

# Performance Enhancing Drugs

**Resource Pack  
2011**

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This pack is concerned with the use of Anabolic Steroids and other Performance Enhancing Drugs outside of medical settings. The use of this information is intended to assist drugs workers and needle exchange workers in providing advice and information. It should not be seen as an endorsement or to encourage the use of PEDs.

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# Performance Enhancing Drugs

## Glossary:

Anabolic:	promoting muscle or tissue growth
Androgenic	androgenic effects are those that relate to the masculinizing effects of these hormones – such as growth of hair or behavioural changes; from a PEDs point of view the sought-after effects are increased strength, muscular hardness,
Aromatase	enzymes responsible for the process of aromatising
Aromatising	the process of an enzyme or complex of enzymes that converting an androgen (as testosterone) into estrogens (as estradiol)
Catabolic	Promoting the breaking down of muscles or tissue
C-17 Alpha Alkylated	Chemical treatment of a steroids molecular structure to slow down break-down in the liver and allow them to be taken orally; increases liver toxicity
Ester	Chemical chain to added to a compound to adjust the half-life
Esterification	Adding an ester to a compound such as a steroid, changing its half-life
Gynaecomastia	Development of breast tissue in men
Hormone	A biochemical substance that is produced by a specific cell or tissue and causes a change or activity in a cell or tissue located elsewhere in an organism.
Steroids	Naturally occurring chemicals that function as hormones in plants and animals
Testosterone	Male hormone
Virilisation	Process of developing male secondary sexual characteristics in women

## 1.1 Introduction:

These training notes relate to the use of drugs in the context of physical training and development. This includes the use of drugs in body-building and athletic settings.

The document looks at the main compounds used, effects and risks, methods of use and harm reduction information.

The resource pack is primarily aimed at professionals such as drugs workers who need to understand performance enhancing drugs in order to engage with, advise and support clients who use these drugs. However, it will also be of interest to users themselves.

## 1.2 Terms and Concepts:

The main group of drugs of interest here is **anabolic androgenic steroids** but as these substances are used alongside other drugs, these other substances will need to be considered too.

**Steroids** are naturally-occurring chemicals produced in both plants and animals. They function in Humans as **Hormones**. That means they function as chemical messengers that work around the body.

**Anabolic Androgenic steroids** exercise an **Anabolic Effect** on the body. **Anabolic** indicates a process of growth or development. With reference to steroids, it means that they trigger or increase the growth of muscles and other tissues.

This is the opposite of **Catabolic** which refers to the process of breaking down muscles or tissue. For athletes seeking to build muscle growth, increasing anabolism and reducing catabolism is a key aim.

**Anabolic steroids** are therefore mostly used outside of medical settings because they can cause an increase in the size of muscle tissue.

**Androgenic** hormones are responsible for the development of male sexual characteristics. This includes things like deepening of the voice, growth of chest and facial hair. From an athletic and body-building perspective, the sought-out androgenic effects are an increase in strength and development of muscle tissue, the mental drive to train harder and the increased aggression that may come with this.

### Terms of Reference:

**AAS:** Amongst many users and some professionals, the abbreviation **AAS**, for **Anabolic Androgenic Steroids** is widely used.

Despite research, it has not yet proved possible to create compounds that are purely anabolic or androgenic; instead there is a ratio between anabolic and androgenic effects within most drugs.

So the preferred term for compounds is Anabolic Androgenic Steroids rather than just Anabolic Steroids. Then the drug will be described in terms of whether it is strongly anabolic, strongly androgenic, or a balance between the two.

**Performance Enhancing Drugs:** Not all the compounds used are anabolic or androgenic, nor are they all steroids. For this reason some people have preferred the term Performance Enhancing Drugs (PEDs) to cover a wider range of substances than AAS. A compound such as EPO for example is not an AAS but is clearly a Performance Enhancing Drug.

**Performance and Image Enhancing Drugs:** At the risk of becoming pedantic, some commentators noted that compounds such as fat burners or tanning agents were image rather than performance related and as such said that the term Performance and Image Enhancing Drugs (PIEDs) should be the preferred term. We could argue as to the extent that a serious fake tan is an image enhancement . Regardless the term has not caught on amongst users.

**Performance and Image Enhancing Drugs and Ancillary Compounds:** Only the truly obsessive would note that some of the remaining compounds are not related not hormones, anabolic, androgenic, performance related or even image related (though this last point can be argued). Many of these compounds are used to offset the (side)effects of another drug. So for example compounds such as Tamoxifen are used to reduce the risk of male users developing breast tissue. We could (somewhat facetiously) argue that this is an "image enhancing" issue but realistically it fits in better as an Ancillary compound. So PIEDAC it is. Though in practice it's a bit of a mouthful.

On balance this document will stick with SIDs – Sports and Image Drugs, which we think covers the range pretty well.

## 2 SIDs use in Context

### 2.1 Reasons for Use

The use of performance enhancing drugs may take place in a variety of different contexts and this makes it hard to talk about a “typical SID” user.

**High end athletes:** This type of user is likely to be a highly adept user who has access to high quality drugs and medical advice. Combinations will be taken to maximise physical gains and minimise obvious signs of PED use and chances of detection. Such users are likely to be in receipt of the most recent developments and be “ahead of the curve” in terms of drugs and patterns used.

**Competitive body-builders:** People who are competing at high levels in body-building and weight-lifting may use steroids to bulk out and increase strength; while not all competing in such activities use AAS, it is a key group where such use takes place.

**Aesthetic use:** For some users, the use of steroids is an aid (or a shortcut) to developing a perceived aesthetic look. This might mean increased musculature, more defined muscles, more prominent veins or reduction of body fat.

**Functional use:** For some trades and activities, use of steroids might be useful. Door security and private security workers may use steroids to help increase bulk and strength. Similarly, young people may take up use of steroids to reduce bullying or harassment. Such a trend has been reported amongst young Asian men for example.

**Peer pressure and Peer Influence:** Body building environments are highly competitive while at the same time provide a strong sense of group identity. They offer a classic example of a closed sub-group with it’s own language, rituals, norms and behaviours. As use of PEDs is a widespread activity, this has become partially accepted as a norm and so, while frowned upon by “natural trainers” will be accepted and acceptable to many others.

Further, non-users may feel pressured to start using because they see newcomers and younger people arrive, equal and then exceed their own achievements in a relatively short time frame. This can influence a decision to start using steroids.

**Dependent Use:** Steroid users can become dependent on steroids. This can have several axes.

**Physical:** the physical gains through steroid use may be transitory and hard to maintain. Where a (over)developed body builder ceases to use steroids, there may be rapid catabolism or breaking down of muscles. Users will virtually see hard-gained muscles melting away.

Unless training is continued, remaining muscle will rapidly turn flabby and watery and people can end up looking physically big but flabby.

These factors can make it difficult to discontinue use.

**Psychological:** Use of steroids can offer a powerful psychological effect of feeling stronger, more confident, able to train harder, increased sex-drive and increased energy.

Conversely, when use discontinues there is likely to be a “crash” which can include reduced libido, tiredness, low mood and reduced confidence. This again will encourage repeated use. The crash can see gained muscle and weight being lost, and whilst it can be minimised through effective planning of drug cycles it can't be wholly avoided.

**Social:** Body-building circles provide a very strong reinforcing social circle. With the growth of body building websites, these and gyms provide a supportive, welcoming community which is dedicated to physical development. The positive regard of these people can become important and be a difficult environment to leave.

**Ritual:** The use of PEDs is part of a wider behaviour including meticulous diet and exercise planning. It requires development of carefully planned schedules, sourcing drugs, administering drugs and then measuring gains and success. There is a very tangible outcome – increased size, or increased strength. The ritualistic aspects are powerful reinforcers of behaviour.

**Youth Drug Use:** Increasingly, some drugs agencies are seeing more young people – in late teens, using SIDs. This use may be taking place alongside training and diet work, in which it has more akin to peer influence and a short-cut, as discussed above.

However, some of the young people in question are using SIDs alongside other substances such as cannabis, alcohol, ecstasy, and cocaine. There is typically no other attention to training or diet.

This pattern of use seems to have more in common with polydrug use than as a more serious “performance enhancing drug” use.

Some of this use appears to be seasonal and image related: a chance for young men to “bulk up” quickly for the summer and a spell on the beaches of the Med.

**Transferring from other Drug Use:** Worryingly, some agencies are seeing a growing number of AAS users who have migrated from other drugs, including opiates or stimulants. Some of these have become drug free in the community, started using gyms to “get healthy” and moved towards SIDs. Others have got off opiates in prison and got on to SIDs at the same time. At this point the routines,

rituals, and possibly the injecting aspects may end up reinforcing old patterns of behaviour but with new substances.

**Sexual Identity:** A small number of people may use SIDs for hormonal aspects of gender reassignment – for example use of testosterone in order to develop male sexual characteristics. This would typically take place under medical supervision but a small number of people may source drugs illicitly and do so without supervision.

**Scene:** Some “scenes,” especially the Gay muscle scene, fetishises certain aesthetic looks and so some people may use SIDs to achieve this appearance.

**Image:** Some substances, such as fat-burners and tanning agents are linked much more to fashion and trends – and may not be linked at all to sports or athleticism. As such use of these compounds may be much wider than those using in gym or athletic settings.

**Self perception and body dysmorphism:** Some body builders may have underlying psychological issues that encourage more extreme behaviours and patterns of use and training.

Just as eating disorders and extreme weight loss may stem from a search for a perceived perfect figure and weight, so the use of anabolics may stem from a similar dissatisfaction with the users body and a quest for “perfection.”

By society’s standards there is a narrow band of male physical perfection: too little muscle is not satisfying. Too much can start to look gross and distorted. In between is the perceived male ideal, well developed arm and chest muscles, and firm stomach muscles.

It can be argued that some gym-related behaviours such as excessive training, may stem from dependencies towards physical training and some dissatisfaction with the current form. There comes a point where benefits have ceased to be to do with improved fitness and has more in common with a dysfunctional behaviour.

There are further issues that need to be explored here, such as the extent to which body-builders may have experienced bullying or assault, and the extent to which sexual identity and sexuality influences body reshaping behaviours.

At its most extreme end, body-builders may have a more defined body dysmorphism. Workers have relayed examples of clients who are absolutely huge in terms of their build, but still see themselves as being small and poorly developed.

While it would be unfair to assume that the majority of people who use PEDs regularly have poor self-esteem and self-image, the conscientious worker will build a relationship with their client which allows this issue to be explored.

## Workplace Implications and Practice Issues:

- **Supervision and Training:**

Workers and organisations should ensure that, through training and supervision, stereotypes and assumptions about why people use SIDs are explored and challenged.

- **Distinctive group**

To an extent, SID users have some key needs which are not easily met through mainstream drug provision. As such some specially tailored services may be required which use targeted publicity, out-of-hours provision, specific equipment and literature and specifically trained staff. However, the point below about diversity should also be borne in mind.

- **Diversity**

As with any other population of drug users, SID users are not a homogenous group and are a broad church. As such, stand-alone services aimed at one part of this population (e.g. body-builders using AAS) may not appeal to or be accessible to other SIDs users (e.g. young polydrug users). Service publicity and development should ensure as accessible a service as possible for all SID users.

- **Therapeutic Interventions**

Some SID users may want or could benefit from more therapeutic interventions to help manage their use of SIDs, or to deal with dependency or underlying issues. While not wishing to assume all SID users have some underlying pathology, some may have and ensuring access to services beyond needle exchange will be a key tool in addressing these issues.

Services will need to ensure that there is a clear care-pathway for SID users, that increases their access to therapeutic interventions such as counselling.

- **Ex-heroin and crack users:**

Given the increasing number of former Class A drug users presenting with steroid use, workers may want to be more circumspect as to promoting gym attendance as a path to recovery. Assessment of gyms, messages about addictive and dependent behaviours, and awareness raising about risks of steroid use should be in place for former heroin or crack users being directed towards exercise.

- **Young poly-drug users:**

Specific services and messages will need to be developed for young polydrug users who are starting to use steroids. This message will need to be further tailored for those young people who may have a genuine interest in gym work, and whose SID use is premature, as opposed to those who have little or no interest in training healthily and whose use is exclusively cosmetic.

### 3 Trends and Attitudes to Steroid Use:

#### 3.1 Steroids in recent history:

In the seventy years since the first steroids were identified, their use has continuously escalated despite the efforts of sports regulatory bodies to curtail their use.

Prior to this, other substances had been widely used in sport, including cocaine and amphetamine to enhance speed and energy.

Steroid use by Russian weightlifters in the 1952 Olympics saw a substantial medal haul, and American athletes sought to match this advantage.

Initially popular amongst athletes relying on strength and bulk, their use spread to athletes who sought the extra "edge" that steroids seemed to offer.

Whilst still limited to these high-end athletes, steroid use spread in to more amateur settings, becoming more widespread in gyms and training arenas.

Most recently, the growth of the Internet has made access to steroids and interest in steroids more widely available than ever before. This has meant that non-professionals have had greater access to more real steroids (and more fake steroids) than ever before, with a resultant growth in interest and use across the UK.

#### **A BRIEF HISTORY OF DOPING IN SPORT <sup>1</sup>**

In the 19th century stimulant use was common among endurance athletes and cyclists.

1928 International Amateur Athletic Federation ban the use of stimulating substances. Other federations follow, but the bans are ineffective due to lack of tests.

1930s Synthetic hormones invented.

1950s Synthetic hormones used for doping purposes.

1960 Danish cyclist Knud Jensen dies at the Rome Olympics; an autopsy reveals traces of amphetamines.

1966 International cycling (UCI) and football (FIFA) federations test for drugs at their world championships.

1967 International Olympic Committee (IOC) draws up the first list of prohibited substances.

1968 Drug tests first introduced to the winter (Grenoble) and summer (Mexico) Olympic Games.

The early 1970s sees marked growth in use of anabolic steroids due to lack of a reliable test.

1974 Reliable test for anabolic steroids introduced.

1976 IOC bans use of anabolic steroids.

1986 IOC bans blood doping as a method.

1988 Ben Johnson, the 100 metre champion, disqualified at the Seoul Olympics after

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<sup>1</sup> <http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmcumeds/499/499we10.htm>

	testing positive for stanozolol.
1989	Confirmation of state-sponsored doping in the German Democratic Republic during 1970s/80s.
1990s	New doping agents developed (eg EPO, hGH); anti-doping efforts restricted by lack of tests.
1998	Large quantities of prohibited substances found during the Tour de France. The scandal highlighted the need for an independent international agency.
1999	World Anti-Doping Agency (WADA) established.
2003	WADA adopts the World Anti-Doping Code to harmonise anti-doping measures.

### 3.2 Trends: UK

A House of Commons report on steroid use reported that, in 1993, around 5% of gym users reported some steroid use. Revised figures put that higher at between 25% and 50% of people who used gyms equipped for competitive body building.<sup>2</sup>

Of all the drug trends in the UK, Steroid use is probably the most poorly reported. Reasons for this include:

- Steroid use not tested on arrest;
- Steroid users not routinely committing "trigger offences" which would trigger a screen for Class A drugs;
- SIDs users proactive in wishing to see AAS remain Class C, Schedule 4ii, and so keen to see AAS kept off the Government's radar;
- SIDs users not typically presenting for structured treatment;
- SIDs users may only come in to contact with drugs agencies via needle exchange; some may choose not to use this service as they are (a) not injecting or (b) source equipment from commercial or peer sources.

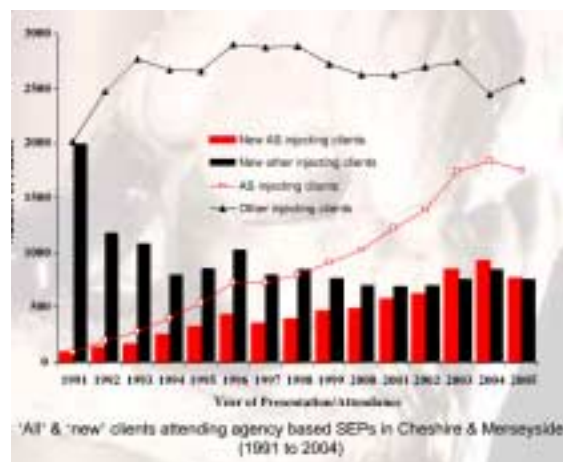
According to the Home Office-sourced "British Crime Survey," the number of SIDs users has gone down:

**AAS steroid use in last year amongst: % 16-24 year olds (BCS07-08)**

1996	1998	2000	01/02	02/03	03/04	04/05	05/06	06/07	07/08
1.5	1.2	0.9	0.7	0.5	0.7	0.7	0.7	0.6	0.6

This trend in the BCS is at odds with other sources. Anecdotally, needle exchanges are seeing increasingly large numbers of steroid users, suggesting a dramatic upsurge in steroid use.

This is borne out by research from Jim McVeigh, one of the UK's leading researchers with an interest in Performance Enhancing Drugs. In a 2006 presentation he presented the following trends<sup>3</sup>:



<sup>2</sup> Drug and Therapeutics Bulletin, 42, No1, January 2004,

While levels of injecting amongst other drug users have remained level and dropped marginally, the trendline amongst SID users is resolutely upwards. There is something seriously adrift between the evidence from the BCS and the evidence of the field.

### 3.3 Why an upward trend?

Most recently, the growth of the Internet has made access to steroids and interest in steroids more widely available than ever before. This has meant that non-professionals have had greater access to more real steroids (and more fake steroids) than ever before, with a resultant growth in interest and use across the UK.

Whereas previously a would-be steroid user would have to have built up relationships at a gym – and had the confidence to ask questions, much of this can now be done on line.

There has also been a growing interest and market for male fitness and image magazines, promoting an aesthetic for development of muscular physiques.

When this pack was first prepared in 2006 a Google search for “Anabolic Steroids” threw up some 237,000 references to Anabolic Steroids. Three years later this, a search throws up 1,920,000 references. 120,000 claim to offer anabolics for sale.

### 3.4 Workplace implications and practice issues:

- **Monitoring:**

Organisations should ensure that they have effective monitoring in place to assess levels of SID use. This should include routine monitoring of “substance used” at all Needle Exchange provision.

Organisations may find that the term “substance injected” meets with less resistance than the term “drug injected” as some steroid users may not consider their steroids use as being a “drug.”

Organisations should not base their monitoring on proxy indicators such as type of equipment distributed as this may not give an accurate picture of local trends.

### 3.5 Are Anabolic Androgenic steroids needed?

The arguments between “natural” athletes and those who use steroids are hard-fought and passionate. Those who use steroids argue that it is only possible to get past a certain point with Steroids, and that those who claim to have achieved similar results “naturally” have used some sort of chemical.

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<sup>3</sup> Presentation by Jim McVeigh: NCIDU 2006

Natural trainers would in turn argue that permanent gains can only be made through appropriate diet and training regimes and that top level builds and performances can be achieved without recourse to anabolics.

Some companies and competitors argue that there are a range of protein, dietary and supplemental preparations which are not steroids and are not banned but can achieve results which are as good as (if not better than) steroids.

Some critics will argue that these companies are selling unproven goods to people who can't or won't take steroids; others will argue that they are selling overpriced proteins with scientific names and profiting from the confusion. And the rest will use some of these products to boost a natural regime.

### **3.6 Essentials regardless of Steroids:**

Regardless of whether they are pro- or anti- steroids, nearly everyone agrees that steroid use on its own is of limited value. Without proper planning of steroid regimes, diet and training any gains are likely to be short lived, and hard to retain.

The requirements of any sort of development are the same regardless of whether steroids are used or not including:

- **Careful diet management and planning**

This will typically be a diet low in fat but with lots of protein and a carbohydrate level that takes in to account the person's proportion of body-fat. There is a colossal amount of information regarding diet and nutrition within body-building circles.

If someone does not have the discipline or knowledge to maintain a very strict nutritional regime, then the effectiveness or need for steroids will be questionable.

- **Rigorous planned exercises**

The use of steroids may allow someone to train harder and longer but they will still need to train. And so a well planned training regime that develops and rotates all the major muscle groups will still be essential if steroids are taken.

- **Proper rest cycles**

Muscles will need to be rested after training to allow for proper healing and to ensure the development sort.

On balance, it is likely that many people who use performance enhancing drugs – especially those who use them badly - could get similar or better results, with greater safety, by reviewing diet and exercise regimes.

For them, use of PEDs may seem like a faster way to get striking results but will ultimately not result in long-term gains.

### 3.7 PED users and Other Drugs

Many people who use SIDs view themselves in a wholly different light to people who use other substances. While some SID users will also use other drugs for recreations (e.g. amphetamine use for clubbing) others would not touch drugs perceived to be unclean and illegal.

This division has, of late, started to be undermined as a growing cohort of young polydrugs users have added steroids to their repertoire, and a significant number of ex-heroin or ex-crack users have moved to steroid use. However, for the lions share of SIDs users, there remains a mind-set which views *their* drug use as enhancing, scientific, clean and intelligent, and views other patterns of

This duality of perception can reduce access to services as PED users may be reluctant to access drug-treatment agencies as they do not wish to associate, or be associated with other drug users;

In part this may stem from the function of PEDs to improve performance and shape; they are perceived to be scientific, refined and a tool for the skilled athlete. This self perception is wholly at odds with the self-perception of many illegal drug users.

PEDs occupy a semi-legal netherworld. The products are widely produced illegally, with potentially poor standards of sterility and quality. However, although the supply of them may be illegal, possession is not and so people who purchase and use such drugs will generally not be breaking the law.

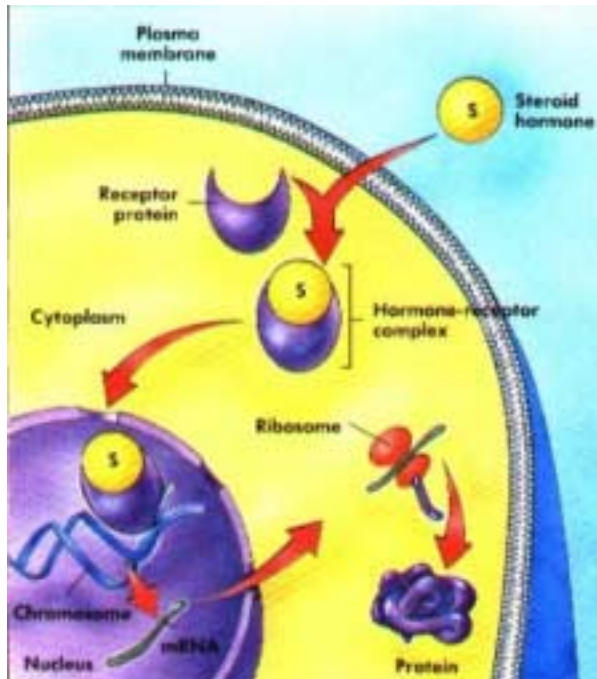
This has meant that many aspects of PED use are less "underground" than other types of drug use. PED use ends up with a veneer of acceptability and legitimacy not shared by other drugs. You can see adverts on the internet, buy magazines, purchase by credit card and discuss with peers on the many bulletin boards.

Most body-builders would not consider their steroid use as a drug of abuse. And they would not widely consider it to be something that they could seek help from via a drugs agency.

Similarly from the drugs agency point of view, PED users do not conform to the classical drug-agency client and so agencies are under skilled and under confident in engaging with and responding to such clients.

## 4 How Steroids Work

### 4.1 Method of Action:



Steroid hormones enter the blood stream and travel round the body.

The steroid hormones reach a target area, such as a muscle. They pass through the cell wall and bind to a **Receptor Protein**.

The combined hormone and receptor is called a **Hormone Receptor Complex**. This is able to pass into the cell nucleus and change processes of the cell. This can include increased production of proteins, resulting in increased growth.

Different hormones will have different effects at different sites. So

within muscles, steroid hormones may increase size of muscles. Within hair cells, it may increase hair production. Other effects elsewhere could include changes to mood, alteration of bone growth or other local effects.

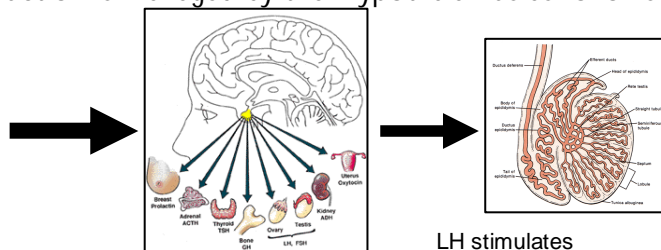
### 4.2 About Testosterone:

**Testosterone** is a hormone produced by men in the testes and in both men and (at a lower level) women in the adrenal cortex. Women also produce lower levels in the ovaries and the placenta. Testosterone being produced inside the body can be called **endogenous testosterone**.

Testosterone production is managed by the Hypothalamus as follows:



Gonadotrophin Releasing Hormone (GnRH) released by hypothalamus



GnRH causes pituitary gland to form Luteinizing Hormone (LH)

LH stimulates production of testosterone from stored cholesterol in the Leydig Cells in the testes.

Testosterone is **anabolic** and **androgenic**. This means that it affects both growth and development but also male secondary sexual characteristics such as hair growth, patterns of fat-deposit and sexual drive.

Low levels of testosterone can result in **catabolism** or muscle wasting. High levels of testosterone in men can result in:

- Increased aggressiveness
- Increased sex drive and libido
- Increase in lean muscle

As testosterone is responsible for many male secondary sexual characteristics, it can have a number of serious side effects on women who have excessively high levels of testosterone. This can result in the development of male characteristics; this process is called **virilisation** and can result in symptoms including:

- Deepening of voice,
- Development of increased facial and body hair,
- Enlargement of clitoris
- Restructuring of bones, especially face and chin
- Sterility

### 4.3 Exogenous Testosterone:

**Testosterone** was first isolated in animals in 1935. It has been used medically in humans ever since. Testosterone that is being introduced from outside the organism (rather than that produced in the organism) can be called **exogenous testosterone**. Its primary use was for people who lacked or had low levels of endogenous testosterone. Medically it has also been used to treat low growth levels, anaemia, erectile dysfunction, and a range of other problems that have been associated with low testosterone levels. Typically these interventions have been applied to men whose levels of testosterone were naturally low or had declined with age.

**Exogenous Testosterone outside of medical settings:** The anabolising effect of testosterone makes it an obvious choice as a Performance Enhancing Drug. It can promote rapid physical change to muscle shape and size and can mentally increase the drive and aggression needed to train hard and frequently.

This meant that forms of testosterone have become the lynchpin of performance enhancing drugs. Compounds based around testosterone are the foundation of most anabolic steroids.

**4.4 Progestins:** In addition to the main, testosterone-derived anabolic steroids, there are also some widely used progesterone-based compounds that are used for their anabolic effects.

The main function of progesterone in women is to prepare the uterus to receive a fertilised egg and to maintain the uterus during pregnancy.

Importantly some steroids which are used for their anabolising effects are related to progestins. The most significant of these is **Deca Durabolin** (nandrolone decanoate). This substance has widely been used in body-building as it promotes muscle growth. However, as it is also a hormone that would not typically be present at significant levels in men, it can have serious unwanted side-effects on male users including reduced libido, inhibition of erections and the development of secondary sexual characteristics (see Aromatisation, below).

## 5 Routes, Cycles and Stacks

### 5.1 Oral or Injected

A number of steroid preparations are for oral use; others are intended for injection. While with heroin and other drugs there is typically a clear admonition against injecting the case is not so clear cut with anabolic androgenic steroids.

The key advantage of not injecting is it removed risks of injecting-related complications:

- The injectable steroids may not be sterile
- Risk of nerve or vein damage
- Infections due to unhygienic injecting technique
- Risk of BBVs
- build-up of scar tissue at injecting sites

While these risks would be avoided through the use of oral preparations, this is not wholly safe.

Oral steroids would be broken down easily during their passage through the liver and wouldn't allow an effective dose to reach the blood stream. In order to overcome this first-pass metabolism of steroids, they are chemically altered to survive passage through the liver. This process is called C-17 Alpha Alkylation.

### 5.2 C17-alpha alkylation:

This process adds an extra molecular structure to the steroid. This means that the liver cannot break the steroid down easily. The benefit for the user is that a single dose will therefore remain active for longer when the drug is taken orally. The downside is that the compound is much more liver toxic so will have a far worse impact on liver health in long term use. The process is referred to as c17AA as a short hand term.

Further, oral steroids require the user to take a larger dose, with a greater level of liver toxicity but with less results to show at the end.

So on balance there are pros and cons with both oral and injected preparations. Experienced users will typically use a combination of oral and injected preparations although there are still a very large number of exclusively oral users.

There should be no assumption that all users inject, nor that simply moving to oral preparations are inherently "safer."

### 5.3 Duration of effect and Half-Lives

In order for AAS to work, levels of the steroids in the blood need to be elevated and remain elevated for a sustained period of time. This puts the user in an anabolic state, allowing muscle growth to take place.

Peaks and troughs in steroid levels would be undesirable, as they would put the person in and out of an anabolic state, making it difficult to make and retain gains.

In order to maintain high levels of steroids, the route of administration and the half-life of the drugs is critically important.

The **half-life** of a drug is a measure of how long it will exert an effect on the body and how long it will take the peak level of the drug to drop to half. Half-life will vary from individual to individual, as everyone will have different metabolisms, levels of liver function and builds.

Exogenous testosterone would, if used in a "natural" state have a relatively short half life and so would need to be taken frequently to maintain an effect. For some people that may require use at least once a day and maybe more frequently.

By tinkering with the molecular structure of a steroid, it is possible to affect the duration of effect.

### 5.4 Intramuscular 'depot' injections:

Injected anabolic androgenic steroids are taken intramuscularly. Aside from the health risks of injecting steroids in to a vein (risk of an oil embolism when the oil travels in to and blocks a lung) IV use would cause large peaks and troughs in steroid levels.

Instead, steroids are injected in to a large muscle. The oil based steroid is then absorbed slowly from the muscle in to the blood stream acting as a depot which comes on gradually rather than all at once.

### 5.5 Esterification:

The other way of changing the effective half-life of a steroid is through a process of esterification. This means adding an ester to the steroid. An ester is a chain of molecules. The presence of the chain of molecules prevents the steroid reaching a receptor site until the chain has been broken down. The longer the chain, the slower the absorption of the steroid.

The ester chains also have a weight; the longer the chain and the greater the weight, the more of a given compound will be ester as opposed to active drug. So for example a compound such as **testosterone enanthate** might come in a 250mg preparation of which 180mg would be testosterone and 70mg would be the ester.

The table below looks at key esters, and the extent to which they prolong periods of effect:

<b>Ester</b>	<b>AKA</b>	<b>Extends duration</b>	<b>Notes</b>
Propionate	Carboxyethane, Hydroacrylic acid Methylacetic Acid Ethylformic acid Ethanecarboxylic acid Metacetic Acid Pseudoacetic Acid Propionic Acid	Slows release over several days; propionate compounds usually injected two or three times weekly	
Acetate	Acetic Acid Ethyl Ac Vinegar Acid Methanecarboxylic Acid	A couple of days	Used on oral primobolan tablets, Finaplix and some forms of testosterone
Isocarpoate	Isocaproic Acid	Around one week	Used in testosterone products Sustanon and Omnadren
Phenylpropionate	Propionic Acid Phenyl Ester	Slightly longer than propionate; administration at least twice weekly	Used in forms of Durabolin and in Sustanon and Omnadren
Caproate	Hexanoic Acid Hexanoate	Around one week	Used in Omnadren
Enanthate	Heptanoic acid, enanthic acid, enathicylic acids	Approx 10-14 days, though users will still typically use twice weekly	Used with testosterone and Primobolan Depot
Cypionate	Cyclopentylpropionic Acid	10-14 days	Mostly in US and Canada
Decanoate	Decanoic Acid Capric Acid Nonanecarboxylic Acid	As long as one month, but with drops after two weeks. Usually used in a weekly schedule	Used with nandrolone (as in Deca-durabolin) and in Sustanon
Undecylenate	Undecylenic Acid	2-3 weeks Usually used in weekly schedules	Occurs in Equipoise
Undecanoate	Undecanoic Acid,	2-3 weeks	Used in Dynabolan and Andriol
Laurate	Dodecanoic Acid Laurostearic Acid	3 weeks to 1 month	Used in Laurabolin
Based on "A beginners guide to Testosterone Esters" Iron Magazine: 2001			

## 5.6 Cycling

Performance enhancing drugs are typically taken over a sustained period of time. This is a **cycle**. One, or several drugs may be used in the course of a cycle.

A cycle needs to be long enough for the body to enter an anabolic state and for diet and training to facilitate muscle growth and development. Few people will end up using for less than six weeks.

The longer a cycle goes on, the greater the impact is likely to be on the body's own testosterone production, blood pressure, liver health, fitness and cholesterol levels. In addition, steroid receptors may reduce in number and not be replenished fast enough and so steroid use may become less effective over a longer cycle. Cycles of sixteen to twenty weeks are becoming more common but should be considered on the long side.

There is a belief that as some steroid receptors become exhausted, switching to steroids that work at other receptors can ensure that steroid use remains effective.

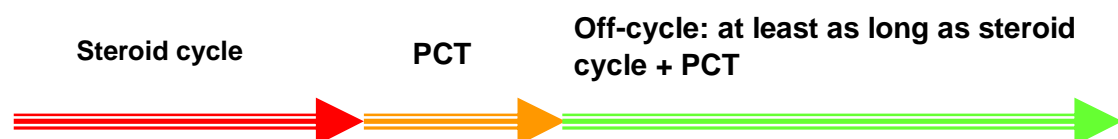
Steroid literature is replete with examples of cycles of different levels and complexities.

Key features could include:

- frontloading: taking lots of powerfully anabolic and androgenic compounds at the start to rapidly increase blood testosterone levels
- brief oral use: oral steroids used early on and discontinued to prevent too much liver damage
- introduction of longer acting drugs: to ensure these start to work when the earlier drugs have been cleared from the body
- switching compounds: when other receptors are becoming exhausted and depleted
- tapering: to reduce crash.

At the end of the process, there will typically be a period of **Post cycle treatment (PCT)** aimed at restoring the body back to its "natural state."

Ideally this should in turn be followed by a period completely "off cycle" where no SIDs are used. This rest period should be at least as long as the steroid and PCT period.



## 5.7 Anabolic or androgenic?

It's probably not a good idea to think of AAS being anabolic or androgenic. Better to think of them having a ratio of effect which could be **primarily anabolic** or **primarily androgenic** or being a balance between the two. Drugs can then be relatively weak or relatively strong.

**Powerful** drugs will give more dramatic results and more rapid gains. This will always make them with popular. In theory, given their potency, this should mean that they can be used at lower doses for shorter periods which would be a good thing. In practice some people will want to use the strongest compounds and at high doses and for long cycles. Use of stronger compounds and especially at high doses for long periods will bring with them greater risk of side-effects.

**Strongly Anabolic** compounds will primarily increase bulk; they will be useful for increasing the amount of muscle. They will appeal especially to people who want to put on muscle early in a cycle or when starting to do body building. The muscle may not be very strong or well defined.

**Strongly androgenic** compounds won't help put on large amounts of muscle; they will help define and harden existing muscle and make existing muscle stronger. So strongly androgenic compounds would get used alongside anabolic compounds for people who want to put on muscle and make it stronger. Alternatively androgenic compounds would be used after bulk had been put on by anabolics.

Strongly androgenic compounds can have a greater impact on mood, skin, hair, sexual function and health issues such as prostate and testicular function.

**Anabolic and androgenic** compounds will have the benefits and risks of the above – development of muscle and strength but with the attendant risks.

## 5.8 Stacking

Based on the above, the idea of **stacking** should make some sense. Stacking is taking two or more compounds at the same time. This may be because one is slower acting and another is faster acting; alternatively it could be because one is perceived to be a stronger androgen and the other more anabolic. There may also be some evidence from other users that compounds used together act 'synergistically' and as such give better rewards.

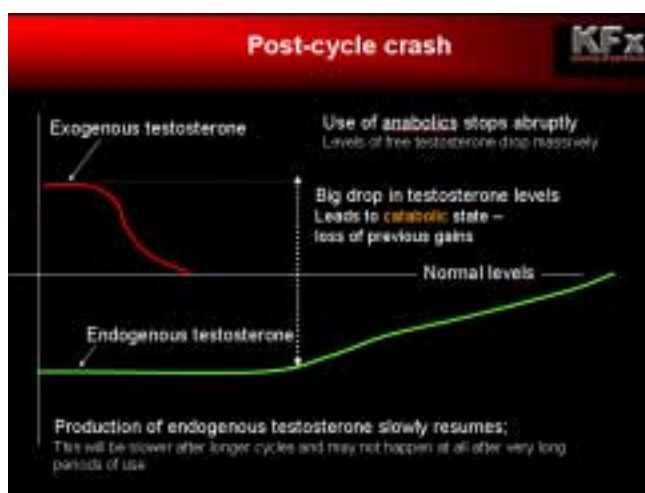
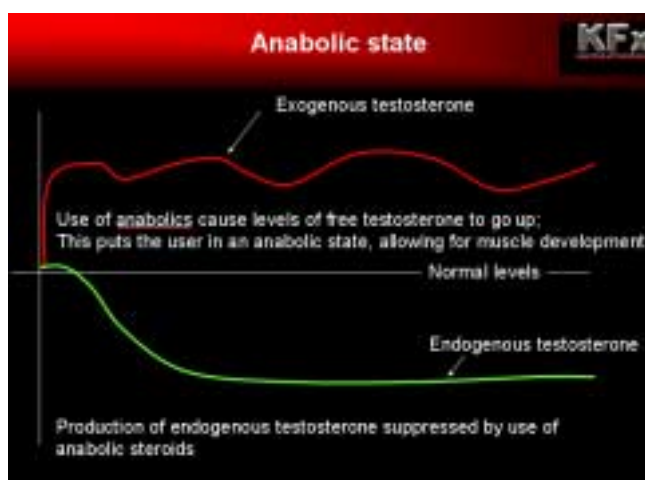
## 6 Adaptation: The impact of exogenous testosterone on the endogenous system

Where anabolic steroids are taken for an extended period of time these initially boost the overall levels of free testosterone in the body. But this effect is short-lived and the male body rapidly adapts, curtailing production of endogenous testosterone and causing this to eventually stop.

This suppression of the endogenous testosterone system can increase other side-effects such as baldness. Where steroid use has taken place at high doses for prolonged periods of time, it can lead to testicular atrophy.

If the use of anabolic steroids is stopped suddenly, then the user can be left with low endogenous testosterone, but none from outside. This crash in testosterone levels can lead to feelings of fatigue, low mood and depression and catabolism – muscles start to be broken down. Erectile function and sperm production can be affected. Weight and size gains can seem to melt away.

The end of cycle crash can be very unpleasant, and may mean some users extend a cycle to avoid the crash, or start another cycle of drugs sooner than ideal to regain lost growth.



### 6.1 Reducing impact of adaptation

Ensuring that the endogenous testosterone system takes over when steroid use is discontinued is hugely important. There are several strategies for doing this including:

- The use of lower doses, for the shortest period feasible,
- Tapering dose at the end of a cycle
- Using carefully designed programmes
- Use of additional medication
- Breaks from usage

**Use of Clomid (Clomiphene Citrate) and HCG:**

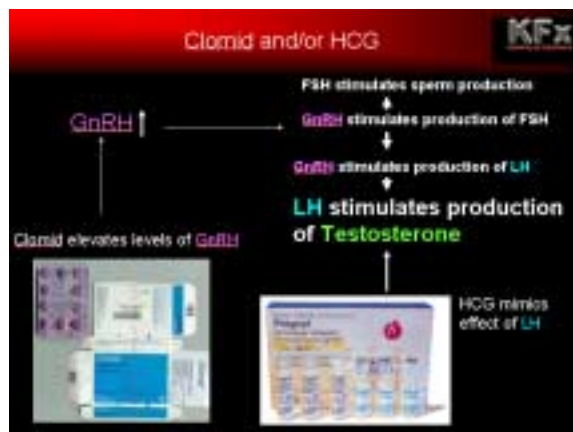
The use of ancillary compounds such as Clomiphene Citrate or Human Chorionic Gonadotrophin are intended to restart testosterone production and reduce the extent of a “crash” at the end of cycles. Depending on the length of a cycle, they may also get used during a cycle to help stimulate endogenous testosterone production.

Either or both compounds may get used. They have different mechanisms of action as illustrated and described below.

### Human Chorionic Gonadotrophin (HCG)

HCG mimics the effect of Lutenising Hormone (LH), the hormone that directly affects testosterone synthesis. This means that testosterone production can be restarted quite quickly towards the end of a cycle.

However, use of HCG doesn't restart the production of testosterone and long-term use may further suppress the production of both Lutenising Hormone and Follicle Stimulating Hormone (FSH) which compounds rather than resolving the problem of suppressed testosterone production.



### Clomiphene Citrate: (Clomid)

Clomiphene Citrate works by elevating levels of Gonadotrophin Releasing Hormone (GnRH) in the hypothalamus. In turn this leads to increased production and release of LH and FSH which in turn normalises testosterone and sperm production.

This is a slower process but restarts production at a hypothalamic level rather than just at a testicular level.

Clomid also provides some protection against aromatisation (see below) and so may end up being used throughout a cycle rather than just towards the end as with HCG.

## 7 Aromatisation:

A key problem for people who use exogenous testosterone is that the body's receptor sites can rapidly become saturated with testosterone.

Excess levels of testosterone are metabolised by the enzyme **aromatase** in to the hormones **oestrogen** or **progesterone**. These hormones are responsible for the development of female secondary sexual characteristics. The process of conversion is **aromatisation** (or *aromatization* if using American dictionaries or spell-checkers.)

The increased levels of female hormones can result in the development of unwanted developments, especially **gynecomastia** – the development of enlarged breast tissue and glands (aka "*bitch tits*") and of fat deposits on the hips and buttocks.

### Overcoming Aromatisation:

Some anabolic steroids are aromatised very easily and others do not aromatise at all. PED users are often very conscious of the risks associated with aromatisation and so will try to reduce these risks through:

- Selection of drugs which have a lower risk of aromatisation
- Using in quantities and for periods which will reduce aromatisation
- The use of other drugs to inhibit or block aromatisation.

This means that some people who use PEDs will also use substances that in themselves are not anabolic or adrogenic, but seeks to inhibit or block the effects of aromatisation.

There are two key chemical approaches to reducing the risks of aromatisation:

- use of chemicals that block the enzyme Aromatase, so that oestrogen isn't produced – **aromatase inhibitors**
- use of chemicals that block oestrogen reaching receptors sites so it doesn't trigger changes – **oestrogen antagonists**

### Aromatase Inhibitors:

**Arimidex** (Anastrozole) **Proviron** (Mesterolone)

These bond to the receptor site on the aromatase enzyme that testosterone usually would. By doing so, the testosterone cannot bond to aromatase and so can't be metabolised in to oestrogen.

### Oestrogen Receptor Antagonists

**Nolvadex** (tamoxifen citrate) **Clomid** (Clomifen)

These are weak oestrogens that bond to the receptor sites and block them so that stronger oestrogens cannot bond and trigger a feminising effect.

## **Aromatisation due to Progesterone:**

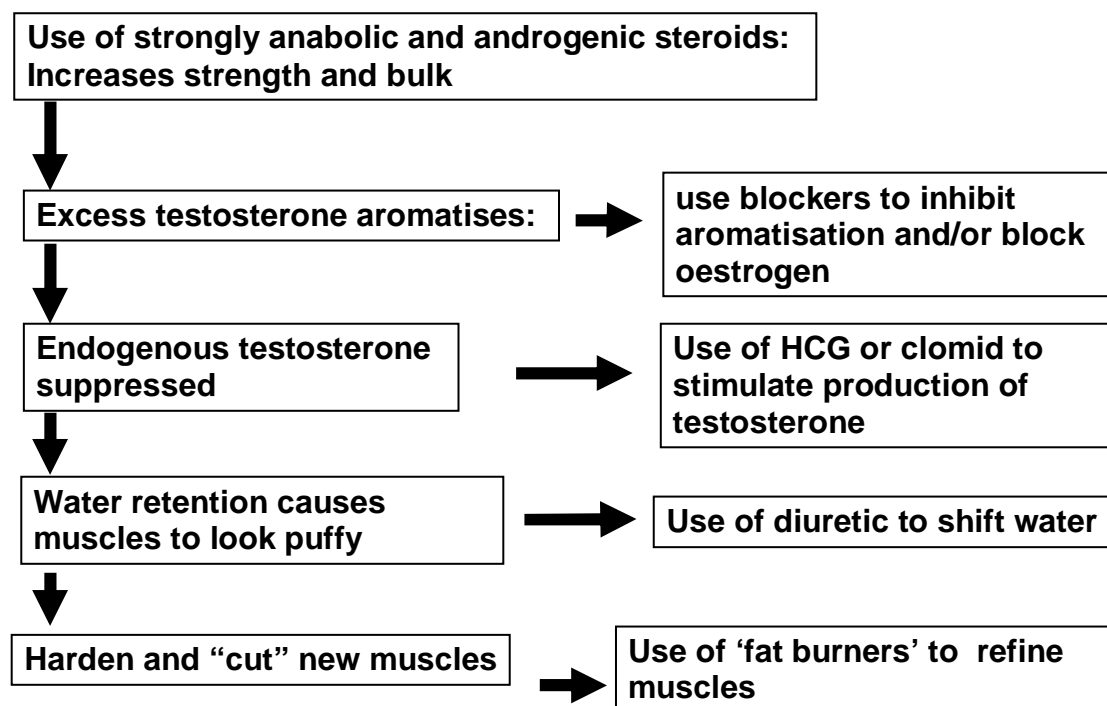
When progestin-based substances are taken, aromatisation may stem from the presence of progesterone rather than the presence of oestrogen. While the symptoms may be the same (e.g. development of breast tissue) the cause is different.

However as it is believed that oestrogen needs to be present to allow progesterone to function, strategies that keep oestrogen levels low will also serve to keep progesterone less effective. **Winstrol** is also used in this context as it prevents production of progesterone.

## 8 Cycles and Stacking

### 8.1 Basics of a cycle – and key ancillaries

So far we have looked at some foundation aspects of AAS use; the use of AAS to create bulk and strength, and then the resultant problems of aromatisation and suppression of endogenous testosterone. This forms the backbone of a steroid cycle and the required **post cycle treatment**.



Given the range of range of different PEDs that are available, and the differing effects each can have, different consumption programmes have been designed for male and female users.

**The stack** is the combination of medicines taken at the same time.

**The cycle** is the programme of drug taking over a number of weeks for an intended purpose.

**Types of cycle:** Numerous body-building and steroid websites provide illustrative cycles. These should not be taken as applicable to each individual. They would need to be tailored for each individual's build and metabolism.

**Beginner cycles:** for people new to taking steroids, these are simple and relatively low risk cycles for rapid increases over a short period of time.

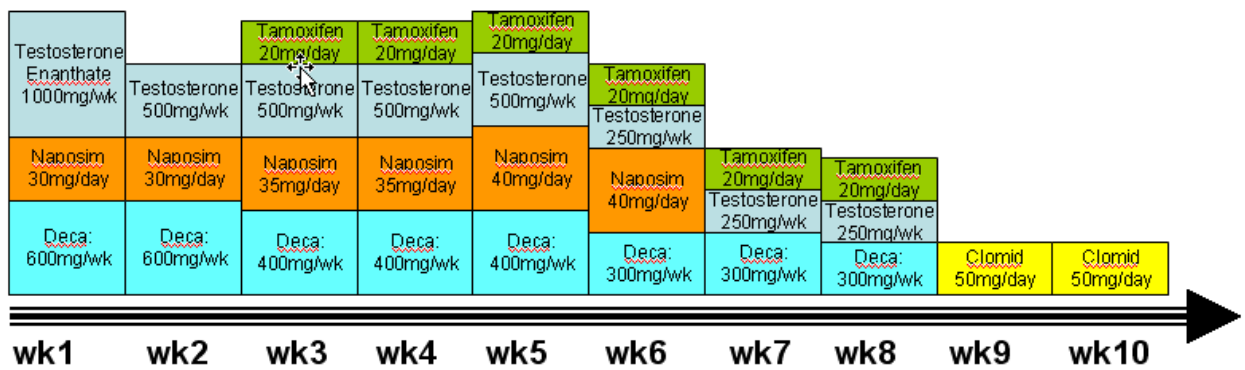
**Intermediate cycles:** for more experienced users who have developed a level of musculature and practise. These cycles may involve more substances with higher levels of risk and need for careful management.

**Advanced cycles:** considered to be very complicated and for more specialist purposes such as preparing for a show or to develop certain areas more than others.

**Women cycles:** intended for women with less risk of virilisation

**Cutting cycles/stacks:** The use of a drug or combination of drugs to reduce body fat around muscles leading to muscles looking more “cut” or “ripped.” The cut or ripped look is important for those competing or displaying.

## 8.2 Illustrative Cycle:



Naposim 'Dianabol' Methandrostenolone	Strong fast acting anabolic Aromatises quickly liver toxic	Stopped early in cycle to reduce liver damage	<b>Tamoxifen:</b> Blocks oestrogen receptors may need to be used longer	<b>Clomid</b> help restart testosterone production Reduce crash
Deca Durabolin Nandrolone Decanoate	Strong fast acting anabolic Less aromatisation Slow gains	Used throughout cycle with taper		
Testosterone Enanthate Nandrolone Decanoate	Strong anabolic and androgen Aromatises Won't work straight away	Tapered		

**Key**

This is an example of a cycle, based on a bulking cycle from a website. It has been reformatted here to make it easier to understand.

At the start, Testosterone Enanthate, Dianabol and Deca Durabolin are being used.

The Testosterone Enanthate, a powerful anabolic and androgenic, won't start working straight away, until the ester has been broken down.

The Deca Durabolin won't provide fast gains either. But it is a safer, less problematic compound and so provides a backbone through the whole cycle, tapered towards the end.

Naposim (Dianabol, methandrostenolone) is strongly anabolic and moderately

androgenic. It is used orally, and provides rapid bulking gains at the start of the cycle. However, it is liver toxic, causes significant water retention and aromatises easily. Its use is reduced and ends mid cycle.

As both the Naposim and the Test E aromatise readily, anti-oestrogens are introduced early in the cycle to reduce the risk of gynecomastia. Its use may need to continue longer at the end of the cycle.

Finally, Clomid (clomiphene citrate) is used to help restore endogenous testosterone production. However, it may need to be introduced earlier, and used for longer to reduce a crash.

## 9 Other Substances Used

Alongside the anabolic steroids, anti-oestrogen compounds and PCT mentioned so far, a collection of other substances may also be used in the context of Performance Enhancing Drugs.

### 9.1 Diuretics

The use of many anabolic steroids leads to water retention (bloating, the bloat). While water retention makes muscles look bigger and increases weight, the muscles are liable to be overly smooth and weak. This looks less attractive and doesn't assist in competition.

In order to shift this excess water, drugs with diuretic properties will usually be included at some stage in the process. This may include the use of a drug which is specifically a diuretic or a steroid which also has diuretic properties.

The use of anti-oestrogen compounds (e.g. nolvadex, proviron) or the use of diuretics (e.g. Furosemide - Lasix) is commonly used to shift water prior to competitions.

**9.2 Painkillers and anti-inflammatories:** use of analgesics to reduce pain and anti-inflammatories to reduce soreness in muscles may allow people to train harder and reduce soreness after training. However, it increases the risk of injury or damage to muscles and ligaments.

**9.3 Stimulants:** The use of stimulants can serve two useful purposes. They can provide more energy for a short period of time, allowing for more exertion during training. A key stimulant used is ephedrine. Ephedrine is also used as part of a "cutting stack:" a collection of drugs used to speed up the burning of body-fat to provide a lean, "ripped" look. Ephedrine is often used as part of a stack involving caffeine, aspirin and ephedrine (CAE Stack) to achieve this result.

Other substances used to help burn fat include thyroid agents which increase thyroid function.

**9.4 Other drugs:** A range of other substances are also used including Insulin and related compounds, Growth Hormones, GHB, and tanning agents.

The look-up tables later in the pack look at all the major products used, and key information about each product.

These tables do not attempt to be definitive or comprehensive; additional research will be required on specific drugs to provide more detailed information to clients.

## 10 Key Health Problems related to PED Use:

The use of steroids and other performance enhancing drugs can create a range of health problems. The underlying reasons for some of these problems have been discussed above. In this section, key physical and mental health related complications are briefly explored, along with symptoms, prevention strategies and responses. This list should not be used as a definitive guide to diagnosis, but as an aid to identifying some of the more common problems:

**Abscess:** The injection of non-sterile compounds or poor injecting practice can result in infections at the injecting site. This can result in abscess formation.

**Prevention:** Wherever possible, ensuring that high quality products are used, and checking against lists of known fakes; avoid products which appear to have been tampered with.

Wash hands, swab or wash injecting site prior to injection; use a clean needle for each injection.

**Presentation:** The user will present with a swelling at the injection site. As injections may be very deep, this may not be visible on the surface of the skin, as the infection could be in the deep muscle. The area may feel tender, swollen and hot. If it is close the surface, a visible swelling may be observed, which will be red and inflamed. The wound may have white pus visible or ooze foul-smelling discharge.

Abscesses will (rarely) heal themselves but more frequently will need to be lanced and drained, and treated with antibiotics. If left untreated, major surgery will be needed to excise the infected tissue leaving major scarring. Abscesses will release septic material in to the bloodstream, and can lead to septicaemia, which could be life-threatening.

**Aching Muscles:** This may be a sign of joint damage caused by improper or excessive training. When levels of fluid retention drop, joints that were well lubricated may start to ache too.

It is important that such aches are taken as a warning sign and not masked through the use of pain-killers to facilitate further training.

**Acne:** Both men and women may experience acne during the use of steroids. Skin is likely to become more oily as sebaceous glands become more active. The back and face are especially prone to acne. The use of over the counter acne treatments may help reduce these symptoms, along with washing with soap and water.

**Acromegaly:** overgrowth of bones on forehead, hands and feet, especially related to use of Human Growth Hormone.

**Balding:** Some steroids can speed up the process of hair loss in male-pattern balding. This hair-loss is typically non-reversible.

### **Cholestrol Levels:**

The blood carries basically two types of cholesterol, HDL (high density lipoproteins) the good cholesterol and LDL (low density lipoproteins) the bad cholesterol. The good cholesterol helps get rid of the bad cholesterol. The bad cholesterol is responsible for clogging arteries. Lower levels of HDL and higher levels of LDL directly correlate to heart attacks. Steroids increase the level of LDL and decrease the level of HDL.

Steroid users should have their levels of cholesterol regularly checked to reduce risk of high blood pressure and heart disease.

**Clitoral enlargement (Women):** This is a symptom of *virilisation* in women using androgenic steroids. It is permanent and non-reversible. Some women find this an asset, but others find it disfiguring and uncomfortable.

**Damage to joints and ligaments:** The use of powerfully anabolic drugs can cause a substantial increase in muscle size and weight – but not necessarily in muscle strength. These weighty muscles can strain ligaments and bones, and cause tears or damage to muscles, ligaments, joints and bones.

**Diabetes:** increased risk for people using Insulin, or Growth Hormone as part of a range of SIDs.

**Facial and body hair (women):** The excess production of facial and body hair (hirsutism) is a sign of virilisation in women using high doses of androgenic steroids. Generally these symptoms will reverse when steroid use is discontinued.

**Fatigue:** The dietary strains and training requirements of body building put a substantial impact on the body alone and can cause exhaustion.

However, the use of PEDs can cause tiredness and feelings of fatigue. A general feeling of being “unwell” could have numerous causes including:

- The “crash” following the end of a cycle when levels of natural testosterone may be low
- Low blood sugar levels
- Impaired liver function
- Bad reaction to one or more drugs
- Impaired sleep due to steroid or stimulant use
- Excessive training
- “crash” following excessive use of caffeine and ephedrine used to reduce body fat

**Gynecomastia** (aka “gyno,” “Bitch Tits”)

This condition is a serious sign of elevated oestrogen in men. It causes growth or development of one or both breasts. The nipple can become sore and enlarged and there is a development in breast size.

Warning signs can include puffiness and soreness around the nipple, a lump or solid feeling in the breast tissue.

Gynecomastia can occur where steroid use is not taking place; however it is a key risk of steroids which aromatise.

The risks can be reduced by avoiding use of steroids that aromatise, using at lower doses for shorter periods and the use of oestrogen blockers or aromatisation inhibitors.

Some of the growth may spontaneously reverse when oestrogen levels drop; however for others, gynecomastia can be a permanent symptom, which requires surgery to remove the presence of the over-developed breast tissue.

**Headaches:** It is hard to be certain what causes headaches but they are a common side effect; they may indicate an increase in toxic compounds in the body which are being inadequately metabolised and excreted. They may also reflect altered hormone levels, high blood pressure, dehydration or muscular strains.

While the use of headache remedies is an obvious answer, it may mean that important causative factors are not identified.

**Heart problems:** over development of heart tissue, training, high blood pressure and cholesterol levels and imbalanced diets increase the risk of heart problems.

**High Blood Pressure:** The use of steroids can elevate blood pressure to potentially dangerous levels. This can cause headaches, circulatory problems, impaired vision, nosebleeds and potentially increase the risk of strokes and heart problems.

Steroid users should ensure that they can have their blood-pressure taken regularly so that elevated blood pressure can be detected earlier.

**Impaired Immune System:** Although the elevated testosterone during steroid use can boost the immune system, the lowered testosterone levels at the end of use can leave the immune system impaired, leaving users prone to infections and illness.

**Impotence:** Male users may experience erectile problems during or after a period of steroid use. Some users will offset this through the use of Viagra, but for others there may be longer term problems with sexual dysfunction.

**Kidney Problems:** The combination of high drug loads, altered fluid and sodium levels and increased blood pressure can cause complications to kidney function. This can include swelling of the kidneys, impaired kidney function and, in extreme cases, damage or failure of the kidneys.

A careful watch of fluid intake and retention, care in the use of diuretics and checks in the event of pain around the kidneys should help avoid permanent damage to the kidneys.

### **Liver damage:**

Steroids, especially oral ones which have been C17-alpha-alkylated, are very liver toxic and will put a substantial strain on the liver.

Heavy use of steroids can cause liver damage, impaired liver function, jaundice, hepatitis and ultimately cancers of the liver and liver failure.

Symptoms can include ache in the lower back, fatigue, nausea, yellowness of the skin and the whites of the eye.

The best approach has to be avoiding putting such a strain on the liver: using lower doses, for shorter periods of time with breaks to allow liver health to recover.

People who have a history of impaired liver function should avoid the use of liver-toxic compounds.

Informed users will have regular tests of liver function to assess the impact of steroid use on liver health.

Many steroid users take high levels of Milk Thistle Seed Extract which helps to improve liver function.

### **Mental State:**

**Aggression:** Use of steroids, especially highly androgenic ones, can cause increased aggression and difficulty in controlling temper. This "roid rage" can cause intrapersonal problems, violent behaviour and, at its most extreme, serious offending behaviour.

Awareness of this issue is important. The problem can be addressed by reducing or avoiding the use of androgenic compounds. Coping strategies such as anger management can help reduce violent incidents. The use of relaxation aids such as herbal remedies, breathing exercises and meditation can assist people affected by elevated aggression.

**Depression:** Depression can have numerous sources including the drop of testosterone levels at the end of a cycle. The crash from a "hyped up" state to a resting state can leave the user low and depressed. Similarly, observing the rapid loss of bulk and strength at the end of the cycle can cause low mood.

While some of these symptoms may abate as testosterone levels return to normal, depression may have other underlying reasons which may need to be explored through counselling.

**Pain at injection site:** Pain straight after an injection is not uncommon, and can be reduced through injecting technique and process. However, prolonged pain may be a sign of problems including:

- Allergic reaction: this could be a problem with drugs from a new or untested source. Some people will be allergic to the oils, the steroids themselves or possibly contaminants.
- Infection: the steroids may not be sterile and cause an infection or irritation
- Trauma: moving or twisting the needle may tear tissue and cause pain
- Large volumes injected at site: this will stretch the site and cause damage and pain
- Typical drug reaction: some compounds are inherently painful to inject and this cannot be avoided.
- Frequent injection in same site: leading to increased scarring and damage to site.

If unusual or persistent pain is encountered, medical assistance should be sought.

**Prostate Gland:** The use of some steroids can lead to the male prostate gland to become enlarged. This can be painful, cause difficulty in urinating and some sources suggest a link with prostate cancer.

**Skin cancer:** may be a risk for people using high doses of tanning agents; weak evidence of this at present.

**Sterility:** Both men and women can have impaired fertility as a result of steroid use. Male sperm production and fertility can be impaired, and ovulation and menstruation in women may become irregular or cease.

**Stomach pains:** Oral steroids can sometime bring about stomach aches in some users, the most common being Anapolon, Stenox, Primabolan, Winstrol, and Dianabol. The symptoms can be anything from a slight discomfort to nausea, diarrhoea, and vomiting. Sometimes this can be avoided by taking the steroids at mealtime.

However, the symptoms could also be a marker for gastric problems such as stomach ulcers. In such situations the use of drugs such as aspirin, ephedrine and caffeine could exacerbate such symptoms.

**Testicular Shrinkage; Penile Shrinkage (Men):** The ongoing use of testosterone-based compounds can result in testicular shrinkage in men and, in severe case, atrophy of the testicles. The penis can also become smaller.

These symptoms may be permanent and irreversible. The use of drugs like Human Chorionic Gonadotrophin and Clomid will be used to stimulate and increase production of endogenous testosterone at the end of the cycle.

**Water and Salt Retention:** As many steroids can increase water retention and the retention of sodium. In turn this can cause muscles to appear bigger but also cause puffiness of skin. The retention of water and sodium can increase blood pressure and increase the strain on the kidneys.

**The use of diuretics, although a ready way of shifting this excess water can in turn cause substantial problems including severe dehydration and increased strain on the kidneys.**

## 11 Women and Steroid Use:

The use of hormones that are based around testosterone and hormones with androgenic effects can have serious and permanent side-effects for women who use them.

With male users, a key risk is that excesses of testosterone is converted to oestrogen and this can lead to the development of female secondary sexual characteristics.

Conversely, female users exposing themselves to high levels of male hormones can experience a **virilising** effect which causes **masculinisation**.

These effects, as mentioned earlier, can include:

- Deepening of voice,
- Interruption of the menstrual cycle
- Development of increased facial and body hair,
- Enlargement of clitoris
- Restructuring of bones, especially face and chin
- Sterility

In order to reduce these risks women who use steroids may use a number of approaches to avoid excessive masculinisation including:

- Avoidance of substances with a powerfully androgenic effect;
- Lower doses than men
- Shorter cycles
- Use of alternative substances such as Growth Hormone (GH)

## 12 Young People and Steroid Use:

Steroid use can have a serious and lasting effect on adult men and women. But the effects on young people can be even more serious.

Steroid use amongst young women in the UK is not a phenomenon that has come up in the course of researching this paper. However drug use amongst young men is widely reported and is an area of growing concern.

The use of steroids amongst young men who have not finished growing and maturing can affect both processes.

Problems for juvenile steroid users can include:

- Premature closure of skull plates;
- Termination of development of long-bones
- Stunted growth
- Interruption of puberty, incomplete pubescent development
- Sterility
- Development of male characteristics in girls
- Development of female characteristics in boys

### **Attitudes of and to young steroid users:**

While the steroid-using community agree on very little, they do agree that the use of anabolic steroids and growth hormones by people who have not completed puberty is too dangerous to countenance. Further, they would stress the need for diet and training work to maximise growth, before steroid use should be considered.

It is hard to assess how willingly existing steroid users will “induct” younger people into the using fold. The better-regulated body-building forums actively discourage use of steroids amongst young people. They stress the risks of early use, the importance of diet and training and the need to build and maximise these gains before considering steroid use.

Looking at some of these bulletin board debates, there is clearly a level of self-policing and peer-education at work.

However, there is absolutely nothing to suggest that younger users cannot access drugs and information from people who do not share these scruples. The quality of both the drugs and the information may be of dubious quality.

For many young men who want to use steroids, it is perceived to be a very fast short-cut to a desirable body. In reality, without the discipline, diet, training, money and knowledge, it is likely to be dangerous and damaging.

It may be useful to further divide young people using (or thinking about steroids) in to two groups, for whom different specific messages need to be developed.

	<b>Population 1</b>	<b>Population 2</b>
<b>Characteristics</b>	Under 21; Attending gym; Interested in sports/exercise/body building Some diet and training knowledge Patchy steroid knowledge	Under 21; Not using gym Limited interest in training and nutrition Use of other substances present; Very limited steroid knowledge; Primarily interested in looking bigger for cosmetic reasons
<b>Key issues</b>	Steroid use at this stage is premature; Naturally high testosterone levels mean use of exogenous testosterone not needed and wasteful; Full natural gains not yet been achieved; May not have knowledge and discipline to use steroids effectively and more safely	Steroid use likely to be partly or wholly ineffective due to poor diet and lack of exercise; Health risks increased due to poor knowledge of risks, risk reduction strategies, and polydrug use; Little benefit in promoting 'natural training' as this is not a key interest.
<b>Key Messages</b>	Now is too early; Should not start until at least after 21 when full pubescent development and growth has been completed; Train naturally to perfect diet, sleep and exercise. When this has been perfected for at least three years <u>and</u> gains in weight and strength have started to plateau, this is the earliest even to think about using SIDs. Ensure that you do as much research as possible and ensure you know what to use and how to use it as safely as possible.	Steroid use has a high level of risk if used unsafely; Cosmetically, instead of big muscles you run the risk of impotence, acne, greasy skin, bloat and breast tissue. Without diet and training muscle gains will look big, but will be physically weak and can't be retained. Eating better, moderate exercise and grooming will probably achieve the results you want better than a bodged attempt to use steroids.

## 13 Injecting Technique for Anabolic Steroids:

### 13.1 Intramuscular Injection

When drugs are injected into the muscle, they are absorbed into the blood stream via the muscle's blood system, and then return via the venous system to the heart, lungs and on to the rest of the body.

**Anabolic steroids** are usually injected into muscles, and to use intravenously would be dangerous and potentially fatal. A small number of PEDs are injected subcutaneously and these are specified in the drug fact tables below.

Most anabolic steroid users inject with the aim of the drug working systemically (across the whole body).

Some users suggest that very fast acting anabolics (e.g. Winstrol) are site injected to maximise effect in that area. A minority will undertake specific site injections with the aim of picking up 'sagging' muscles. Some argue that such an approach is ineffective while others are convinced that it has an impact on muscle development.

A few substances, notably Formebolone, cause muscles to swell up at the injection site and so will be used to boost specific sites.

### 13.2 Health risks

**Anabolic steroids:** Anabolic steroids are liable to have been prepared in clandestine labs, and may be non-sterile, contaminated or of variable strength. This can result in infections and other complications.

Where powders (such as HCG) are being prepared and injected, risks may arise from the drug itself, or the water used to reformulate it.

Some products such as veterinary implant pellets are not intended for injection and doing so brings with it increased risk of infection.

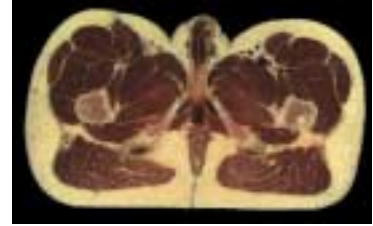
Repeated injection of steroids into the muscle can lead to scarring of the area, and sites will need to be rotated to reduce this risk.

### 13.3 Equipment

Intramuscular injections require a longer, thicker needle than intravenous injection. A longer needle is required to reach an adequate depth into the muscle. There is a risk that thin needles would snap off in the muscle and so a thicker needle will be required.

Fluid leaves a fine needle under higher pressure than a larger-bore needle. The increased pressure from fine needles can cause increased local tissue damage and so larger needles should be used for intramuscular injection.

Depending on build, depth of fat and size of muscles, and the site selected, a 23G (blue) of the appropriate length will be required. As the illustration shows, the amount of fat and depth of muscle can be quite substantial.



According to information from a variety of body-builders, most use 23G needles and use of 21G (green) needles is less common for injecting though often used for drawing up fluids. A small number of needle exchanges stock a blunt-ended 18G (pink) needle solely for drawing up.

A key advantage of this is that by providing a blunt, drawing up needle, it ensures that the same needle won't get used for injecting.

The downside is that a larger, blunt needle is not ideal for piercing rubber stoppers, especially of multi-dose vials.

Fewer used a green needle for injecting and it is not clear if this is a result of needle exchange advice.

For injectors with very large muscles, needing to reach deeper than the 1.25" possible with a long blue needle, a 1.5" needle may be needed. Rather than using a green needle a Black (22G) needle would be preferable as it will cause less scarring.

In theory there is no need for any steroid user to be injecting with 21G (green) needles. 23G or 22G needles cover the length range from 0.75" to 1.5" and this is more than adequate.

Unfortunately too few needle exchanges stock a 22G needle so some steroid injectors will have to use these overly-large needles.

For injections in to smaller muscles, smaller needles will be needed. This will depend on the site being used but shorter 23G needles or, for very small sites, 25G needles may be needed.

Only a small quantity of liquid can be injected into an intramuscular site. Again, depending on size, build and site used, a maximum of 2.5mL of solution should be injected into the thigh and buttock sites. The maximum that should be injected into IM sites on the arm is 1.5mL.

If larger quantities are to be injected, they should be injected at different sites. A fresh needle should be used each time to reduce damage.

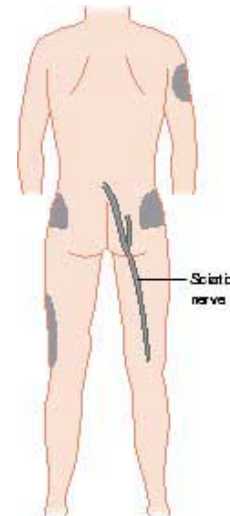
Although this advice is generally accepted by exchange workers, body builders routinely report injecting larger quantities per site; many respondents were injecting as much as 4ml per site in the glutes.

## 13.4 Sites

The sites indicated are the preferred sites for intramuscular injection. Sites will take a long time to heal, and so recently used sites should not be reused until they are fully healed.

There are three areas which are suitable for IM injections - buttocks (Gluteus Maximus), mid thigh (Quadriceps), and upper arm (Triceps). Only the mid thigh is advisable for someone injecting themselves.

Where an injector is attempting to inject themselves intramuscularly, rather than being injected by a third party, the site on the thigh is the only accessible site.



**Spot Injections:** Other sites are used for spot-site injections. Some Body-builders fiercely contest that such injections bring about lasting growth. They agree that the muscle may temporarily swell, but that this will go down later. Others are adamant that muscle gains can be achieved through spot-site injections.

The risks of site injecting are greater as the muscle groups involved are smaller and they tend to be closer to nerves and blood vessels. Many will require the user to be injected by a friend as they will be inaccessible otherwise.



Sites that may be used include:

- Trapezius: tricky area as there are numerous blood vessels and nerves in the area. Will need someone else to administer. It will be important to ensure that equal doses are taken on each side or development will be lopsided.
- Deltoids: this area provides three "heads" to inject in to; the rear, side and front. Injecting in to the front is close to a large vein so is risks.

Back View:



- Biceps: inspect area carefully for veins; smaller needles and smaller volumes
- Triceps: lots of nerves and veins; careful inspection of these areas
- Chest: highly dangerous; short needle going in at a shallow angle, rather than in at 90 degrees. Injection of oil or other material into the chest could be fatal.
- Forearms: very small muscles and lots of veins; small needles and aspirate to ensure you are not in a vein.

## 13.5 Process – IM Injection

- Only drugs prepared for IM injection should be injected into muscle areas. Any powders or solid contaminants will remain in the muscle and may cause infection.
- The maximum amount of fluid should be no more than 3mls – less for smaller muscles. Larger amounts should be split and injected separately into different sites.
- Always use sterile equipment.
- Choose the site (remembering to rotate sites and avoiding bruised or damaged areas).
- Wash hands before opening equipment.
- If using oil-based anabolic steroids, gently warm in a bowl or warm water, or in the armpit as this will help the oil become more fluid and less viscous. The solution should not be overheated; warm, not hot.

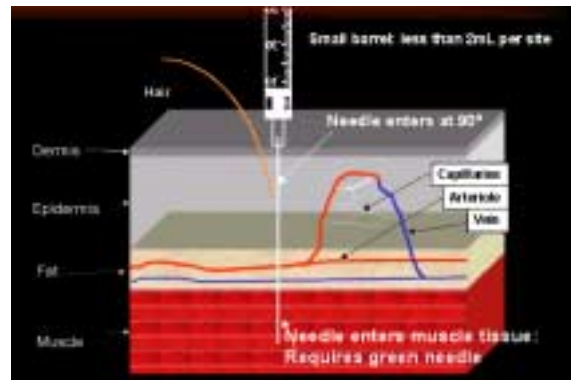


- If using multi-dose bottles of steroids, clean the rubber top first using a swab.
  - Some illicitly produced ampoules will be made of poor standard glass, or not be scored; some body building sites advocate using a file to score the neck prior to snapping it; others advocate using a piece of plastic tubing or other finger protection to prevent glass injuries.
- Clean area with soap and warm water.
  - Draw up the drugs with one needle (which should be unused) and dispose of as it will have been blunted and barbed by the ampoule. When filling from multi-dose bottles, it may be easier to add the stage below;
  - [for multi-dose bottles – initial filling: draw air into the syringe; the volume drawn in should be the same as the intended quantity of drug to be injected. The needle should be pushed through the rubber stopper, and the air forced in to the bottle. Then, when the needle is drawn back again, the fluid will be forced into the barrel more easily.]
  - Use a separate needle to inject.
  - The injecting needle should be a 22G or 23G needle of a suitable length for the site in question, needle as this will reduce damage caused from the pressure of the fluid and is less likely to break. Some people will want to use an orange needle for small site administration such as the calves.
  - Stay relaxed; tensing the muscle will only make entry difficult causing increased pain and damage.
  - Loosely hold the muscle, but not squeezing it hard; just enough grip to make it an easier target.
  - Hold the syringe like a dart and resting the injecting hand on the thigh. The needle should pierce the muscle at 90 degrees (right angle) with one smooth jab

using a rolling motion from the wrist. Do not push the needle in slowly as this will only cause more pain and tissue damage.



- Do not push the needle in right to the hub as this will add trauma to the site and will increase the chance of the needle snapping.
- Pull back slightly (aspirate) on the plunger to make sure that the needle is **not** in a blood vessel, if it is a small plume of blood will appear. If this happens withdraw the needle and place pressure on the site. Discard the preparation and begin again. At the very least change the needle.
- If no blood appears (there will be a small bubble of clear fluid) then the needle is in the muscle.
- Inject slowly and steadily as this will reduce tissue trauma.
- Withdraw the needle slowly.
- If any blood appears then apply pressure using clean fingers. Do not use Sterets as they will harden the skin and increase bleeding and bruising.
- Dispose of the equipment in a sharps bin.



## 13.6 Subcutaneous injections

Subcutaneous injecting is also often referred to as *skin popping*. As the name suggests, the injecting is made into below the surface of the skin, between the skin and muscles below.

The main drug that is associated with body-building and is injected subcutaneously is Insulin. A standard Insulin syringe will be the best equipment for this task. Other drugs injected SC can include tanning agents, Growth Hormone and Human Chorionic Gonadotrophin (HCG).

### Equipment

Subcutaneous injections require small quantities of fluid be injected using fine needles. No more than 0.5mL of solution should be injected into a site, so a 0.5mL or 1mL barrel will be adequate. A short fine needle (28G or 26G) should be used.

### Sites

The indicated sites are the preferred ones for subcutaneous injections.

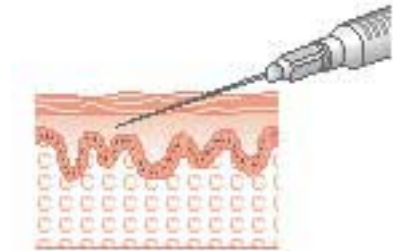


Sites where the skin is already bruised, discoloured or blemished should be avoided.

Sites will take a long time to heal, and so recently used sites should not be reused until they are fully healed.

## Process

- Clean hands.
- Use clean, unused equipment.
- The site is swabbed, and allowed to dry. The needle is inserted into the skin at a shallow angle, so that it is under the surface of the skin, and enters the fatty layer below.
- The contents should be injected slowly into the site.



## 13.7 Wounds and other Complications:

**BBV transmission:** PED users are at risk of contracting or spreading BBVs through unsafe injecting practice. Education should be provided about:

- Risks of sharing needles and syringes
- Cross contamination from swabs, blood spills etc
- Risks associated with sharing ampoules or multi-dose vials
- Safer sex
- Safe disposal of equipment

**Scarring:** Repeat injections over a sustained period of time can lead to scar tissue forming. This risk can be reduced by:

- avoiding the use of excessively large needles
- rotating sites
- allowing sites to heal
- not swabbing after injecting
- using a fresh needles for each injection.

**Abscesses:** The injection of non-sterile material in to a muscle can lead to infections and abscess formation. Symptoms may include a raised swollen area which is hot to the touch and inflamed.

As many PEDs are injected in to the deep muscle, abscesses may not be visible. They will be indicated by a hot, painful sensation deep in the muscle, pressure and stiffness. If an abscess is suspected, then the wound may need to be drained and the person treated with antibiotics. More serious abscesses will require surgery to cut away damaged muscle.

**Broken needle:** A needle can snap during injecting and this can cause dangerous complications. To avoid this risk, people should:

- use a suitably robust needle

- go in at 90 degrees and try to avoid bending the needle at an oblique angle
- avoid going in up to the hub.

If a needle does snap, the person should endeavour to keep still and remove the protruding end of the needle with a pair of pliers or fingers as appropriate. It will be easier for a third party to do this. If the needle cannot be retrieved, medical help will be essential.

**Bad Reaction:** Fake or non-sterile products can trigger an adverse reaction, which includes nausea, shakes, tremors and headaches. These symptoms will develop shortly after injecting. They should be taken as a warning sign that the drugs may be contaminated.

If symptoms persist, medical assistance should be sought.

### **13.8 See Appendix 2 for a sample assessment tool for use in Needle Exchange**

## 14 Fakes and Scams:

The sale of Performance Enhancing drugs is illegal in many countries and so the market for anabolic steroids is rife with counterfeit drugs and fake products.

Any search of the internet will throw up hundreds of on-line outfits purporting to sell anabolic steroids and other PEDs. However, a high proportion of these are "scammers," who will defraud credit-cards, sell details on to other bodies, supply inert products or supply counterfeits. Such operations are known as "scammers."

"Genuine" PEDs may come from several sources. Some are 100% genuine medical supplies intended for human use that have been diverted to PED users. Others are veterinary products that have been diverted for human use by PED users.

Other products are manufactured by illicit labs but are recognised as being good quality – they are manufactured to a high standard of safety, are sterile and are of known strength and quality.

There are also a huge number of fakes: they look like either the genuine product but may be of inferior quality – containing little or no active compounds. Some may be unsterile, or contain dangerous additives.

The consensus seems to be that most of the on-line suppliers cannot and do not sell genuine PEDs. To do so would, in most countries, be illegal and so operations would be rapidly shut down and prosecuted. Most of the supply of genuine products still needs a contact with a trusted source that will make genuine products available.

Having sourced drugs, there is still a risk that the products are counterfeit, and a range of strategies can help identify fake products. However, as many of the fakes are of a high standard, it can be nearly impossible to differentiate the products.

All the major body-building websites and discussion boards maintain lists of fakes and scammers, and anyone trying to identify products should consult these for further information. An example is at <http://www.steroidworld.com/scam.htm>

Some board moderators will also offer to look at pictures or descriptions and advise if products are know fakes. A good UK starting point for such a service MuscleTalk – listed in the "contacts" section. They offer the following advice on source checking (from: <http://www.muscletalk.co.uk/source-checking.asp>)

- Have a good basic background knowledge on what you are wanting to buy -
- Do not rush placing your order, take your time if you appear gullible you will be scammed. Ask loads of questions in your e-mails assess their reply times and their response.
- Research to find out who the company/person is; what they have to offer and the different types of steroids. Are they based in Europe or USA? It makes a big difference to customs.
- Check all the scammer lists. These can be found on numerous sites

- Email a Moderator for their advice on possible suppliers you have found.
- Ask for references, these could be fixed so check them out too!
- Check their pricing - if it looks really low, be suspicious. Do they include delivery in their prices? It may look a bargain until you add up the cost of posting.
- Most suppliers will not send samples
- If you think they could be legit order only a small amount. Build mutual trust, as it's a two-way thing with a genuine supplier. If they are legit never post their details on a message board unless they give their consent.
- Do not send large amounts of money until you are 100% sure. Even then double check.
- Just remember - if you are scammed you have no comeback and the supplier could be in a different country. You've lost your hard-earned money and delayed your cycle.
- If you are in doubt, do not order!!
- If you sign up for a board and post something like: "Hi, I am new and looking for a source..." you are going to receive emails from scammers - beware!
- Any source that is legit does not need to solicit business

#### **Additional steps for avoiding scams:**

- The packaging on fakes usually looks a lot like the original, but look at the expiration date and the batch number. If they look like they were all printed in the same process as the label, they are probably fakes.
- Be sure that the expiration date on the box matches the one on the product as well. Real pharmaceuticals are packaged in large quantities and the batch number and the expiration date are imprinted later in a different process.
- Look for low quality labels; You should not be able to easily peel the label off of the ampoule or the bottle. Most steroids made by legitimate companies use labels with rounded corners so pay attention to that as well. Also be sure to check that it is on straight and that it doesn't overlap itself, this is a sign of low quality.
- If you are checking a glass ampoule, be sure that if you have a few, they are filled consistently, and of the same colour. If it doesn't have a label, be sure that its imprint is straight and level and cannot be smeared easily.
- Be especially aware of multi-injection vials, these are easily obtained by counterfeiters and are not easily available as a legitimate drug.
- A final visual inspection of any products can identify bad fakes. If the caps of vials are loose, or rubber seals are perished then the substances should be discarded.

## 15 Steroids and the Law in the UK

A number of PEDs are classed as Controlled Drugs under the Misuse of Drugs Act 1971. They are Class C drugs.

Since the penalties for class C drugs were revised following the reclassification of Cannabis, **supply** of Class C drugs, including anabolic steroids carries a maximum penalty of 14 years.

However, the PEDs which are Controlled Drugs occupy Schedule 4ii under the Misuse of Drugs Regulations 2001.

This means that possession in a medicinal form is not a criminal offence. A user found in possession of PEDs in a medicinal form will not be committing an offence unless they are supplying or intending to supply it.

Premises (such as gyms) that knowingly allow supply of steroids will be committing an offence under Section 8(b) of the Misuse of Drugs Act 1971.

Other products used may be covered under the Medicines Act and may be Prescription Only medicines, making supply outside of medical settings an offence.

The legal status of each drug is detailed in the drug look-up charts below.

## 16 Services for Steroid Users:

Service user take-up of services, especially needle exchange, has increased substantially in the past few years. However, there are some measures that services can undertake to ensure ease of access and delivery of appropriate services:

**Publicity:** services will need to be publicised through non-typical routes. This could include:

- Gyms and sports clubs
- Bulletin boards on websites
- Health food shops and sports shops
- Magazines
- Local contests

**Access times:** PED users may well be in work and so may find lunchtime or evening services easier to access.

**Relationships with other users:** PED users do not view themselves in the same light as other drug users and often would prefer to not share services with them. Several respondents to a KFx questionnaire expressed a preference for services which were exclusively for PED users. Anecdotally, some services have reported that other needle exchange clients feel intimidated by PED users and so would prefer not to have them using the services at the same time.

**Equipment Needs:** Injecting PED users will need a range of equipment and this is best met through provision of Pick-and-mix, not pre-packed provision. This will typically include:

- Larger number of needles than syringes for drawing up and multi-site injections
- More large bore needles for large muscle groups
- More swabs, for cleaning vials and multi-site injections
- Larger sharps bins for larger barrel and needle discards
- No need for filters and stericups
- Advice about IM technique

### **Environment and Staff Training:**

Part of the reason for a lack of engagement by SID users and staff is mutual misunderstandings on both sides. Workers assume that steroid users know lots about their subject and only want needles. While this may often be the case there is a growing population of steroid users who are woefully ignorant about what they are taking and the risks.

PED users tend to assume that drugs workers know nothing about AAS and so don't see any point in engaging with workers. They may not see a need for a service.

In order to overcome this, workers clearly need to be better trained. But they also

need to revise the assumption that steroid users know what they are doing; all too often they don't.

But lastly, workers need to ensure they focus what they are good at – needle exchange, harm reduction, explaining risk, and exploring alternatives. They should not need to explore the issue of combinations of drugs for specific effects. This is discussed in more detail in the ETHICS section.

The environment in to which SID users come is also important. Most needle exchange and drugs services reflect their primary client group – heroin and crack users. So the literature, posters, and resources on display are aimed at this client group. The risk is that, to a steroid user, this environment reinforces the idea that this is not a service for them. It may be useful to redesign a service, especially if it is going to run as a dedicated session for steroid users.

**Assessment:**

Most agency assessment tools (both for treatment and Needle Exchange) are generic or opiate-specific and have little of relevance to steroid users. Specific assessment tools should be developed to ensure relevance to SID users.

For example needle exchange assessment tools will focus on IV injection, will look at sharing such as spoons and filters and will not be applicable to people injecting steroids intramuscularly. **See Appendix for an example of an assessment tool**

**Additional services:**

PED users are reluctant to seek help from GPs as they wish to ensure that the use of PEDs does not appear on medical notes. This is because steroid use is not wholly legal and can jeopardise health and sporting insurance.

However, there are a number of interventions that could be offered to PED users to reduce health including:

- Advice about BBVs
- Wound care for abscesses and site infections
- Blood pressure and cholesterol checks
- Liver function testing
- Profiling of hormone levels
- Access to support and counselling as required.

**Care planning:**

As with other drug users, a clear pathway of care for steroid users should be in place, which ensures that they are able to access the widest range of services at appropriate stages of their use and cycle.

**See appendix 1 for an illustrative care plan.**

## 17 Look up Charts for Anabolic Steroids and other PEDs:

The following charts are intended to provide key information on commonly used PEDs. The information has been gleaned from multiple sources but cannot claim to be comprehensive or exhaustive!

### 17.1 Names, Terms and Abbreviations:

When undertaking research on Performance Enhancing Drugs, one finds a huge number of abbreviations, acronyms, initials and slang.

Steroids have a **full chemical name** which describes its molecular structure. It is usually a bit of a mouthful and no-one refers to it by this name.

Instead people use a **short chemical name** which is usually a contraction of the full chemical name. This is not a brand-name. Instead it is an accepted name which is used internationally for the same compound.

Manufacturers who produce and distribute different products originally gave these products **Brand Names**. These were once specific to a company but, as the drugs are widely counterfeited, lots of producers use the same Brand Names. In some cases the Brand Name is more widely known and used than the short chemical name.

Finally, users may use short hand slang for products they use. For example:

**Full chemical name:**

17a-methyl-17b-hydroxy-1,4-androstadien-3-one 1-dehydro- 17a-methyltestosterone

**Short chemical name:**

methandrostenolone

**KEY BRANDS:**

**DIANABOL**

***Slang:***

*d-bol*

Sometimes the short chemical name can be an indicator of the composition of the product. The specific ester in a product may be included in the short chemical name, but this is not always the case! <b>Units and Measures:</b>			
<b>cc</b>	cubic centimetre		
<b>ml</b>	millilitre	1/1000 of a litre	
<b>mg</b>	milligram	1/1000 of a gram	thousandth
<b>mcg    µg</b>	microgram	1/1,000,000 of a gram	millionth
<b>IU</b>	International Unit		
An international unit (IU) is an international accepted amount of a substance. This type of measure is used for the fat-soluble vitamins (such as vitamins A, D and E) and certain hormones, enzymes, and biologicals (such as vaccines).			
The definition of an international unit (IU) is generally arbitrary, technical, and eminently forgettable. For example, an IU of vitamin E is the specific biological activity of 0.671 milligrams of d-alpha-tocopherol. Nonetheless, most IUs are quite handy and helpful in use as a means of standardizing measures.			
All international units are officially defined by the International Conference for Unification of Formulae.			
<b>Dosing schedules:</b>			
<b>m.e.d.</b>	multi every day	dosing more than once a day	
<b>e.d.</b>	every day	dosing once per day	
<b>e.o.d</b>	every other day	dosing every second day	
<b>Routes:</b>			
<b>IM</b>	intramuscular	injection in to a muscle	
<b>SC</b>	subcutaneous	injection below skin and above muscle	
<b>IV</b>	intravenous	injection in to vein	

## 17.2 Drug Look-Up Tables: (over)

in a shaded box are the names used to head up each drug-fact box and are the short chemical name; there's a page number which takes you to the specific information on that substance.

**Bold entries** in the right hand of the paired columns list the short chemical name for any specific compound;

Normal type entries are other terms for brands of the drug;

*italicised* names refer to slang names.

For example, if a client came in and said that they were using *drol*, look up *drol* in the left hand column. This show that *drol* is Nandrolone Decanoate.

Looking up Nandrolone Decanoate takes you to the relevant page number.

<u>Durathate</u>	<b>Testosterone Enanthate</b>
<u>Dynabolon</u>	<b>Nandrolone Decanoate</b>
<i>Drol</i>	<b>Nandrolone decanoate</b>
<u>Dynasten</u>	<b>Oxymetholone</b>
<u>Elaboron</u>	<b>Nandrolone decanoate</b>

<u>Nandrolone</u>	<b>Nandrolone decanoate</b>
<b>Nandrolone Decanoate</b>	p45
<b>Nandrolone Undecanoate</b>	p46
<u>Nandrobolic</u>	<b>Nandrolone decanoate</b>

Agovirin	Testosterone Propionate
Agovirin Depot	Tesosterone Suspension
Aldopur	Spirolactone
Anabol	Methandrostenolone
Anabolin	Methandrostenolone
Anaboline	Nandrolone decanoate
Andoredan	Methandrostenolone
Andro-Cyp	Testosterone Cypionate
Androfort	Testosterone Propionate
Androlone	Nandrolone decanoate
Anandrol	Oxymetholone
Anapolon	Oxymetholone
Anasteron	Oxymetholone
<b>Anastrozole</b>	<b>p69</b>
Anatrophill	Oxandrolone
Anavar	Oxandrolone
Andriol	Nandrolone decanoate
Andro	Testosterone Enanthate
Androtardyl	Testosterone Enanthate
Androxon	Nandrolone decanoate
Aromason	Exmestane
Arimidex	Anastrozole
Avodart	Dutasteride
Boldebal	Boldenone undecyclenate
Boldebal	Boldenone undecyclenate
<b>Boldenone</b>	<b>p56</b>
Biogonadyl	Human Chorionic Gonadotrophin
Bionabol	Methandrostenolone
Broncodil	Clenbuterol
Broncoterol	Clenbuterol
Ceadon	Tamoxifen
Cesbron	Clenbuterol
Chlorodehydromethyl-testosterone	Turinabol
Choragon	Human Chorionic Gonadotrophin
Chorex	Human Chorionic Gonadotrophin
<i>Clen</i>	Clenbuterol
<b>Clenbuterol</b>	<b>p70</b>
Clomid	Clomiphene
<b>Clomiphene</b>	<b>p70</b>
Contrasmina	Clenbuterol
Contraspasmina	Clenbuterol
Corpormon	Growth Hormone
Crescormon	Growth Hormone
Crioxifeno	Tamoxifen
Cynomel	Cytomel
<i>Cyp</i>	Testosterone Cypionate
Cypionate	Testosterone Cypionate
Cytomel	Liothyronine
<i>D-bol</i>	Methandrostenolone
<i>Deca</i>	Nandrolone decanoate
Deca-Durabolin	Nandrolone decanoate
Defarol	Tamoxifen
Delatestryl	Testosterone Enanthate
Depotest	Testosterone Cypionate
Depo-Testosterone	Testosterone Cypionate
Deverol	Spirolactone
Dianabol	Methandrostenolone
Do Dos	Ephidrene
Durandon	Sustanon
Duraspiron	Spirolactone
Duratest	Testosterone Cypionate
Durateston	Sustanon
Durathate	Testosterone Enanthate
<b>Dutasteride</b>	<b>p79</b>
Dynabolon	Nandrolone Decanoate
<i>Drol</i>	Anadrol
<b>Drostanolone</b>	<b>p56</b>
Dynasten	Oxymetholone
Elpihormo	Nandrolone decanoate
Emblon	Tamoxifen

Performance Enhancing Drugs

<i>Enan</i>	Testosterone Enanthate
<i>Enanth</i>	Testosterone Enanthate
Enarmon-depot	Testosterone Enanthate
Encephan	Methandrostenolone
<b>Ephedrine Hydrochloride</b>	<b>p71</b>
<i>Eq</i>	Boldenone undecyclenate
Equipoise	Boldenone undecyclenate
Esiclone	Formebolone
Everone	Testosterone Enanthate
<b>Exmestane</b>	<b>p69</b>
Extraboline	Nandrolone decanoate
Femara	Letrozole
<b>Finasteride</b>	<b>p79</b>
<b>Fluoxymesterone</b>	<b>p56</b>
<b>Formebolone</b>	<b>p57</b>
Fortadex	Nandrolone Laurate
<b>Gamma Hydroxy Butyrate</b>	<b>p71</b>
Ganabol	Boldenone undecyclenate
GHB	Gamma Hydroxy Butyrate
Genotonorm	Growth Hormone
Genotropin	Growth Hormone
Gestyl	Human Chorionic Gonadotrophin
Gonadotrophan	Human Chorionic Gonadotrophin
Gorm	Growth Hormone
<b>Growth Hormone</b>	<b>p72</b>
Halotestin	Fluoxymesterone
HCG	Human Chorionic Gonadotrophin
Hemogenin	Oxymetholone
Histerone	Tesosterone Suspension
<b>Human Chorionic Gonadotrophin</b>	<b>p73</b>
Humatrope	Growth Hormone
<b>Insulin</b>	<b>p75</b>
<b>Insulin Growth Factor</b>	<b>p74</b>
IGF1	Insulin Growth Factor
Jenaspiron	Spirolactone
Kessar	Tamoxifen
Laurabolin	Nandrolone Decanoate
<i>Letro</i>	Letrozole
<b>Letrozole</b>	<b>p76</b>
Linomel	Liothyronine
<b>Liothyronine</b>	<b>p76</b>
Lipidex	Oxandrolone
Lonavar	Oxandrolone
Mandofen	Tamoxifen
Masteron	Drostanolone Propionate
<b>Melanotan</b>	<b>p77</b>
<b>Mesterolone</b>	<b>p57</b>
Mestoranum	Mesterolone
Metanabol	Methandrostenolone
Metandiabol	Methandrostenolone
<b>Methandrostenolone</b>	<b>p58</b>
<b>Methenolone Acetate</b>	<b>p59</b>
<b>Methenolone enanthate</b>	<b>p58</b>
Monores	Clenbuterol
<b>Nalbuphine Hydrochloride</b>	<b>p77</b>
Nandrolone	Nandrolone decanoate
<b>Nandrolone Decanoate</b>	<b>p59</b>
<b>Nandrolone Undecanoate</b>	<b>p60</b>
<b>Nandrolone Laurate</b>	<b>p60</b>
Nandrobolic	Nandrolone decanoate
Naposim	Methandrostenolone
Neo-Durabolic	Nandrolone decanoate
Nerobol	Methandrostenolone
Norditropin	Growth Hormone
<i>Nolva</i>	Tamoxifen
Nolvadex	Tamoxifen
Novegam	Clenbuterol
Nubain	Nalbuphine Hydrochloride
Nurezan	Nandrolone decanoate
Osryol	Spirolactone
Oxandrin	Oxandrolone

<b>Oxandrolone</b>	<b>p61</b>
Oxitosona	Oxymetholone
<b>Oxymetholone</b>	<b>p61</b>
<i>Oxymeth</i>	Oxymetholone
Plenastril	Oxymetholone
Pluviron	Mesterolone
Pregnesin	Human Chorionic Gonadotrophin
Pregnyl	Human Chorionic Gonadotrophin
Primogonyl	Human Chorionic Gonadotrophin
Proscar	Finasteride
Profasi	Human Chorionic Gonadotrophin
Prontovent	Clenbuterol
<i>Prov</i>	Mesterolone
Proviron	Mesterolone
<i>Primo</i>	Methenolone
Primobolan Depot	Methenolone
Primobolan Oral	Methenolone
Primoteston Depot	Testosterone Enanthate
<i>Prop</i>	Testosterone Propionate
Pronabol	Methandrostenolone
R3 IGF1	Insulin Growth Factor
Restandol	Nandrolone decanoate
Retabolil	Nandrolone decanoate
Retabolin	Nandrolone decanoate
Roboral	Oxymetholone
Somatomorm	Clenbuterol
Somatomedin C	Insulin Growth Factor
Spiractone	Spirolactone
Spiroctan	Spirolactone
Spirohexal	Spirolactone
Spirolang	Spirolactone
Spirolone	Spirolactone
Spirom	Aldactone
Spiropent	Clenbuterol
<b>Spirolactone</b>	<b>p78</b>
<b>Stanozolol</b>	<b>p62</b>
Stenolon	Methandrostenolone
Sterobolin	Nandrolone decanoate
Stromba	Stanozolol
Strombaject	Stanozolol
<i>Sust</i>	Sustanon
<b>Sustanon</b>	<b>p65</b>
Sybolin	Boldenone undecyclenate
Synasteron	Oxymetholone

T3	Cytomel
Tadex	Tamoxifen
Tamofen	Tamoxifen
Tamoplex	Tamoxifen
Tamox	Tamoxifen
<b>Tamoxifen</b>	<b>p78</b>
<i>T-bol</i>	Turinabol
Tertroxin	Cytomel
Testa C	Testosterone Cypionate
Testadiate-Depo	Testosterone Cypionate
Testex Leo prolongatum	Testosterone Cypionate
Testosterone Aqueous	Testosterone Suspension
<b>Testosterone Cypionate</b>	<b>p63</b>
Testosterone Depot	Testosterone Enanthate
<b>Testosterone Enanthate</b>	<b>p63/66</b>
<b>Testosterone Propionate</b>	<b>p64</b>
<b>Testosterone Suspension</b>	<b>p65</b>
<b>Testosterone Undecanoate</b>	<b>p64</b>
Testoviron Depot	Testosterone Enanthate
Theramex	Testosterone Heptylate
Thyrotardin	Cytomel
Ti-Tre	Cytomel
Tiromel	Cytomel
Tprop	Testosterone Propionate
<i>Tren</i>	Trenbolone Acetate
<b>Trenbolone</b>	<b>p67</b>
<b>Trenbolone Acetate</b>	<b>p67</b>
Trinergic	Methandrostenolone
Turanabol	Turinabol
<b>Turinabol</b>	<b>p68</b>
TV	Testosterone Enanthate
Undestor	Nandrolone decanoate
Vasorome	Oxandrolone
<i>Var</i>	Nandrolone decanoate
Vebonol	Boldenone undecyclenate
Ventolase	Clenbuterol
Verospiron	Spirolactone
Virigen	Nandrolone decanoate
Vistiron	Mesterolone
<i>Winny</i>	Stanozolol
<b>Yohimbine</b>	
Winstrol	Stanozolol
Ziremilon	Nandrolone decanoate
Zomacton	Growth Hormone

<b>Chemical Name:</b>	<b>Boldenone Undecyclenate</b>
<b>Brand Names:</b>	Equipoise, Boldebal
<b>Slang names:</b>	<i>Eq, Bol</i>
<b>Description:</b>	Anabolic Steroid; veterinary preparation
<b>Route:</b>	IM
<b>Half-life</b>	14 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes, but only to a small extent compared to testosterone
<b>Typical Dose</b>	200-400mg per week, possibly split in two two or three day doses
<b>Cost</b>	£50/10ml vial est
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Long acting ester</li> <li>• Reasonably available and popular anabolic steroid</li> <li>• Highly anabolic and moderately androgenic</li> <li>• Low risk of liver damage, low levels of aromatisation</li> <li>• Relatively slow acting and so used in longer cycles or alongside faster acting steroids.</li> </ul>

<b>Chemical Name:</b>	<b>Drostanolone Propionate</b>
<b>Brand Names:</b>	Masteron
<b>Slang names:</b>	<i>Mast</i>
<b>Description:</b>	Anabolic steroid; moderately powerful anabolic: produces lean muscle mass
<b>Route:</b>	IM
<b>Half-life</b>	Two days
<b>C17-AA</b>	No
<b>Aromatises</b>	No; may reduce aromatisation partially
<b>Typical Dose</b>	200-400mg per week in three doses
<b>Cost</b>	?
<b>Notes</b>	<ul style="list-style-type: none"> <li>• All products sourced from underground labs</li> <li>• Least common of the main anabolics in the UK</li> </ul>

<b>Chemical Name:</b>	<b>Fluoxymesterone</b>
<b>Brand Names:</b>	Halotestin
<b>Description:</b>	Anabolic Steroid
<b>Route:</b>	Oral
<b>Half-life</b>	?
<b>C17-AA</b>	Yes
<b>Aromatises</b>	No
<b>Typical Dose</b>	10-40mg daily
<b>Cost</b>	?
<b>Legal status</b>	Class C: Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Powerfully androgenic – good strength drug, but less useful for bulk</li> <li>• Risks of androgenic side effects – aggression, acne, hair loss</li> <li>• Not widely available</li> </ul>

<b>Chemical Name:</b>	<b>Formebolone</b>
<b>Brand Names:</b>	Esiclene
<b>Description:</b>	Anabolic Steroid; inflammatory
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	Effects last 24-48 hours
<b>C17-AA</b>	Yes
<b>Aromatises</b>	No
<b>Typical Dose</b>	1-2ml per muscle group for 2-5 days
<b>Cost</b>	£10/amp but hard to get hold of – little availability
<b>Legal status</b>	Class C: Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Causes muscle to swell up with lymph fluid</li> <li>• Muscle looks at feels bigger and harder</li> <li>• Is used in specific muscles to make them more pronounced</li> <li>• Contains lidocaine to reduce pain at injection sites</li> <li>• Muscles will “deflate” after administration</li> <li>• Injected into smaller muscles so smaller needles needed</li> </ul>

<b>Chemical Name:</b>	<b>Mesterolone</b>
<b>Brand Names:</b>	Proviron
<b>Slang names:</b>	<i>Prov</i>
<b>Description:</b>	Steroid: Androgenic; not anabolic. Blocks aromatisation so prevents increase in oestrogen levels. Used to offset aromatisation caused by other drugs
<b>Route:</b>	Oral
<b>Half-life</b>	8-9 Hours
<b>C17-AA</b>	No
<b>Aromatises</b>	Prevents aromatisation of other drugs
<b>Typical Dose</b>	25-50mg/day taken in AM and PM dose
<b>Cost</b>	£1-2/tablets (est)
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Androgenic steroid</li> <li>• Is not anabolic</li> <li>• Blocks aromatisation; less powerfully so than Arimidex</li> <li>• Also increases hardness of muscles</li> <li>• Can cause sexual overstimulation and priapism in men</li> <li>• Can cause virilisation in women, especially at high doses</li> </ul>

<b>Chemical Name:</b>	<b>Methandrostenolone</b>
<b>Brand Names:</b>	Dianabol, Anabol, Metanabol, Naposim
<b>Slang Names</b>	<i>D-Bol, nap</i>
<b>Description:</b>	Anabolic Steroid
<b>Route:</b>	Oral, but IM injectable compounds also available
<b>Half-life</b>	2-4 Hours
<b>C17-AA</b>	Yes
<b>Aromatises</b>	Yes, very readily: anti oestrogens probably required
<b>Typical Dose</b>	15-40mg/day Oral;
<b>Cost</b>	£40/20 tablets (est)
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Powerful anabolic with androgenic properties</li> <li>• Increases bulk and strength but also causes water retention</li> <li>• Aromatises easily so generally will be used with oestrogen blockers</li> <li>• Can speed up balding in men, aggravates acne</li> <li>• Can cause aggressive behaviour at high doses</li> <li>• Not advised for women due to powerful virilising effects</li> <li>• Highly popular in tablet form; readily available</li> <li>• Often used at the start of cycles to provide early rapid gains</li> <li>• Use then discontinued after first few weeks to reduce strain on liver</li> </ul>

<b>Chemical Name:</b>	<b>Methenolone enanthate</b>
<b>Brand Names:</b>	Primobolan
<b>Slang names:</b>	<i>Primo</i>
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Intramuscular
<b>Half-life</b>	10 days
<b>C17-AA</b>	No
<b>Aromatises</b>	No
<b>Typical Dose</b>	200mg/week often taken in a stack with Deca-durabolin for men 50-100mg/week often with Winstrol for women
<b>Cost</b>	£10-20/ampoule
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Good basic steroid with anabolic effect;</li> <li>• Weaker than Deca-durabolin</li> <li>• Comparatively low risk: low liver toxicity and low risk of elevating blood pressure</li> <li>• Used by women in smaller doses: virilisation can occur</li> <li>• Widely available and very popular</li> </ul>

<b>Chemical Name:</b>	<b>Methenolone Acetate</b>
<b>Brand Names:</b>	Primobolan
<b>Slang names:</b>	<i>Primo</i>
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Oral
<b>Half-life</b>	8-9 Hours
<b>C17-AA</b>	No
<b>Aromatises</b>	No
<b>Typical Dose</b>	50-150mg per day in two or three doses
<b>Cost</b>	£1-2/tablet (est)
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Oral form of primobolan</li> <li>• Highly anabolic and low androgenic properties</li> <li>• Low liver toxicity</li> <li>• Short acting so needs to be taken every day or Multi-every Day</li> <li>• Not so widespread in the UK</li> <li>• Popular with and well tolerated by women</li> </ul>

<b>Chemical Name:</b>	<b>Nandrolone Decanoate</b>
<b>Brand Names:</b>	Deca-Durabolin, extraboline
<b>Slang names:</b>	<i>Deca</i>
<b>Description:</b>	Anabolic Steroid; derived from nor-testosterone
<b>Route:</b>	Intramuscular
<b>Half-life</b>	8 days
<b>C17-AA</b>	No
<b>Aromatises</b>	A little; about as fifth as much as testosterone.
<b>Typical Dose</b>	200/400mg/week
<b>Cost</b>	£10-25/200mg
<b>UK Law</b>	Class C; Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Highly anabolic and moderately androgenic – gives gain in bulk and some strength gains</li> <li>• Does aromatise to an extent, people using high doses or sensitive to oestrogen would want to take precautions</li> <li>• Causes very high levels of water retention</li> <li>• Causes water retention but can reduce joint pain</li> <li>• Can cause high blood pressure, reduced clotting, acne and greasy skin, and, with prolonged use, reduction of sperm production in men</li> <li>• Women using higher doses likely to experience symptoms of virilisation.</li> <li>• Relatively expensive and widely faked</li> </ul>

<b>Chemical Name:</b>	<b>Nandrolone Undecanoate</b>
<b>Brand Names:</b>	Dynabolon
<b>Slang names:</b>	NA
<b>Description:</b>	Anabolic Steroid
<b>Route:</b>	Intramuscular
<b>Half-life</b>	16 days
<b>C17-AA</b>	No
<b>Aromatises</b>	No
<b>Typical Dose</b>	2-4ml/week in twice-weekly doses
<b>Cost</b>	£10-20/amp (est)
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Similar in properties to nandrolone but slightly longer half life; moderately more powerful</li> <li>• Rare in UK</li> </ul>

<b>Chemical Name:</b>	<b>Nandrolone Laurate</b>
<b>Brand Names:</b>	Laurabolin
<b>Slang names:</b>	
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Intramuscular
<b>Half-life</b>	Four weeks
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	200mg-400mg/week
<b>Cost</b>	£200-250/50ml
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Nandrolone-type effects but longer acting</li> <li>• Not commonly available</li> </ul>

<b>Chemical Name:</b>	<b>Oxandrolone</b>
<b>Brand Names:</b>	Anavar
<b>Slang names:</b>	<i>Var, Oxa</i>
<b>Description:</b>	Anabolic Steroid
<b>Route:</b>	Oral
<b>Half-life</b>	9 Hours
<b>C17-AA</b>	Yes
<b>Aromatises</b>	No
<b>Typical Dose</b>	20-40mg/day – men 10-15mg/day – women
<b>Cost</b>	£100/100tablets (est)
<b>UK Legal</b>	Class C; Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Considered to be highly anabolic, and enjoys a relatively low risk profile given its relative potency.</li> <li>• Less significant for bulking, more significant for lean hard quality muscle gain</li> <li>• Low androgenic effect so popular with women and more sensitive users</li> <li>• Less impact on endogenous testosterone production</li> <li>• Relatively expensive</li> <li>• Less commonly used in UK but still significant levels of use</li> <li>• Can cause nausea and gastrointestinal pain</li> </ul>

<b>Chemical Name:</b>	<b>Oxymetholone</b>
<b>Brand Names:</b>	anadrol, anapolon
<b>Slang names:</b>	<i>Oxymeth, drol</i>
<b>Description:</b>	Anabolic Steroid; progestin
<b>Route:</b>	Oral
<b>Half-life</b>	8-9 Hours
<b>C17-AA</b>	Yes
<b>Aromatises</b>	<p>Has oestrogenic action – which looks like symptoms of aromatisation such as gynecomastia, possibly due to the drugs progesterone-like effects.</p> <p>Where Anadrol is used with steroids that DO aromatise, the effects of both are worse in terms of estrogenic effects</p>
<b>Typical Dose</b>	50-150mg
<b>Cost</b>	£40/20 tablets (est)
<b>UK Legality</b>	Class C; Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Very powerful oral steroid which offers big gains in bulk and strength very quickly.</li> <li>• Causes very high levels of water retention</li> <li>• Widely used and popular;</li> <li>• Very liver toxic;</li> <li>• Size gains rapidly reverse if use is discontinued suddenly</li> <li>• Used at start of cycle to increase bulk, before switching to other compounds for lasting gains</li> <li>• Can cause headaches, nausea, stomach pains, diarrhoea, disrupted sleep, balding</li> <li>• Not recommended for use by women</li> </ul>

<b>Chemical Name:</b>	<b>Stanozolol</b>
<b>Brand Names:</b>	Winstrol, Stromba
<b>Slang names:</b>	<i>Winnie, Stromba</i>
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Oral, IM injection
<b>Half-life</b>	9 hours (oral) : 1 day (Injected)
<b>C17-AA</b>	Yes
<b>Aromatises</b>	No; acts as progesterone-blocker and so can block the actions of other substances that can cause feminisation through the action of progesterone
<b>Typical Dose</b>	50mg Every other day (by injection) or 15-25mg/day oral
<b>Cost</b>	£5/amp: 50p/tablet (est)
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Widely used and popular</li> <li>• Does not aromatise and partially blocks progesterone-induced gynecomastia and other symptoms</li> <li>• Liver toxic, but less so than some other 17AA compounds</li> <li>• Comes in aqueous solution that needs to be shaken prior to injection</li> <li>• Also comes in tablet form</li> <li>• Some users will drink the injectable form, rather than inject it as it requires daily, painful injections</li> <li>• Helps develop strength and hardness of muscles and can also so is used to harden and cut in muscles.</li> <li>• Also used by women, but with increases risk of side effects, but at lower doses and for shorter periods.</li> <li>• The crystal-size of different brands of Stanazolol affect which equipment will be needed, and the half-life of the drug. Larger crystals will be absorbed more slowly, so won't need to be injected so often. However, a larger (22G) needle will probably be needed. Finer powders will pass through a finer (e.g. 15-27G) needle but will need to be used more frequently.</li> </ul>

<b>Chemical Name:</b>	<b>Testosterone Cypionate</b>
<b>Brand Names:</b>	Testex Leo Prolongatum, Testa C
<b>Slang names:</b>	<i>Cyp</i>
<b>Description:</b>	Anabolic Steroid; esterised testosterone
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	12 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	200-600mg per week
<b>Cost</b>	£10-20/amp (est)
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<p>A powerful and popular anabolic steroid</p> <ul style="list-style-type: none"> <li>• Long acting strong anabolic and androgenic</li> <li>• Won't start working so quickly so likely to be used in conjunction with shorter-acting AAS</li> <li>• Significant bulking and strength gains</li> <li>• oily skin, acne, accelerated male pattern balding</li> <li>• Causes water retention: muscles may look puffy but joints may be less painful</li> <li>• Can cause symptoms of feminisation very rapidly, especially in sensitive individuals</li> <li>• Increases steroid "pump" effect –increased blood flow and red blood cells.</li> <li>• High blood pressure in sensitive individuals</li> <li>• High impact on endogenous testosterone production – many will use another treatment to stimulate testosterone production</li> <li>• Big crash – and loss of growth – when use is discontinued suddenly</li> <li>• Increased risk of aggression,</li> <li>• Not recommended for women as has powerfully virilising effects</li> </ul>

<b>Chemical Name:</b>	<b>Testosterone Enanthate</b>
<b>Brand Names:</b>	testosterone prolongatum, testoviron
<b>Slang names:</b>	<i>Enan, TV</i>
<b>Description:</b>	Anabolic Steroid; testosterone with enanthate ester
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	10 – 11 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes very strongly
<b>Typical Dose</b>	200-600mg/week in one or two doses
<b>Cost</b>	£50-150 for a 10ml bottle
<b>UK Legality</b>	Class C; Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• As for cypionate</li> </ul>

<b>Chemical Name:</b>	<b>Testosterone Propionate</b>
<b>Brand Names:</b>	Testex Leo, Testosteron, Testoviron,
<b>Slang names:</b>	<i>Test Prop, Prop</i>
<b>Description:</b>	Anabolic Steroid; esterised testosterone
<b>Route:</b>	Intramuscular Injection; also available as a suppository
<b>Half-life</b>	4 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	50-100mg every day or every other day (Men) weekly doses of 200-400mg per week
<b>Cost</b>	£50-60/10 ml amp (est)
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Testosterone propionate is shorter acting so it starts working more quickly than longer ester forms of testosterone.</li> <li>• However, as it is short acting, it will need to be used more frequently requiring a larger number of injections less liver toxicity</li> <li>• Some users find it a more painful substance to inject than other esters</li> <li>• Risks as for other testosterone esters.</li> </ul>

<b>Chemical Name:</b>	<b>Testosterone Undecanoate</b>
<b>Brand Names:</b>	Andriol, Nebido
<b>Slang names:</b>	
<b>Description:</b>	Anabolic Steroid, with very long-acting Ester
<b>Route:</b>	IM
<b>Half-life</b>	3-5 Hours
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	1000mg every 2-4 weeks
<b>Cost</b>	?
<b>UK Legality</b>	Class C; Sch4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Recent arrival – long acting testosterone ester requiring very infrequent administration;</li> <li>• Nebido, brand name of the injectable form – replaces the older, less widely available Andriol, which was a weaker compound intended for oral consumption.</li> <li>• Risks and issues as for other Testosterone esters</li> </ul>

<b>Chemical Name:</b>	<b>Testosterone Suspension</b>
<b>Brand Names:</b>	
<b>Slang names:</b>	<i>Test Susp</i>
<b>Description:</b>	Anabolic Steroid; testosterone in water
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	1 day
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	100-200mg EOD
<b>Cost</b>	?
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<p>Crystals of testosterone are in a water suspension. They are not soluble and will settle out if the ampoule is left. Veterinary products will contain larger particles. Human products contain micro-crystals, too small to see with the naked eye. The ampoule needs to be shaken and then injected.</p> <ul style="list-style-type: none"> <li>• Short acting; will start working very quickly so used to get results quickly, or for front loading at the start of a cycle</li> <li>• Requires frequent injections</li> <li>• Painful to inject</li> <li>• Risks as for other testosterone products</li> <li>• Not widely available</li> </ul>

<b>Common Name</b>	<b>Sustanon</b>
<b>Chemical Name:</b>	Testosterone propionate 30mg, Testosterone phenylpropionate 60 mg, Testosterone isocaproate 60 mg, Testosterone decanoate 100 mg
<b>Brand Names:</b>	Sustanon, Sust 250
<b>Slang names:</b>	<i>Sust</i>
<b>Description:</b>	Anabolic Steroid; blend of four different testosterone esters
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	15-18 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Yes
<b>Typical Dose</b>	250-1000mg/week most are happy on 250-500mg
<b>Cost</b>	£15-30/amp (est)
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Blend of esterised testosterone gives a long period of effect</li> <li>• Shorter acting esters start working first, and then longer acting esters start working afterwards</li> <li>• Anabolic and androgenic – provides bulk and strength</li> <li>• Side effects similar to other testosterone compounds: oily skin, acne, sexual excitement, aggression, increased balding</li> <li>• Reduces endogenous testosterone production</li> </ul>

<b>Common Name:</b>	<b>Testoviron Depot</b>
<b>Chemical Name:</b>	Testosterone Propionate Testosterone Enanthate
<b>Brand Names:</b> Confusingly, a product which is solely Testosterone Enanthate is also branded as Testosterone Depot. Most of the time, Testosterone Depot will be referring to Enanthate rather than this Propionate/Enanthate combination.	
<b>Slang names:</b>	<i>TV</i>
<b>Description:</b>	Anabolic Steroid; blend of two testosterone esters
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	Up to 10 days
<b>C17-AA</b>	No
<b>Aromatizes</b>	Yes
<b>Typical Dose</b>	2-4ml per week
<b>Cost</b>	£10-15/amp (est)
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<p>A blend of testosterone esters but, unlike Sustanon, contains only two esters. Effects come on rapidly but are long acting.</p> <ul style="list-style-type: none"> <li>• Widely faked, and not so widely used</li> <li>• For risks, see Enanthate and Propionate tables</li> </ul>

<b>Chemical Name:</b>	Testosterone Phenylpropionate Testosterone Propionate Testosterone Hexanoate Testosterone Decanoate
<b>Brand Names:</b> Omnadren	
<b>Slang names:</b>	Omna
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Intramuscular
<b>Half-life</b>	14-21 days
<b>C17-AA</b>	No
<b>Aromatizes</b>	Yes
<b>Typical Dose</b>	200mg-1000mg/week
<b>Cost</b>	£10-20/ampoule
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Mix of four testosterone esters</li> <li>• Similar to Sustanon though with different testosterone esters for longer effect</li> <li>• Builds bulk and strength</li> <li>• Aromatizes easily</li> </ul>

<b>Common Name</b>	<b>Trenbolone</b>
<b>Chemical Name:</b>	<b>Trenbolone Acetate</b>
<b>Brand Names:</b> Trenbolone, Finaplix, finajet, trenbol	
<b>Slang names:</b>	<i>Tren</i>
<b>Description:</b>	Anabolic Androgenic steroid;
<b>Route:</b>	Intramuscular Injection (when available as an oil-based preparation) transdermal, nasal
<b>Half-life</b>	3 days
<b>C17-AA</b>	No
<b>Aromatises</b>	No, but does bond to progesterone receptors and this may cause progesterone-induced gyno.
<b>Typical Dose</b>	100-300mg/week
<b>Cost</b>	£40-50 per 100 pellets
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Trenbolone Acetate is popular and sought-after as it is a powerful anabolic, which does not aromatise. It is available in injectable forms but these are relatively scarce.</li> <li>• It is highly valued by contest body builders for building muscles which are well defined and strong, with little water retention or fat. It is considerable more potent than testosterone.</li> <li>• More widely available are pellets of "Finajet" a veterinary product which is implanted in to cattle.</li> <li>• In order to make the implants in to a usable form they may be crushed and snorted, made in to a solution and applied to the skin using additional chemicals or made in to a solution and injected. The latter method brings with it a very high risk of infections due to the difficulty of creating a sterile, particle free solution from the implants.</li> </ul>

<b>Common Name:</b>	<b>Trenbolone</b>
<b>Chemical Name:</b>	Trenbolone hexahydrobencylcarbonate
<b>Brand Names:</b> Parabolan	
<b>Slang names:</b>	<i>Para, Powerbone</i>
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Intramuscular Injection
<b>Half-life</b>	4-5 days
<b>C17-AA</b>	No
<b>Aromatises</b>	No
<b>Typical Dose</b>	150-200mg/week
<b>Cost</b>	N/A
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• A compound that has a different ester to trenbolone acetate and so has a longer half-life</li> <li>• Harder to get hold of, and expensive</li> <li>• Only made by some underground labs</li> <li>• Comes in a form prepared for injection and so avoids the problems of finaplix</li> </ul>

<b>Common Name:</b>	<b>Turinabol</b>
<b>Chemical Name:</b>	Chlorodehydromethyltestosterone
<b>Brand Names:</b> Turinabol, Turanabol	
<b>Slang names:</b>	<i>T-bol</i>
<b>Description:</b>	Anabolic Steroid;
<b>Route:</b>	Oral
<b>Half-life</b>	16 hours
<b>C17-AA</b>	Yes
<b>Aromatises</b>	No
<b>Typical Dose</b>	60mg/day, possibly in split doses
<b>Cost</b>	?
<b>Legal UK</b>	Class C, Schedule 4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Any increasingly popular oral steroid. Actually quite an old one, but now increasingly available via UG labs.</li> <li>• Moderately powerful effect, not dissimilar to d-bol, but less water retention</li> <li>•</li> </ul>

<b>Chemical Name:</b>	<b>Anastrozole</b>
<b>Brand Names:</b>	Arimidex
<b>Slang names:</b>	
<b>Description:</b>	Aromatase blocker
<b>Route:</b>	Oral
<b>Half-life</b>	3 days
<b>C17-AA</b>	No
<b>Aromatises</b>	Blocks aromatisation
<b>Typical Dose</b>	25-50mg each day
<b>Cost</b>	£5-10/tablet
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Powerful aromatase blocker</li> <li>• Stops the enzyme aromatase working so prevents excessive levels of testosterone being metabolised into oestrogen; this means that the risks of feminisation are reduced in male users</li> <li>• Used alongside steroids that aromatise</li> <li>• Causes lower levels of HDL (good) cholesterol which increases risk of circulatory and heart problems</li> <li>• For this reason some people would favour an oestrogen blocker like tamoxifen</li> <li>• Expensive</li> <li>• Common side effects are: shortness of breath, dizziness, diarrhea, vomiting, headache, hot flashes, weakness, cough, dry mouth, skin rash, sweating, abdominal pain and bone pain.</li> </ul>

<b>Chemical Name:</b>	<b>Exemestane</b>
<b>Brand Names:</b>	Aromasin
<b>Slang names:</b>	
<b>Description:</b>	Third generation Aromatase inhibitor; binds to aromatase and prevents it working
<b>Route:</b>	Oral
<b>Half-life</b>	
<b>Typical Dose</b>	10-20mg
<b>Cost</b>	?
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Powerful new aromatase inhibitor</li> <li>• Less widely available and less popular than other compounds like letrozole</li> </ul>

<b>Chemical Name:</b>	<b>Clenbuterol</b>
<b>Brand Names:</b>	Spiropent
<b>Slang names:</b>	<i>Clen</i>
<b>Description:</b>	Bronchiodilator and stimulant; used to aid fat loss
<b>Route:</b>	Oral
<b>Half-life</b>	1.5 days
<b>C17-Alpha-Alkylated</b>	No, but liver toxic
<b>Aromatises</b>	NA
<b>Typical Dose</b>	40-100mcg/day
<b>Cost</b>	£1-2/tablet
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Widely used in athletic and body building circles</li> <li>• Stimulates production of adrenaline and dopamine</li> <li>• Increases respiratory capacity</li> <li>• Stimulates fat burning – used to create a lean and muscled look</li> <li>• Will start to break down muscles when used in excess</li> <li>• Some belief (though little evidence) that it has anabolic properties</li> <li>• Side effects can include elevated blood pressure, insomnia , rapid heart rate, panic</li> </ul>

<b>Chemical Name:</b>	<b>Clomiphene citrate</b>
<b>Brand Names:</b>	Clomid
<b>Slang names:</b>	<i>Clom</i>
<b>Description:</b>	Synthetic anti-oestrogen; clinically used in fertility treatment; Used by male bodybuilders as a partial anti-oestrogen and as post-cycle treatment
<b>Route:</b>	Oral
<b>Half-life</b>	Up to five days
<b>Aromatises</b>	No: blocks the effects of other aromatised hormones by partially blocking oestrogen receptors
<b>Typical Dose</b>	50-100mg/day for up to 14 days at the end of a cycle
<b>Cost</b>	£50 for 10 tablets (est)
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Very widely used – important for male users as a tool for normalising sperm and testosterone production</li> <li>• Not anabolic – is a weak oestrogen</li> <li>• Binds to and blocks oestrogen receptors so stops aromatised hormones reaching receptors: reduced symptoms of aromatisation in men – reduced chances of gynecomastia and water retentions</li> <li>• Stimulates production of endogenous testosterone in men</li> <li>• Used at end of cycle to stimulate suppressed testosterone in men</li> <li>• Side-effects can include hot flushes and visual distortion</li> </ul>

<b>Common Name:</b>	<b>Ephedrine</b>
<b>Chemical Name:</b>	Ephedrine Hydrochloride
<b>Brand Names:</b>	In the UK, ephedrine is usually obtained through the use of Do-Do Chestezze cough treatments, Ma Huang and illicitly imported Ephedra; A wide range of medicines contain ephedrine.
<b>Slang names:</b>	<i>Ephedrine, E, Eph</i>
<b>Description:</b>	Stimulant
<b>Route:</b>	Oral
<b>Half-life</b>	6 hours
<b>Aromatises</b>	NA
<b>Typical Dose</b>	25mg three times per day
<b>Cost</b>	£2-4/packet
<b>Legal UK</b>	OTC
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used to speed up metabolism and burn fat</li> <li>• Typically used as part of a fat burning stack alongside caffeine and aspirin (ECA Stack)</li> <li>• Used at a ratio of 1 part ephedrine to 10 parts caffeine</li> <li>• Powerful appetite suppressant</li> <li>• Can cause insomnia, stomach irritation, tremors, palpitations</li> </ul>

<b>Common Name:</b>	<b>GHB</b>
<b>Chemical Name:</b>	Gamma Hydroxy Butyrate
<b>Slang names:</b>	GBH
<b>Description:</b>	GABA-agonist: sedating, relaxant
<b>Route:</b>	Oral
<b>Half-life</b>	4-8 hours
<b>Aromatises</b>	NA
<b>Typical Dose</b>	Depends on build and strength of GHB
<b>Cost</b>	£10/bottle
<b>Legal UK</b>	Class C Schedule 4i
<b>Notes</b>	<ul style="list-style-type: none"> <li>• GHB was used in body building circles before it became popular in recreational drug settings</li> <li>• It is used to promote sleep and to stimulate natural production of Growth Hormone</li> <li>• When it was widely available, body builders would typically take a teaspoon of GHB in a pint of water before bed.</li> <li>• Now illegal to possess and supply in the UK</li> <li>• Increased risk of overdose</li> <li>• Impure</li> <li>• Addictive – withdrawal symptoms similar to benzos</li> </ul>

<b>Common Name:</b>	<b>HGH</b>
<b>Chemical Name:</b>	<b>Human Growth Hormone</b>
<b>Brand Names:</b> Somatropin, Humatrope, Serostim, Humatrope	
<b>Slang names:</b>	<i>Soma, STH</i>
<b>Description:</b>	A synthetic version of natural Human Growth Hormones; strongly anabolic effect, and stimulates the production of growth promoting agents in the liver
<b>Route:</b>	Intramuscular or Subcutaneous
<b>Half-life</b>	Less than 1 hour
<b>Typical Dose</b>	2-4IU per day injected SC at three or four separate sites 6-22 week cycle
<b>Cost</b>	£150 – 30IUs – 7 day course
<b>Legal UK</b>	Class C, sch4.ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Probably talked about more than it is used</li> <li>• Synthetic compound, increasingly widely available</li> <li>• Has direct and indirect anabolic effects</li> <li>• Directly has an anabolic effect on muscle and bone, causing thickening and strengthening of bone and muscle, tendons and ligaments</li> <li>• Causes organs to grow too</li> <li>• Indirectly causes levels of Insulin-like growth factor (IGF-1) to go up which also has an anabolic effect</li> <li>• Risks include development of diabetes, acromegaly (overgrowth of cranial bones, hands and feet)</li> <li>• Young users may end up with stunted growth</li> <li>• Thyroid problems, heart problems also reported</li> </ul>

<b>Common Name:</b>	<b>HCG</b>
<b>Chemical Name:</b>	Human Chorionic Gonadotrophin
<b>Brand Names:</b> Pregnyl	
<b>Slang names:</b>	HCG
<b>Description:</b>	Hormone produced in the placenta of pregnant women; most now made from animal extracts
<b>Route:</b>	IM
<b>Half-life</b>	Can stimulate testosterone production for as long as five days
<b>Aromatises</b>	Elevates testosterone levels; as there may aromatise, can cause/exacerbate gynecomastia and other symptoms
<b>Typical Dose</b>	2000-5000IU every 5 days
<b>Cost</b>	£100+ for six ampoules
<b>Legal UK</b>	Class C, Sch4ii
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Mimics effects of Lutenising Hormone; used in fertility treatment for women</li> <li>• In men, the use of HCG stimulates the production of testosterone and so, where this has been reduced to the use of other steroids, HCG use at the end of a cycle and help bring endogenous testosterone "back on line."</li> <li>• Also used during cycles to reduce testicular atrophy</li> <li>• This can help reduce testicular shrinkage, decrease impotence and improve libido;</li> <li>• For other users, HCG helps to provide a smooth transition from the "on cycle" to "off cycle" state avoiding a crash in between where muscle gains may be lost.</li> <li>• Excess testosterone produced through the use of HCG will aromatise causing symptoms such as water retention and gynecomastia so HCG will often be used alongside an anti-oestrogen compound.</li> <li>• Excessive use will desensitise the Leydig Cells in the testes to Lutenising Hormone and so with prolonged use will reduce, not increase testosterone production</li> <li>• Supplied as a freeze-dried white powder with a separate solution of liquid; the two are mixed and injected;</li> <li>• Can cause more frequent erections, increased libido and acne in male users.</li> </ul>

<b>Common Name:</b>	<b>IGF</b>
<b>Chemical Name:</b>	<b>Insulin Growth Factor</b>
<b>Brand Names:</b> Somatomedin C	
<b>Slang names:</b>	IGF 1, R3 IGF1
<b>Description:</b>	An analogue of the liver-produced substance Insulin Growth Factor which is produced by elevated insulin levels (See Insulin, above)
<b>Route:</b>	SC
<b>Half-life</b>	Around half an hour; a similar product Long R3 IGF 1 has added molecular chains which slow down the breakdown, giving a half life of up to 12 hours.
<b>Typical Dose</b>	20mcg/day but doses do go to 120+mcg/day
<b>Cost</b>	Very expensive: American sites quoting \$1320 for 50 bottles at 100mcg
<b>Legal UK</b>	POM (not listed in BNF)
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Is meant to come as a white powder in sealed vials which is dissolved for injection;</li> <li>• Some sites offer a premixed liquid preparation; bulletin boards argue if these are real or fakes. Most argue they are fakes.</li> <li>• Not widely available and highly expensive;</li> <li>• IGF is naturally produced in the liver and IGF1 and related compounds are synthetic analogues.</li> <li>• Causes increased burning of fat</li> <li>• Can lead to growth in number of muscle cells, leading to growth and increased strength</li> <li>• For risks see notes on Insulin, below.</li> </ul>

<b>Common Name:</b>	<b>Insulin</b>
<b>Chemical Name:</b>	Insulin
<b>Brand Names:</b>	
Humulin R is the preferred brand for this purpose as it is fast acting and has a short half-life. Other brands bring a greater risk of hypoglycaemia due to longer periods of action.	
<b>Description:</b>	Pancreatic hormone which regulates blood-sugar levels
<b>Route:</b>	SC injection
<b>Half-life</b>	Four hours
<b>Typical Dose</b>	1 IU per 10-20lbs lean weight
<b>Cost</b>	£20/10ml
<b>Legal UK</b>	POM
<b>Notes</b>	<p>As a medicine, typically prescribed to people with diabetes. In the context of PEDs, is used in two main contexts.</p> <p>1) Insulin is used alongside Growth Hormone to maximise gains from the use of GH.</p> <p>2) Insulin is used towards the end of, or after training. A high-carbohydrate drink is consumed within 15 minutes. The insulin is thought to increase the amount of glycogen transported in to the muscle.</p> <p>Insulin is injected subcutaneously and so users will need 1ml insulin syringes for this purpose and may need guidance around SC technique.</p> <p>Some users will inject Insulin IM into triceps but this brings with it faster absorption and increased risk of hypoglycaemia.</p> <p>Misuse of Insulin can bring with it a range of serious complications. Blood sugar levels can drop dangerously low when Insulin is taken and this can cause drowsiness or coma. Ensuring that high carb drinks are used and the user is vigilance for signs of hypoglycaemia is essential.</p> <p>Symptoms of mild to moderate hypoglycaemia include: hunger, drowsiness, blurred vision, depressive mood, dizziness, sweating, palpitation, tremor, restlessness, tingling in the hands, feet, lips, or tongue, lightheadedness, inability to concentrate, headache, sleep disturbances, anxiety, slurred speech, irritability, abnormal behaviour, unsteady movement, and personality changes.</p> <p>If any of these warning signs should occur, the user should immediately consume a food or drink containing sugar such as a sugary snack bar or carbohydrate drink. This will treat a mild to moderate hypoglycaemia and prevent a severe state of hypoglycaemia.</p> <p>Severe hypoglycaemia is a serious condition that may require medical attention. Symptoms include disorientation, seizure, unconsciousness, and death.</p> <p>Concern has grown that improper use of Insulin in healthy adults can trigger the development of diabetes-type symptoms, which may be permanent and irreversible.</p> <p>The use of Insulin appears to be on the increase in the UK.</p>

<b>Chemical Name:</b>	<b>Letrozole</b>
<b>Brand Names:</b>	Femara
<b>Slang names:</b>	<i>Letro</i>
<b>Description:</b>	New generation of aromatase inhibitors which stops aromatase working and permanently binds to aromatase enzyme causing it to stop working
<b>Route:</b>	Oral
<b>Half-life</b>	2 days
<b>Typical Dose</b>	.25-.5mg/day
<b>Cost</b>	?
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Increasingly widely used</li> <li>• Widely available on illicit market</li> <li>• Sometimes used alongside tamoxifen, or alone</li> <li>• The most effective aromatase inhibitor currently available</li> </ul>

<b>Chemical Name:</b>	<b>Liothyronine Sodium</b>
<b>Brand Names:</b>	cytomel, T3
<b>Slang names:</b>	T3
<b>Description:</b>	Synthetic Thyroid Hormone
<b>Route:</b>	Oral
<b>Half-life</b>	2-2.5 days
<b>Aromatases</b>	NA
<b>Typical Dose</b>	25-100mcg/day for me; women up to 50mcg
<b>Cost</b>	£50-100 for 100 tablets
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used medically to treat thyroid insufficiency</li> <li>• When used outside of medical settings, duplicates effects of the thyroid hormone LT-3 in the body</li> <li>• Increases metabolism and burns fat very effectively</li> <li>• Excess use can cause irreversible damage to thyroid gland, resulting in a need for long-term medical help</li> <li>• side effects are: heart palpitation, trembling, irregular heartbeat, heart oppression, agitation, shortness of breath, excretion of sugar through the urine, excessive perspiration, diarrhea, weight loss, anxiety and panic, etc., as well as symptoms of hypersensitivity.</li> </ul>

<b>Common Name:</b>	<b>Melanotan</b>
<b>Chemical Name:</b>	
<b>Brand Names:</b> Melanotan, Epitan, Melanotan ii	
<b>Slang names:</b>	
<b>Description:</b>	Tanning agents
<b>Route:</b>	SC
<b>Half-life</b>	?
<b>Typical Dose</b>	1-2mg daily: 2-4 week course
<b>Cost</b>	£50-100 course
<b>Legal UK</b>	Not licensed
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used to increase amount of melanin produced</li> <li>• Tanning agent, combined with exposure to sunlight or tanning bed, increases level of tan</li> <li>• Tan will not be permanent</li> <li>• Supplied as powder; needs to be mixed with bacteriostatic water to inhibit bacteria growth when stored</li> <li>• Dilution is important to ensure mixture does not cause excessive tanning</li> <li>• Risks not yet known – may increase mole development and increase risk of skin cancer</li> <li>• Supply in UK breach of Medicines Act.</li> </ul>

<b>Chemical Name:</b>	<b>Nalbuphine Hydrochloride</b>
<b>Brand Names:</b> Nubain	
<b>Description:</b>	Opiate analgesic
<b>Route:</b>	SC, IM or IV injection
<b>Half-life</b>	5 hours
<b>Aromatises</b>	NA
<b>Typical Dose</b>	20-30mg
<b>Cost</b>	£2+/ampoule
<b>Legal UK</b>	POM: CD
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used as an anesthetic to reduce pain during or after training</li> <li>• Allows for harder and longer training</li> <li>• As an opiate can lead to dependency and withdrawal symptoms</li> <li>• Other opiates can also be used though this is not widely reported in the UK</li> </ul>

<b>Chemical Name:</b>	<b>Spirolactone</b>
<b>Brand Names:</b> Aldactone	
<b>Description:</b>	Diuretic
<b>Route:</b>	Oral
<b>Half-life</b>	NA
<b>Aromatises</b>	No
<b>Typical Dose</b>	75-150mg/day
<b>Cost</b>	£3-5 for 10 tablets
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used to help reduce water retention and show increase muscle hardness and definition</li> <li>• Milder than other diuretics such as Lasix</li> <li>• Can cause headaches, cramping and dehydration</li> <li>• Excessive dehydration can be dangerous and cause kidney problems and electrolyte imbalance</li> </ul>

<b>Chemical Name:</b>	<b>Tamoxifen Citrate</b>
<b>Brand Names:</b> Tamoxifen, Nolvadex	
<b>Slang names:</b>	<i>Nolva, Tamox</i>
<b>Description:</b>	Hormone which blocks oestrogen receptors
<b>Route:</b>	Oral
<b>Half-life</b>	Initial half-life 7-14 hours followed by a secondary peak at 4 days or more
<b>Aromatises</b>	Blocks receptor sites preventing symptoms of aromatisation
<b>Typical Dose</b>	10-20mg
<b>Cost</b>	£100-150 for 100 tablets
<b>Legal UK</b>	POM
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Used with compounds that aromatise to block the oestrogen receptor sites</li> <li>• Preferred to Arimidex as doesn't affect HDL (good cholesterol) as much</li> <li>• Also elevates LH and FSH so aids Post cycle recovery</li> <li>• Does not prevent aromatisation, just competes with oestrogen at receptor sites</li> <li>• Side effects can include nausea, vomiting, hot flushes, numbness, and blurred vision can occur.</li> </ul>

## Other Compounds

### Caffeine

Used as part of a stack (Ephedrine, Aspirin, Caffeine) to increase metabolic activity and burn fat. Usually taken in the form of pro-plus. Excessive use can cause headaches, tremors, insomnia and may cause or irritate stomach ulcers.

### Creatine

Naturally occurring compound found in foods which is essential in the body for energy transportation and muscle development.

Many athletes and body-builders will consume creatine as a dietary supplement, and it is widely considered to be an essential aspect of diet for body builders.

### Reductase Inhibitors

Reductase inhibitors prevent conversion of Testosterone to DHT (dihydrotestosterone). This is desirable as the more androgenic DHT is responsible for some unwanted health and side effects such as accelerated male-pattern balding, acne, prostate problems, and oily skin

**Examples include dutasteride (Avodart) finasteride (Proscar)**

**Risks:** impotence, reduced libido, difficulty ejaculating, allergic reactions, birth defects; should not be used by either partner without contraception

### Synthol

Synthol is a mixture of fatty acids, alcohol and lidocaine. It is injected in to the muscles and they swell up, because of the volume of fat and oil injected between the muscle fibres. It is not intended to be drawn in to the blood stream. Injecting in to a vein could be fatal.

Synthol may or not be widely used. As it is widely considered to be "cheating" as the muscles have not been expanded through training, most people do not admit to synthol use.

Synthol can create very large muscle size but this will diminish over time – usually two to three years.

### Yohimbe

Plant bark extract mainly used as an aphrodisiac. Now used by some PED users either as a topical ointment reputed to increase fat burning, or as capsules to increase metabolism and burn fat.

## 18 Sources

This resource pack used multiple sources to check and verify content. The main internet sites used to develop the contents are listed below along with other useful sites and sources of information. Inclusion in this list should not be taken as endorsement of the sites or their content:

### Websites:

<http://www.anabolicsteroidsonline.com/>

A very basic site, but some useful information.

<http://www.ironmagazine.com/>

Some good articles in the archive

<http://www.mickhart.com/>

UK Based website: annoying number of pop-ups. Some good information. Very pro-steroids and too keen on swearing

<http://www.mesomorphosis.com/>

Excellent articles, good profiles of steroids.

<http://www.muscletalk.co.uk/>

Excellent UK-based website. Good discussion boards and very helpful moderators who have contributed to the development of this resource. Would suggest this site as a first port of call.

<http://www.bodybuilding.com/>

Good site, profiles useful but would want to check facts on this site against at least one other source.

<http://www.steroid.com/drugprof.php>

Best for profiles and cycle information

<http://www.steroidabuse.org/>

NIDA website on Steroids.

<http://www.drugsinsport.net/>

The same team that brings you the Daily Dose run this site with news and bulletins on drugs in sport.

<http://www.uksport.gov.uk/>

UK sports website which includes lists and information on all prohibited substances including steroids. Useful and comprehensive resource.

<http://www.steroids.net>

Site set up and run by Jim McVeigh of Liverpool JMU – discussion group for professionals with an interest in SIDs.

### Leaflets:

**Anabolic Steroids:** HIT: Postcard; basic information

**Anabolic Steroids:** HIT: Julian Cohen (2005)

Aimed at young people; very vague information

**Anabolic Steroids – Hardcore Information:** Lifeline: John Baines: Not Dated  
*Generally good information leaflet; not keen on the injecting section; some significant errors; good drugs information section*

**Anabolic Steroids:** A guide for users and professionals: Pat Lenehan and Tony Miller: Lifeline: 2004

*Generally good, especially the drug profiles section*

**Muscle Boundaries:** A users guide to steroids and other performance and image enhancing drugs: HIT: Magazine-style booklet: not dated  
*Originally written and designed for Australian users, and adapted by HIT for the UK. Styled to look like a leading body-building magazine. Glossy. Lots of pictures of men with big muscles. Not sure if this is a good thing. Patchy information – really mixed in terms of what is covered and what is not; so for example HCG is mentioned, Clomid isn't. And lots of terms are introduced but never explained. Injection section questionable*

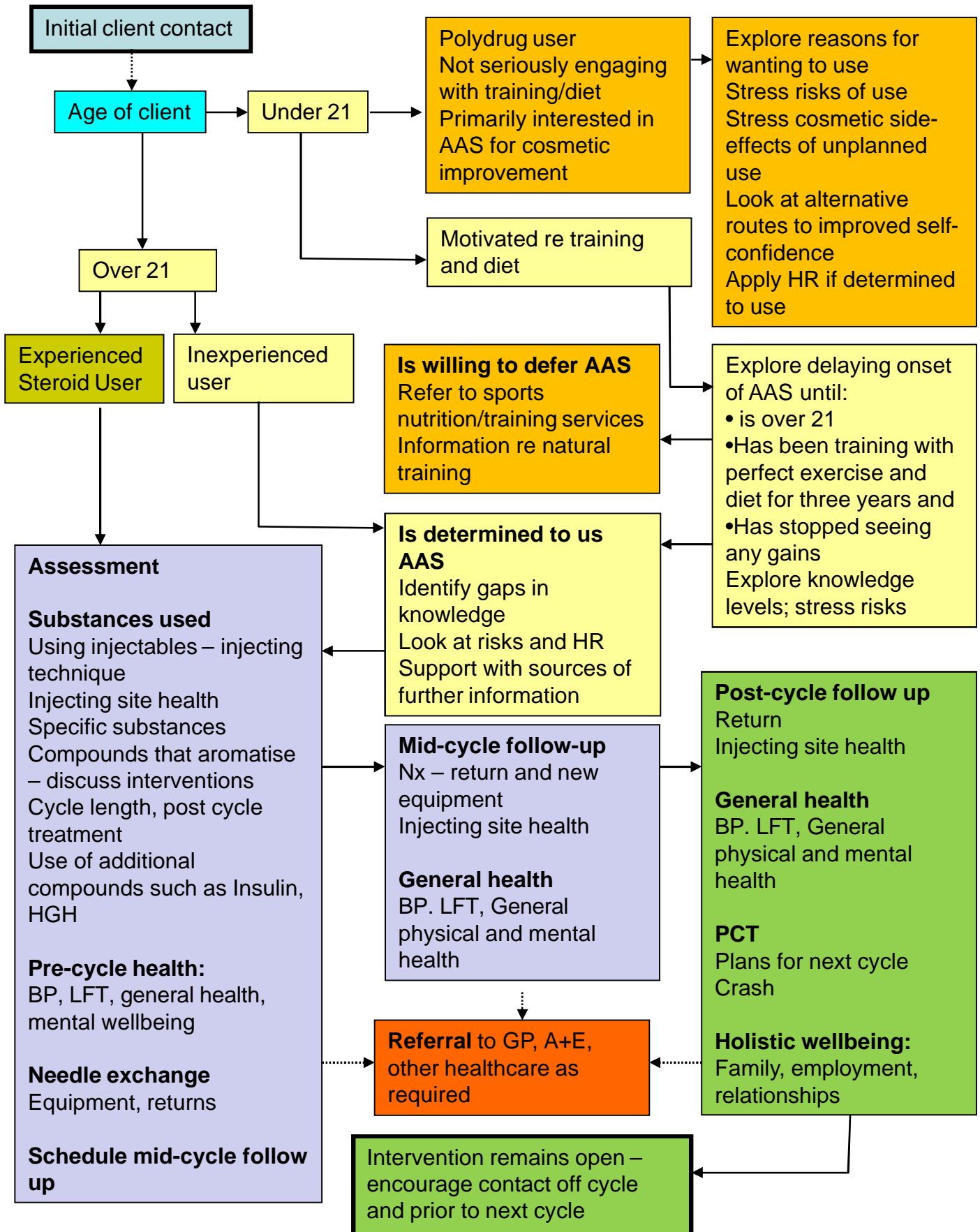
**Steroids**                      Release                      Very basic leaflet

## **Books**

**William Llewellyn's Anabolics: 9<sup>th</sup> Edition: Molecular Nutrition LLC: 2009**

*The most comprehensive book on the subject, and regularly updated. Tries to approach the subject from a neutral and evidence-based approach but the book is clearly for people who are interested in using steroids. Nonetheless an indispensable resource.*

## SIDs Illustrative Care Plan







## Needle Exchange Assessment Tool Sports and Image Drugs

<b>Name:</b>	<b>Date of assessment:</b>
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<b>Type of contact:</b> initial <input type="checkbox"/> follow up <input type="checkbox"/>	<b>Is:</b> Planning cycle <input type="checkbox"/> About to start cycle <input type="checkbox"/> Started cycle <input type="checkbox"/> End of cycle <input type="checkbox"/>
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<b>Age:</b> U18 18-21 22-25 26-35 36-45 45+	<b>Gender:</b> Male <input type="checkbox"/> Female <input type="checkbox"/>
<b>Ethnic group:</b>	

<b>Anabolic androgenic steroids injected?</b> Yes <input type="checkbox"/> No <input type="checkbox"/>
Specify substances in current cycle

<b>Is injecting other substances:</b> yes <input type="checkbox"/> no <input type="checkbox"/>
Insulin <input type="checkbox"/> HCG <input type="checkbox"/> Tanning agents <input type="checkbox"/> HGH <input type="checkbox"/>
Other <input type="checkbox"/> (Specify).....

<b>Intramuscular technique discussed :</b> Yes <input type="checkbox"/> no <input type="checkbox"/> Has had previous input <input type="checkbox"/> Not applicable <input type="checkbox"/>
<b>Subcutaneous technique discussed:</b> Yes <input type="checkbox"/> no <input type="checkbox"/> Has had previous input <input type="checkbox"/> Not applicable <input type="checkbox"/>

<b>Additional injecting risks:</b>
<b>Sharing of any of the following:</b> Barrels <input type="checkbox"/> Needles used for drawing up <input type="checkbox"/> Needles used for injecting <input type="checkbox"/> Vials or ampoules <input type="checkbox"/> Sterile/bacteriostatic water <input type="checkbox"/>
Injected by another/injects others: yes <input type="checkbox"/> No <input type="checkbox"/> <i>Discussion of legal and health risks</i>
<b>Hepatitis vaccination:</b> Offered: <input type="checkbox"/> Outcome: Action
<b>Disposal advice:</b> <input type="checkbox"/> Action:

<b>Interested in full SIDs care plan assessment</b> Yes: now <input type="checkbox"/> Later: <input type="checkbox"/> Date set No: <input type="checkbox"/> Already care-planned: <input type="checkbox"/>
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