



Principles of Training

AEROBIC VS. ANAEROBIC

- ▶ Longer slower exercise AEROBIC
 - ▶ Primarily convert fat for energy
- ▶ Shorter, faster exercise ANAEROBIC

Understanding Energy Production

- ▶ Too much or too little emphasis on a particular energy system will compromise not only your performance but also your ability to recover and risk of injury.
- ▶ 3 energy systems
 - ▶ Phosphagen System
 - ▶ Glycolysis
 - ▶ Oxidative

Phosphagen System

- ▶ High energy system, capable of delivering large amounts of energy, quickly.
- ▶ Only lasts a few seconds; requires maximum or near max efforts
- ▶ Heart rate response lags behind the work effort, therefore HR monitoring is best used here as gauging recovery.

Glycolysis

- ▶ Also referred to as : Glycolytic or lactic acid system
- ▶ Predominately used during maximum effort exercise that lasts 15-90 seconds
- ▶ Primary source of energy is CHO; this reliance on CHO can often results in the production of lactic acid.

Oxidative

- ▶ Also called oxidative system
- ▶ Produces energy slow but has a greater capacity to go on for hours
 - ▶ Endurance athletes

Energy system by duration of exercise

Energy system	Duration
Phosphagen	1-15 seconds
glycolysis	15-90 seconds
Oxidative	>90 seconds

Things to consider with respect to Energy System Development

- ▶ 1. should you consider any nutritional intervention to enhance your performance?
- ▶ 2. what recovery heart rates should you be looking for between intervals or after shorter periods of high intensity?
- ▶ 3. what heart rate zones should you exercise at to cause adaptations and challenge to the desired energy system?

FITT Principle for CV fitness

- ▶ CV fitness Considered to be one of the best indicators of overall health
 - ▶ Aerobic: "with Oxygen"
 - ▶ Continuous activity
 - ▶ Biking, jogging, rowing

Aerobic activities

- ▶ Make your working muscles more efficient at using Oxygen
- ▶ Increase stroke volume
 - ▶ Amount of blood pumped per heart beat
- ▶ Lower resting HR
 - ▶ Lower your RHR the more efficient your heart is working

Frequency

- ▶ How often should we engage in CV activities?

<http://www.csep.ca/en/guidelines/read-the-guidelines>

Beginner vs. advanced

3-7 days/week

Intensity

- ▶ How hard should we be working out
- ▶ Target heart rate zones (found in a previous class 50-95+%)
 - ▶ HR indicates our intensity very easily: how hard/fast the heart is pumping to deliver oxygen to the working muscles; as intensity increases, the heart must work harder to get more oxygen to the muscles.
 - ▶ Moderate to vigorous intensity
 - ▶ WHAT DOES THIS LOOK LIKE?

Time

- ▶ How long?
- ▶ 150 minutes
 - ▶ Bouts of 10+min
- ▶ Depends on the intensity:
 - ▶ HITT workouts are much shorter than steady state (long slow distnaces)

Type

- ▶ What type of cardiovascular activity do we engage in?
 - ▶ Age dependant
 - ▶ Fitness level
 - ▶ Barriers to overcome

Example for notes

- ▶ Jane is a 45 year old fit female. In a chart form create her FITT principle using her estimated max heart rate and the temperate zone (60-70%).

FITT PRINCIPLE			
Frequency			
Intensity (ESD)			
Time			
Type			

Injury

- Overuse injury
- Persistent muscle soreness