Anabolic Steroid Use by Athletes: Practices and Consequences

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A Brief History Of Anabolic Steroids

- Greek wrestlers - meat to build muscle
- Norse warriors - hallucinogenic mushrooms
- The first competitive athletes - swimmers in Amsterdam in the 1860s
- Testosterone was first synthesized in the 1930's
- The Germans first experimented on dogs than on their own soldiers
- Introduced into the sporting arena in the 1940's and 1950's
- In the 1950’ Russian began dominating in power lifting
- 1960 - The first death in the Olympic games (Kurt Jensen - Amphetamines overdose)
- 1967 - The IOC took action after the death of Tommy Simpson
- 1968 - The IOC decided on a definition of doping and developed a banned list of substances
- Testing began at the Olympic games
Prohibited List – WADA 2006

- Anabolic Agents
- Stimulants
- Narcotics
- Cannabinoids
- Hormones and related substances
- Beta-2-Agonists
- Agents with Anti-Estrogenic Activity
- Diuretics and other Masking Agents
- Enhancement of Oxygen Transfer
- Chemical and Physical Manipulation
- Gene Doping
Steroids are used to:

• Increase muscle bulk:

  1. Shift the nitrogen equilibrium, this gives better utilisation of ingested proteins and increased retention of nitrogen – a temporary effect that requires a high-protein complementary diet but leads to an increase in muscle bulk

  2. Formation of a steroid receptor, leads to an increase in protein synthesis

  3. Compete for glucocorticoides receptors, this blocks the inhibition of protein synthesis which occurs after exercise.

• Increase in the amount of time and the intensity that an athlete can train
Why are they abused?
Anabolic steroids are primarily used by bodybuilders, athletes, and fitness “buffs” who claim steroids give them a competitive advantage and/or improve their physical performance.

Steroids are purported to increase lean body mass, strength, and aggressiveness.

Steroids are also believed to reduce recovery time between workouts.
How are they taken?

- intramuscular
- subcutaneous injection
- by mouth
- by application to the skin (e.g. gels or patches)
1 to upwards of a 100 times normal therapeutic doses of anabolic steroids

two or more steroids concurrently, a practice called “stacking”

alternate periods (6 to 16 weeks in length) of high dose use of steroids with periods of low dose use or no drug at all. This practice is called “cycling”

“pyramiding”

Doses of anabolic steroids used will depend on the particular objectives of the steroid user
<table>
<thead>
<tr>
<th>Week</th>
<th><strong>Anapolon</strong> (Oxy-metholone)</th>
<th><strong>Sustanon</strong> (4 Testosterone-esters)</th>
<th><strong>Deca</strong> (Nandrolone-decanoate)</th>
<th><strong>Dianabol</strong> (Metandienone)</th>
<th><strong>HCG</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50 mg/d</td>
<td>250 mg/w</td>
<td>400 mg/w</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>100 mg/d</td>
<td>500 mg/w</td>
<td>400 mg/w</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>150 mg/d</td>
<td>750 mg/w</td>
<td>400 mg/w</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>100 mg/d</td>
<td>750 mg/w</td>
<td>400 mg/w</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>750 mg/w</td>
<td>200 mg/w</td>
<td>50 mg/d</td>
<td>5000 IU/w</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>500 mg/w</td>
<td>200 mg/w</td>
<td>45 mg/d</td>
<td>5000 IU/w</td>
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<tr>
<td>7</td>
<td></td>
<td>250 mg/w</td>
<td>200 mg/w</td>
<td>40 mg/d</td>
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<td>8</td>
<td></td>
<td>250 mg/w</td>
<td>100 mg/w</td>
<td>30 mg/d</td>
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</tr>
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<td>9</td>
<td></td>
<td></td>
<td></td>
<td>20 mg/d</td>
<td></td>
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<td>10</td>
<td></td>
<td></td>
<td></td>
<td>10 mg/d</td>
<td>5000 IU/w</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5000 IU/w</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5000 IU/w</td>
</tr>
</tbody>
</table>
Substances which are taken during and after a longterm application of AAS to fight against their side effects.

<table>
<thead>
<tr>
<th>substance</th>
<th>effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCG</td>
<td>stimulation of testosterone synthesis</td>
</tr>
<tr>
<td>Tamoxifen-Citrat (Nolvadex)</td>
<td>antiestrogen</td>
</tr>
<tr>
<td>Clomiphene-Citrat (Clomid)</td>
<td>stimulation of testosterone synthesis, Antiestrogen</td>
</tr>
<tr>
<td>Clenbuterol</td>
<td>increase of lipolysis, increase of muscle mass</td>
</tr>
<tr>
<td>Aminogluthethimid (Cytadren)</td>
<td>antiestrogen; anticatabolic effect</td>
</tr>
<tr>
<td>Cycofenil (Fertodur)</td>
<td>stimulation of testosterone synthesis, antiestrogen</td>
</tr>
</tbody>
</table>
Anabolic Agents

1. AAS –
   A. Exogenous - clostebol, fluoxymesterone, metandienone, metenolone, nandrolone, stanozolol
   B. Endogenous – androstenedione, DHEA, testosterone
2. Other Anabolic Agents –

Clenbuterol, Zeranol, Tibolone, Zilpaterol
Designer Steroids - THG
What is Tetrahydrogestrinone?

- An anabolic steroid based on the steroids **Trenbolone and Gestrinone**
- Both of the parent compounds are only suitable to be administered by injection

By modifying the 17a position THG was able to be administered orally.

THG is a very strong steroid

- Increasing the chance of liver damage
The Dangers of Steroids.

Apart from getting caught.
Short-Term Effects

The major effects of anabolic steroid use include liver tumors, jaundice, fluid retention, and high blood pressure.

For men, additional side effects include:

- shrinking of the testicles
- reduced sperm count
- development of breasts
- baldness
- infertility
For women, additional side effects include:
  • growth of facial hair
  • deepened voice
  • changes in or cessation of menstrual cycles

For adolescents, additional side effects include:
  • accelerated puberty changes
  • growth halted prematurely (due to premature skeletal maturation)
Black Market
Detection and Cheating
Catheter
Thank you for your attention!!!