



I. The Machine

a. The Computer

- i. Central Nervous System
 1. Brain
 2. Spinal cord
- ii. Peripheral nervous system
 1. Sensory
 2. Motor
 - a. Somatic
 - b. Autonomic: Sympathetic and Parasympathetic

b. The Pump system

- i. Heart: during exercise the heart rate rises, which results in an increase in cardiac output. By determining maximum heart rate we can easily determine the intensity of our training players.
- ii. Blood: made of nutrients, water, electrolytes and plasma protein to be used in skeletal muscles functions. Appropriate hydration is important to maintain aerobic performance
- iii. Vessels: arteries transport blood high in oxygen and low in carbon dioxide from the heart to the skeletal muscle, veins returned blood low in oxygen and high in carbon dioxide back to the heart
- iv. Lymphatic system: provides a drainage system to maintain proper pressure balance between arteries and veins

c. The Fuel system

- i. Carbohydrates: the optimal fuel for EXERCISE
- ii. Proteins: important for recovery and to boost the immune system
- iii. Fats: do need to consume enough; it is a good source of calories!

Composition of the diet for optimal performance:

Carbohydrate: 60% Protein: 15% Fat: 25%

d. The Piston system (muscles)

The human body contains over 400 voluntary skeletal muscles, which constitute 40 % to 50 % of the total body weight. Skeletal muscle performs three major functions: (1) force production for locomotion and breathing, (2) force production for postural support, and (3) heat production during cold stress.

- i. Functions: flexor, extensor, abductor, adductor.
- ii. Ligament: provides connection and stability between joints
- iii. Tendons: connect muscles to skeleton

e. The Respiratory System

“The primary function of the pulmonary system is to provide a means of gas exchange between the environment and the body. Further, the respiratory system plays an important role in the regulation of the acid-base balance during exercise.”

- i. Pulmonary respiration: exchange of gases (O₂ and CO₂) in the lungs
- ii. Cellular respiration: O₂ utilization and CO₂ production by the tissues

f. The Energy System

The predominance of a given energy system during exercise is time-dependent. *“Although the three energy systems have been treated separately, no bodily activities take place during which the necessary energy is produced by only one of the energy systems. All three systems play a role during any activity, whatever it may be. It is true, however, that one system may be of greater importance than another during any given activity”* (Verheijen, 1998)

- i. Aerobic: The oxidative energy sources are carbohydrates, proteins, and fats as they undergo mitochondrial oxidative phosphorylation. The oxidative energy sources predominate during long bouts of endurance exercise.
- ii. Anaerobic
 - 1. The “immediate” sources of energy are ATP and PC, and they predominate for <30 seconds.
 - 2. The “nonoxidative” energy source is glucose during glycolysis, and it predominates for approximately 1 min and 30 seconds.

II. Pre-season Training

The first couple weeks build aerobic capacity and gradually increase intensity and duration of training. Prepare the body for the season by working out the body core and flexibility exercises. You can always add technical and tactical components to the training; just keep monitoring heart rate to ensure team target zone.

a. Aerobic: lower intensity for a longer period of time, e.g. 8v8 and up

b. Anaerobic: high intensity at shorter periods of time 7v7 and down

Period	Format	Reps	Intensity	Speed	Intensity	Rest	Macro
Week 1	8v8	3x11min	Normal	60 mt	60 %	60 sec	2 min

Verheijen, R. 1998. The Complete Handbook of Conditioning for Soccer. Reedswain, Michigan.