Manipulation of blood and blood components

What is it?

The supply of oxygen to the body can be enhanced using a variety of substances and methods. These include blood doping as well as the administration of synthetic oxygen carriers or substances that enhance delivery of oxygen to tissue. WADA defines blood doping as the use of autologous, homologous or heterologous blood or red blood cell products of any origin if such use is not for the purpose of medical treatment. For medical use stored blood is needed in cases where a patient requires an operation involving a great amount of blood loss. While such blood is usually heterologous, blood can be taken several weeks in advance from patients in good health and returned during the operation.

Status on the prohibited list

The enhancement of oxygen transfer comes under M1 on the list of Prohibited methods.

Examples:

Examples include injecting an athlete with someone else’s red blood cells; removing own blood two to three months before competition, storing it, and then returning it once body has compensated blood volume loss finally resulting in a raised blood volume. Similar effects are reported from training at altitude.

Potential harmful side effects from blood doping

- Heightened stress on the heart and circulatory system
- High blood pressure and thrombosis
- May risk complications during transfusion due to incompatibilities and allergies when doping with heterologous (third-party) blood.
- Sense of uneasiness, anxiety and abdominal pain.
- Foreign fever-inducing substances (pyrogenes) can cause high fever even after a short while.
- Risk of infection with diseases such as hepatitis and HIV.

Who might use it and why?

Competitors in endurance activities, such as marathon and long distance running, cycling and skiing may use blood doping to increase the oxygen-carrying capacity of the blood which in turn will increase their performance.