

Image and Performance Enhancing Drug use

Research at LJMU Conference

13th October 2017

Liverpool



Image and Performance Enhancing Drug use

Research at LJMU

Anabolic steroids & associated drugs

Changes in use and concerns over last 20 years

Jim McVeigh

Director

Public Health Institute

Anabolic steroids through the public health lens

<u>Evidence required</u>	<u>2008</u>	<u>2017 (October)</u>
★ Prevalence	Very little	Data to debate
Characteristics of users	Some	OK – We think
Reasons for use	Quite confident	Not so sure
Efficacy	Limited	Limited
★ Methods of use	Basic	Good – for some
★ Harms	Virtually nothing	Improved
★ Effective drug prevention	Nil	Some principles
Effective harm reduction	Not much	Transferable evidence

We do have effective engagement strategies

Introduction





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Control freak and his reign of terror: Pumped full of steroids, sword-wielding club bouncer Moat thought he was irresistible

By PAUL SIMS FOR MAILONLINE
UPDATED: 09:41, 5 July 2010



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Raoul Moat is an unpredictable control freak with a violent temper who snaps without warning, say friends and family.

The 6ft-plus ex-nightclub bouncer, who is addicted to steroids and anti-depressants, is so paranoid that he wired his house up with CCTV cameras and microphones, neighbours said.

He was caught by police carrying a serrated steel knuckle duster and a terrifying 5ft long Samurai sword and has links to Newcastle gangsters.



Mug shot: Moat was well known to Northumbria Police, and he believed they victimised him

Breivik used illegal drug mix before Norway massacre: expert

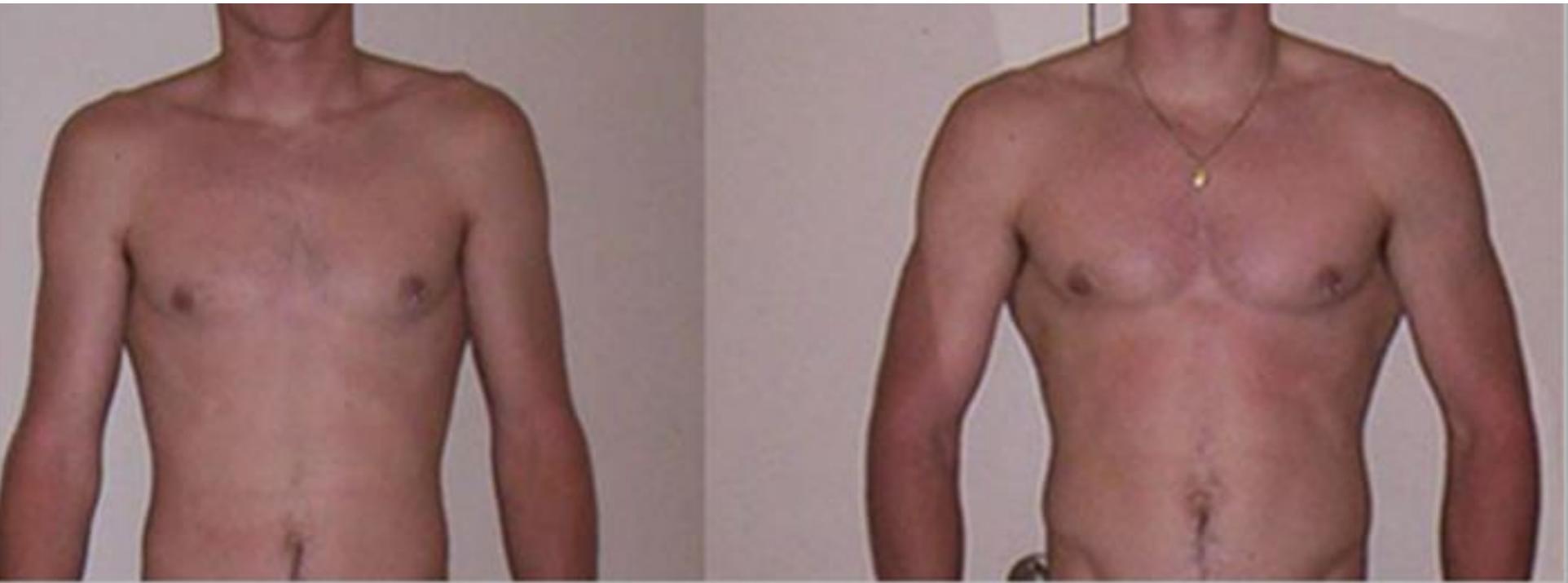
OSLO - Agence France-Presse



Anders Behring Breivik has his handcuffs removed in the courtroom in Oslo, Wednesday, May 30, 2012. AP photo



In reality...



158 lbs

175 lbs

40 years of Action Man



Anabolic steroids definition

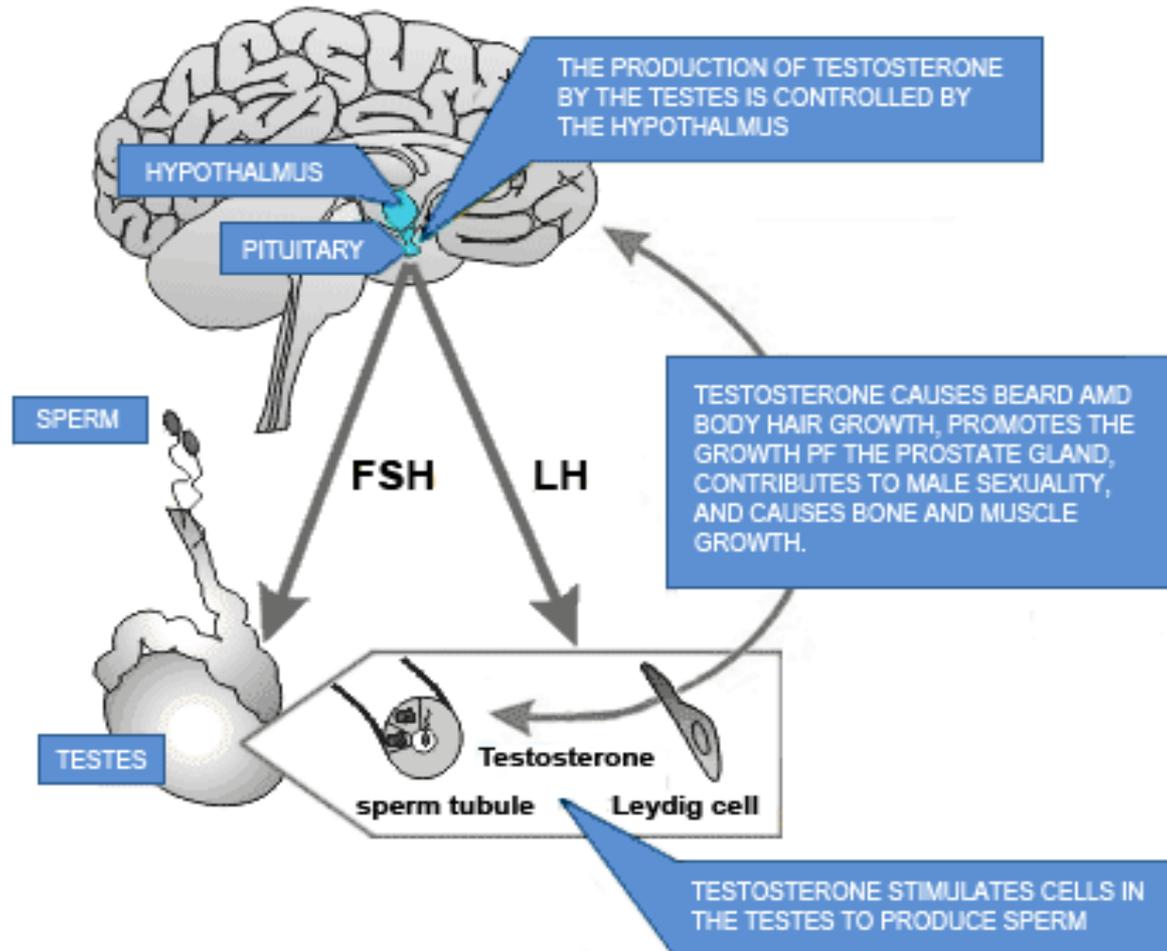
Mimic the effects of testosterone

Testosterone - anabolic & androgenic

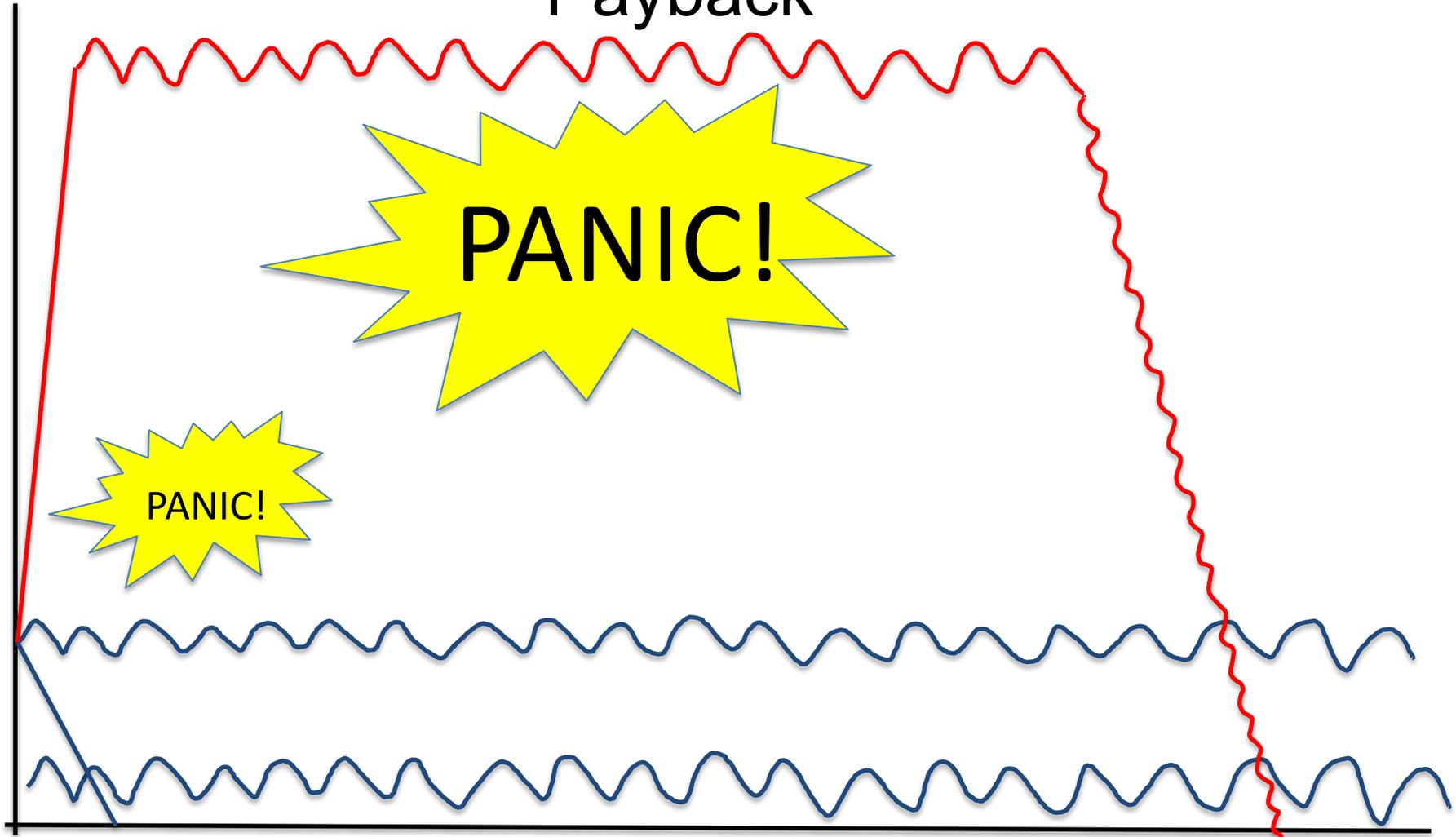
Anabolic - growth & development of tissue

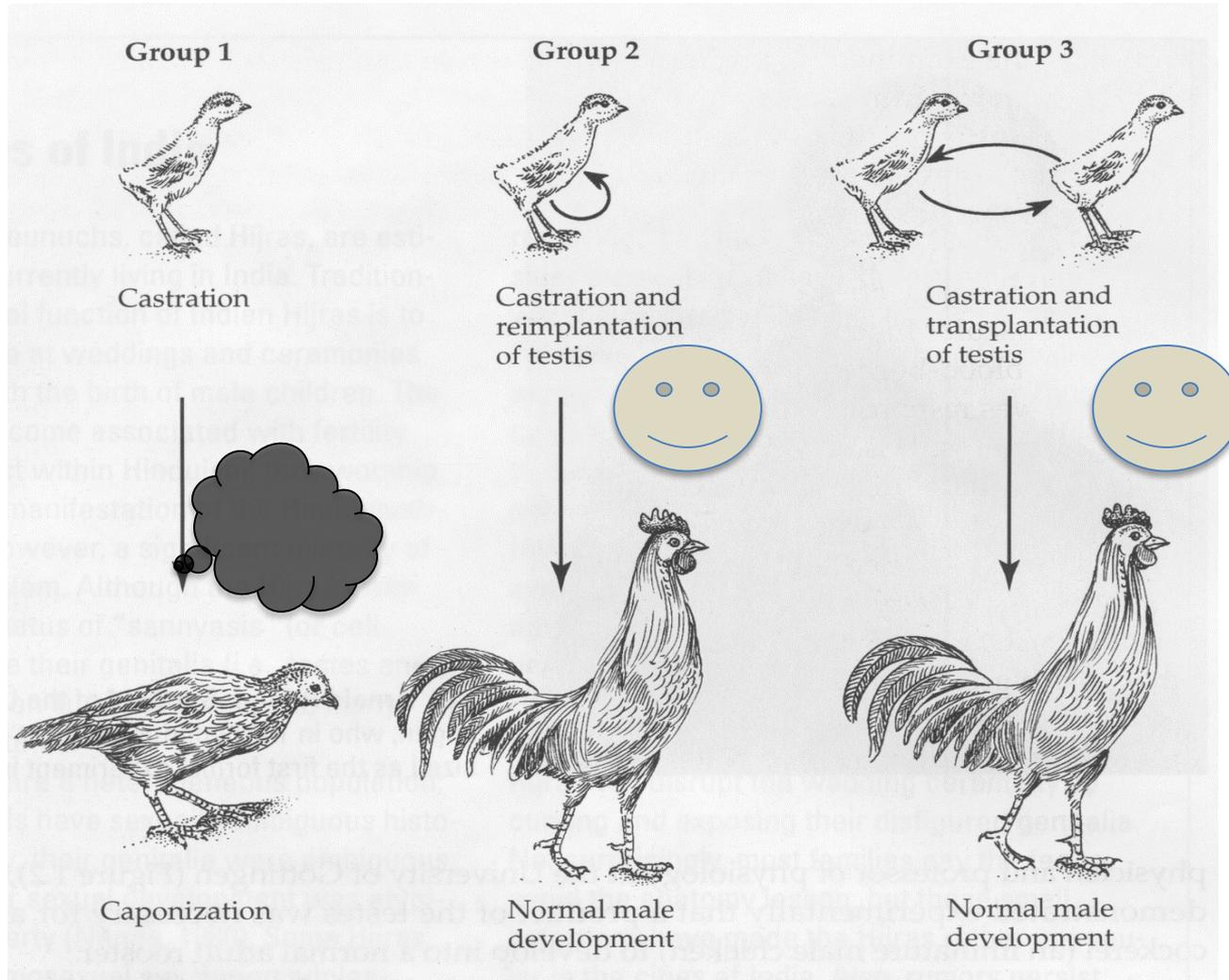
Androgenic - secondary male sexual characteristics

Testosterone production



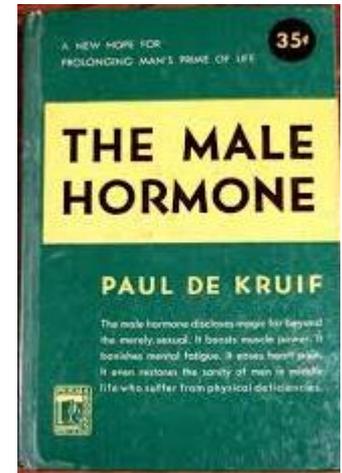
Testosterone “Payback”





Berthold 1849

“It’s chemical crutches. It’s borrowed manhood. Its borrowed time. But just the same, its what makes bulls bulls.”



de Kruif, 1945

“The day after the first subcutaneous injection, and still more after the two succeeding ones, a radical change took place in me ...
...nervous energy has been increased in every way...ability to do intellectual work has been increased i every way....”

Brown Sequard, 1889

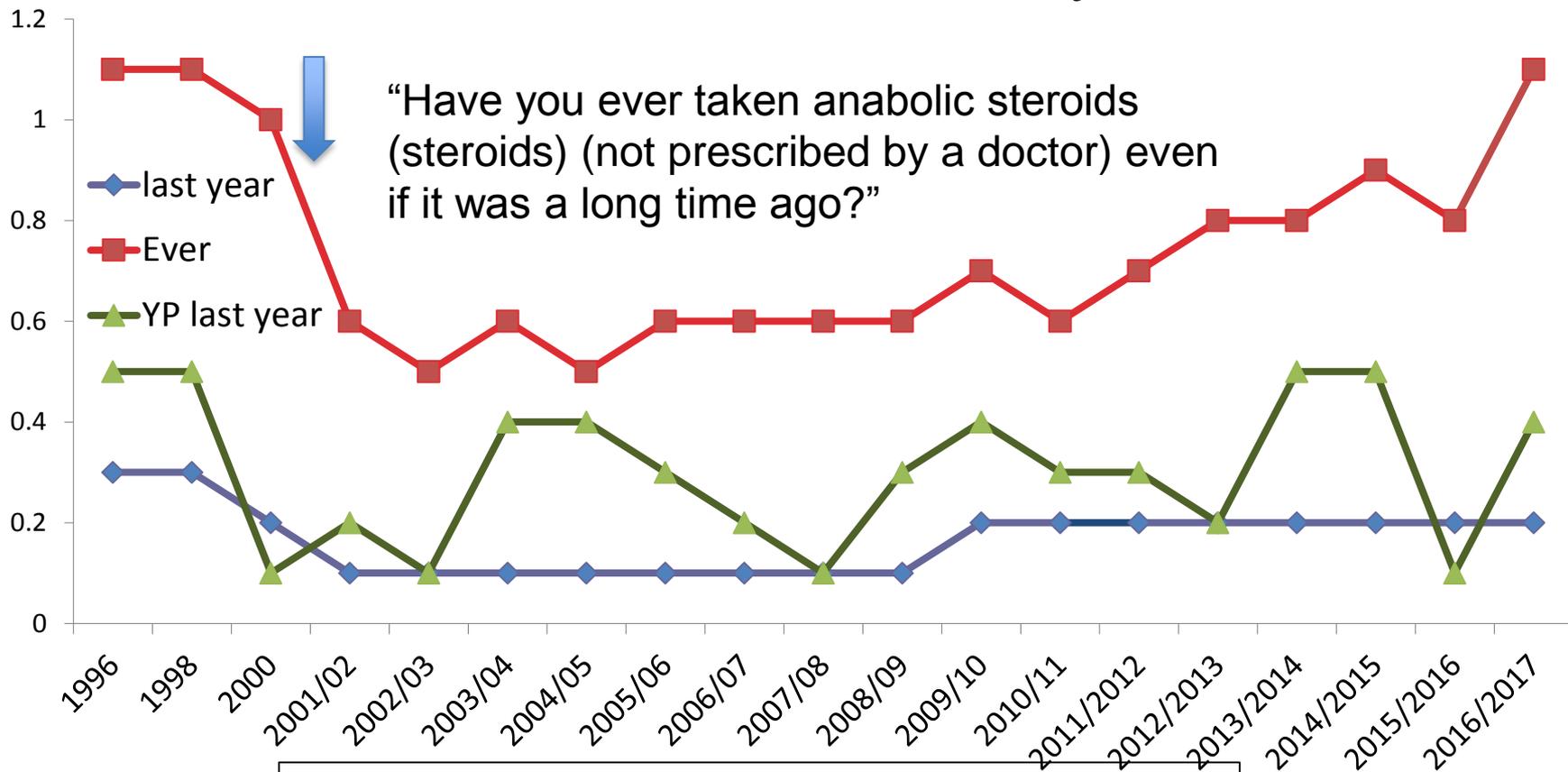


The Strange Career of Leo Stanley: Remaking Manhood and Medicine at San Quentin State Penitentiary, 1913-1951.

[http://www.academia.edu/1961928/The Strange Career of Leo Stanley Remaking Manhood and Medicine at San Quentin State Penitentiary 1913-1951](http://www.academia.edu/1961928/The_Strange_Career_of_Leo_Stanley_Remaking_Manhood_and_Medicine_at_San_Quentin_State_Penitentiary_1913-1951)

Prevalence

Anabolic steroid use in last year/ever



Adults ever	356,000 (302,000 – 411,000)
Adults last year	61,000 (38,000 – 83,000)
YP last year	23,000 (5,000 – 40,000)

Steroids see four-fold increase, data shows, fuelled by rise in muscle-conscious young men

Got me out of there: reality TV star Spencer Matthews - brother-in-law of Pippa Middleton - was ejected from I'm A Celebrity when it emerged he had taken steroids CREDIT: ITV

By **Camilla Turner**, EDUCATION EDITOR

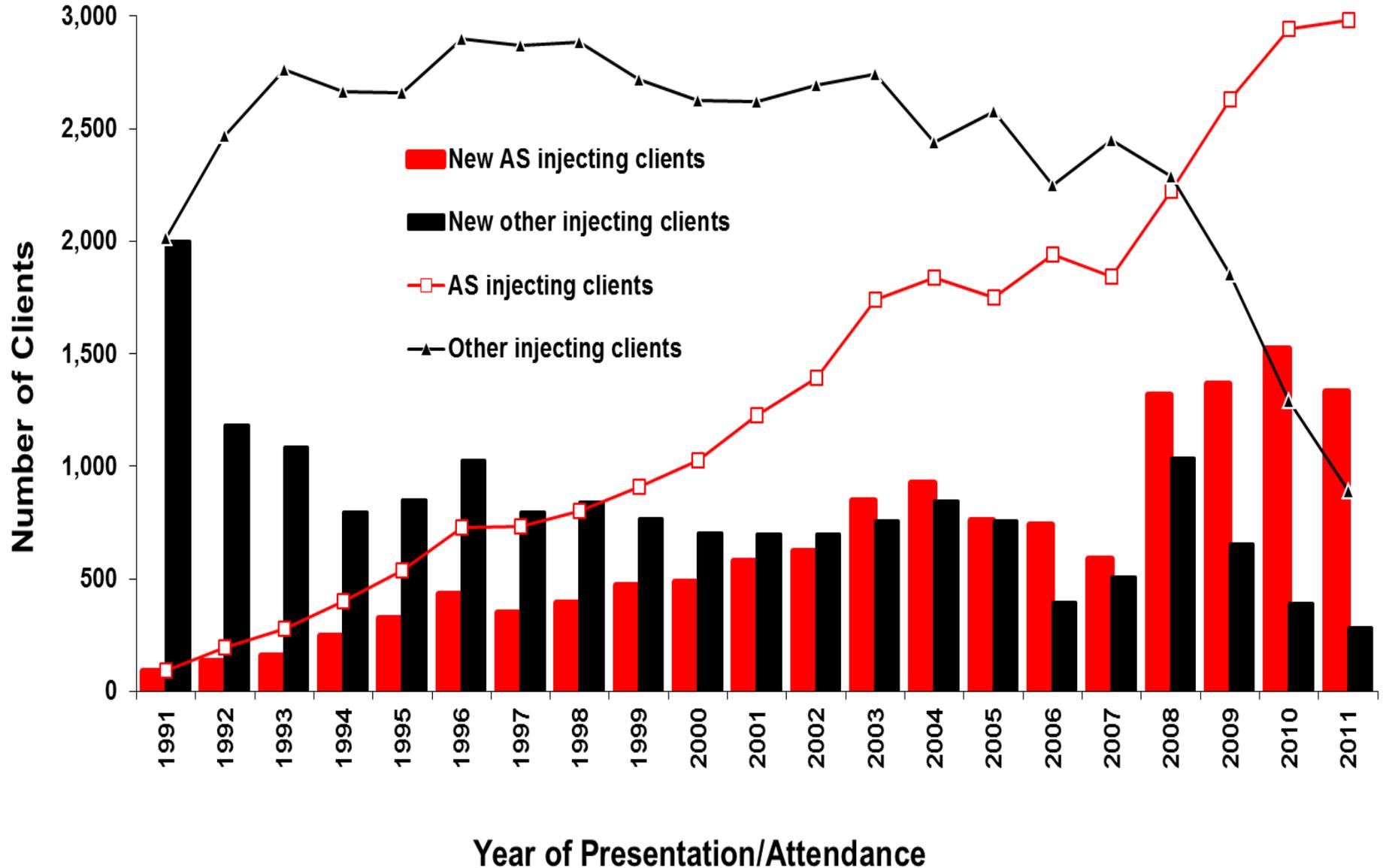
27 JULY 2017 • 6:27PM

Steroids are the only drug in the UK to have seen a four-fold increase in the past year, official data shows, fuelled by a rise in muscle-conscious young men.

The vast majority of drugs have declined in usage compared to last year, with only a handful increasing by a small fraction, according to the most recent Crime Survey, published by the Home Office.

Use of anabolic steroids saw the biggest increase of all among 16-24 year-olds, from 0.1 per cent of the population to 0.4 per cent, meaning that an extra 19,000 young people have taken the drug in the past year.

'All' & 'new' clients attending agency based NSPs in Cheshire & Merseyside (1991 to 2011)



Proportion of NSP clients using enhancement drugs in the North of England

Middlesbrough	67%
Kirklees	60%
Sheffield	62%
Newcastle	52%
Sunderland	60%
Bradford	41%
Halton	86%
Liverpool	83%
Sefton	43%
St Helens	34%
Warrington	86%
Wirral	77%
Manchester	60%
Bolton	52%

(McVeigh, 2014)

Anabolic steroid users accessing NSPs in Cheshire and Merseyside, UK (1995 and 2015)

LA/DAT	1995 No. of steroid users	2015 No. of steroid users	1995 Male steroid users aged 20–29			2015 Male steroid users aged 20–29			2015 All steroid users (all sources)
			No. users	Total Pop	Users per 1000 population	No. users	Total Pop	Users per 1000 population	
Cheshire	29	412	17	42468	0.40	238	38083	6.25	1214
HAL	12	328	10	8350	0.24	145	7731	18.76	616
KNW	25	178	15	10119	1.48	79	9444	8.37	178
LIV	223	153	164	36298	4.52	55	47145	1.17	278
SEF	40	85	25	16935	1.48	33	15647	2.11	791
SHL	45	411	33	12187	2.71	180	10729	16.78	605
WAR	29	233	17	12908	1.32	122	12525	9.74	677
WIR	150	646	96	18736	5.12	276	17697	15.60	980
Total	553	2446	377	200469	1.88	1128	197084	5.72	5336

(McVeigh & Begley, 2017)

Anabolic steroid users accessing NSPs in Cheshire and Merseyside, UK (1995 and 2015)

Variable	1995	2015
Proportion of total NSP clients	17.1%	54.9%
Proportion male	96.5%	98.6%
Sum of syringes	14293	139956
No of syringes per individual	26	57
Age of male NSP clients		
Mean	26	31
Median	25	30

(McVeigh & Begley, 2017)

Harms associated with anabolic steroid use

ENDOCRINE REVIEWS

Adverse Health Consequences of Performance Enhancing Drugs An Endocrine Society Scientific Statement

Adverse effects on several organ/systems in particular:

Cardiovascular effects

Haematologic effects

Psychiatric and neuropsychologic effects

Hormonal and metabolic effects

Variety of less frequent effects on various other bodily tissues.

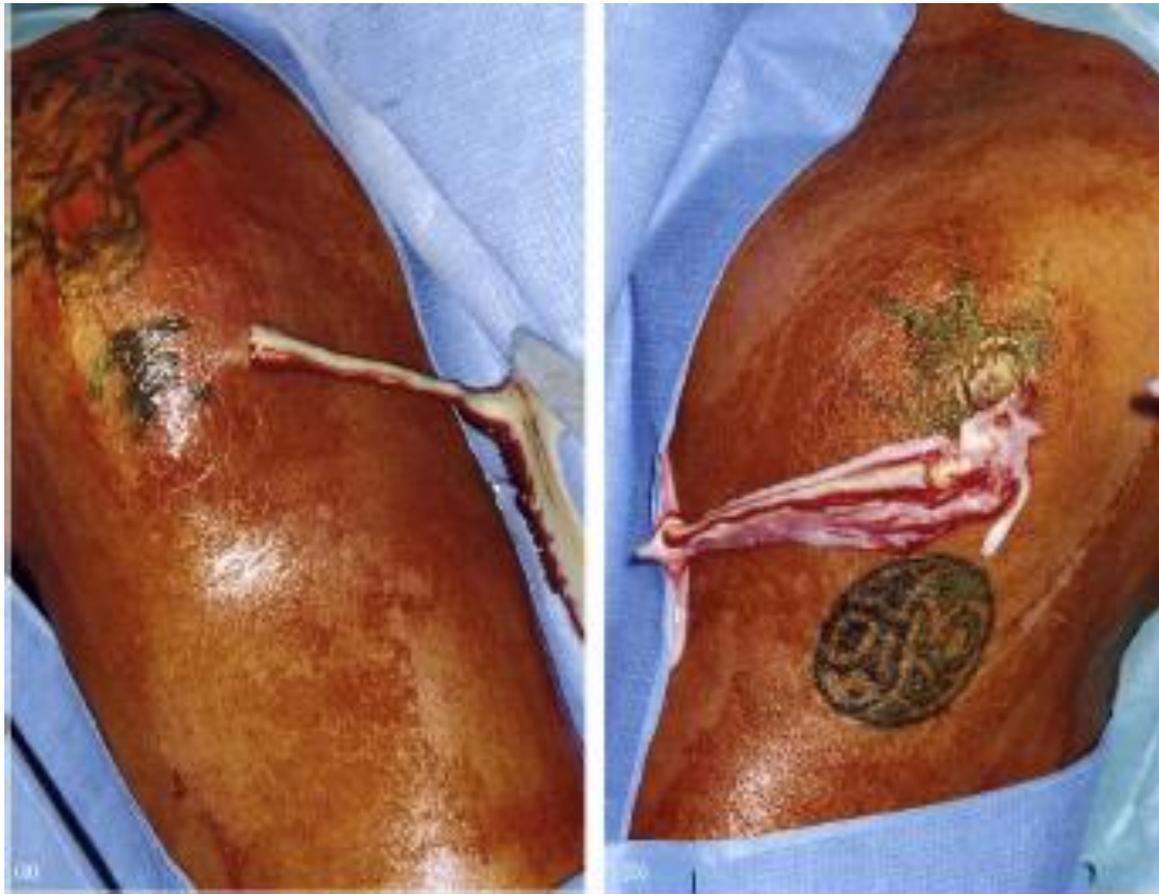
Pope et al, 2013

Bilateral deltoid abscesses pre-operative clinical appearance



Marquis & Maffulli, 2006

Intra-operative drainage



Marquis & Maffulli, 2006

Unlinked Anonymous Monitoring Survey of People Who Inject image and performance enhancing drugs

	2010/11	2012/13
Anti-HIV Prevalence	1.5% (400)	2.0% (249)
Anti-HBc Prevalence	8.7% (400)	2.8% (249)
Anti-HCV Prevalence	5.4% (400)	3.6% (249)
Level of sharing (direct & indirect)	8.9% (392)	13% (243)
Hepatitis B vaccine uptake	24% (375)	40% (246)
Symptom of injection site infection	6.9% (389)	16% (238)
Ever been in prison	17% (377)	24% (247)

Hope, McVeigh et al, 2014

Hepatitis C in injecting drug users in the North West

A Multi-Agency Study

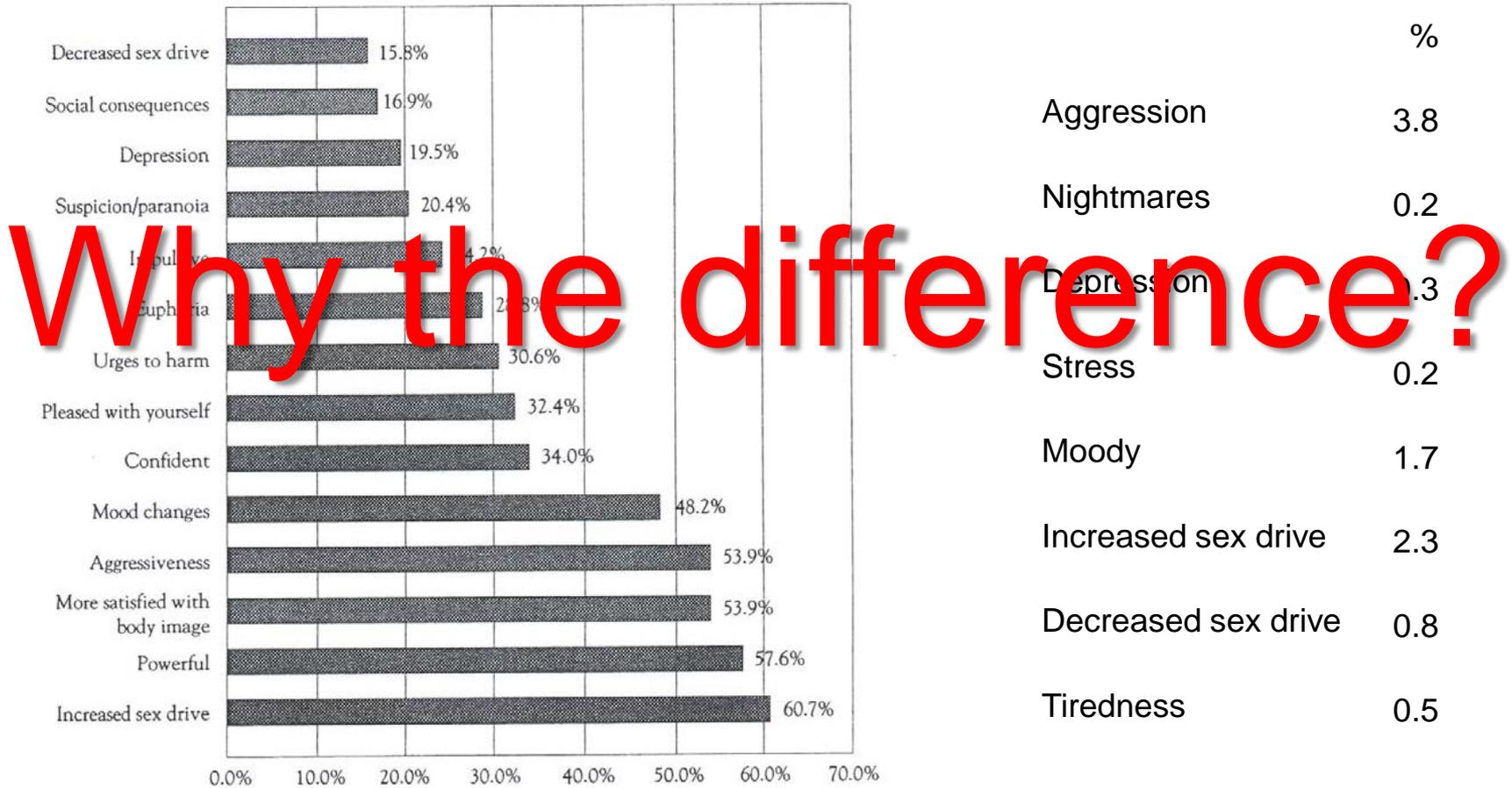
341 injecting drug users
53.1% hep C positive

Only 9 steroid injectors
5 hep C positive



Liverpool John Moores University

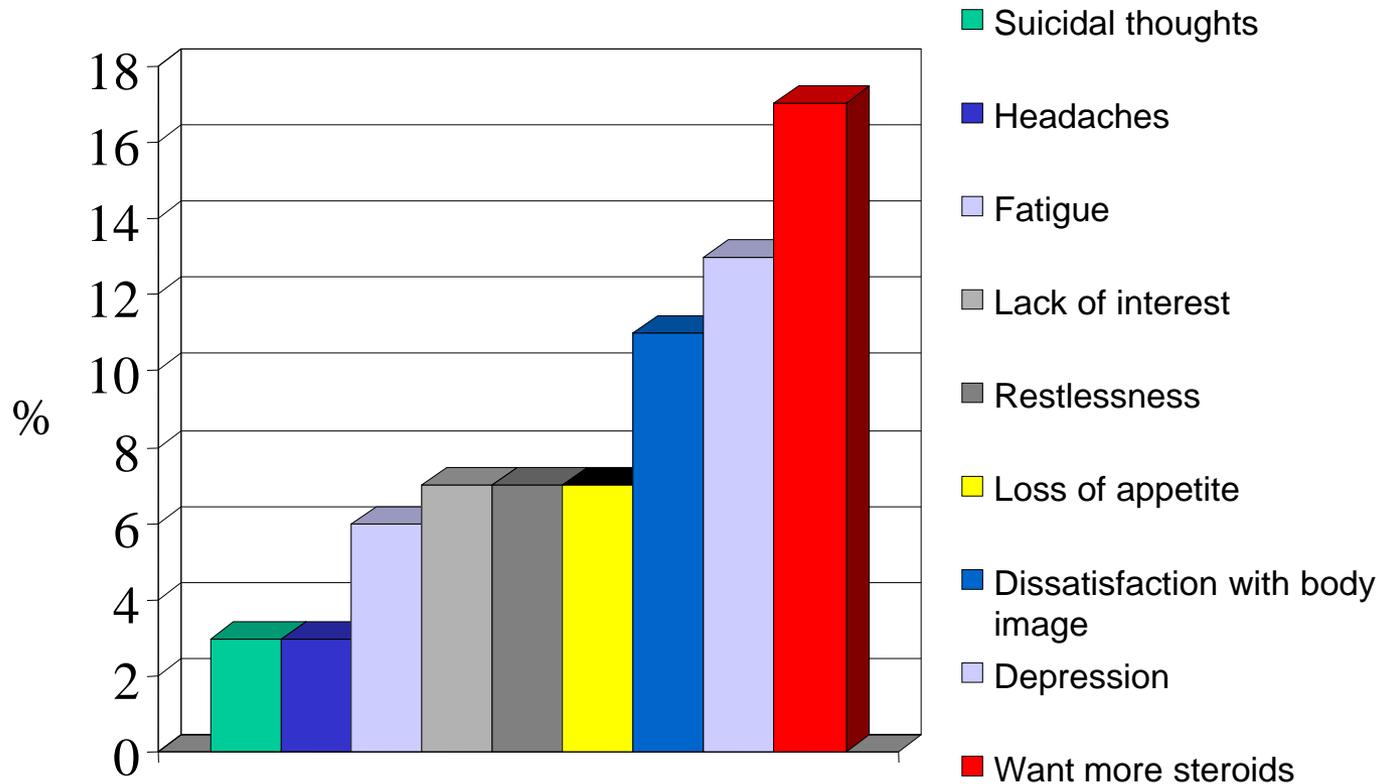
Self reported psychological effects attributed to anabolic steroids



386 individuals - 1995

869 individuals 2006

Symptoms experienced when anabolic steroid use is stopped



What else has changed?

Use of drugs by male anabolic steroid injectors

Image and performance enhancing drug use, last year

Years since first used an image and performance enhancing drug	0-4	36%	141
	5+	32%	128
	Median (IQR)		4 (8)
	Not reported	32%	126
Oral anabolic steroids		57%	226
Oral anti-oestrogens		23%	92
Oral clenbuterol		15%	60
Oral ephedrine		20%	78
Oral thyroid hormones		9%	37
Oral phosphodiesterase type 5 inhibitor (PDE5i; "Viagra/Calias")		6.6%	26
Oral other image and performance enhancing drug (inc. Diuretics, 2,4-dinitrophenol and Pro/designer)		12%	46
Injected anabolic steroids		86%	340
Injected growth hormone		32%	128
Injected human chorionic gonadotropin (hCG)		16%	62
Injected insulin injected		5.6%	22
Injected melanotan		8.6%	34
Injected other image and performance enhancing drug (inc. ethryopoetin, insulin-like growth factor 1 and nalbuphine hydrochloride)		5.1%	20

Use of other illicit drugs

Ever injected illicit drug other than an image and performance enhancing drug.		4.8%	19
Snorted cocaine in the last year		46%	181
Snorted, drunk or swallowed amphetamine in last year		12%	47

(Hope et al. 2013)

The growth of growth hormone

Author/ year Published	Sample	Growth hormone use
Korkia & Stimson Great Britain (1993)	110 anabolic steroid user interviews	2.7% (3/110) of those currently reporting anabolic steroid use also reported use of growth hormone in the past 6 months. Users were all male.
Lenehan et al. North West (1996)	386 interviews	5.7% (22/386) reported use of growth hormone in the past 6 months.
McVeigh et al Merseyside (2007)	85 anabolic steroid users interviews	21.2% reported use of growth hormone in the last 12 months
McVeigh et al Liverpool (2008)	27 anabolic steroid users at NSPs and Snowball sampling	29.6% reported lifetime use of growth hormone, with 11.1% reporting current use.
Hope et al England & Wales (2013)	395 IPED users at 19 NSPs	32% injected growth hormone in previous year

Cycles, dosages & stacks

Types of anabolic steroid users

Generally divided on the basis of purpose or function.

Sports competitors

Occupational users

Aesthetic users

Competitive/recreational sports participants

Bodybuilders!!!

Young people

Testosterone replacement patients (self-medicating or prescribed)



THE YOLO TYPE

Motivated by impatience, curiosity and influence from peers and authoritative role models.

Focus on asserting his masculinity (e.g. impressing girls and advancing upwards in the male hierarchy).

Little to no concern about side effects and towards general health

Aims at immediate benefits.

Low level of 'steroid knowledge' - based on lore and advice from 'gym rats'

Risk-taking Lifestyle (e.g. recreational drug use and is more likely to end up in fights than the other types)

Little concern about diet, training and recovery

THE ATHLETE TYPE

Motivated by competitive aspirations

Focus on performance (e.g., skills, size, and definition).

Concerned with side effects but willing to run health risks in order to fulfil sporting ambitions.

Aims at maximising benefits by combining different steroids (stacking) with other performance and image enhancing drugs (polypharmacy)

Medium to high level of knowledge - based on medical assistance and experience from his sporting community.

Plans training and diet according to season - avoids recreational drugs.

Dedicated to the athlete life style

THE WELL-BEING TYPE

Motivated by vanity and/or wishes for restoration or rejuvenation

Focus on well-being, moderation and peer recognition (e.g. during summertime)

Considers side effects and wants to play it safe

Aims at slight improvements

Medium level of knowledge - based on own experience, online fora and other users

Wants to improve his quality of life and has a relaxed take on nutrition

Focus on healthy living and are typically older

THE EXPERT TYPE

Motivated by lay scientific curiosity and a fascination with pharmacological performance enhancement.

Focus on muscularity, learning and knowledge sharing.

Very concerned with side effects and wants to play it safe

Aims at optimising benefits with a perceived sensible drug regimen

High level of knowledge - based on various sources including scientific papers

Values health and monitors his body systematically (e.g. in collaboration with physician)

Offers advice on harm reduction to others and seeks recognition as a source of expertise on steroids.

National IPED survey 2015

Cluster analysis

Age	Number of adverse effects
Age first used	Alcohol use
Steroids used	Psychoactive drugs used
Other IPEDs	Motivations for steroid use
Source of drugs	

Sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
(n=611; 100%)	(n=68; 11.1%)	(n=236; 38.6%)	(n=155; 25.4%)	(n=152; 24.9%)

(Zahnow et al, in prep)

The IPED market

The biggest source of these drugs is the illicit market. It is vast and complex. In some cases the drugs are bought from Internet, ‘bricks and mortar’ shops or dealers. In others they are sold or given away by friends, family, partners, or other acquaintances.

Those involved in the illicit market range from cottage industries to large-scale operations.

The Market

“You can’t get anything pharmaceutical grade, everything is ‘underground’”

“I’ve heard horror stories about dealers that I talk to...there’ll be a tray of vials and they’ll ask, ‘what are you after?’ [specific types of steroids] And they say, ‘well there’s the bottles, there’s the labels, take whatever labels you need and just stick them on the bottles’”

(Steroid user, competing bodybuilder and gym owner aged 45)

“You wouldn’t know, but you do find out the difference after you’ve finished your course and your are not getting the results you should be getting. I think that’s a risk you take, it comes in life, it comes everywhere”

(Steroid user aged 27)



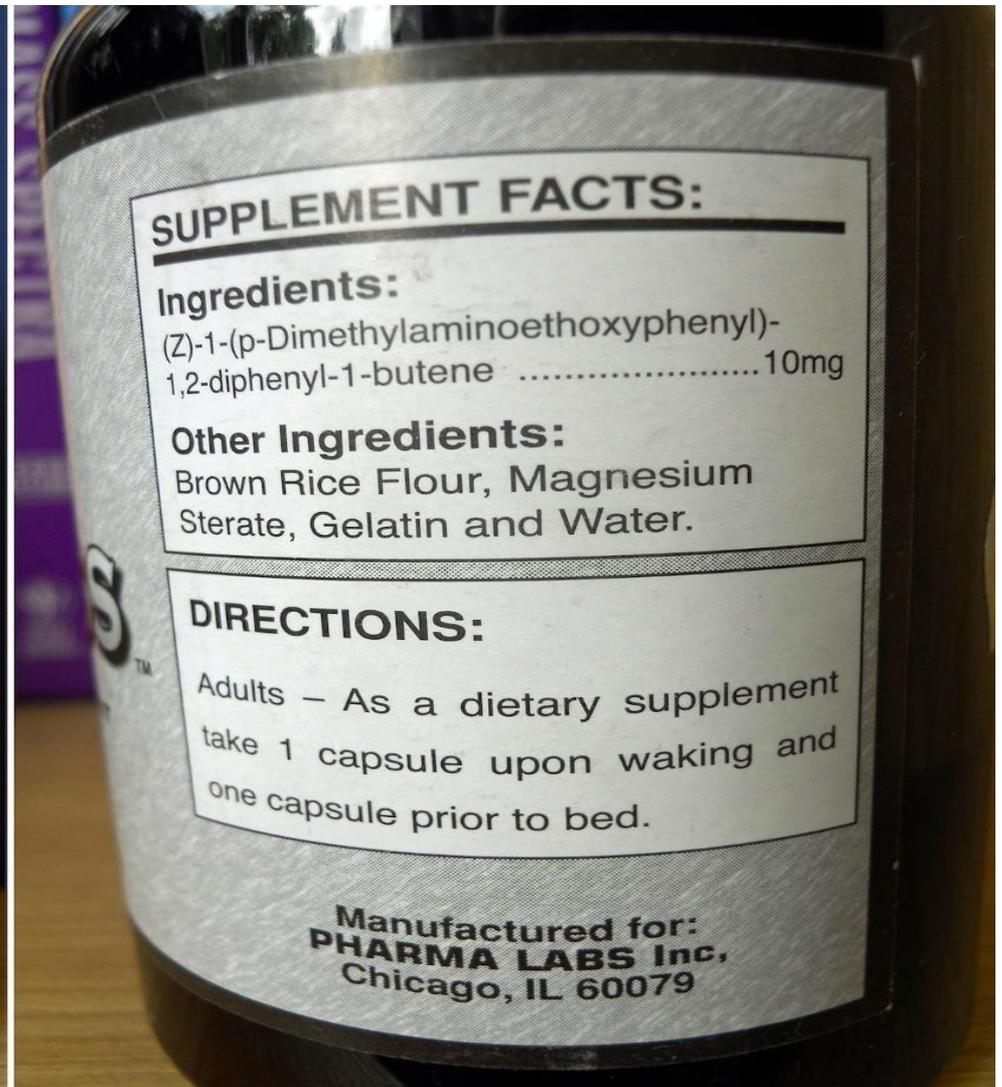
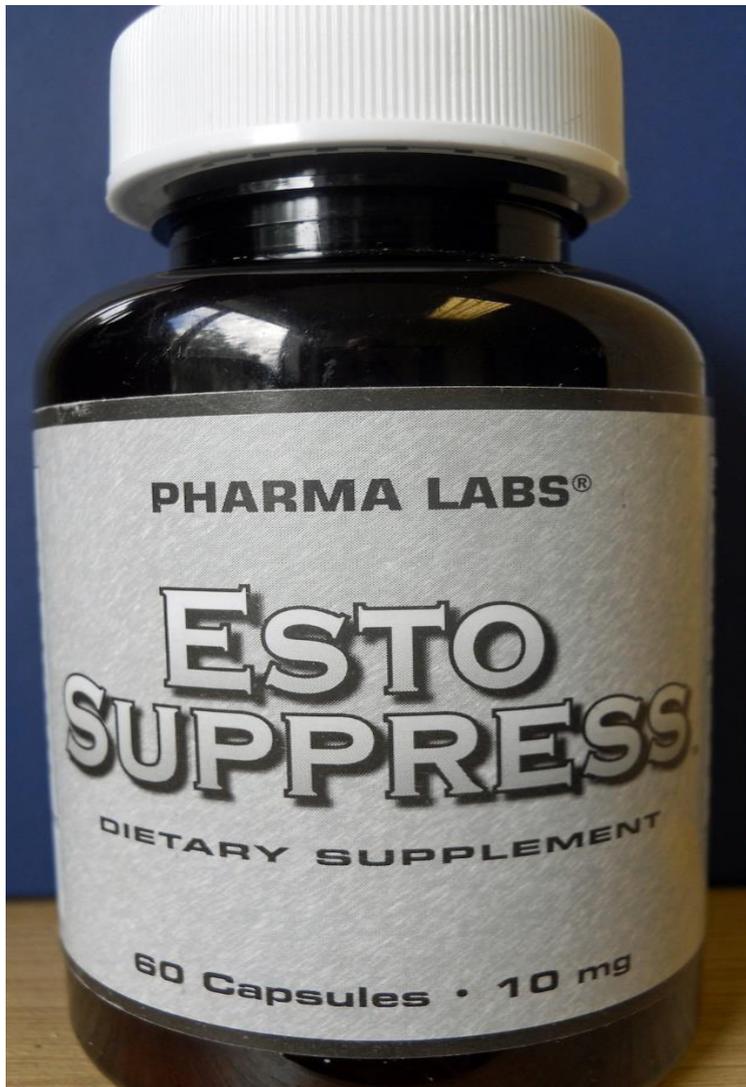
The strange case of GHRP-6



“We aim for a high standard....”

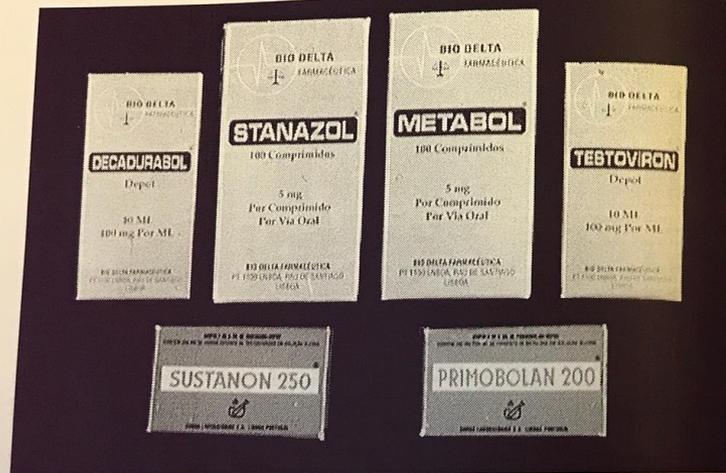
Supplements – they are safer!

Product Name	Steroid Identified	Estimated amount per tablet/capsule
Super Tren-MG	DHEA	28 mg
19-Nor Tren	DHEA	16 mg
Tren Bomb	Methyl-1-Testosterone	7 mg
Super Halo	DHEA	20 mg
Straight Epi	DMT	12 mg*
Straight Drol	Androstenedione	9 mg
Straight Phlexed	DMT	7 mg*
	Androstenedione	4 mg
Ultra Mass	DMT	17 mg*
	Methasterone	
11-Sterone	Androst-4-ene-3,11,17-trione	61 mg
Furuza-A	Furazabol	31 mg
Epivol	DMT	36 mg*
Epivol Black	Androstenedione	~1 mg
	Methasterone	2.4 mg*
S-Drol-17-Black	Methasterone	8 mg*
Straight Phlexed	Androstenedione	9 mg
Super Halo	Methasterone	5 mg*
Super Tren-MG	DHEA	21 mg
Tren Bomb	Methyl-1-Testosterone	7 mg



COUNTERFEITS AND FAKES A GROWING PROBLEM

By Jim McVeigh & Pat Lenehan



The existence of counterfeit anabolic steroids is by no means a new phenomenon. Due to the limited availability of genuine pharmaceutical products and the laws of supply and demand, many anabolic steroid users have grown to accept the fact that the majority of products available to them will be either fake or counterfeit. However it is important to note that although the terms "fake" and "counterfeit" may imply inferior quality, there is evidence to suggest that many of these products do in fact contain anabolic steroids (not always of the dosage or type specified). In some instances these products have acquired such a positive reputation that they have become sought after in their own right, even to the extent of being counterfeited themselves.

Traditionally, fake anabolic steroids were relatively easy to identify if you knew what to look for. Poor packaging, badly printed or photocopied information inserts and bar codes that often appeared to have been drawn with a felt tip pen (and in some cases had been) were and still are the most obvious indications of fake products. Other pointers include visible contamination of ampoules, variability in appearance and content of ampoules and vials, and incorrect tablet consistency. There are however, exceptions to these guidelines as is evident in the poor quality packaging of genuine pharmaceutical products manufactured in Developing Countries.

While it is still possible to find these rather amateurish fakes being sold to the

unwary, a more sophisticated type of product has appeared on the market which is much more difficult to identify. One such example of these new high quality fakes is a range of both injectable and oral anabolic steroids, purported to have been manufactured in Portugal. However, on making enquiries into the legitimacy of the products, it was discovered that the company was non-existent and the address was that of a dentist in Lisbon who had no knowledge of the company or its products. These anabolic steroids were available to dealers for £3.50 each in bulk orders and were being sold on for anything between £8 and £17. The wholesale price of £3.50 seemed remarkably cheap for a product with such high quality packaging. One possible explanation for this was that these fakes did not contain any anabolic steroids at all.

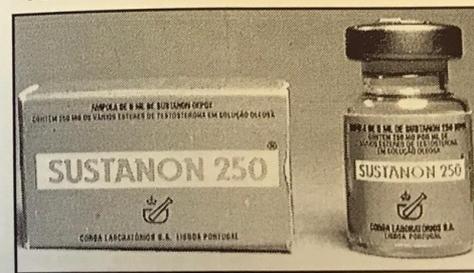
Samples of these products, together with examples of other known fakes and counterfeits were sent to a pharmaceutical unit for analysis. At first we had some difficulty in persuading the analyst that they were in fact fakes and not genuine pharmaceutical products.

The results of the analyses were both interesting and disturbing. All of the samples were found to contain anabolic steroids. The amount of anabolic steroids however, varied considerably, ranging from 43.33% to 73.1% of their

anabolic steroids. These results clearly demonstrate the problems facing anabolic steroid users who purchase products on the black market.

Many users will be aware of the probability of a product being fake or counterfeit. There is often the presumption that the fake steroid will be weaker than the stated content. The user will often compensate for this by increasing the amount taken. As illustrated above this could be a very dangerous practice.

There have been cases of high androgenic anabolic steroids being packaged as steroids with much lower androgenic properties. Many of the side-effects associated with anabolic steroids are a direct result of their androgenic properties. The potential for harm can be greatly increased if large doses of high androgenic anabolic steroids are used. The risk to female anabolic steroid users is particularly worrying as the virilising effect of androgens in women can result in irreversible side-effects.



stated content. The laboratory was able to confirm that neither Bio Delta Farmaceutica nor Coroa Laboratories were listed with the Royal Pharmaceutical Society of Great Britain and were not legitimate pharmaceutical companies. A slight discrepancy was identified on the label of one box, the dosage instructions referring to 10mg instead of 10ml.

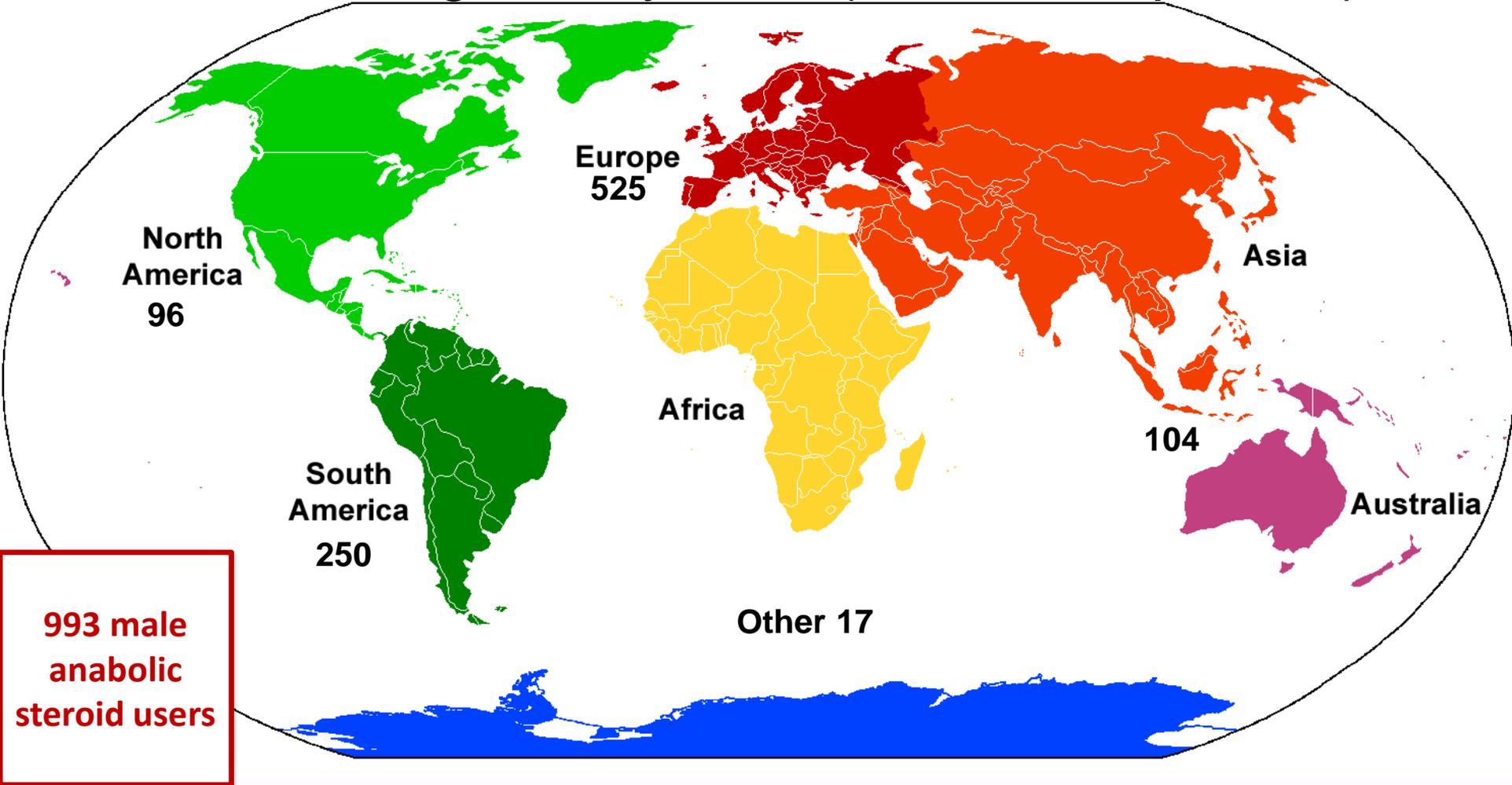
The most disturbing aspect of these results is the variations in content of anabolic steroids. This is especially significant when one considers anabolic steroids which we have had tested previously. One oral anabolic steroid also produced by Bio Delta Farmaceutica was found to contain 182.8% of the stated content of

In addition to the strength variations of black market anabolic steroids, there are many examples of the stated anabolic steroid being substituted with a different

TRADE NAME	MANUFACTURER	RESULT
TESTOVIRON (10ML VIAL)	BIO DELTA FARMACEUTICA	67.54% OF STATED CONTENT
DECADURABOL (10ML VIAL)	BIO DELTA FARMACEUTICA	43.33% OF STATED CONTENT
STANAZOL 5MG TABLETS	BIO DELTA FARMACEUTICA	73.1% OF STATED CONTENT
SUSTANON 250 (5ML VIAL)	COROA LABORATORIES	58.64% OF STATED CONTENT

Global phenomenon

Global Drug Survey 2015 (89,509 responses)



Region of residence: AAS users as proportion of GDS participants

Characteristics	Total males	Ever used	% of total males ever used	Used in the last 12 months	% of total male used in last 12 months
Region					
Europe	47,424	525	(1.10)	158	(0.33)
North America	3,038	96	(3.06)	27	(0.86)
South Americas	3,133	250	(7.39)	84	(2.48)
Oceania	4,080	104	(2.49)	38	(0.91)
Other	537	17	(3.07)	8	(1.44)
Total	58,212	993	(1.68)	315	(0.53)

Global Drug Survey – 993 steroid users

Drug	Used in last 12 months	Lifetime use
Cannabis	63.1	87.8
Other drugs *	44.6	71.4
Ecstasy	41.8	61.3
Cocaine	38.7	61.3
Amphetamines	20.6	49.1
LSD	18.1	41.1
Benzodiazepines	28.2	34.8
NPS	14.0	31.0
Opiates	15.3	30.0

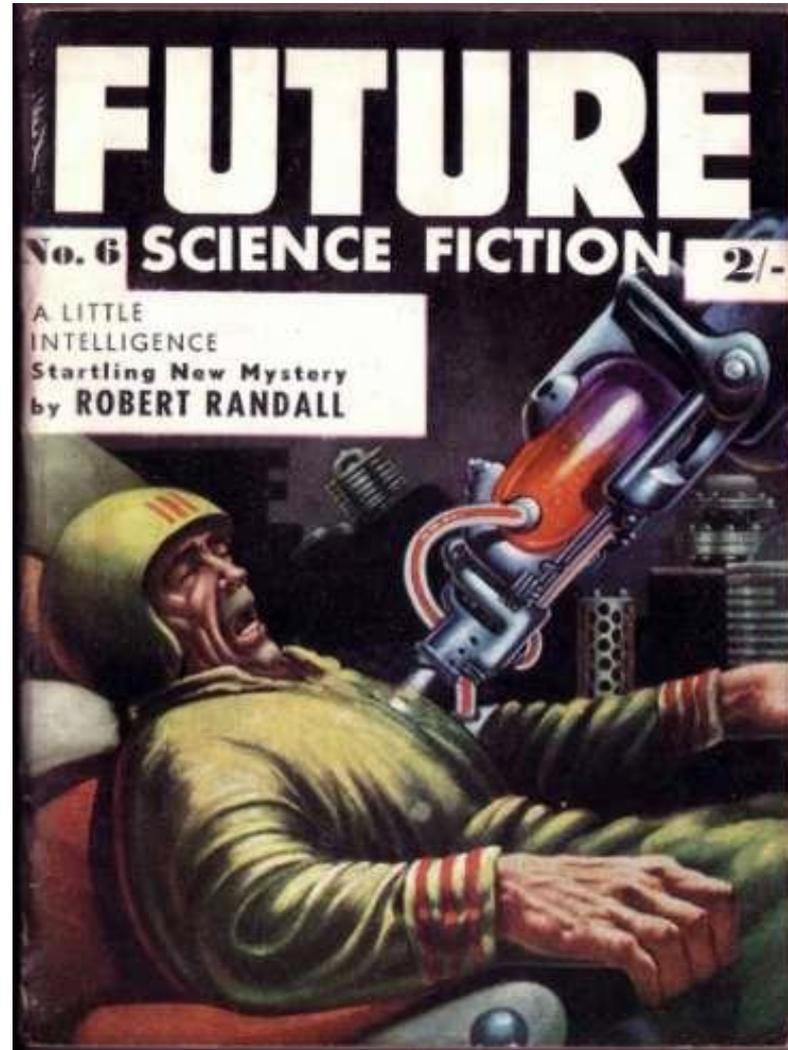
* Zahnow et al (in press)

* Including magic mushrooms, poppers, nitrous, ketamine and GHB

The Future







The power of communication



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MELANOTAN II 20MG PACKAGE



Don't Forget Mother's Day April 6th!

Make Your Mother Even More Beautiful This Mother's Day With A 20mg MT2 Package For Only... £44.00!

PRODUCT INFORMATION

Melanotan 2 - 20 mg Package

Includes 2 needles/wipes to get you started.

This 20mg package [tan injections](#) is a favorite for our new customers who have heard about the great results they can achieve and want to try this fantastic product for the first time. The first 10ml vial of [Melanotan](#) will take you through the **LOADING PHASE** and the second vial will start your **MAINTENANCE PHASE** which will help you keep your desired color for months.

Each 10mg vial contains 10 injections.

Popular Products

- Melanotan II 10mg
- Needles 10 Pack
- Melanotan II 20mg Package
- Melanotan II 30mg Package
- Sterile Wipes 10 Pack
- Melanotan 2 50mg package + 1 free vial
- Diamond Labs ECA 30+ (EPH 25+ Alternative, Much Stronger)
- Bacteriostatic Water 30ml
- Sibotrim 30 Tabs
- Melanotan Nasal 2 Pack
- Melanotan Nasal 1 Pack
- Melanotan 2 100mg Package
- Buy PT-141 Nasal Spray | Increase sexual arousal | bromelanotide
- GHRP-6
- ReduTrim 15mg 30 Day Course
- Melanotan 30mg + Free KIT
- SIBOTRIM 90 TABS
- CJC-1295
- PT - 141 Injections
- Admin KIT 10mg

Featured Product



30mg MT2 Package

Melanotan II 30mg Package

[Sale Items](#)

Melanotan 2 20mg Package

RPS-10/04/4030

Royal Pharmaceutical Society of Great Britain

certifies that

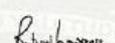
Canadian Health&Care Mall

is registered with the Royal Pharmaceutical Society of Great Britain (RPSGB), the professional and regulatory body for pharmacists and pharmacies in England, Scotland and Wales. Canadian Health&Care Mall fully adheres to the standards and online pharmacy services guidelines set by the RPSGB and offers professional services and quality customer care via the Internet.

Customers of the registered pharmacies can be assured that the products are of the highest quality and are purchased from reputable sources, and can expect to be fully satisfied as to the integrity and quality of products.

We recommend using Canadian Health&Care Mall for buying medicines on a regular basis.

Date: 16/04/10

Signature: 

Richard Lawrence



...and finally

AS SEEN IN
CBS SPORTS Men'sHealth MUSCLE FITNESS

**"GAIN 700%
MORE MUSCLE
IN 7 WEEKS"**

**#1
SUPPLEMENT
IN MMA!**



Gain Weight :
Creatine and

NOW AVAILABLE!
**THE WORLD'S #1 PROVEN LEGAL
MUSCLE BUILDER...**

BREAKING NEWS: September 18, 2009

Rare Plant Extract Increases Muscle Growth by 700%

Now Available Here for the First Time Without a Prescription...

Now, in just 7 short weeks, you can safely gain 700% more rock-hard muscle mass.



Jim McVeigh
Director

Public Health Institute
Liverpool John Moores University

0151 231 4512
j.mcveigh@ljmu.ac.uk

