Anabolic steroid use

1. Anabolic steroid use

Body image issues and the pursuit of a muscular physique are becoming an increasing issue for men and teenage boys.

Anabolic steroids, e.g. nandrolone and stanozolol, are a synthetic form of testosterone, usually taken recreationally, without medical supervision, in a desire to build muscle mass. They are often known as 'roids' or 'juice'. Use is more common in men, but can occur in women (BJGP 2015;65:626).

This article was updated in February 2025.

1.1. Prevalence

The prevalence of use is hard to determine, but it is estimated that over 1 million people in the UK are using image- and performance-enhancing drugs, including anabolic steroids (BJGP 2024;74(741):187).

Global prevalence is estimated at 6.4% of males, and is 19–53% among gym-going populations (BJGP 2015;65:626).

We probably all have at least a few on our lists….

1.2. Adverse effects

Much of the literature regarding adverse effects comes from trials where therapeutic doses were used under medical supervision. Recreational doses can be up to **1000x** the recommended amount, and users may use more than one steroid at the same time.

Potential adverse effects		
Reversible	**Irreversible**	**Unclear whether reversible**
• Increased appetite. • Scrotal pain/impotence. • Acne. • Hypertension. • Oedema. • Aggression and behaviour change. • Anxiety.	• Hirsutism. • Voice changes. • Male pattern baldness. • Striae/keloid. • Tendon rupture. • Cardiac disease (IHD/cardiomegaly). • Clitoral hypertrophy. • Short stature (if taken in adolescence). • Blood-borne viruses from needle sharing. • Hepatic carcinomas (10–15y after use).	• Testicular atrophy. • Gynaecomastia. • Subfertility.

Studies of users suggest that nearly 80% experience 2 or more of these side-effects, but only half of them are concerned that they may lead to long-term consequences.

1.3. Muscle dysmorphia

Now recognised as a form of body dysmorphic disorder (see articles on

Obsessive compulsive disorder and *Body dysmorphic disorder* in the online handbook), muscle dysmorphia is characterised by (usually) young men becoming obsessed with the muscularity and appearance of their body (JAMA 2017;317:23). Many of these men take-up weightlifting and use dietary supplements, and in two (very small) US studies, over 40% of such men were using anabolic steroids. Some may choose not to use anabolic steroids but may still unwittingly be taking them as some of the dietary and 'herbal' supplements they use may contain anabolic steroids.

What is the scale of the problem?

It is estimated that, in the US, around 2% of men have BDD and, of these, up to 25% have muscle dysmorphia. Young men are the commonest group affected but the JAMA article points out that some older men, who have perhaps used anabolic steroids in their youth, may also continue to use them, or restart them to try to counteract the changes of ageing.

Something to bear in mind when you see a patient using anabolic steroids, or when you see young men who may be overly concerned about their appearance or obsessed with going to the gym. And don't forget to ask about supplements, including 'herbal' remedies they may be taking.

1.4. Drugs used alongside anabolic steroids

The BJGP editorial reminds us that it is rare for individuals using anabolic steroids to take only one drug (BJGP 2015;65:626). Other drugs commonly used include (*text in brackets is the reason bodybuilders give for use, not medical indications for use!*):

- Ephedrine (to promote weight and fat loss).

- Clenbuterol (to burn fat).
- HCG (to improve testicle function/stimulate testosterone).
- Diuretics (to get to competition weight).
- Growth hormone (to promote muscle development).
- Tamoxifen (to reduce gynaecomastia/side-effects).
- Insulin (to promote muscle development).
- Thyroxine (to burn fat).

Clearly, each of these drugs comes with a range of side-effects. We need to ask for specific drug regimens of everyone we see who is misusing anabolic steroids.

1.5. Issues to consider in a consultation

This was the subject of a BMJ 10-minute consultation (BMJ 2016;355:i5023).

REMEMBER: individuals may present with complications or may be asking for advice about the safety of continued use (though many just want to be reassured).

The author reminds us to approach this in a sensitive, non-judgemental way.

Take a full drug history	Ask specifically about the substances used, as above. Ask about mode of delivery. Ask about nutritional supplements.
Ask about mental health	Eating disorders, especially bulimia. Body dysmorphic disorder (see article about this in the online

	handbook). Mood and anxiety levels. Domestic violence and criminal activity.
Examination	BMI. Skin (for acne/striae, etc.). Blood pressure and CV system exam. Gynaecomastia. Check for testicular atrophy and enlarged prostate.

Investigations	A BJGP clinical practice guideline covered essential blood tests and actions in those using anabolic steroids, and we have also included some pointers from the older BMJ article (BJGP 2024;74(741):187, BMJ 2016;355:i5023):
	• Testosterone is likely to be supressed: refer to secondary care if, after 24 weeks off anabolic steroids, patient remains hypogonadal.
	  • Suppressed gonadotropins with normal testosterone suggests exogenous testosterone use.
	• Oestradiol is likely to be elevated: referral is not needed; advise the patient to stop using anabolic steroids. Treatment with aromatase inhibitors is not advised.
	• FBC: polycythaemia is a complication of excess steroid use.
	  • If haematocrit raised (male >0.52, female >0.48), advise patient to stop anabolic steroids, then repeat analysis. Advise about alcohol reduction and smoking cessation.
	  • If haematocrit very high (male >0.60, female >0.56), refer urgently to haematology.
	• U&E (high Na/low K/acute kidney injury/low eGFR): follow usual AKI or CKD protocol (even though we know high muscle mass underestimates eGFR) (BMJ 2016; 355:i5023).
	• Hypertensive renal disease secondary to steroid use may occur; check BP if suspected.
	LFT: oral steroids may be modified to prevent breakdown on first pass through the liver, which can cause hepatotoxicity.

	Advise no heavy weightlifting, then repeat in 14 days. If ALT remains raised, follow standard raised ALT pathway.
	• Lipids and HbA1c (anabolic steroids can promote a metabolic syndrome picture).
	  • If HbA1c >41mmol/mol, follow standard prediabetes/diabetes pathway.
	  • Recheck lipids when off anabolic steroids. If subsequent tests fit any of the criteria below, refer to lipid team:
	- TC >9mmol/L OR non-HDL >7.5mmol/L.
	- TC >7.5mmol/L in those under 30y.
	- TG >10mmol/L.
	- TG 4.5–9.9mmol/L and non-HDL >7.5mmol/L.
	• CK: consider checking for elevated levels if muscle damage or rhabdomyolysis is suspected.
	• Hepatitis and HIV screening (if needle sharing).
	• Prolactin: may be elevated (BMJ 2016;355:i5023).

Refer	If acutely unwell, refer. If evidence of cardiac disease: • Do an ECG and refer for an ECHO – may need cardiology input. May need psychiatric support if coexistent mental health disorders.
Management	Discuss the risks using the table above and strongly encourage cessation. • There is no need to taper doses. • Continuing resistance and endurance exercises will help reduce muscle loss on stopping. Consider annual monitoring for bloods as above – if normal over a period of years after cessation, this could be reduced in frequency. If use continues, at least annual monitoring is recommended.

	Signpost local needle exchange facilities. Advise that anabolic steroids are banned by sports governing bodies.

Anabolic steroid use

- More common that we think, with potentially serious consequences.
- Often more than one drug/class of drug used.
- Encourage cessation – no tapering required.
- Not all adverse effects are reversible.
- Remember coexistent mental health conditions, especially body dysmorphic disorder, and refer for help.

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