Anabolic Androgenic Steroids

Group 6, Question 2
Introduction

1. How many and what type of individuals use AAS?
2. When do these individuals start using AAS?
3. How are AAS commonly administered within the body?
How many and what type of individuals use AAS?

- misconception of elite athletes (1)
- majority are non-athlete weightlifters and recreational body builders (1)
- mostly well-educated men under the age of 50 years old (1,3)
- prevalent in the United States but rare in Eastern Asia (1)
- approximately three million AAS users in the United States (2,4)
When do these individuals start using AAS?

- AAS use typically begins after the teenage years (1,3)
- start using when 25-26 years old (3)
- goal: to look leaner and more muscular (1)
How are AAS commonly administered within the body?

- most self-administer by intramuscular injection (2,3)
- consume highly supraphysiologic doses: average dose of 500-1000 mg/week (1,3)
- most frequent: testosterone, boldenone, and trenbolone (1)
- stacking: combine various steroidal and nonsteroidal drugs
  - diuretics make detection of AAS more difficult (1)
  - opiates aid in muscle and joint pain (1)
A league of their own: demographics, motivations, and patterns of use of 1,955 male adult non-medical anabolic steroid users in the United States
Jason Cohen, Rick Collins, Jack Darkes, & Daniel Gwartney

- **Purpose**: To create a more complete and accurate description of common AAS use
- **Methods**:
  - Survey containing 291 questions
    - Demographic information, patterns of AAS use, motivation for AAS use, AAS-induced side effects, medical history, other drug use, and diet.
  - Online format was chosen to recruit a large sample size and guarantee anonymity.
  - Participants: 1,955 male AAS users in the United States
    - Gathered through posts on online bodybuilding/fitness websites and an advertisement in a bodybuilding magazine
• **Results**: Who uses AAS?
  ○ Mostly Caucasian men with an average age of 31.1 years
  ○ Well-educated and employed
    ■ Higher average income than the general population
  ○ Perceived themselves to be competitive and motivated; most described themselves as perfectionists.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian/White</td>
<td>1727</td>
<td>88.5%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>83</td>
<td>4.3%</td>
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<tr>
<td>Multi or Biracial</td>
<td>41</td>
<td>2.1%</td>
</tr>
<tr>
<td>Asian</td>
<td>26</td>
<td>1.3%</td>
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<tr>
<td>African-American</td>
<td>25</td>
<td>1.3%</td>
</tr>
<tr>
<td>Native American</td>
<td>19</td>
<td>1.0%</td>
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<tr>
<td>Middle Eastern</td>
<td>12</td>
<td>0.6%</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>0.6%</td>
</tr>
<tr>
<td>Pacific Islander/Native Hawaiian</td>
<td>7</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest Level of Education Obtained to Date</th>
<th>AAS Respondents</th>
<th>*US Census</th>
<th>Percent Difference between AAS Users and US Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not graduate high school</td>
<td>0.9% (n=17)</td>
<td>16.3%</td>
<td>-15.4%</td>
</tr>
<tr>
<td>GED</td>
<td>2% (n=39)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>High school diploma</td>
<td>23% (n=448)</td>
<td>31.1%</td>
<td>-8.1%</td>
</tr>
<tr>
<td>Vocational school</td>
<td>5.1% (n=100)</td>
<td>3.6%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>33.2% (n=847)</td>
<td>15.6%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Master degree</td>
<td>7.6% (n=149)</td>
<td>5.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Professional degree (e.g., MD, JD)</td>
<td>3.7% (n=72)</td>
<td>1.4%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1.5% (n=30)</td>
<td>1.0%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Figure 1: Race/Ethnicity
Figure 2: Level of Education
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Figure 3: Employment Status

Figure 5: Annual Household Income
Results: What kinds of AAS are used?

○ Single ester testosterones, methandrostenolone, nandrolone decanoate are most common

○ Average AAS dose = 500-1000 mg/week

○ Additional drugs often used to prevent/treat side effects or enhance AAS effectiveness

Figure 7: Typical Weekly Testosterone Dosage
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- **Results**: Why use AAS?
  - Most common motivations: increased muscle mass, increased strength, improved physical appearance
  - Involvement in professional sports was the least common motivation for AAS use.

- **Results**: When do people use AAS?
  - Average age of first AAS use was 25.81 years
  - 94% began using AAS at 18+ years of age
  - Average length of AAS use was 5.53 years
  - Most began using AAS in their first five years of weight training
Results: How do people use AAS?
- Most participants combined AAS use with 4-5 workouts per week and a fairly strict, protein-rich diet
- AAS are commonly “cycled”
- Injection is the most common method of administration (95% of participants)

Conclusions
- Most AAS users are well-educated, high-functioning Caucasian men around age 30 who are NOT professional athletes.
- Efforts to prevent AAS use would likely be more effective if they were directed more toward this “typical” AAS user, rather than focused on the illicit use of AAS in professional sports.
The Lifetime Prevalence of Anabolic-Androgenic Steroid Use and Dependence in Americans: Current Best Estimates
Harrison G. Pope MD, MPH, Gen Kanayama MD, Alison Athey BA, Erin Ryan BA, James Hudson MD, and Aaron Baggish MD

Purpose: To approximate the number of Americans that have used AAS at some point in their lives

Methods:
1) Found 4 qualifying youth surveys for analysis
   -- Criteria: a national survey repeated over multiple years
   -- Inquired about lifetime
2) Used mathematical models to extrapolate from these surveys and generate prevalence estimates for the current overall American population

Results:
- Survey measuring use in adults 19 - 28 found a prevalence of 1.58% or 3.1 million
- Of those 3.1 million, 30% develop a dependence → 1 million have experienced AAS dependence
- Male to female ratio for lifetime use is 15 to 1 (few women aspire to extreme muscularity)
- No large difference between racial groups in prevalence of AAS use
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Harrison G. Pope MD, MPH, Gen Kanayama MD, Alison Athey BA, Erin Ryan BA, James Hudson MD, and Aaron Baggish MD

**FIGURE 1.** Estimated mean cumulative percentage of anabolic-androgenic steroid (AAS) users who have initiated use by a given year of age, based on five American studies collectively evaluating 2,549 AAS users.
Conclusion

- Focus on the majority of AAS users: non-athlete young men
- Raise awareness for “typical” user
- Most are recreational weight-lifters
- Average age of first use is 25.8 years
- More regulation and education about risks
References


