

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 an 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 emphasize 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: 20-60 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 measured 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 sessions 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/ anaerobic

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: anaerobic

Energy Source: ATP/CP and Muscle Glycogen

Activity: Sprinting



Anerobic 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 is 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 is made the heart rate will drop more quickly in recovery



Circuit training compared to cardio respiratory 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 of EPOC and strength
- produced near-identical level of caloric expenditure for the same given time span when compared to walking at a fast pace