exercise intensity increases
- Blood flow and blood pressure change (next slide)
- Result: the body efficiently meets the increased demands placed on it

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Cardiorespiratory Training Adaptations

- Increase VO2 Max: 10 – 30% due to adaptations in:
  - Heart: Increases delivery of oxygen to the muscles
  - Muscles: are better able to extract and utilize oxygen
- Decrease Resting Heart Rate (Increased Stroke Volume)
- Possible decrease in Blood Pressure
- Preferential use of fat (Energy systems)

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Other Benefits of Cardiorespiratory Exercise

- Helps with weight management:
  - Burns calories
  - Helps maintain or increase lean body mass → positively affects resting metabolic rate
- Improves control of:
  - Blood glucose → decreases the risk of Type II diabetes
  - Blood lipids (cholesterol and triglycerides) → decreases the risk of cardiovascular disease
- Weight bearing exercise increases bone density → decreases the risk of osteoporosis

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Program Design

Module 15

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Strong Program Design

SAFE EFFICIENT ENJOYABLE EFFECTIVE

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How to Design a Program

- Gathering the information
- Prioritization of Program Goals
- Creation and Evaluation of the Program
- Delivery of the Program
- Reassessment

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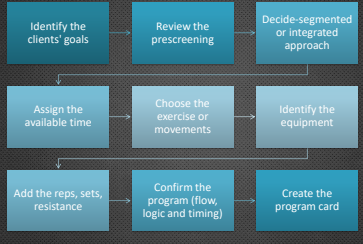
Program Design



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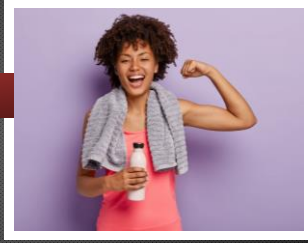
Cardiovascular Training Guidelines



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Health Benefits of CV Training

1. Increased aerobic capacity (VO2 max)
2. Improved function of Heart & Lungs
   - Stroke Volume increases
   - Resting Heart Rate Decreases
3. Resting blood pressure may decrease
4. Increased HDL Cholesterol (the good cholesterol)
5. Reduced body fat and improved weight control
6. Improved glucose tolerance and reduced insulin resistance

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ACSM AerobicTraining Guidelines

F = Frequency:
- 3-5 X's per week

I = Intensity:
- 60-90% Maximal Heart Rate
- 50-85% Heart Rate Reserve
- Rate of Perceived Exertion
- Talk Test

T = Time:
- 20-60 min (10 min bouts)

T = Type/Mode:
- Continuous, Rhythmic, Large Muscle Mass

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Determining Intensity: Heart Rate Max

- Estimate max HR: 220 - age (± 15)
- Intensity level: 60 - 90%
  - 60 - 70% Low: novice, special populations
  - 70 - 85% Moderate: normal
  - >85% Intense: performance enhancement
- Example: 30 year old
  - Estimated Max HR: 220 – 30 = 190 bpm
  - 190 bpm * .60 = 114 bpm
  - 190 bpm * .85 = 171 bpm
  - Target Training Zone = 114 – 171 bpm

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AGE	Maximal Heart Rate (220 – age)	Aerobic Target Zone (70-85%)
20	200	140 – 170
25	195	135 – 166
30	190	133 – 162
35	185	130 – 158
40	180	126 – 153
45	175	123 – 149
50	170	119 – 145
55	165	116 – 140
60	160	112 – 136
65	155	109 – 132
70	150	105 – 128

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Determining Intensity: Heart Rate Reserve (HRR) or Karvonen

- HRR = (220 – age) – Resting Heart Rate (RHR)
- Intensity level = 50 – 85%
- (HRR * intensity %) + RHR
  - A common mistake is forgetting to add back in the RHR
- Example: 30 year old, RHR = 70 bpm
  - HRR:(220 – 30) – 70 = 120 bpm
  - (120 * .50) + 70 = 130 bpm
  - (120 * .85) + 70 = 172 bpm
  - Target Training Zone = 130 – 172 bpm

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BORG Scale - Rating of Perceived Exertion (RPE)

Original Scale	
6	
7	very, very light
8	
9	very light
10	
11	fairly light
12	
13	somewhat hard
14	
15	hard
16	
17	very hard
18	
19	
20	very, very hard

Revised Scale	
0	no intensity
0.5	extremely weak
1	very weak
2	weak, light intensity
3	moderate
4	
5	somewhat hard
6	
7	hard
8	
9	
10	extremely strong, strongest intensity

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Components of a training session

- Warm-up
  - Purpose
  - 5-10 minutes of progressive endurance activity sufficient to ↑ HR to low end of the prescribed target HR zone
  - 5-10 minutes of ROM stretching (Dynamic Stretching)
- Endurance Phase: 20-60 min
- Cool-down: Recovery
- Stretch

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Monitoring Heart Rate

- HR monitor
- Palpate
  - 6 sec count "add a zero"
  - 10 sec count "multiply by 6"
  - Count 1st beat as "1"
- When to monitor HR during a class
  - Before class starts (baseline HR)
  - After warm up (should be low end of target zone)
  - 1 or 2X's during aerobic phase (target zone)
  - After cool down/stretch phase
    - ≤ 50 years of age, HR should be below 120 bpm
    - > 50 years of age, HR should be below 110 bpm

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Rate of Progression:

- Increase only 1 component at a time
  - Frequency
  - Intensity
  - Time
- Use the 10% rule
- After developing a base (5-6 months)
  - Cross Training
  - Interval Training
    - Aerobic Intervals: 2-15 minutes, 1:1 Work: Recovery Ratio
    - Anaerobic Intervals: 15 sec – 2:00 minutes, 1:3 Work: Recovery Ratio

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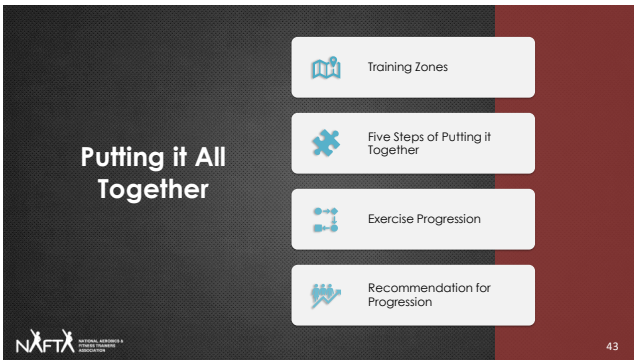
Putting it All Together
Training Zones
Five Steps of Putting it Together
Exercise Progression
Recommendation for Progression
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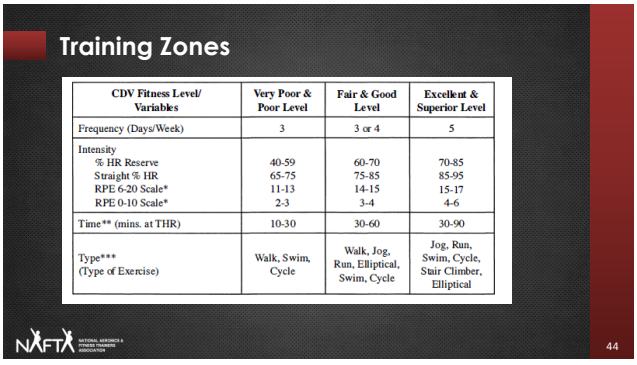
Training Zones
CDV Fitness Level/ Variables
Very Poor & Poor Level
Fair & Good Level
Excellent & Superior Level
Frequency (Days/Week)
3
3 or 4
5
Intensity
% HR Reserve
Straight % HR
RPE 6-20 Scale*
RPE 0-10 Scale*
40-59
65-75
11-13
2-3
60-70
75-85
14-15
3-4
70-85
85-95
15-17
4-6
Time** (mins. at THR)
10-30
30-60
30-90
Type***
(Type of Exercise)
Walk, Swim, Cycle
Walk, Jog, Run, Elliptical, Swim, Cycle
Jog, Run, Swim, Cycle, Stair Climber, Elliptical
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Five Steps of Putting it Together
Select Current Fitness Category
Select Frequency
Select Time
Select Activity
Calculate Intensity
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Intensity Ranges

Age (yrs)	65% (bpm/10 sec)	75% (bpm/10 sec)	85% (bpm/10 sec)	95% (bpm/10 sec)
20	125/21	145/24	164/27	183/31
25	123/21	143/24	162/27	181/30
30	121/20	140/23	158/26	177/30
35	119/20	137/23	156/26	174/29
40	116/19	134/22	152/25	170/28
45	114/19	132/22	149/25	167/28
50	112/19	129/22	146/24	163/27
55	110/18	126/21	143/24	160/27
60	107/18	124/21	140/23	157/26
65	105/18	121/20	137/23	153/26
70	103/17	119/20	134/22	150/25
75	100/17	116/19	131/22	147/25
80	98/16	113/19	128/21	143/24

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Exercise Progression

- Based on the concept of overload, it is important to progress the program after the initial cardiovascular prescription has been developed for week one. To determine the amount of work that is prescribed in week one, it is important to calculate the total amount of exercise performed for that week by calculating volume.
- **Calculating Volume**
  - The calculation of volume for cardiovascular prescription is the total of amount of exercise performed during a week. Volume is determined by using the following calculation:
  - Volume= Frequency x Time.

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Recommendation for Progression

Variable/ Week	Type	Frequency	Intensity	Time	Volume (Total min/ wk)
Week 1	Walk	3	124-133	20	60
Week 2	Walk	3	124-133	25	75
Week 3	Walk	3	124-133	30	90
Week 4	Walk	4	124-133	27	108
Week 5	Walk	4	124-133	30	120
Week 6	Walk	4	124-133	33	132

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Example of Cardiovascular Rx using an Elliptical Trainer for 40-Year-Old Individual in Good Category, Resting HR of 65

Variable/ Week	Type	Frequency	Intensity	Machine Work Level	Time	Total min/ wk
Week 1	Elliptical	3	133-145	12	20	60
Week 2	Elliptical	3	133-145	12	25	75

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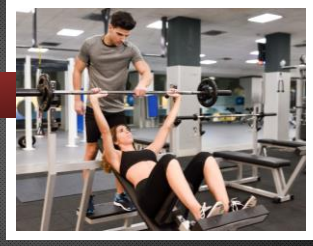
Strength Training Guidelines



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Benefits of Strength Training

- Increased muscle mass and resting metabolic rate
- Increased bone density
- Improved glucose tolerance and insulin sensitivity → decreases risk of diabetes
- Lowered risk of musculoskeletal injury including back pain
- Enhanced performance

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Factors Affecting Muscle Strength

- **Genetics**
  - Muscle fiber type
  - Limb and Muscle length
  - Tendon insertion point
  - Gender
  - Age
- **Training Program**
  - Appropriate overload
  - Good technique
  - Adequate recovery time
  - Changing the program

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Muscle Fatigue and Soreness

- Fatigue:
  - ATP depletion (run out of fuel for the muscle)
  - Lactic acid buildup (impedes muscle contraction)
- Delayed Onset Muscle Soreness (DOMS)
  - NOT due to lactic acid!!!
  - Muscle microtrauma
  - Related to eccentric contraction
  - Stimulates muscle tissue synthesis

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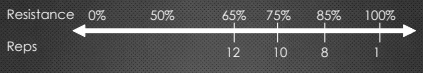
Strength – Endurance Continuum



- Endurance Training: > 12 Reps
  - Slow Twitch Fibers
    - ↑ capillaries
    - ↑ mitochondria
    - ↑ aerobic enzymes
  - Can perform more reps at a given weight
- Strength Training: ≤ 12 Reps
  - Slow & Fast Twitch Fibers
    - ↑ muscle mass
    - ↑ bone mineral density
    - ↑ connective tissue
  - Maximal strength (1RM) will increase

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Selecting the Appropriate Resistance

- **Muscular Strength**
  - High resistance, Low reps (1-12 RM)
- **Muscular Endurance**
  - Low resistance, High reps (>12 RM)
- **Power**
  - Specific lifts, emphasize speed of movement, several sets of low reps, moderate resistance.
- **Muscle Size**
  - Used to be high volume, now, intensity is the criteria
    - 1 set (drop sets)
    - Each muscle group 1X/week

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ACSM Guidelines for Strength Training

- Rep: 8-12
- Sets: 1-3
- Recovery: 1-2 min
- Exercises; 8-10 (major muscle groups) next slide
- Order: Large to small (abdominals last)
- Frequency: 2-3x's per week
- Progression: ↑ 5-10%

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Major Muscle Groups

Major Muscle Groups	Example: 8-10 Exercises
Legs	Leg press
	Leg curl
	Heel raise
Chest	Bench press
Back	Lat pull-down (front)
Shoulders	Overhead press
Arms	Seated dumbbell curl
	Lying triceps extension
Abdominals	Abdominal curl
Low Back	Back extensions

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ACSM Guidelines for Strength Training

- Adhere to proper form and alignment when performing exercises
- Full ROM: Controlled speed (Con – 2, pause, Ecc – 4)
- Perform both concentric and eccentric
- Avoid breath holding (valsava maneuver) , can increase BP,
- decrease venous return and cause fainting
- If possible, train with a partner, safety, feedback and motivation

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Strength Training Safety Guidelines

- Warm-up
- Use spotters, and collars
- Protect Joints
  - Knees:
    - Limit Range of Motion (ROM)
  - Shoulders:
    - Avoid behind head moves.
    - Limit ROM and weight for chest flys
  - Elbows:
    - Neutral "hammer curls" □ stress
  - Back
    - Avoid excessive hyperextension (arching)
    - Avoid rounding back on dead lifts

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Modes of Strength Training

- Calisthenics: Body weight exercises
- Free Weights
  - Bar bells & Dumb bells
- Machines
- Other
  - Stability Ball
  - Medicine Balls
  - Kettle Bells
  - Elastic Resistance
  - Yoga

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Training Adaptations

- Resistance training programs can produce a 25% to 100% improvement in strength within 3 to 6 months depending upon:
  - Initial fitness level
  - Training program
  - Genetic potential (fiber type distribution)
- Adaptations due to:
  - Neural Adaptations - Coordination
  - Muscle Hypertrophy

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Gender Differences

- No gender difference in muscle
- Men have a higher % of muscle
- In the first few months of training men and women show the same % improvement
  - Initial gains are due to neural adaptations
- Long term, men have a greater potential to increase muscle mass due to higher amounts of anabolic hormones

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Types of Resistance Training

- Isometric (plank)
- Constant Resistance: Free Weights
- Variable Resistance: Machines

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Strength Training Variations

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Time Efficient Training

- Utilize recovery time between sets
  - If working upper body, do light endurance leg work (unweighted squats, leg press, etc)
  - Do light aerobic activity (cycle)
- Selectorized Machines
- 1 Set
- Compound Exercises
  - Squats / Lunges:
  - Bench press /Push ups:
  - Overhead Press:
  - Lat Pull /Pull ups:

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Training Variations

- Split Routines:
  - Work 2 or 3 muscle groups per day
- Pyramid:
  - Progressively increase or decrease the weight each set
- Negatives:
  - Performing only the eccentric "negative" phase of the rep
- Super Sets:
  - Back-to-back exercises for opposing musclegroups (no rest)

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Training Variations

- Giant Sets:
  - "Back-to-back exercises for same muscle group (no rest)
- Drop Sets "breakdown training":
  - Work to muscle failure, reduce weight and work to failure again. ~ 3 sets
- Forced Reps "assisted training":
  - Work to failure, then use a spotter to perform additional reps
- Super-Slow "10-second training":
  - Slowing the speed of each rep to ~ 10 seconds

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Example: Light to Heavy Pyramid

Set No	Reps	Intensity
1	10	75%
2	8	80%
3	6	85%

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Split Routines

- Upper Body / Lower Body
- Push-Pull
- Example
  - Chest & Tri's, Abs & Low Back
  - Back & Biceps, Abs & Low Back
  - Shoulders & Legs, Abs & Low Back

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Putting in All Together
Goal Selection
Selected Targeted Muscles
Determine Exercise Selection
Incorporate Acute Variables
Determine Volumes and Total Volumes
Choose the Training System
Choose Periodization & Manipulations
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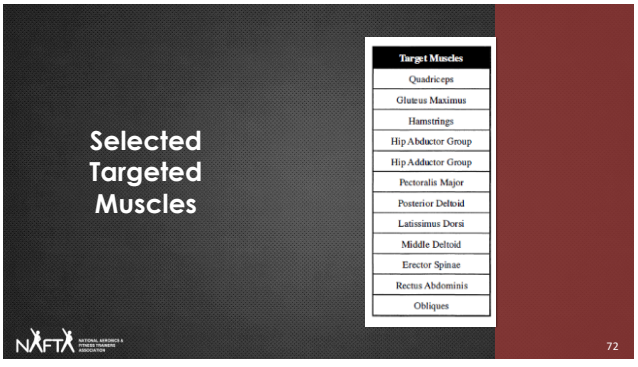
Selected Targeted Muscles
Target Muscles
Quadriceps
Gluteus Maximus
Hamstrings
Hip Abductor Group
Hip Adductor Group
Pectoralis Major
Posterior Deltoid
Latissimus Dorsi
Middle Deltoid
Erector Spinae
Rectus Abdominis
Obliques
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Determine Exercise Selection
Day 1 Exercise Selections
Target Muscles
Day 2 Exercise Selections
Dumbbell Step Up with Bicep Curl Squatted Cable Low Row
Quadriceps
Leg Press
Dumbbell Step Up with Bicep Curl
Gluteus Maximus
Leg Press
Dumbbell Step Up with Bicep Curl Lying Hamstring Curl on Ball
Hamstrings
Leg Press Standing Cable Leg Curl
Band Hip Abduction
Hip Abductor Group
Towel Hip Adduction Slides
Hip Adductor Group
Rotator Cuff
Band External/Internal Rotation
Dumbbell Bench Press
Pectoralis Major
Cable Push and Pull with Spine Rotation
Incline Lying Supine Pull-up Under Bar (Shoulder Horizontal Abduction)
Posterior Deltoid
Cable Push and Pull with Spine Rotation
Squatted Cable Low Row
Latissimus Dorsi
Assisted Machine Pull-ups
Dumbbell Shoulder Press on Stability Ball
Middle Deltoid
Dumbbell Standing Lateral Raise
Dumbbell Shoulder Press on Stability Ball
Erector Spinae
Back Extension on Floor with feet down
Dumbbell Shoulder Press on Stability Ball
Rectus Abdominis
Plank on Knees
Side Plank on Knees
Obliques
Cable Push and Pull with Spine Rotation
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Incorporate Acute Variables

Target Muscle	Day 1 Exercise Selected	1 RM	Intensity	Resistance	Repetitions	Sets	Tempo	Rest	Volume*
Quadriceps, Gluteus Maximus, Hamstrings	Dumbbell Step Up with Bicep Curl Squatted Cable Low Row		30%		17	2	1.5-1-1.5-1	15-30 sec.	1020
Hamstrings	Lying Hamstring Curl on Ball		30%		17	2	3-1-3-1**	15-30 sec.	1020
Hip Adductor Group	Band Hip Abduction		35%		16	1	1.5-1-1.5-1	15-30 sec.	360
Hip Abductor Group	Towel Hip Adduction Slides		35%		16	1	1.5-1-1.5-1	15-30 sec.	360
Pectoralis Major, Anterior Deltoid	Dumbbell Bench Press	45***	30%	20	17	2	1.5-1-1.5-1	15-30 sec.	680
Posterior Deltoid	Incline Lying Supine Pull-up/Under Bar (Shoulder Horizontal Abduction)		30%		17	2	1.5-1-1.5-1	15-30 sec.	1020
Latissimus Dorsi	Squatted Cable Low Row		35%		16	1	1.5-1-1.5-1	15-30 sec.	360
Middle Deltoid, Erector Spinae, Rectus Abdominis, Obliques	Dumbbell Shoulder Press on Stability Ball		35%		16	1	1.5-1-1.5-1	15-30 sec.	360
Obliques	Side Plank on Knees				30 sec.	2	1.5-1-1.5-1	15-30 sec.	60 sec

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Determine Volumes and Total Volumes

	Hypertrophy	Strength	Other
Training to failure	Train to failure occasionally. It's not necessary to go to failure on every set. Failure might be more important for trained lifters or those who use low-intensities.	Train to failure occasionally. It's not necessary to go to failure on every set. Failure might be more important for trained lifters or those who use low-intensities.	Excessive use of failure could lead to fatigue, lowered training volumes, discomfort, and overuse injuries. Failure cuts reduces volume.
Frequency (training days per muscle group per week)	Train every muscle group twice a week. Evidence for this is not super strong, but there is a consistent trend favouring 2x per week. We don't yet know what is ideal for the long-term.	The evidence is mixed. Higher training frequencies (2x and 3x per muscle group per week) might be better. Especially if it allows you to use higher weekly volumes.	Periodization is key. A block of high frequency training might be a sound plan, but constant HFT might lead to burnout and injury.

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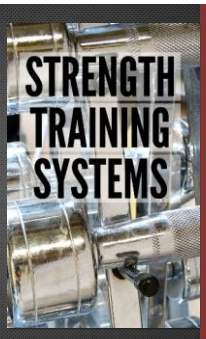
Training System



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Periodization & Manipulations

The Fitness Pyramid

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Flexibility Training Guidelines

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Topics

- Benefits of Flexibility Training
- Types of Stretching
  - Static
  - Ballistic
  - Dynamic
- Flexibility Training Guidelines
- Safety Guidelines

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Benefits of Flexibility Training

1. Increased physical efficiency and performance
2. Decreased risk of injury
3. Increased neuromuscular coordination
4. Reduced muscular soreness
5. Improved muscular balance and posture
6. Decreased risk of low back pain

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Flexibility

- A joint's ability to move through a full and normal range of motion (ROM)
- Need to balance strength and flexibility
  - A tight muscle is more prone to injury
  - An hypermobile (over-lax) joint cannot stabilize effectively

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Three Types of Stretching

- Static
- Dynamic
- Ballistic

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1. Static Stretching

- Slow stretch to the point of mild discomfort, hold in stretched position for 10-30 seconds.
  - Passive
  - Active
- If performed regularly can increase joint range of motion

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2. Dynamic Stretching

- Used as a warm-up technique: Movement preparation
- Controlled movement specific to sport or activity
- Example: Walking lunges, knee-ups, front leg lifts

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3. Ballistic Stretching

- Muscles stretched by the force of momentum
- Higher risk of injury
- Significantly less effective
- Initiates the stretch reflex
  - A reflex action of the muscle to excessive stretch
  - Causes the muscle to contract (shorten) to prevent the muscle from becoming over- stretched or injured

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Flexibility Training Guidelines

- Frequency: 2-7x's per week
- Intensity: To point of mild discomfort
- Type: Static
- Time:
  - Static: 10 - 30 seconds
  - 3 to 4 repetitions for each stretch
- Always warm-up prior to stretching!

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Flexibility Training Guidelines

- Stretch typically "tight" muscles
  - Low back
  - Hamstrings
  - Calves
  - Hip flexors
  - IT Band
  - Chest & Shoulders

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Safety Guidelines for Stretching

- Safety #1
- Stretch should have a purpose
  - ROM during warm-up: Dynamic
  - Prepare for Sport / Occupation: Ballistic
  - Enhance flexibility, Static (offset strength/flexibility imbalances)
- Stretching should not cause pain
- Never stretch :
  - Areas near fracture
  - Areas recently sprained or strained
  - Clients with osteoporosis, unless MD permission

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Safety: Overstretching

- Many people tend to stretch as far as possible.
- Activates the stretch reflex, causing the muscle to contract.
- Can cause microscopic tears of the
- involved tissue (muscle), scar formation.
- Results in loss of flexibility.

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Goal Setting
Module 16

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Goal Selection: The First Step

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Goals

- Cardiorespiratory
- Absolute Strength
- Dynamic Strength
- Flexibility
- Body Composition

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Goals-Timelines

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Goal Setting

- Focus on realistic goals
- Answer the question"where should I be?"
- Focus on short term (8-16 weeks) rather than long-term
- Better to have a goal that is too easy and attainable than one that is too difficult and unattainable.
- 5% improvement is a realistic goal for most people

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Factors Affecting Goal Setting

- Training
  - Frequency
  - Duration
  - Intensity
  - Mode
- Quality and duration of rest
- Nutrition
- Psychological factors

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Nutrition

Module 17

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Optimizing Nutritional Status

- No one "optimal" diet for everybody
- Needs vary depending on genetics, gender, activity level, etc.

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Food

- Food fulfills 3 needs

1. Energy:
   - Carbohydrates: 4 calories/gram
   - Fat: 9 calories/gram
   - Alcohol: 7 calories/gram
   - Protein (Back-up): 4 calories/gram
2. New Tissue Growth & Repair:
   - Protein
3. Metabolic Regulation:
   - Vitamins & Minerals - no calories

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Essential Nutrients

- Carbohydrates
- Protein
- Fat
- Vitamins
- Minerals
- Water
- (Fiber – Essential, but not considered a nutrient i.e. not broken down and absorbed)

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Estimating Daily Calorie Need

- There are a number of formulas to estimate daily calorie needs
  - Katch – McArdle Formula:
    - Estimates BMR based on lean mass and therefore is more accurate than a formula based on total body weight.
    - Requires body composition assessment (% bodyfat)
  - Harris Benedict Formula
    - Estimates BMR based on age, gender, height & weight
    - Does not require body composition assessment
  - EZ Method
    - Based on Gender, weight and activity level
    - Does not require body composition assessment

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Katch-McArdle Formula

- BMR (men and women) = 370 + (21.6 X lean mass in kg)
- Now that you know your BMR, you can calculate Activity Component by multiplying your BMR by your activity multiplier from the chart below:
- **Activity Multiplier**
  - Sedentary = BMR X 1.2 (little or no exercise, desk job)
  - Lightly active = BMR X 1.375 (light exercise/sports 1-3 days/wk) Mod. active = BMR X 1.55 (moderate exercise/sports 3-5 days/wk) Very active = BMR X 1.725 (hard exercise/sports 6-7 days/wk) Extremely active = BMR X 1.9 (hard daily exercise/sports & physical job or 2X day training, i.e marathon, contest etc.)

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Katch McArdle Formula: Example

- Gender: Male
- Weight: 180 lbs. (180/2.2 = 81.82 kg)
- % Body Fat: 15% (27 lbs.of fat, 153 lbs.of lean)
  - Lean mass is 153 lbs. (69.5 kg)
  - BMR = 370 + (21.6 X 69.5) = 1312 calories
- To determine activity component from BMR, you simply multiply BMR by the activity multiplier:
- BMR: 1871
  - Activity level is moderately active (work out 3-4 times per week)
  - Activity factor is 1.55
  - Activity component = 1.55 X 1312 = 2900 calories

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Harris Benedict Formula

- BMR Formula
  - Women: BMR = 655 + (4.35 x weight in pounds) + (4.7 x height in inches) - (4.7 x age in years)
  - Men: BMR = 66 + (6.23 x weight in pounds) + (12.7 x height in inches) - (6.8 x age in year)
- Harris Benedict Formula: To determine your total daily calorie needs, multiply your BMR by the appropriate activity factor, as follows:
  - sedentary (little or no exercise): 1.2
  - light exercise/sports 1-3 days/week): 1.375
  - moderate exercise/sports 3-5 days/week): 1.55
  - hard exercise/sports 6-7 days a week): 1.725
  - very hard exercise/sports & physical job or 2x/day train. 1.9

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Harris Benedict Formula: Example

- Example: 25 year old man, 180 lbs, 6' tall, moderately active
  - BMR = 66 + (6.23 x 180lbs) + (12.7 x 72 inches) - (6.8 x 25)
  - BMR = 66 + (1121.4) + (914.4) – (170)
  - BMR = 1931.8
- Harris Benedict Formula: To determine your total daily calorie needs, multiply your BMR by the appropriate activity factor, as follows:
  - Total Daily Calorie Estimate = BMR* 1.55
  - = 1931.8 * 1.55
  - = 2994

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EZ method Estimated Daily Calorie Needs

Activity level	Kcal/lb	Kcal/kg
Male	17	38
Light		
Moderate	19	41
Heavy	23	50
Female	16	35
Light		
Moderate	17	37
Heavy	20	44

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Estimated Daily Calorie Needs of Male and Female Athletes by Activity Level

- Light activity level:
  - Walking on level surface @ 2.5 to 3.0 mph, garage work, electrical trades, carpentry, restaurant trades, housecleaning, childcare, golf, sailing, table tennis
- Moderate activity level:
  - Walking 3.5 to 4.0 mph, weeding and hoeing, carrying a load, cycling, skiing, tennis, jogging
- Heavy activity level:
  - Walking with load uphill, running, heavy manual labor, basketball, football, soccer, strength training

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Estimated Daily Calorie Needs

- Example: Joe Smith
  - Weight 180 lbs
  - Activity level Moderate (19 kcals/lb)
- 180 lbs * 19 kcals/lb = 3420 calories per day

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Comparison of the 3 methods

- Estimated Daily calorie needs for a 6', 180 lb, 25 year old male
  - Katch McArdle= 2900
  - Harris Benedict= 2904
  - EZ Method= 3420

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NAS – IOM Recommendations

- **CHO:** 45 – 65% of total calories
  - 50 – 70% for athletes or very active
- **FAT:** 20 – 35% of total calories
  - Saturate fat <10% of total calories
- **Protein:** 10 -35% of total calories
  - The protein recommendation is the same as in the past!

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Carbohydrates

- 50 -70% of total calories
- 4 calories per gram

  Total calories X 0.5 = calories/4 = grams

  Total calories X 0.7 = calories/4 = grams

Example: Estimated total calories = 3000 3000 X 0.5 = 1500 calories/4 = 375 grams

3000 X 0.7 = 2100 calories/4 = 525 grams

So: Should consume 1500-2100 calories (375 – 525 grams) of carbohydrate per day

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Fat Intake Recommendations

- **Total Fat:** 20-35% of total calories
  - Example: 3000 kcal diet x .20-.35 = 600-1050 kcal per day
  - divided by 9 kcal/g = 67-117 grams fat per day
- **Saturated Fat:** No more than10% of total calories
  - Example: 3000 kcal diet x .10 = 300 kcal
  - divided by 9 kcal/g = No more than 33 grams of saturated fat per day
- **Fats:** 600 – 1050 kcals/day (67-117 grams/day)
  - Of that, no more that 300 kcals (33 grams) saturated

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Protein Intake Recommendations

- The recommended daily intake for protein is 10-35% of total calories
- Example:
  - 3000 kcal diet x .10 - .35 = 300-1050 calories of protein per day
  - divided by 4 kcal/g = 75-263 grams of protein per day

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Carbohydrates (CHO):

- Function:
  - Main source of glucose to fuel the body
  - Muscles use a "mixture" of Glucose & Fat
  - High intensity activities (sprinting & weightlifting)
  - rely solely on Glucose
  - Brain and CNS only use Glucose
- Requirements:
  - at least 130 grams of CHO (520 cal) a day for
  - brain function

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Carbohydrate

- All carbohydrates that you eat are ultimately converted to Glucose Candy
  - Grains
  - Vegetables
  - Fruits
  - Dairy (lactose)
  - Candy
  - Syrup
  - Soda
  - White Flour

- Choose complex sources except during & after exercise
- Glycemic Index

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Fate of Carbohydrate

- After ingesting carbohydrate, it circulates in the blood stream and…
  - can be used for energy, if needed
  - stored as Glycogen
    - Liver
    - Muscles
- Excess converted to fat and stored in the adipose tissue

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Fat:

- Function:
  - Component of cell membranes and nerve fibers
  - Energy Source for muscles
  - Cushions vital organs, thermal regulation
  - Source of all steroid hormones
  - Transports and stores fat-soluble vitamins

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Fat:

- Studies have shown that a low fat diet (<20%) in athletes:
  - Decreases endurance performance compared to a higher fat diet
  - Blunts the normal rise in testosterone after a strength training session

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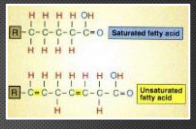
Types of Dietary Fat

- Cholesterol: < 300 mg/day
- Fatty Acids
  - Saturated: unhealthy fats animal fats, eggs, dairy, palm oil and coconut oil
  - Unsaturated: healthy fats
    - Monounsaturated:
      - olives, peanuts, almonds, pecans, avocado, & walnuts
    - Polyunsaturated:
      - Omega-6: Sunflower, safflower, soybean, corn oil
      - Omega-3: Fish (salmon, halibut, sardines, albacore, trout, herring, shrimp, clams, light chunk tuna, catfish, cod); Flaxseed; Canola oil, Walnuts, and Spinach.
  - Trans Fatty acids: unhealthy fats
  - Partially hydrogenated vegetable oil, "vegetable shortening".



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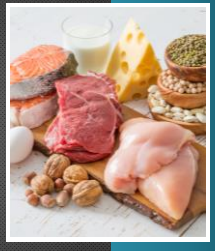
Protein:

- Functions:
  - building and repairing tissue
    - muscles,
    - red blood cells
    - Hormones (insulin and growth hormone)
    - and antibodies (Immunity)
  - Backup energy source



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Do Athletes Need More Protein?

- RDA 0.4g/lb (0.8 g/kg)
  - Most Americans consume 50% more than the RDA
- Both Strength and Endurance Athletes: 0.5 - 0.8 g/lb (1.1 1.8 g/kg)
- Consuming 1.4g/lb or more can inhibit muscle growth & compromise health.
  - Possibly "strain" the liver and kidneys.
  - Dehydration
- Excess protein is converted to FAT!

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Protein Sources:

Meat, poultry or Fish, Beef, Chicken, Shrimp (3 oz)	21	grams
Tempeh (1/2 cup)	15	
Peanut Butter (2 tablespoons)	10	
Tofu (1/2 cup)	9	
Milk or Yogurt (1 cup)	8	
Beans, cooked (1/2 cup)	7	
Cheese (1 ounce or 1 slice)	7	
Egg, cooked (1 medium)	7	
Whole Wheat Bread (1 slice)	5	
Rice, cooked (1 cup)	4	
Corn (1 ear)	3	

Over the course of the day, our collective diet should easily provide all the protein we need so long as we eat a variety of foods.

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Protein Supplements

- It's beneficial to get protein from food, but not always easy or convenient
- Whey protein (from milk - whey & casein)
  - High biological value
- Avoid individual amino acid supplements
  - may disrupt the harmonious balance among amino acids in your body.

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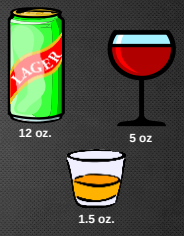
Alcohol: 7 calories/gram

- Moderation!!!
  - One drink per day for women
  - Two drinks per day for men
  - Can't "save up" and drink all at one time!
- Reflects difference between the sexes in weight and metabolism
- Count as a drink
  - 12 ounces of regular beer (150 calories)
  - 5 ounces of wine (100 calories)
  - 1.5 ounces of 80-proof distilled spirits (100 calories)



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People Who Should Avoid Alcohol

- Those who cannot restrict their alcohol intake
- Women of childbearing age who may become pregnant
- Pregnant and lactating women
- Children and adolescents
- Individuals taking medications that can interact with alcohol and those with specific medical conditions
- Individuals engaging in activities that require attention, skill, or coordination, such as driving or operating machinery

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FIBER: Men - 38 grams/day; Women - 21 grams a day

Beans: 1 cup	> 19 grams
Bran cereal or bran muffins:	grams
Peas: ½ cup	> 9 grams
Corn on the cob: 1 ear	grams
Berries: 1 cup,	3 - 4 grams
Potatoes: 1 med potato with skin)	5 grams
Figs and other dried fruits	
• 3 dried figs	10.5 grams
• 3 prunes only	~ 2 grams
Broccoli: ¾ cup	7 grams
Oats: ¾ of a cup has	> 7 grams
Apples: One medium apple	4 grams

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Vitamins and Minerals

- The human body needs 40+ vitamins and minerals
- Best sources are from food
- Many vitamins and minerals have a recommended daily allowance (RDA) or Dietary reference value (DRI)
- Do not provide energy like carbohydrates, proteins and fat
- Regulate physiological processes like red blood cell formation, bone development and water/electrolyte balance

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Zinc

- This mineral aids in post-exertion tissue repair and in the conversion of food to fuel.
- Both male and female athletes have lower serum zinc levels compared with sedentary individuals.
  - Those who train without days off lose zinc even more quickly.
- Studies correlate endurance exercise with periods of compromised immunity—zinc depletion may be one reason.
- Athletes need 30 to 60 mg zinc daily.
  - Beef is major source of Zinc, so may need to supplement
  - Zinc picolinate or monomethionate are most easily tolerated.

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Water

- New guidelines:
  - 8 glasses per day not valid for everyone
  - Needs vary significantly
  - Thirst is a good indicator (under normal circumstances)
  - Water comes from many sources
    - Fluids including coffee and tea
    - Foods, fruits and vegetables
- Athletes still require additional intake of fluids before, during and after exercise to avoid dehydration

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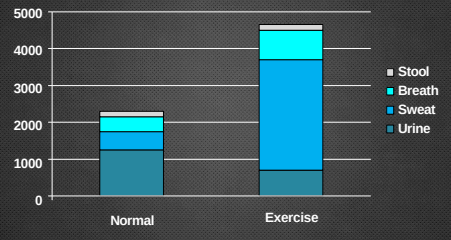
Water Output: Normal vs. Exercise



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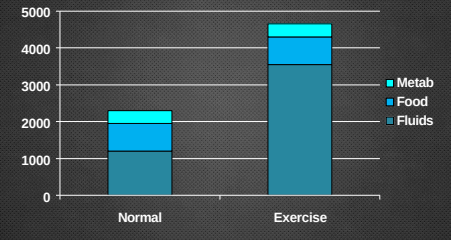
Water Intake: Normal vs Exercise



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Avoid Dehydration

- Sweat is the body's cooling mechanism
- Fatigue is the first symptom of dehydration:
  - 1-2% loss of body weight - difficulty regulating body temperature
  - 3-4% loss impaired muscular performance
  - 6% loss heat illness imminent (heat exhaustion /heat stroke)
- Prevention
  - Wear lightweight, light colored, loose-fitting clothes.
  - Avoid alcohol, or heavy meals.
  - Proper Hydration

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Fluid Recommendations

- Pre-Exercise
  - 500 ml (~ 2 cups) of fluid 2 hours prior to exercise
- During Exercise
  - Cool Fluids
  - 1 liter per hour (~1 cup every 15 minutes)
- Intense exercise > 1 hour
  - CHO 30-60 grams (120-160 calories) per hour
  - Electrolytes (Na+ & K+)
- Post-Exercise
  - Drink at least a pint (2 cups) of fluid for every pound lost

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Hyponatremia

- Low blood Na+ levels - "water intoxication"
- Symptoms:
  - Mild: headache, confusion, malaise, nausea & cramping
  - Sever: Seizure, coma, pulmonary edema, and death
- Predisposing factors
  - Prolonged (3+ hr) high-intensity exercise in the heat
  - Exercising in a sodium depleted state (salt free diet)
  - Use of diuretic medication for hypertension
  - Frequent intake of Na+ free fluid during a long exercise bout
- Prevention:
  - Drink a beverage that contains Na+

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Homemade Sport Drink
Nancy Clark's Sport Nutrition Guidebook, 2nd ed.

- Yield: 1 quart
  - 4 Tbsp sugar
  - 1/4 tsp salt
  - 1/4 c boiling water
  - 1/4 c orange juice (not concentrate) or 2 Tbl lemon juice
  - 3 3/4 c cold water
- Dissolve sugar, salt in hot water, add juice & cold water, chill
- 50Cal, 12gCHO, 110mgNa, 30mgK per cup

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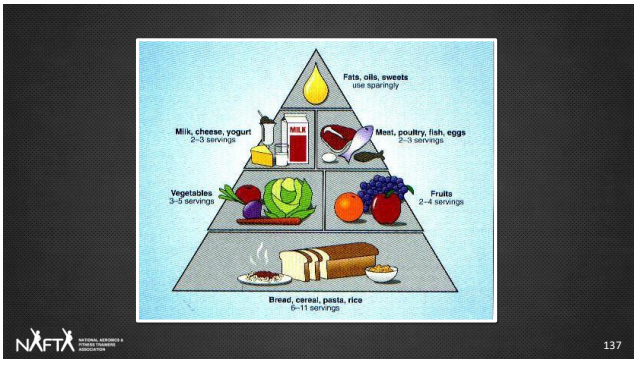
Fats, oils, sweets
use sparingly
Milk, cheese, yogurt
2–3 servings
MILK
Meat, poultry, fish, eggs
2–3 servings
Vegetables
3–5 servings
Fruits
2–4 servings
Bread, cereal, pasta, rice
6–11 servings
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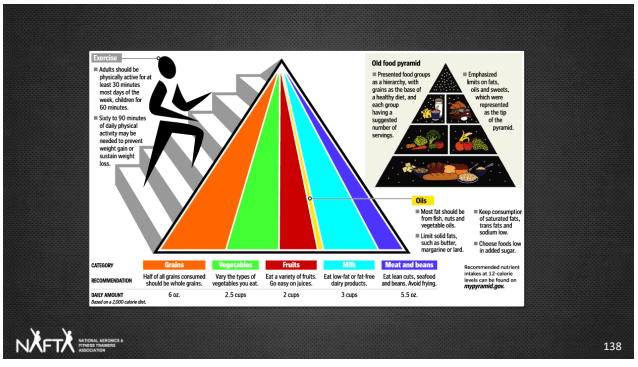
Exercise
Adults should be physically active for at least 30 minutes most days of the week, children for 60 minutes.
Sixty to 90 minutes of daily physical activity may be needed to prevent weight gain or sustain weight loss.
Old food pyramid
Presented food groups as a hierarchy, with grains as the base of a healthy diet, and each group having a suggested number of servings.
Emphasized limits on fats, oils and sweets, which were represented as the tip of the pyramid.
Oils
Most fat should be from fish, nuts and vegetable oils.
Limit solid fats, such as butter, margarine or lard.
Keep consumption of saturated fats, trans fats and sodium low.
Choose foods low in added sugar.
CATEGORY
Grains
Vegetables
Fruits
Milk
Meat and beans
RECOMMENDATION
Half of all grains consumed should be whole grains.
Vary the types of vegetables you eat.
Eat a variety of fruits. Go easy on juices.
Eat low-fat or fat-free dairy products.
Eat lean cuts, seafood and beans. Avoid frying.
DAILY AMOUNT
6 oz.
2.5 cups
2 cups
3 cups
5.5 oz.
Recommended nutrient intakes at 12 calorie levels can be found on mypyramid.gov.
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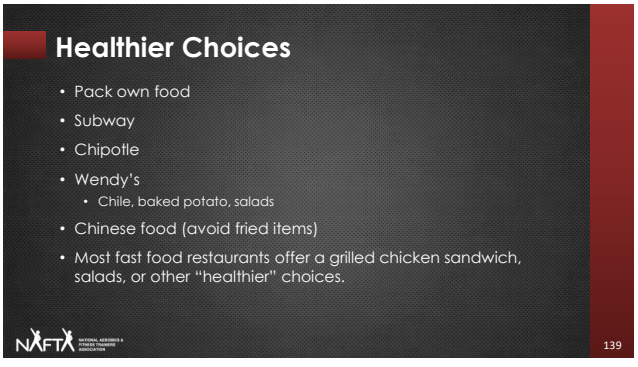
Healthier Choices
Pack own food
Subway
Chipotle
Wendy's
Chile, baked potato, salads
Chinese food (avoid fried items)
Most fast food restaurants offer a grilled chicken sandwich, salads, or other "healthier" choices.
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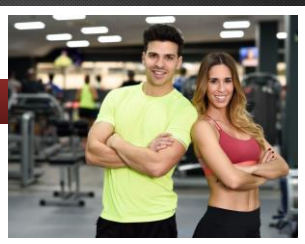
Business of Personal Training

Module 18



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Business Aspects

- The business aspects of personal training can be the most challenging part of the profession unless the trainer
  - has obtained appropriate requirements for getting into the business
  - is aware of the different opportunities for training and preparation and/or resources to engage in the selected opportunity
  - is prepared with a well thought out business plan outlining his/her business operations
  - has developed a plan for marketing his/her services
  - is aware of what he/she can and cannot do with a plan for areas that are outside of his/her scope of practice
  - has developed a personal structure of ethics and professionalism

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Requirements of Personal Training

- Certified
- College Degrees
- Continuing Education
- Specialty Fitness Training

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Personal Training Opportunities

In home training:	Health club:
Limited clientele	Easy access to clients
Limited equipment	Equipment
Driving	Benefits
Higher commission $$	Commission based
Own schedule	Minimal hours/week
Own benefits	

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Income Structure

Every club has its own fee structure and policies for personal training. Many large multi-facility health clubs (chains) have standardized personal training policies and fee structures which dictate the reimbursement fees and/or wages for their trainers. Listed below are some of the most common methods clubs use to reimburse trainers.

- **Percentage of set fees** - The club will set a fee they charge clients per session, or for a package of multiple sessions. The trainer will receive a predetermined percentage of the client fee depending on his/her experience and education. Most facilities provide an incentive program where the trainer can increase their reimbursement by adding specialty training (biomechanics, health conditions and exercise certificate, functional fitness training, etc.), or by gaining more experience or education (complete a Health or Kinesiology degree). In this situation, the club usually assists the trainer in getting new clients.
- **Monthly Fees** - Some clubs or studios charge each trainer a monthly fee to use their facility. In this case, the trainer decides what fee to charge the client and collects revenues from the clients. The trainer is responsible for marketing their services and gaining new clients.
- **Percentage of decided upon fees** - Another less popular option are facilities that allow a trainer to establish their own fee structure for training sessions while the club takes a set percentage of the fee that the personal trainer charges.

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Contractor Vs Employee

- Contractor
- Employee

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Business Plan
Mission Statement
Business Models
Policies and Procedures
Customer Service
Client Communication
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Business Terminology
• Independent contractor
• Self-employed fitness professional
• Employee
• Staff member of a fitness facility where benefits may or may not be provided
• Sole proprietorship
• Business owned and operated by one person
• An independent contractor is typically a sole proprietor
• Corporations
• Legal entities that are considered independent of the business owners
• Limits the financial liability of the company's shareholders
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Client Communication
Effective
Ineffective
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Marketing Your Business and Services

- Product
- Price
- The Market
- Competition
- Costs of Business
- Perceived Value of Services
- Place
- Promotion/Social Media

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Selling Yourself

- Clients Concerns
- Commitment from the Client
- Client Goals

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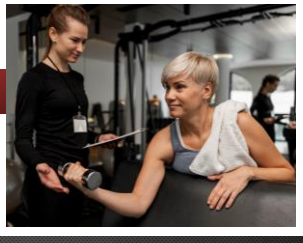
Personal Trainer Scope of Practice



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Scope of practice

- Scope of practice refers to the range and limit of responsibilities normally associated with a specific job or function.
- Scope of practice limits the authority of a personal trainer.
  - Follow industry standards and guidelines
  - Do not provide advice or counseling outside area of expertise:
    - Medical /psychological
    - Nutrition and diet
- Refer to licensed practitioners

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Scope of Practice

- Examples of appropriate scope of practice:
  - Referring to more qualified professionals when necessary
  - Educating a client about the USDA Dietary Guidelines
  - Designing an exercise program for an apparently healthy adult
- Important point: Personal trainers never diagnose or prescribe

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Scope of Practice

- The following are **not** within the scope of practice for a Personal Trainer
  - Medical diagnosis or recommendations
  - Nutritional counseling or designing a specific "diet"
  - Psychological counseling
    - If psychological problems are suspected, refer the client to a healthcare provider for assessment.
    - Anorexia and bulimia nervosa
      - Body-image disorder, or Compulsive exercising
      - Severe or rapid weight loss
      - Excessive concern for weight and appearance
      - Extreme fear of gaining weight
      - Purging (vomiting, or laxative or diuretic use to control weigh)

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Scope of Practice

- Minor injury
  - Suggest RICE, but if last more that a week or two, seek professional medical advice
- Nutritional advise to lose < 20 lbs.
  - 3-day diet diary
  - Recommend small, incremental, healthy changes to their diet
- Psychological barriers to maintaining a regular exercise program
  - Use coaching skills of attending and articulating to help client realize their barriers and decide what course of action to take.

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Standard of care

- Standard of care refers to the appropriateness of an exercise professional's actions in light of current professional standards.
- Based on variables such as the age, condition, and knowledge of the participant.
- Examples of appropriate standard of care:
  - Proper risk-factor and medical screening
  - Exercise testing and physical assessments
  - Proper development of exercise program
  - Proper supervision of a client during exercise

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Negligence

- The definition of negligence has two important components:
  1. the failure to act and
  2. the appropriateness of the action.
- Negligence can be described as acting inappropriately compared with how a reasonable and prudent professional would act under similar circumstances.

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Negligence

- Examples of negligence:
  - Failing to stop a client from exercising above a recommended heart rate (failure to act or act of omission)
  - Encouraging a client to work above his or her recommended heart rate (appropriateness of action or act of commission)

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Comparative and contributory negligence

- Varies State by State
- Comparative negligence
  - measures the relative fault of both the plaintiff and defendant.
  - The court may apportion guilt and any subsequent award and damages.
- Contributory negligence
  - the client plays a role in getting injured.
  - The plaintiff (client) cannot recover damages from the defendant (personal trainer).

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C's Values

- Integrity
- Respect
- Teamwork
- Leadership
- Knowledge
- Excellence

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Referrals
Primary care physicians
Registered dietitians
Physical therapists
Chiropractors
Massage therapists
Orthopedists
Podiatrists
Mental health professionals (counselors, psychiatrists, psychologists)
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Ethics and Professionalism
Confidentiality
Ethical Considerations
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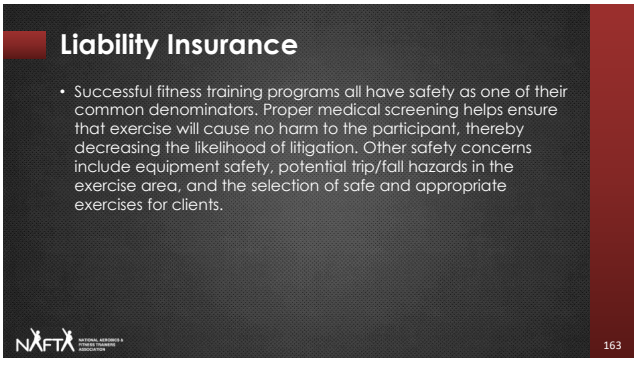
Liability Insurance
• Successful fitness training programs all have safety as one of their common denominators. Proper medical screening helps ensure that exercise will cause no harm to the participant, thereby decreasing the likelihood of litigation. Other safety concerns include equipment safety, potential trip/fall hazards in the exercise area, and the selection of safe and appropriate exercises for clients.
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Insurance for Fitness Professionals

- General liability
  - Covers basic trip-and-fall injuries that occur in a non-business environment
  - Will not provide coverage for accidents that occur at work or while working
- Professional liability
  - Includes coverage based on allegations claiming injury to clients
  - Covers acts of omission (things the personal trainer did not do)
  - Covers acts of commission (actual conduct)
  - Necessary for independent contractors (self-employed personal trainers)
- Disability
  - Provides income protection in the event of injury to the personal trainer
- Medical
  - Provides hospitalization and major medical coverage

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Equipment Safety

- The trainer is also responsible for the safety and cleaning of equipment used as part of personal training sessions. Discuss the process for reporting, repairing, and sanitizing equipment to determine the policy at your facility. It is important to inspect all equipment before use regardless of whether the facility owns the equipment or the instructor. Failure to do so can lead to injury which increases instructor liability.

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