Physical Aspects of Fitness

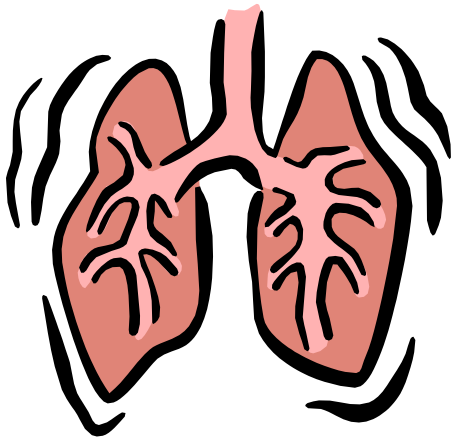
Cardio-Respiratory Endurance (CRE)

Definition

Ability of the heart and lungs to supply **oxygenated** blood to the working muscles for a prolonged period of time

2 types of Endurance:

- Anaerobic
- Aerobic



Anaerobic Fitness

Muscles working over a **short** period of time at a high intensity **without** constant supply of oxygen.

Activity – Timed 100m sprint

Problem: without oxygen the muscles produce **lactic acid** causing pain, forcing you to slow or even stop!!

Anaerobic Fitness

To improve your anaerobic fitness we use:

- Interval training
- Speed work

Improved anaerobic endurance allows you to:

- Sprint for longer
- Get rid of the lactic acid built up in your muscles quicker

Aerobic Fitness

Muscles working **with oxygen**

Exercise for a long period of time at a **lower intensity** like in a **marathon**

Q. Can you think of any other activities that requires a high level of CRE?

Effects on performance?

High level of CRE means:

- You can perform for longer without getting tired
- Need less resting time
- Maintain technique of skill for longer

Can you think of disadvantages of having poor CRE?

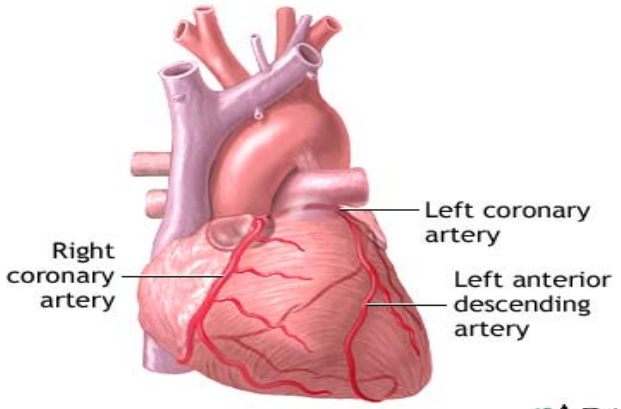
Effects on your body

Lungs will work better

- Breath in more oxygen and get rid of CO_2

Heart gets bigger and stronger

- So is able to pump more **oxygenated** blood to the working muscles



Testing for CRE

Multi-stage fitness test (the bleep test)

- 20m long gym-continuous running
- The 'bleeps' get quicker
- Pace increases the longer you keep running

Q. Why do we use the test at the start of our training programme and then at the end?

Testing for CRE

Recovery rate:

The **faster** your heart rate and breathing returns to normal the better your CRE is.

Why?

Heart is more efficient and does not have to work as hard

Training for CRE

After finding our initial level of CRE there are a number of training methods:

- Continuous running
- Fartlek (varied pace running)
- Circuit training

Which training method would suit the demands of football?

Training For C.R.E

Continuous Training

Continuous training involves training for long periods where the intention is that your heart rate stays in your training zone.

Exercising for 20-30 mins for 3-4 times a week is one example of continuous training.

Helps to develop C.R.E.

Training For C.R.E.

Fartlek Training

Involves running different speeds over different terrains for a long period of time (20-30 mins)

Helps to develop C.R.E.

Training For Physical Fitness

Circuit Training

Involves general exercises which alternate the demands made on the major muscle groups as you complete the circuit. Ie. Sit-Ups, Burpees, Press Ups, Step Ups, Shuttle Runs, Tricep Dips.

Helps to develop Muscular Endurance.

CRE

How do we know how hard we are working though?

By measuring our **heart rate** (how fast our heart is beating) for 1 minute

Do you know how to find your pulse rate?

Maximum Heart Rate

Max Heart Rate is maximum amount of times your heart can beat in a minute

220 – you age (15) = MHR of 205

The harder you exercise the faster your heart beats – indication of how hard your working!

Training Zone

Target training zone:

- Allows you to check how hard you are working to ensure CRE benefit is gained

Training zone for CRE is **60 – 85%** of maximum heart rate

What is **your** target heart rate zone for CRE?

Training Zone

To improve your CRE level you need to work:

- 3 times/week (frequency)
- Within your training zone (intensity)
- For at least 20mins (time)

CRE Training

We need to change how hard we are training

Our bodies adapt to the extra stress from exercise we put on it so our training will get easier

We need to make our training progressively harder

Progressive Overload

Increase difficulty gradually:

- Increase how often – frequency

  (Increase to 4 times per week instead of 3)

- Increase how hard you work – intensity

  (Keep at the top of your training zone)

Progressive Overload

- Increase length of training – time

  (Increase train to 40 mins instead of 30 mins)

- Reduce resting time

  (Reduce resting between stations during circuit training from 1 min to 45 secs)

Progressive Overload

How do you know when to increase the intensity of your training?

- **Re-test** using the bleep test

Warning – too much increase will result in fatigue and increased risk of injury

Effects of Training

Before long you'll be a CRE machine!!

Question Time!!

Thinking caps on!!

1. Name an activity in which you need a high level of cardio-respiratory (heart and lungs) fitness.

Activity: _____

Name a test, which measures cardio-respiratory endurance.

Fitness test _____

Name a type of training which could improve this aspect of fitness.

_____

_____

2. Give **two** example of how improved cardio-respiratory fitness helped your performance.

(i)._____

_____

_____

_____

(ii)._____

_____

_____

_____

3. Read the following statements about the effects of regular exercise on the heart and lungs. Which of the following statements are true and which are false?

(i) The heart takes longer to return to its normal resting rate after exercise.

T/F

(ii) The heart becomes larger.

T/F

(iii) More air can be taken into the lungs with each breath.

T/F

4. During strenuous exercise, your breathing increases.

Why does this happen?

5. State **two** reasons why you should measure your fitness **before** taking part in a fitness-training programme.

Reason 1

_____

_____

_____

Reason 2

_____

_____

_____

6. Suggest a method to ensure that you are working within the correct training zone to gain a cardio-respiratory endurance benefit.

7. To benefit from a fitness-training programme you must ensure that you **overload** the body.

What is meant by **progressive overload?**

8. Why should you make changes to your training programme after a period of time?

9. From the **list** below select **two** principles of training and explain how you used them to improve your cardio-respiratory endurance.

Frequency **Intensity**

Time/ Duration

Principle of training 1 _____

Explanation

_____

_____

_____

Principle of training 2 _____

Explanation

_____

_____

_____