

**PDHPE HSC
Enrichment Day**

2015

Core 2

Factors Affecting Performance Overview

Activity 1/2

How does training affect performance?

Physiological adaptations in response to training

- Resting heart rate
- Stroke volume and cardiac output
- Oxygen uptake and lung capacity
- Haemoglobin level
- Muscle hypertrophy
- Effect on fast/slow twitch muscle fibres

How can nutrition affect performance?

Recovery strategies

- Physiological strategies, e.g. cool down, hydration
- Neural strategies, e.g. hydrotherapy, massage
- Tissue damage strategies, e.g. cryotherapy
- Psychological strategies, e.g. relaxation

Ken Wallace Kayaker





Adaptation	Definition
Resting Heart Rate	
Stroke Volume Cardiac Output	
Oxygen Uptake Lung Capacity	
Haemoglobin Level	
Muscle Hypertrophy	
Effect on fast / slow twitch fibres	





Adaptation	Relationship to Improved Performance
Resting Heart Rate	
Stroke Volume	
Cardiac Output	
Oxygen Uptake	
Lung Capacity	
Haemoglobin Level	
Muscle Hypertrophy	
Effect on fast / slow twitch fibres	

Ken Wallace

Olympic Kayaker – Information from interview with Ken Wallace 2015

A supreme athlete who not only has won world and Olympic titles in K1 500 m but also the K5000m. Showing dominance in both Aerobic and Anaerobic energy systems.

Height of 188cm and weight 89kg.
Resting HR is 42 beats per minute
Max HR as recorded in competition is 200+ beats per minute

Low Body fat = 4% to 5%, therefore high lean muscle mass

High muscle efficiency enabling him to harness more power than other paddlers with consistently fast starts and even faster finishes.

High Lactate threshold, therefore low lactic acid levels allowing him to maintain a faster pace for longer in a race, and have enough anaerobic energy stores for fast finishes

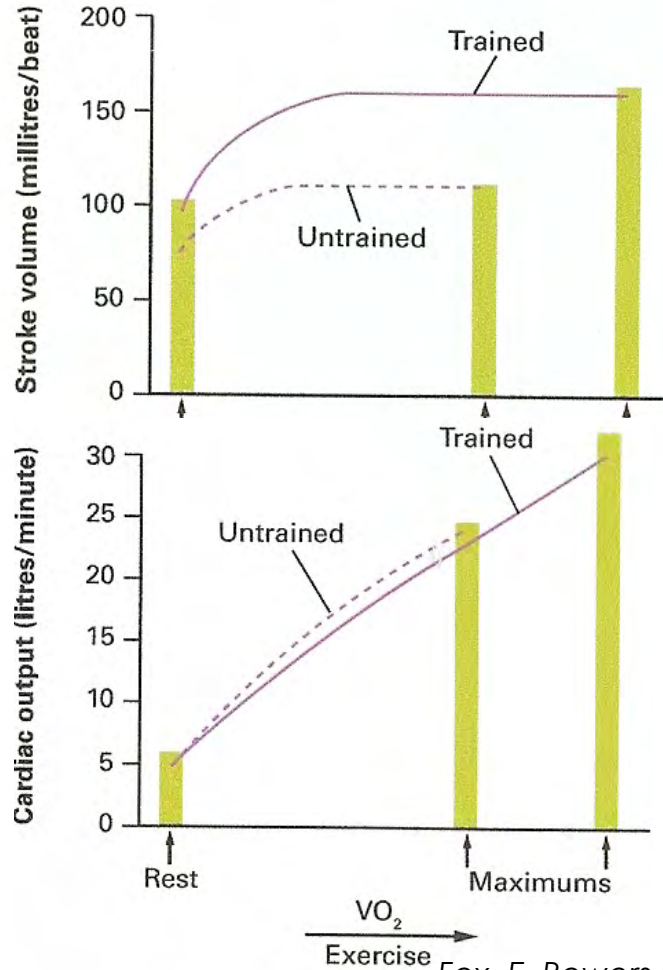
VO₂max is extremely high, (70mls/kg/min)

In the space provided in your work book, explain how these adaptations will impact on Wallace's performance.



Stroke Volume and Cardiac Output

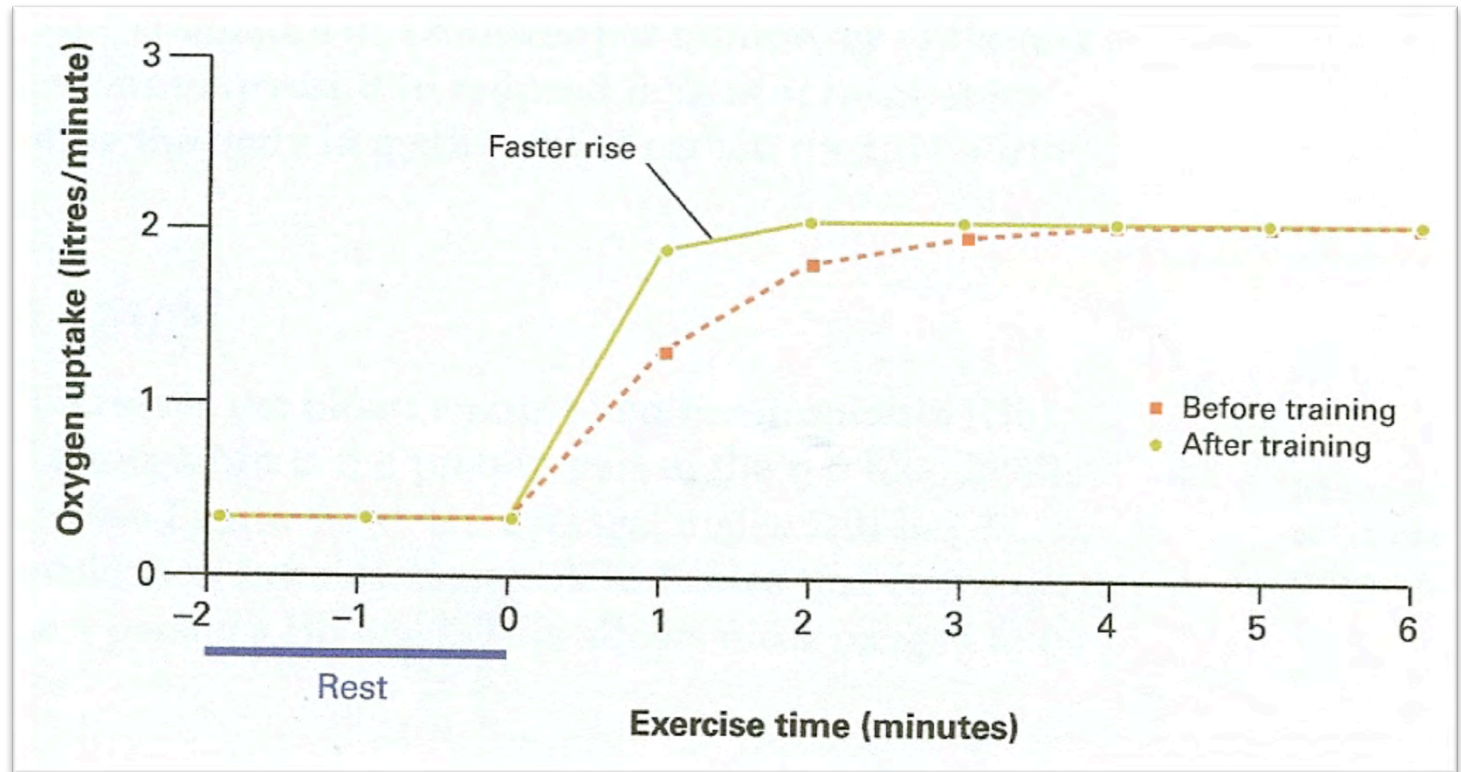
Activity 5



Fox, E, Bowers RW & Foss, M, *The Physiological Basis of Physical education and Athletics*, 4th Ed., Wm C Brown Publishers, Dubuque.

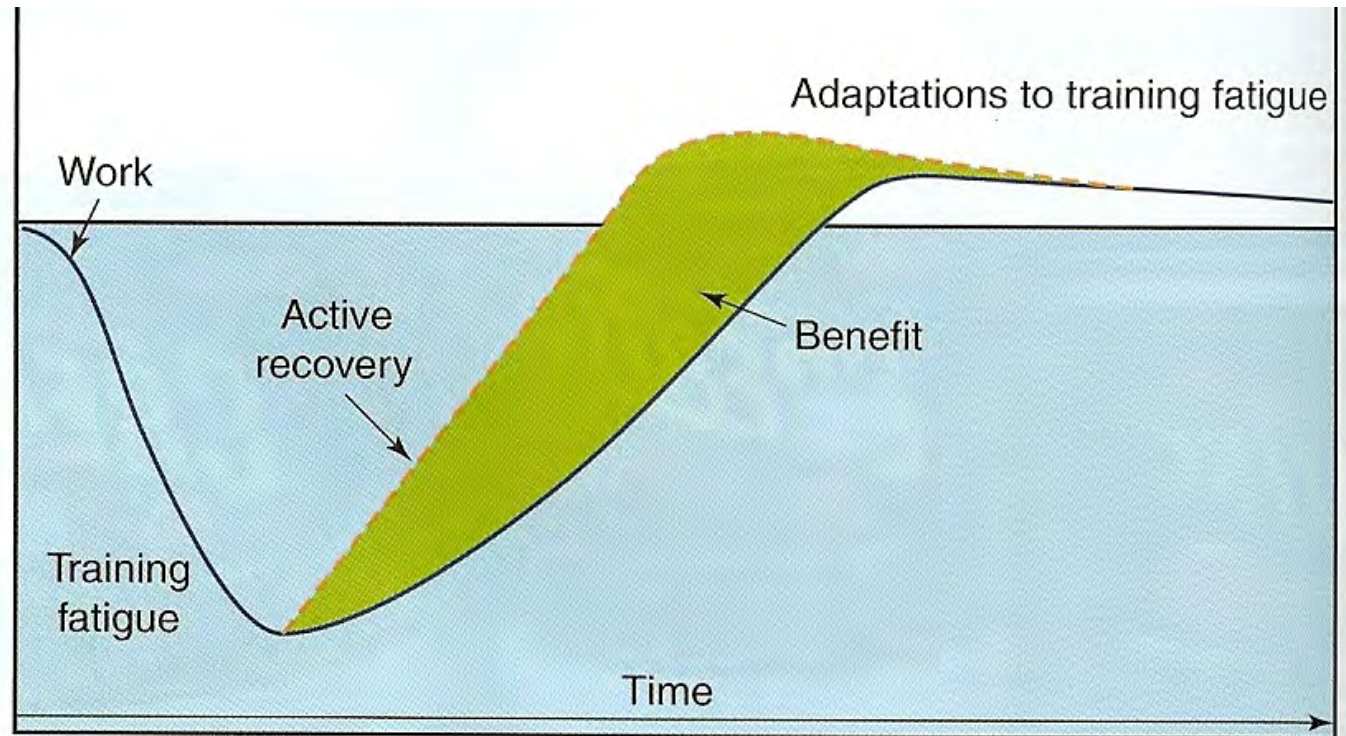
Oxygen Uptake

Activity 6



How can nutrition and recovery affect performance

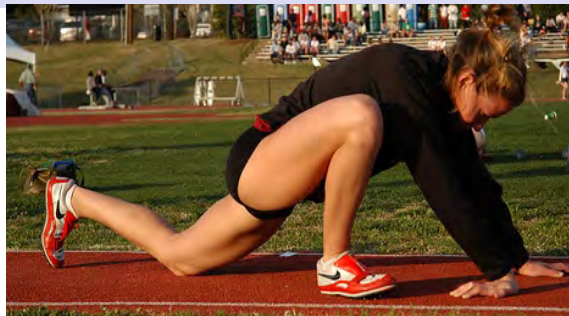
Recovery Strategies



Ruskin, R, Proctor, K., & Neeves, D., *Outcomes 2 HSC Course: Personal development, Health and Physical Education*, 3rd ed. Wiley, Brisbane, 2007

Physiological Strategies

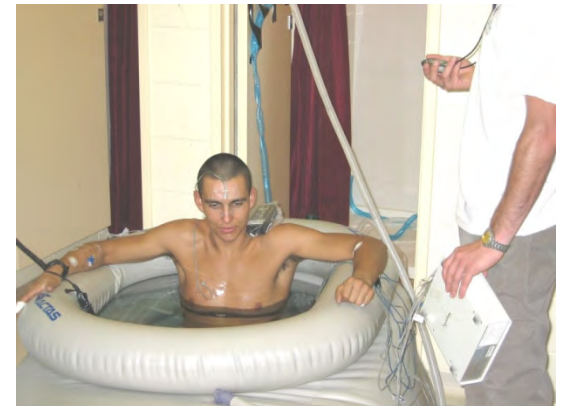
Strategy	Description
Cool Down	
Hydration	





Neural Strategies

Strategy	Description
Massage	
Hydrotherapy	



Tissue Damage Strategies

Strategy	Description
Cryotherapy	



Psychological Strategies

Strategy	Description
Relaxation	



Ken Wallace – Recovery



Ken regularly relies on the following strategies for recovery:

- *Cool down, hydration, massage, cryotherapy & relaxation*

Activity 9 – Why would elite athletes use a range of recovery strategies?