**EXERCISE PHYSIOLOGY INVESTIGATION**

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Investigate elite cycling, in particular the Tour de France.

The 2019 Tour de France is made up of 21 stages and 2 rest days including 2 time trials (sprint). Riders will be covering roughly 3,500km in total and as much as 217km on some days with many of these being through the Pyrenees Mountains and French Alps. The tour de France was first organised in 1903 and has been held every year with the exception of world wars. Starting predominantly as a French field of riders it is now one of the premier world class cycling events attracting riders from all over the world and a global audience.

**Your task is broken down into 2 parts, the first is to research the tour and make notes in preparation for an in-class investigation the second is to design a 6 month periodised plan assuming that the Tour de France is the only major competition the rider will be participating in. this plan must include all elements of a training plan and be specifically designed for riding in the Tour.**

**The research topics to cover are:**

* **Nutritional considerations, energy demands and nutritional requirements**
* **Exercising in extreme conditions (heat/humidity, clod and altitude)**
* **Training programs and periodised plans**
* **Performance enhancing substances**
* **Recovery strategies**

**Periodised plan due Friday 16th August – week 4 – 10 marks**

**In-class investigation – Friday 16th August – week 4 – 50 marks**

**In-class investigation**

**Question 1 (8 marks)**

Many athletes competing at international cycling events such as the Tour de France have been identified as drug cheats even as far back as the 1890’s. Before performance enhancing drugs became illegal in cycling in the 1960’s, early competitors in the race made use of ‘La Moutarde’ a concoction of cocaine solutions in water and ‘la bomba’ an amphetamine mix. In 2005 WADA removed caffeine from the banned list.

1. Outline four negative side effects from the use of stimulants and two physiological responses of the body to suggest why a cyclist would use these substances in a race. (6 marks)

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1. Discuss why caffeine may have been removed from the banned list of substances (2 marks)

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**Question 2 (10 marks)**

Discuss the elements of periodisation that coaches would apply to a training program in the lead up to a major cycling event such as the Tour de France

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**Question 3 (32 marks)**

Stage 16 of the 2019 Tour de France was a 177km ‘flat’ stage won by young Australian Calen Ewan who finished in a time of 3 hours and 57 minutes. This stage was completed in the middle of the French summer as temperatures reached over 35 degrees Celsius. On stage 17 riders will undertake a 200km race through ‘hilly’ terrain followed by stage 18, 208km through the mountains.

1. Riders set off from the start of stage 16 at 10am, the main peloton finishing in just over 4 hours. Discuss the nutritional considerations an athlete on the tour would consider pre-, during and post stage 16. (15 marks)

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1. Identify and explain 2 recovery strategies riders may employ to ensure they are able to race at their best on the following day’s stages. (4 marks)

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1. Cyclists do this to prevent their bodies from overheating. Explain the body’s cooling mechanisms and state why this is an effective strategy. (5 marks)



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1. Athletes spend time acclimatising to altitude to ensure they are adequately prepared for the mountainous stages of the Tour. Identify **four** physiological adaptations of riders that have been acclimatised to altitude and how the physiological adaptations would be an advantage to performance in the mountain stages. (8 marks)

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