BLOOD DOPING: MORE BLOOD, MORE MEDALS

from the recipient, the transfusion is called homologous. A test for detecting homologous transfusions became used at the 2004 Sydney Olympic games because differences between donor and recipient antigens (unique proteins) on the surface of the red blood cells could be detected. Autologous transfusions are much more difficult to detect because all the red blood cells are from the same person.

(7) The World Anti-Doping Agency has been implementing athlete biological passports to overcome the multiple techniques of cheating in sports. In this method, an athlete's baseline biological profile (e.g. amount of natural hormones and blood count etc.) is recorded through obtaining blood and urine samples and this baseline is compared to an athlete's levels before a race or competition. If their race levels are way beyond their normal biological range, they can be accused of doping without need for further proof. This method by-passes the need to find a new detection technique for every new method of cheating that arises.

(8) Though blood doping provides a performance advantage, it also has negative health consequences. All those extra red blood cells thicken the blood and this puts an athlete at risk of blood clots, strokes and heart attacks.

Article Questions

1) What is blood doping?
   It is a method of cheating in sports where red blood cell counts are artificially boosted by taking drugs or through blood transfusions. (1)

2) How does blood doping provide an performance enhancing advantage?
   The extra red blood cells carry more oxygen to muscles (increases VO_2 max). This gives muscles more endurance so that they can perform longer before they get tired. (2)

3) What is one legal way for athletes to increase their red blood cell count?
   They can do high altitude training (1500m or more above sea level). (3)

4) What does EPO stand for and what does it do?
   It stands for erythropoietin and it stimulates the bone marrow to produce more red blood cells which is called erythropoiesis. (4)

5) What makes detecting synthetic EPO difficult?
   Synthetic EPO doesn't last very long in the body so unless it is detected quickly, all traces of it will disappear, even as an athlete benefits from its effects (elevated RBC count). (5)

6) What is the difference between an autologous and a homologous blood transfusion?
   Autologous blood transfusions happen when the blood donor and recipient are the same person but homologous blood transfusions happen when they are different people. (6)

7) How is the athlete biological passport supposed to help catch cheaters?
   The athlete biological passport enables a comparison between baseline levels and competition levels of natural hormones and red blood cell count. If the competition levels are much higher than baseline levels, then this indicates that cheating has likely occurred. (8)