



PÉCSI TUDOMÁNYEGYETEM  
ÁLTALÁNOS ORVOSTUDOMÁNYI KAR

# Doping

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**DOPING**

# The definition of DOPING

- *The word comes from South Africa, the alcoholic beverage with narcotic effects (pálinka) known as DOP is drunk by the Kaffer tribes (**DOP**) during their cult tribal events.*
- *The word appeared in the English-speaking areas at the end of the 19th century (1889). At that time DOP meant opium or a mixture of anaesthetic drugs*
- *The term DOPE was first used during horse competitions.*



# Definition of Doping



- All natural or artificial drugs, or methods which could enhance the athletic or/and mental performance , and which is known DOPING by WADA (World Anti-Doping Agency).
- The use of a performance-enhancing substance, preparation or physiological compound that contains a Scheduled Substance or a method to mask or accelerate the elimination of a Scheduled Substance, or a Prohibited Method." (Government Decree 43/2011 (III.23.))

# Doping during the ancient times

- Ancient Greek Olympics
- 9th century: the word „dope“ used in english horse racing
- from the beginning of 20th century it appears during the Olympics
- Performance enhancers of plant and animal origin
- 1999 World Antidoping Association



# Doping as a way of using „drugs“

The groups of Doping agents, and  
their typically effects

# Central nervous system stimulators (alcohol, koka, amphetamine derivatives)

Best known amphetamine derivatives:

- 1. Methamphetamine,
- 2. MDMA (methylenedioxy-methamphetamine),
- 3. MDA (methylenedioxy-amphetamine),
- 4. MDE or MDEA (N-ethyl-methylenedioxyamphetamine),
- 5. MMDA (methoxy-methylendioxyamphetamine),
- 6. DMA (dimethoxy-amphetamine),
- 7. TMA (Trimethoxy-amphetamine)
- The effect: the athlete does not feel fatigue, so he/she can do physical activity until he/she is completely exhausted, which usually results in death!

(Adrian Mutu, a Romanian top-flight football player and Mats Wilander (Swedish tennis player), who were caught with cocaine.)



# Sympathomimetics

- Coramin:  
Dilate of the coronary arteries, it can stimulate the cardio-respiratory system, it can cause muscular spasm.
- Pervitin:  
Pervitin or Methamphetamine nowadays known "Speed"
- Ephedrine:  
Its important effects are fat burning, increased ability to concentrate, vigilance, and stimulate the nerve-muscle connections

Effect: It can influence the cardio-respiratory system. Deeper breaths can be taken by dilating the bronchi.



# Nervous system stimulators (strychnine derivatives)

- They belong to the Strychnos plant genus.
- They taste very bitter dissolved in hot water
- They were used as rat poison in the 16th century in Germany, In England they were used to enhance the beer's bitter taste
- They have been used in medicine since the 18th century

Effects: At low doses, they can affect subcortical structures and stimulate muscle performance. At high doses they may cause asphyxia.



# Painkillers (Hydrochlorid derivatives)

- Morphine: used as a painkiller for cancer. It cannot eliminate pain, but it makes the patient live with the disease. In low doses it does not reduce mental activity.
- Codeine: This is a simple morphine derivative found in opium in small doses. It is used in Europe for mild pain relief, antitussives.

Effects: helps to combat pain from fatigue, so one can perform better. On the other hand, this consumption can cause fatigue and death.



The groups of doping agents and t's typically effects

# Hormon products

Testosteron:

- The size and power of the muscle can grow with the athlete's high testosterone level.
- Side effects : acne, weight gain  
disturbed behavior, (agressive behavior).
- Reduction in the size of the testicles and the  
production of testicles sperm production stops.  
Chemically modified testosterone products  
may cause liver dysfunction.



Effects: Taking artificial sex hormone preparations can cause disturbances in the body's hormonal system (e.g.: facial hair in women and strain on the liver).

## Beta-Blockers

- They affect positively hypertension, cardiac arrhythmia, cardiac decompensation, several types of angina.
- Their negative effects: taking them quickly stop can causing a hypertension crisis because the human body gets used to their effects.
- Take home message: taking beta-blockers help to concentrate because they lower the blood pressure and the pulse (sedative effect). It is used by archers and target shooters.



# Blood-doping



- This is a method that is prohibited.
- Before the competition, the athlete's blood is taken and stored for several months.
- After a few sessions, the athlete's body produces enough blood. Then, one week before the competition, the athlete's stored blood is administered by transfusion.
- Effects: blood doping increases the amount of red blood cells and the oxygen-transport capacity of the blood.
- The increased oxygen-transport capacity improves the athlete's aerobic endurance, which is very important during cycling or long-distance running.
- Risk: The amount of blood can cause thrombophilia, thickening of the blood and increase the risk of HIV, hepatitis infections.

# Legislation of the doping agents



# Antidoping Rules

- For the first time, anti-doping rules against cyclists were applied in Belgium, France and Italy at the beginning of the 20th century.
- The first doping test was at the 1968 Olympics in Mexico, after which the anti-doping rules were tightened (24 tests were positive in Athens, 5 in Hungary).
- -1998:A major doping incident at the Tour de France led to the creation of the Doping Agency in 1999



## Idézet

*43/2011 ( III.23.) edict  
The rules of the antidopping activity*

# Famous doping cases



# Ben Johnson

- He was a Canadian sprinter who won the 100 metres in 1988 with a world record of 9.79, a time that was also a world record at the time, beating the champion Carl Lewis.
- Three days later, the athlete Johnson tested positive for doping, with stanosolol (an anabolic steroid) in his system.
- He had to give back his gold medal and Carl Lewis became the winner instead of Johnson.
- Ben Johnson said: he never used any doping substance, Lewis put it in his drink.



## Annus Adrián & Fazekas Róbert

Annus hammer thrower, Fazekas discus thrower

They won a gold medal at the Olympic Games in 2004 in Athens, then they both failed on the doping test.

Fazekas couldn't provide enough urine for the testing (75 ml)

Annus's sample was negative at first, and when he refused to give a new test- following Fazekas's example- he had to return his gold medal too.

In 2009 Annus was forced to stop the sport., In 2012 before the Olimpic games he produced a positive doping test (stanozolol), then he was banned from the sport for the next 8 years



# Lance Armstrong

7-time Tour de France winner, Olympic bronze medal-winning American cyclist.

In 2012 (USADA), the United States Anti-Doping Agency stripped him of all medals (won before 1998) for doping. They took away his Tour de France medal

On 22 October 2012, the International Cycling Union (UCI) confirmed this decision, making it official that Armstrong is not a Tour de France winner. His bronze medal from the 2000 Olympics was withdrawn by the IOC on 17 January 2013. Armstrong admitted in an interview with Oprah Winfrey that the allegations were true.





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# Thank you for your attention!

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