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Effects of Anabolic Steroid among Professional Bodybuilders and its Reflection on their Health

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ABSTRACT

Aim of the Study: The current study emphasizes on the effects of anabolic steroid on health of professional body builders and misuse of them with growing global concern along with serious implications for health, sports ethics, and social well-being.

Methodology: The subjects were selected from 2 major cities (Lahore & Faisalabad) having proper facilities with age (18-40) years. This study examines the prevalence, patterns, and health consequences of anabolic steroid use among professional bodybuilders. Demographic variables as Mean ± S.D. calculated in terms of Age (26.6 ± 1.3), Weight (85.4 ± 1.4) and Height (1.65 ± 1.2) of all the athletes. A cross-sectional survey of (n=100) athletes across 20 fitness centers in Lahore and Faisalabad revealed widespread AAS utilization, with testosterone being the most frequently consumed compound. A sample of 20 subjects was also selected of having no AAS intake for further comparison. Targeted sampling technique utilized & data were collected by structured questionnaire as adapted from "Michael Perko's validated survey on steroid use". The reliability checked through Cronh Batch Alpha and its value is 0.77. The results were analyzed through SPSS-26 and found significant at 0.05.

Findings: The study revealed that major athletes perceived that use of AAS steroid in longer terms resulted in respiration, brain and cardiac issues.

Conclusion: The study concluded that regular utilization AAS for long period of time have a serious health issue for athletes.

Keywords: Anabolic-Androgenic Steroids, Testosterone, Bodybuilders, Health.

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1. INTRODUCTION

In last few decades the use of anabolic-androgenic steroids uses increased not only n recreational activities but also in muscle building sports as well, especially in body building sports (Nieschlag & Vorona, 2015). Now-a-days athletes are not in the favor of hardworking and everlasting abilities that have been produced through regular training and effort. The short cut ways have been adopted in the field of sports era through using steroids and other supplements. One of the famous usages of performance enhancement is anabolic-androgenic steroids (Zahnow etal., 2018). AAS are synthetic derivatives of

testosterone widely used to enhance muscle growth, strength, and performance (Frati et al., 2015). While clinically prescribed for certain medical conditions such as hypogonadism or delayed puberty, their non-medical use in sports and bodybuilding poses major risks. Globally, AAS use is common among both elite and recreational athletes. Although many countries strictly regulate their distribution, illegal access remains widespread (Myhre & Fineide, 2025). In Pakistan, bodybuilding has rapidly expanded as a sport and cultural practice, but regulatory mechanisms remain weak (Myhre & Fineide, 2025). This has allowed the proliferation of unmonitored steroid use, often promoted by gym trainers or peers as quick solutions for achieving muscular physiques. These promotions are done as a result of monetary benefits that are offered to these Gym Trainers. As a result for them AAS impact a strong effect on human body performance in terms of strength and power (Hartgens and Kuipers, 2004). Additionally, many of these drugs are basically illegally obtained (i.e smuggled into the country) as they cannot pass the basic regulation tests held by PCSIR and the relevant drug authority, the drugs are then marketed from low level areas at the start, in which promotions are made through supporting the elements (instructors) through finance and other means, and then they are promoted by them to the public mass at large (survey study). The steroids, due to their nature, often give two types of results, one being the result that is required by it, the other that it does neither good but harm. The abuse of steroid especially AAS not only resulted in respiratory problems but also affected the brain and cardiac functions as well (Cole et al., 2019). In one way the drugs is then, becoming massively popular, goes straight into the market and after being a success in the lower tier of public, it is then promoted or presented to Elite athlete. One may argue over here that the steroids were given to the lower class public to test it, which is actually true, at times, the companies that are projecting such projects do not have the required testing facilities to test their products, so the best way of doing this is to present it to the public masses in lower class of a society. By doing that a highly dangerous phenomenon endangers lives at large, fake certification attempted and granted to non professional athletes trainers and doctors (survey study 2022). Furthermore, the AAS steroids presented to the athletes and by doing that a false concept has been spread in the era of bodybuilding every way this method endangers lives and should be banned as if impacted negativity among sports era (Solakovic et al., 2015).

The previous decade studies revealed that harmful effects has been seen in the athletes who has been addicted to take AAS (Sader et al., 2001). On other study indicated that use of AAS steroid not only increases the muscle size power but also effects in cardiovascular complications like haematocrit (a percentage of blood volume made up of RBC carry oxygen) and coagulation of intracardiac thrombosis and stroke Nieschlag & Vorona (2015). In previous research the investigated indicates that between 15% and 30% of gym users worldwide have experimented with anabolic steroids. Studies link long-term misuse to liver toxicity, cardiovascular disease, hormonal imbalance, infertility, psychiatric disorders, and premature death (Bonetti, 2008; Di Paolo, 2007). Athletes are often motivated by the desire for rapid muscle gain, improved physical performance, and enhanced appearance. Social pressures, including peer influence, media portrayals of masculinity, and body dissatisfaction, further fuel misuse (Wright et al., 2000). Most of the athletes at university level use dietary supplements with additional steroid not only enhance their body physique but also improve their performance in and outside the competitions (Gill et al., 2022). Similarly, athletes having injuries and pain relief in the form of pain killers and steroids nor only to get rid of from pain but get rid of respite from acute and chronic injuries along with rehabilitation protocols (Javed et al., 2021; Gill et al., 2021; Gill et al., 2022 & Gill et al., 2023). All these circumstances not only struck them in serious conditions but also banned from world health organizations and professional attitudes.

The intake of AAS on regular basis has serious psycho, behavioral and liver dysfunction. Although severe side effect appeared as it used in long term protocols. Irregularly utilized AAS led to optimistic social and mental traits to users similar to low confidence, short self-esteem, suffered aggression, childhood conduct disorder and high risk behavior (Van et al., 2010). In Pakistan, the demand for bodybuilding success, coupled with inadequate regulation, creates fertile ground for steroid abuse. Gym coaches frequently provide unverified products, while athletes rely on misinformation about supposed “safe” use. Several

media reports have linked sudden deaths of young athletes to steroid misuse. Yet, systematic academic research on this issue in Pakistan remains limited, making this study particularly significant (Hussain et al., 2025). In Pakistan there has been no research related to Anabolic steroids on athletes especially build builders. So there is a gap in terms of Anabolic steroids intake among bodybuilders to do such kind of research in sports era in Pakistan.

1.1 Study Objectives

- To explore the usage of Anabolic steroids (AAS) in Lahore and Faisalabad among bodybuilders.
- To search the responses from athletes about Anabolic steroids (AAS) intake in short and long term health issues.
- To educate the bodybuilders about positive and negative values of using AAS steroids.
- To check the relationship between AAS steroids and performance.

1.2 Research Questions

To seek the stated objects they will seek the answer to the following questions:

RQ1: The Anabolic steroids steroid effect the heath through respiratory tract, brain and cardiac function.

RQ2: Is there a direct relation between Anabolic steroids and health issue of bodybuilders?

RQ3: The Anabolic steroids enhances the power and strength in short version in take.

1.3 Research Hypotheses

H0: The long term utilization of Anabolic steroids has no significant effect on the health of an athlete

H1: The long term utilization of Anabolic steroids has effect on the health of an athlete.

H2: There is a relationship between AAS intake steroid and performance.

1.4 Ethical Considerations

Each participant filled a consent form and read out all the instruction as they were the part of the research activities throughout the research procedure.

2. METHODOLOGY

The study is all about bodybuilding and intake of anabolic steroid. It's a survey research in which the data has been collected from two major cities of Punjab having proper facilities of gymnasium. A total of 143 athletes related with body building at all levels included in this study. Out of that 100 athletes filled the form by explaining the purpose and identifying the use of AAS. A sample of 20 subjects having no usage of AAS steroids utilized for future comparison. The demographic variables Age, Weight and Height were also taken from the respective athletes. This study investigates the prevalence, motivations, and consequences of steroid use among bodybuilders in Lahore & Faisalabad, situating the findings within broader global research. A cross-sectional survey was conducted across 20 gyms approximately in Lahore and Faisalabad. The data consists of male and female perception and 60 percent of data collected from Lahore and 40 percent collected from the Faisalabad community respectively. Data were collected using a structured questionnaire adapted from *"Michael Perko's validated survey on steroid use"*. The adopted questionnaire covered demographics, patterns of steroid consumption, motivations, and also reported health effects. The reliability checked through Cronh Batch Alpha and its value is 0.77. The results were analyzed through SPSS-26. The total responses were analyzed using descriptive and inferential statistics with SPSS-26. A majority of respondents reported current or past steroid use. Testosterone was identified as the most widely consumed steroid (46%). Building muscle mass, enhancing power in muscles and increasing strength is the ultimate achievement of using AAS, by achieving competitive advantage in

bodybuilding contests. Influence of trainers, peers, and exposure to idealized body images. Later on it was observed that acne and stretch marks, hypertension, arrhythmia and fluid retention were appeared as in dermatological cardiovascular side effects. Most of the athletes perceived that use of AAS resulted in serious health issues. The major psychological and reproductive issue was gynecomastia, decreased fertility, aggression, mood instability and depressive episodes. Correlation analysis revealed a significant relationship between frequency of steroid use and severity of side effects. Regression analysis confirmed that both duration and dosage of steroid use were strong predictors of adverse health outcomes.

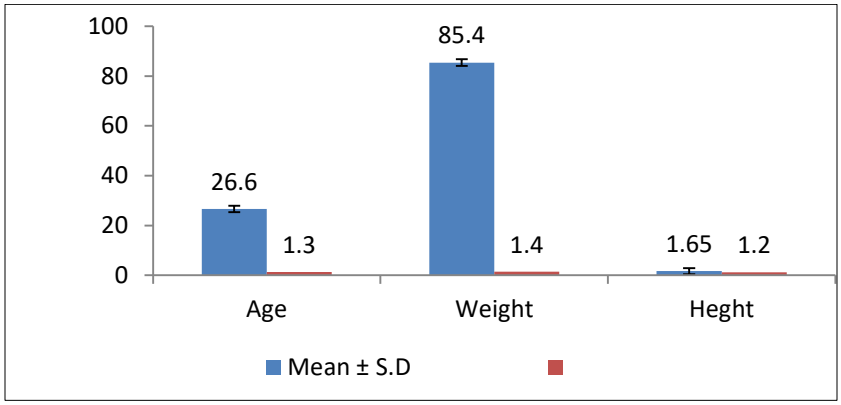
3. RESULTS

The age resulted which participated in this research has age 18 years to 40 years. With average age is 26.6 ± 1.3. Their average height is 1.65 ± 1.2. Along with their weight which is 85.4 ± 1.4 respectively. The above table and figure showed their demographic variables. The values are shown in table 1 and figure 1 respectively.

Table 1: *Shows the demographic variables of data collected from two major cities of Punjab (Lahore & Faisalabad) Age, Weight and Height*

Demographic Variables		
Age	**Weight**	**Height**
26.6 ± 1.3	85.4 ± 1.4	1.65 ± 1.2.

Figure 1: *Shows Demographic variables*



The study also contained sample from twenty (20) gyms from Lahore and Faisalabad and subjects of athletes which were not addicted or not taking the Anabolic steroids since 1 year. The results of that were utilized in the future comparison in research.

Table 2: *Shows the 100 responses collected from the two major cities of the Punjab, Lahore and Faisalabad*

Lahore Data Collection		
No of Gyms	**Athletes Responses**	**%values**
Gym-1	8	8.34
Gym-2	7	7.29
Gym-3	6	6.25
Gym-4	8	8.34
Gym-5	10	10.41
Gym-6	11	11.46
Gym-7	7	7.29
Gym-8	5	5.21
Gym-9	4	4.17

Gym-10	3	3.1
Gym-11	1	1.04
Faisalabad Data Collection		
Gym-1	4	5.13
Gym-2	5	6.41
Gym-3	3	3.85
Gym-4	2	2.57
Gym-5	3	3.85
Gym-6	4	5.13
Gym-7	3	3.85
Gym-8	2	2.57
Gym-9	3	3.84
Gym-10	1	1.28

The data were collected from two major cities of Punjab (Lahore and Faisalabad) 70 percent data collected form Lahore including 10% females and 40 percent data collected from Faisalabad respectfully.

The responses were collected and put it in SPSS-26 software for further analysis. The collected data were inserted in SPSS-26 and the results showed significant 0.000*****.**

3.1 Results of Descriptive Statistics

The descriptive statistics data of the sample of 100 male students whereas 143 survey questionnaires were distributed among samples covering the demographic variables of Age, Weight, Height and types of sports (Body building) and participation level. These characteristics provide inside into the diversity and representation of the participants included in the study.

Table 2: *Age Distribution of Male Athletes having AAS selected from Lahore.*

Age Level (years)	**Frequency**	**Percentage (%)**
18-22	19	31.67
23-26	15	25
27-30	6	10
31-34	7	11.67
35-38	8	13.34
39 and above	5	8.34
Total	**60**	**100%**

The majority of the participants (31.67 %) were between 18-22 years. A notable proportion were (25 %) was in the age of 23-26 years of age, while 13.34 % were fall in the age group of 35-38 years' category. Only 8.34% were aged 39 and above, indicating that most respondents were young adult athletes in the early and peak stages of their career as mentioned in the Table 2 respectively.

Table 3: *Age Distribution of Male Athletes having AAS selected from Faisalabad.*

Age Level (years)	**Frequency**	**Percentage (%)**
18-22	10	16.67
23-26	8	13.34
27-30	5	8.34
31-34	6	10.0
35-38	7	11.67
39 and above	4	6.67
Total	**40**	**100%**

The highest value of the participants was (16.67%) were between 18-22 years and the lowest level of participation were 6.67 % of age group was 39 and above. Only few participated athletes were 30 and above which indicate that most of the participated athletes were young. This has been shown in the table 3 respectively.

The data was expressed in Mean Standard ± deviation analyzed through SPSS (Statistical Package of Social Science) Ver-26 (SPSS Inc, Chicago II, and USA), correlation coefficient (r) and significant value calculated.

Table 4: *Shows the Educational Level of Selected Athletes that participated from Lahore and Faisalabad*

Educational Level	Frequency	Percentage (%)
Matriculation	16	16.0
Intermediate (FA/FSc)	36	36.0
Bachelors Degree	23	23.0
Masters Degree	17	17.0
M Phil or Higher	8	8.0
Total	**100**	**100%**

The maximum subjects participated (36 %) held at intermediate level reflecting a relatively educated students participated in this study around (17 %) are in master degree program and lowest were M. Phil & Higher Education and its percentage values were 8% respectively.

Table 5: *Shows the results of statistical Analysis with 100 (N=100) samples with steroids (AAS) intake and samples of n=20 without intake of Anabolic steroids (AAS).*

Samples	Correlation Coefficient (r)
Using AAS (N=100) Not Using AAS (n=20)	0.58

The results also indicated that athletes using AAS has a direct relation with performance and health issues. The above table 5 shows that the correlation value is 0.58.

Table 6: *Shows the comparison between AAS usage and Non-usage of athletes, which has t- value and p-value*

Participated Athletes	t-value	Significant value p-value
AAS usage vs NON using AAS	11.78	0.000***

The result indicated that there is a relationship between athletes having AAS steroids and it also showed significant results after analyzed through SPSS-26 software. The value of t (t-value) is 11.78 and the p-value (0.000***) has been shown in table 6 and which data found statistically significant at ***$p<0.001$ level.

4. FINDINGS

The findings reveal a troubling pattern of AAS misuse among local bodybuilders. It is consistent usage with global trends; testosterone is the most frequently abused compound, with athletes prioritizing rapid physical gains despite awareness of risks. In this study cultural and social factors played a central role. In Pakistan, weak regulation of fitness centers allows unqualified trainers to promote steroids. The social media and celebrity influence further normalize steroid-enhanced physiques as inspirational goals. The health consequences were profound and complications after usage range formed as skin problems towards life-threatening cardiovascular disease. Psychological effects such as aggression and depression also create risks not only for users but for those around them as it observed deeply later on. Importantly, these

preventable conditions add strain to Pakistan's already overburdened healthcare system ultimately resulted in the end of sports and sports lovers.

Using anabolic steroid is alarmingly prevalent among Pakistani bodybuilders. While athletes pursue strength and aesthetics, the long-term costs include severe health complications and reduced quality of life. Without timely interventions, Pakistan faces a growing public health challenge associated with AAS and steroid misuse. And it's not just misuse of steroids, every other drug that might stimulate or enhance the performance of a player shortly enjoyed and abused in the exceptionally circles of sports and beyond impacted seriously on health. One needs to put an end to this by not only making laws strict but enforcing them strictly upon the society, or else, our future generations are doomed for years and maybe centuries to come. Thus it is the need of the hour to make drastic decisions at an alarming level in order to save the future generations and the sports itself.

5. DISCUSSION

The study reveled that adverse effects has been reported in terms of cardiovascular activities as the survey research has been observed. The same resulted has been reported by Sader et al. (2001). Similarly, the study also stated that use of AAS synthetic derivatives of testosterone widely by athletes for enhancing their muscle size it shows optimistic results, The results were overlapped with Frati et al. (2015) who concluded that synthetic derivatives of testosterone utilized not only increase the size of muscle but also raised the strength and power as well. The study also predicted that 70 % athletes claimed that using AAS not only resulted in enhance power and strength but its major side effects included cardiovascular problems hormonal inequality, childlessness, mental disorders, and sometimes resulted in premature death, the outcomes are familiar with the results of Bonetti (2008) and Di Paolo (2007). The results are also related with Cole et al. (2019). The survey results also indicated as perception of major athletes that excess of used AAS along with other by product not only affected respiratory tract but also affected the brain and cardiovascular functionality, the results are overlapped with the findings of Cole et al. (2019) serious issue of respiratory tract, brain and cardiac functionality. The detailed feedback of the study indicated that the regular and irregular intake of AAS not only disorder physical problems but also impacted on mental and Psychological disorders in the body as well low confidence, short self-esteem, suffered aggression, childhood conduct disorder and high risk behavior the study overlapped with the outcomes of the Van et al. (2010) research work.

6. CONCLUSION

The study concluded that professional and amateur bodybuilding is associated with impaired vascular reactivity which resulted in enhance arterial thickening. Thus the use of AAS per se is not associated with significant abnormalities of arterial structure or function. Thus it concluded that AAS utilization led to physical and mental disorder and sometimes even worst condition.

7. RECOMMENDATIONS

- Regulation and Monitoring: Implement strict oversight of gyms, supplement shops, and pharmacies to curb unauthorized steroid distribution.
- Trainer Certification: Introduce standardized training and licensing for gym instructors, emphasizing safe practices and health education.
- Healthcare Services: Establish nonjudgmental medical support systems for steroid users seeking help.
- Policy Integration: Embed anti-doping policies in local s ports governance frameworks to align with international standards.
- Public Awareness Campaigns: Launch national campaigns educating athletes and the public about the risks of steroids.

- There must be follow the rules of WADA intake of Anabolic steroids in Pakistan.

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