**Recovery Questions**

**Explain the factors that contribute to a performer’s VO2 max. (Half of a 14 marker)**

**VO2 Max factors**

* VO2 max definition – maximum volume of oxygen that can be
* utilised per minute/unit of time
* Relative VO2 max definition – takes into account body weight/ml.kg-1.min-1
* Lifestyle – lack of exercise/smoking/poor diet/fitter/equiv
* Training – continuous/aerobic/fartlek improves VO2 max/stamina/endurance training
* Age – VO2 max decreases with age
* Physiology – number of slow twitch fibres/capillary density/number of mitochondria/haemoglobin content/surface area of alveoli/red blood cell count/efficiency of heart
* Physiology – any other example named in point T
* Genetics – inherited factors of physiology limit possible improvement
* Gender - men generally have approx. 20% higher VO2 max than women
* Body composition – higher percentage of body fat decreases VO2 max/poor diet reduce VO2 max/overweight/obese

**EPOC**

**Outline the function and process of the fast component of the recovery process.**

***(4 marks)***

4 marks for 4 of:

A. EPOC explanation – volume of oxygen consumed in recovery above the resting rate

B. The alactacid/alactic (debt/component)

C. Re-saturation of myoglobin/haemoglobin with oxygen

D. Re-synthesise ATP/PC levels

E. Uses 2-4 litres of oxygen

F. Completed in 2-3 minutes

G. 50% PC stores replenished within 30 seconds/75% within 60 seconds

**Elite swimmers follow structured training programme to develop exceptional levels of fitness.**

**Outline the relationship between ‘VO2 max’ and ‘lactate threshold’. *(3 marks)***

*3 marks for 3 of:*

A. VO2 max – the maximum amount of oxygen utilised/equiv per unit of time/per minute

B. Lactate threshold – the point at which lactic acid starts to accumulate in the blood/OBLA

C. Lactate threshold is a percentage of VO2max

D. The higher the VO2 max, the more the delay in lactic acid build-up/as VO2max increases, so does lactate threshold

E. Trained athletes can exercise for longer periods at the same/higher intensity compared to an untrained athlete/lactate threshold a much higher percentage of VO2 max

**Fatigue**

**Competitive swimmers will often compete in several events and suffer from fatigue due to limited recovery time.**

**Explain the possible causes of fatigue during a race. *(3 marks)***

*3 marks for 3 of:*

A. Build up of lactic acid /accumulation of hydrogen ions/OBLA

B. Glycogen depletion/needed for glycolysis

C. Dehydration/reduces blood flow/loss of electrolytes/increase body temperature

D. Reduced levels of calcium

E. Reduced levels of acetylcholine/slows nerve impulse and inhibits contraction

F. Lack of PC stores