Cardiorespiratory Training

Training that involves and places stress on the cardiorespiratory system.

Integrated Cardiorespiratory Training

What are the benefits and effects of a Warm-up?
- Increased heart and respiratory rate.
- Increased tissue temperature
- Increased psychological preparation for exercise.

A complete warm-up should include what?
A general and specific warm-up.

A low intensity exercise consisting of movements that do not necessarily relate to the more intense exercise that is to follow.

General Warm-Up

Low intensity exercise consisting of movements that mimic those that will be included in the more intense exercise that is to follow.

Specific Warm-Up

Examples of a general warm-up
- Walking on a treadmill
- Riding a stationary bike

Examples of a Specific Warm-Up
- Pushups or squats before weight training.

The accumulation of excessive hydrogen that causes increased acidity of the blood and muscles that is related to, but not caused by, lactic acid.

Acidosis

What is the NASM Warm-Up recommendation for the Stabilization level client?
- 5-10 minutes of Self-Myofascial release
- 5-10 minutes of Static stretching.
- 5-10 minutes of cardiorespiratory exercise.

What is the NASM Warm-Up recommendation for the Strength level client?
- 5-10 Minutes of self myofascial release
- 3-5 minutes of active stretching
- 5-10 minutes of cardiorespiratory exercise.

What is the NASM Warm-Up recommendation for the Power level client?
- 5-10 minutes of Self Myofacial release
- 5-10 minutes of Dynamic stretching.
A ________ provides the body with a smooth transition from exercise back to a steady state of rest.

Cool Down

In a cool-down, intensity of exercise should be decreased to ____% of the max HR for ____ minutes.
- 40% to 50%
- 5 -10 minutes.

F.I.T.T.E stands for what?
Frequency, Intensity, Time, Type and Enjoyment.

At what frequency, intensity and time would a client have to work out to improve general health?
5-7 days a week enough to raise heart and respiration rates 30 minutes a day.

At what frequency and time would a client have to work out to improve fitness?
3-5 days a week 20-60 minutes at 60-90% of max HR.

What is the law of thermodynamics?
Weight loss can only take place when there is more energy burned than consumed.

The ratio of CO2 produced to the volume of O2 consumed.
Respiratory Exchange Ratio (RER)

Elevation of the body's metabolism after exercise
Excess Post-exercise Oxygen Consumption (EPOC)

A three-stage programming system that uses different heart rate training zones based on one's RER.
Stage Training

What is the RER, HR %, energy source and a example activity of Zone One.
RER - .80 - .90
HR % - 65-75
E Source - Muscle Glycogen and fatty acids
Walking or jogging.

What is the RER, HR %, energy source and an example activity of Zone Two
RER - .95-1.0
HR% - 80-85
E Source - Muscle Glycogen and Lactic acids
Activity - Group Exercise Classes.

What is the RER, HR% Energy source and example of an activity for Zone Three
RER 1.1
HR % - 86-90
E Source - ATP/CP and Muscle glycogen
Sprinting

What are the training parameters for Stage 1 (Stabilization Level) clients?
5 minute warm-up followed by a 30-60 minute workout at 60-75% of the max HR.

What are the training parameters for Stage II (Strength Level) clients?
- 5 Minute Warm-Up at 60-75% of Max HR.
  - 1 min 80-85%
  - 5 min 60-75%
  - 1 min 80-85%
  - 5 min 60-75%
  - 1 min 80-85%
  - 2-3 min 60-75%
  - Cool-Down

What are the training parameters for Stage III (Power Level) Clients?
- 5-10 min warm-up
  - 2 min 80-85%
  - 1 min 86-90%
  - 1 min 80-85%
  - 10 min recovery / cool-down

What to watch for during use of stationary bikes, treadmills and ellipticals when a client
has a rounded shoulder or forward head posture.
Watch for grasping of handles. If possible the equipment should be used without handles
to improve stabilization.

Should clients who possess an anteriorly rotated pelvis use bicycles or steppers?
Should be avoided if possible. If they are used empasize hip flexor stretches before and
after use.

Acidosis
The accumulation of excessive hydrogen that causes increases acidity of the blood and
muscle that is related to lactic acid. Increased acid level are associated with
neuromuscular fatigue
How long should the cardio respiratory portion of a warm up be? 
up to 10min

Warm up time for Stabilization
5-10 min Self Myofascial Release
5-10 min Static Stretching
5-10 min Cardiorespiratory exercise

Warm up time for Strength
5-10 min Self Myofascial Release
3-5 min Static Stretching
5-10 min Cardiorespiratory exercise

Warm up time for Power
5-10 min Self Myofascial Release
5-10 min Dynamic Stretching

Adaptations to Cardiorespiratory Training
increase VO2 max
Increase Stroke Volume
Increase Cardiac output
Increase oxidative capacity of muscle
decrease resting heart rate
decrease exercising heart rate

F.I.T.T.E.
Frequency
Intensity
Time
Type Enjoyment

General Health Activity Recommendations
Frequency: 5-7 days per week
Intensity: Moderate
Time: 30 min per day
Type: General activities, walking, gardening

Improved Fitness Recommendations
Frequency: 3-5 days per week
Intensity: 40-80% VO2max or 60-90% of HR Max
Time: 20-6 min per day
Type: Any activity

Law of thermodynamic
body fat reduction can only take place when there is more energy being burned than consumed

indirect calorimetry

can be measure with a metabolic analyzer to detect and individual respiratory exchange ratio.
RER is the ratio of CO2 produced to the volume of O2 consumed

EPOC

excess post exercise oxygen consumption. The state in which the body metabolism is elevated after exercise. It has been shown that splitting the training session into multiple session has the greatest impact on EPOC

Zone 1 RER and heart rate zones
RER .80-.90
Heart Rate %: 64%-75%
Energy System: Aerobic
Energy Source: Muscle Glycogen and Fatty Acids
Activity: Walking or Jogging

Zone 2 RER and heart rate zones
RER .80-.90
Heart Rate %: 80-85%
Energy System: Aerobic/ anerobic
Energy Source: Muscle Glycogen and Lactic Acid
Activity: group exercise class

Zone 3 RER and heart rate zones
RER .80-.90
Heart Rate %: 86-90%
Energy System: anerobic
Energy Source: ATP/CP and Muscle Glycogen
Activity: Sprinting

Aerobic Threshold
the point at which the body can no longer produce enough energy for the muscles with normal oxygen intake. As a result it begins to produce higher levels of lactic acid than can be removed from the body

Zone three can be sustained for how long
not longer than 10-60 sec

Stabilization level cardiorespiratory training
Stage 1
clients should start slow and work up to 30-60min in zone 1. A target of 65-75% max heart rate.
Client who can maintain zone one heart rate for at least 30min two to three times per week will be ready for stage 2

Strength level cardiorespiratory training
this in the introductory to interval training
1. warm up 5-10min
2. 1 min interval 80-85% max heart rate
3. recover back to zone 1, do not proceed into next interval without recovery

Important to alternate days with stage 1 training

Power level of cardiorespiratory training
1. warm up 10 min
2. increase workload every 60 sec until in zone 3 (about 2 min)
3. 1 min in zone 3
4. drop back to zone 2

as improvement ar made the heart rate will drop more quickly in recovery

Circuit training compared to cardiorespiratory training
- Circuit training is shown to be just as beneficial as traditional form of cardiorespiratory exercise for improving and contributing to improved fitness levels
- it is also shown to produce greater levels and EPOC and strength
- produced near-identical level of caloric expenditure for the same given time span when compared to walking at a fast pace