

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/303702917>

Drug Use in Gyms

Chapter · June 2015

CITATIONS

0

READS

865

1 author:



[Ask Vest Christiansen](#)

Aarhus University

24 PUBLICATIONS 171 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Doping WADA [View project](#)



Doping and cheating in cycling [View project](#)

33

DRUG USE IN GYMS

Ask Vest Christiansen

From being a very limited subcultural phenomenon, with its epicentre in Southern California, the use of muscle building drugs in fitness centres and gymnasiums (hereafter gyms) has spread to most parts of the westernized world. Today the use of such drugs – predominantly anabolic-androgenic steroids (hereafter anabolic steroids) – is known and considered widespread in various populations of gym users. Although it is well established that only a minority of those who use drugs in gyms are competing bodybuilders, weight- or power lifters, it is equally clear that the use of drugs in gyms has its origin in these populations (Kanayama *et al.*, 2008; Klein, 2007; Parkinson and Evans, 2006; Pope *et al.*, 2000).

Using elite athlete populations as point of departure, scholars began in the late 1970s and early 1980s to draw some, albeit limited, attention to the use of anabolic steroids by non-elite athlete populations (e.g. Brohm, 1978; Goldman *et al.*, 1984; Taylor, 1985). However, since the focus was predominantly on elite sport, the use of steroids among non-elite athlete populations was mainly dealt with as a regrettable trickle-down effect of elite athletes' use. When the focus of attention began to shift towards non-elite athletes' drug use, it was related to a larger cultural shift in the interest of the male body that emerged in the 1980s.

Whereas strongman contests and exhibitions had had some attention since the 1890s they continued, up through the first half of the twentieth century, to be associated with the proletarian social position from which they arose. For most middle-class men, self-esteem and personal identity were derived not from sport or their bodily practice, but primarily from non-physical activities, especially their role as breadwinners. In line with this, the dominant male role models of popular culture in the 1940s and 1950s rarely exhibited heavy musculature. Although the famous Charles Atlas sand-kicking-bully advertisements had some appeal, especially to insecure teenage boys sensitive about their changing bodies, the larger audiences preferred slim, tall men exhibiting 'non-ostentatious' bodies (Luciano, 2007). The hippie movement in the 1960s, with its rejection of conventional gender roles and social hierarchies, further reinforced the rejection of aggressive masculinity as expressed through muscularity. Instead, this generation explored so-called mind-expanding drugs while opposing the war in Vietnam and the soldiers that fought it by wearing loose clothing and walking around with flowers in their long hair. The oil crisis in the 1970s with its accompanying increase in unemployment rates, the burgeoning health and exercise movement, combined with the emergence of what has been labelled the me-generation in the 1980s changed this situation (Lasch, 1980; Luciano, 2007).

Ask Vest Christiansen

While Arnold Schwarzenegger, with his charming appearance in the film *Pumping Iron* (Butler and Fiore, 2010) and his subsequent superhero roles in a number of blockbusters, was instrumental in lifting bodybuilding out of obscurity and into being part of mainstream culture, the fitness industry in the same period blossomed and men and women took on the metaphor that taking control of one's body equalled taking control of one's life (Klein, 1993; Luciano, 2007). The muscular body as a symbol of masculinity gained new popularity, and the use of muscle-building drugs in gyms spread from competing bodybuilders, weight- and power lifters to larger populations of gym users.

Taking some of the most significant academic works into consideration this chapter describes how the scholarly interest in drug use in gyms rose from studies of competitive bodybuilding to studies of larger segments of the gym population. The challenge of establishing reliable figures for the frequency of anabolic steroid use and describing the typical users is then addressed. Next, the chapter discusses the associated cultural, psychological and evolutionary explanations for anabolic steroid use. The chapter concludes with a brief discussion of some of the significant political campaigns to regulate and counter drug use in gyms.

From insecure bodybuilders to image concerned youth

One of the first scholars to draw attention to the use of anabolic steroids among larger populations of gym users was sports historian Terry Todd. In an article with the evocative title: *Anabolic Steroids: The Gremlins of Sport* he quoted from an interview with a dealer who had told him about the easy access to anabolic steroids in gyms in the early 1980s: 'Most people don't understand how easy it is to buy steroids. All you have to do is to go into almost any gym in the U.S. and inside of a day you can score.' He further stated that:

The largest group of users would be bodybuilders, of course, and I don't mean competitive bodybuilders. I mean average guys who just wanted to be bigger and stronger as fast as they can. The last three or four years, the use of the stuff has just exploded.

(Todd, 1987: 104)

It was indeed the gym and bodybuilding culture that was the focus of attention when, in the 1980s, American scholar Allan Klein carried out an ethnographic study of four well-known Southern California gyms. His intensive studies resulted in the landmark book *Little Big Men* (1993). As the title indicates, Klein embraced a social-psychological approach, arguing that the imposing exterior bodybuilders display reflects psychological insecurity. The drug-enhanced powerful body is a 'psychologically defensive construct that looks invulnerable but really only compensates for self-perceived weakness', Klein suggested (1993: 18). Utilizing a classic approach to cultural analysis, Klein's study also uncovered the discrepancies between the idealized and the actual culture of bodybuilding. Whereas the former, through magazines and commercials, promotes the image of a lifestyle where muscular bodies signify youth, power, autonomy, health and enhanced heterosexuality, the latter is often characterized by the opposite: dependencies, 'illth', drug use, hustling and homosexuality. Drawing on a new trend in the literature, primarily from gender studies, Klein also argued that the obsolescence of traditional male-dominated occupations had resulted in a 'crisis in masculinity' that in turn prompted men to build muscles as a way of regaining their masculine appeal. Shortly before Klein published his work, Samuel Fussell covered many of the same themes (including the psychological insecurity prompting the activity) in his gloomy but also witty and well-written first-hand experience of the bodybuilding community (Fussell, 1991).

Drug use in gyms

As is often the case with influential work, Klein's study also provoked opposition, most significantly from sociologist Lee Monaghan, who to some extent copied Klein's ethnographic approach but substituted rainy Wales for sunny California. Monaghan rejects Klein's psychological analytical framework, arguing that antecedent insecurities are neither a necessary nor sufficient condition for bodybuilding, and he further argues that the macro-analysis of masculinity in crisis does not account for individual involvement in bodybuilding. Monaghan is more influenced by Giddens than Freud when emphasizing how being a bodybuilder is not necessarily a therapeutic project, but a chosen identity involving an element of self-discovery through a specific lifestyle choice. Important in this respect is how the individual deals with drugs and the associated risks. Monaghan describes how individuals in the culture develop what he labels 'ethnopharmacological knowledge', which he defines as lay people's 'detailed subcultural understanding of the pharmacological properties of particular compounds, consisting of a taxonomy of different steroids, dosages, administration routes and complex cycling theory' (Monaghan, 2001: 95).¹ In line with this, and opposed to many others studying bodybuilding, Monaghan therefore prefers to use the term drug use, rather than abuse.

Although also taking non-competitive bodybuilders into account, Monaghan, like Klein, focuses primarily on bodybuilding communities, which may give the impression that steroid use in gyms is limited to a narrow subculture. That this is not the case has been stressed by the Italian doping investigator Alessandro Donati who in a report prepared for the World Anti-Doping Agency, WADA, in 2007, documented the enormous quantities of anabolic steroids that flooded the world market. He concluded that, in a population of 790 million people in the area under study, steroids were used by no fewer than 15.5 million people, indicating that steroid use extended far beyond elite athletes. Among those using steroids were 'athletes of various levels, bodybuilders and other gym-goers, people in the military and various types of police officer, bodyguards and various types of private surveillance agents, people involved in show business, and victims of the improper administration of drugs' (Donati, 2007: 103).

In line with this, scholarly interest has, since the turn of the century, shifted from bodybuilders to ordinary young men attending gyms. An important book in this respect was Harrison Pope, Katharine Phillips and Roberto Olivardia's *The Adonis Complex* (2000), in which the authors described how '[m]illions of men are sacrificing important things in their lives to exercise compulsively at the gym, hoping for a bigger chest or a flatter stomach'. They coined the term 'Adonis complex' to cover these and similar body obsessions, asserting that '[u]nlike healthy men and boys, [men suffering from the Adonis complex] have an unrealistic view of how they should look – and so they may abuse drugs, exercise excessively, and spend millions on products that are often worthless' (Pope *et al.*, 2000: xiii). The pressure to obtain the right look and body image was, the authors argued, caused by an increased cultural exposure to muscular models in TV, films, commercials, music videos, action toys, etc. This, they argued, had prompted an unparalleled level of bodily dissatisfaction among men. Such dissatisfaction expressed itself in a number of ways collected under the term the Adonis complex, which included the use of steroids for many of these men (Pope *et al.*, 2000: chapter 2). The work of Pope and his colleagues represented a shift in attention when it came to academic interest in the body and people's efforts to change it. Whereas scholars in the field had previously primarily studied girls and women (typically with a focus on fat, size and weight dissatisfaction), attention was now directed at boys and men and their preoccupation with muscularity. The impact was significant. According to Thompson and Cafri, academic articles in the field rose by 731 per cent in the period from 2000 to 2006 compared to the previous 7-year period (Thompson and Cafri, 2007). The overall hypothesis that has dominated the literature is that the use of drugs in gyms is caused by a shift in a culture that now gives unprecedented importance to bodily appearance, which

Ask Vest Christiansen

causes a number of psychologically susceptible people to take up drug use in order to live up to the surroundings and their own normative criteria. Before going deeper into the discussion of causes and motives for drug use in gyms, it is worth examining how prevalent the use of anabolic steroids is and who the users are.

Prevalence and typical users of anabolic steroids

Most studies have found that the use of anabolic-androgenic steroids is very rare among women, even among those who use gyms. Women may use other drugs such as fat burners or stimulants, most often in order to lose weight, but as regards the most discussed drugs used in gyms – muscle building anabolic steroids – female users are rare (Kanayama and Pope, 2012; Parkinson and Evans, 2006; Swedish National Institute of Public Health, 2010). For this reason the discussion in this chapter focuses primarily on males. Even if we focus specifically on males, however, it should be noted that the prevalence of anabolic steroid use, as well as the impact the use has on the individual and on society, is modest compared with the use of most other licit and illicit (social) drugs (Nutt *et al.*, 2010).

Other than being a male who works out in a gym and is between 20 and 40 years old, it is not easy to pin-point what the typical anabolic steroid user looks like. As indicated by Donati, they may have very different backgrounds. The single most clear characteristic across a number of studies is that users of anabolic steroids in general also use other drugs more often than non-users (e.g. Barland and Tangen, 2009; Dodge and Hoagland, 2011; Dunn and White, 2011; Ip *et al.*, 2011; Kanayama *et al.*, 2003; Mattila *et al.*, 2010; Nilsson *et al.*, 2001; Pallesen *et al.*, 2006; Pope *et al.*, 2012). Besides that, it is hard to find common traits. The traditional folk hypothesis that users of anabolic steroids are either criminal or less educated and come from poorer socio-economic backgrounds than the general population has not been easy to confirm (Barland and Tangen, 2009; Cohen *et al.*, 2007; Paoli and Donati, 2013; Singhammer and Ibsen, 2010; Skårberg and Engstrom, 2007; Skårberg *et al.*, 2010). One large American study even found that

the typical user was a Caucasian, highly-educated, gainfully employed professional approximately 30 years of age, who was earning an above-average income, was not active in organized sports, and whose use was motivated by increases in skeletal muscle mass, strength, and physical attractiveness.

(Cohen et al., 2007)

On the other hand, a study from Sweden found that anabolic steroid users ‘often have a troubled social background’ and some report ‘poor relationships with their parents’ (Skårberg and Engstrom, 2007).

Further, accurate estimates of the prevalence of steroid use in the general population are hard to obtain. But for users in the gym environment most evidence suggests that use – similarly to drug use in sport generally – is restricted to a limited period of the individual’s life, i.e. from late teens to early thirties (Parkinson and Evans, 2006; Swedish National Institute of Public Health, 2010). Some studies suggest that the general prevalence of anabolic steroid use has remained stable or shown a slight increase over the last couple of decades (Parkinson and Evans, 2006), although ‘recent surveys indicate that the prevalence of androgen use [i.e. anabolic steroids] among adolescents has decreased over the past 10–15 years’ (Hoffman *et al.*, 2009).

Most prevalence studies have been conducted through traditional questionnaire surveys. As with other surveys that inquire into behaviour that is stigmatized, tabooed or otherwise generally disapproved of, they run into well-known problems of response bias, under-reporting,

Drug use in gyms

high dropout- and low response rates, which decrease the value of extrapolations of the results to the level of general populations (Hickman *et al.*, 2004; Yesalis *et al.*, 2001). Precautions should therefore be taken when evaluating results from such surveys. Bearing this in mind, studies using the traditional survey method have generally found prevalence rates around 1–3 per cent for the male population, while rates are approximately 2–3 times as high among gym-users (See Tables 33.1 and 33.2).

Table 33.1 Prevalence rates for the use of anabolic steroids among males from the Nordic countries

First author	Year	Country	Population	Life-time prevalence rates among males (%)
Nilsson	2001	Sweden	Teenagers ($n=5,827$)	2.9
Kindlundh	2001	Sweden	High School students ($n=2,742$)	2.1
Leifman	2008	Sweden	General population, 18–50 years ($n=3,144$)	0.6
Leifman	2011	Sweden	Gym members ($n=1,752$)	3.8
Pallesen	2006	Norway	High School students ($n=1,351$)	3.6
Barland	2009	Norway	19 year olds for conscription ($n=5,332$)	2.9
Kulturministeriet	1999	Denmark	Gym members ($n=1,035$)	5.0
Singhammer	2010	Denmark	General Population, 15–60 years ($n=1,703$)	1.5
Mattila	2010	Finland	Adolescents 12–18 years ($n=22,519$)	0.5
Ægisdóttir	2006	Iceland	High School ($n=11,031$)	5.5

Source: Barland and Tangen, 2009; Kindlundh *et al.*, 2001; Kulturministeriet, 1999; Leifman and Rehnman, 2008; Leifman *et al.*, 2011; Mattila *et al.*, 2010; Nilsson *et al.*, 2001; Pallesen *et al.*, 2006; Singhammer and Ibsen, 2010; Ægisdóttir's study is quoted from Barland and Tangen, 2009).

Table 33.2 Prevalence rates for the use of anabolic steroids among males.

First author	Year	Country	Population	Life-time prevalence rates among males (%)
Hoare	2010	Great Britain	General population, 16–24 year olds ($n=26,500$)	0.9 ^a
Hibell	1997	26 European Countries	15–16 year olds (n =approx. 2,400 per country)	~2 ^b
Dunn	2011	Australia	High School Students ($n=21,361$)	2.4
Hoffman	2008	USA	Students, grades 8–12 ($n=3,248$)	2.4
Johnston	2009	USA	General population, 19–30 years ($n=2,300$)	4.1
Centraal Bureau voor de Statistiek	2009	Holland	General population ($n=10,000$)	2.8 ^c
Tahtamouni	2008	Jordan	College students ($n=503$)	4.2

Source: Centraal Bureau voor de Statistiek, 2009; Dunn and White, 2011; Hibell *et al.*, 1997; Hoare and Moon, 2010; Hoffman *et al.*, 2008; Johnston *et al.*, 2010; Tahtamouni *et al.*, 2008.

^a No gender figures were given in this study, so this is the total figure for *both* men and women.

^b Most countries reported prevalence rates between 1% and 3%. A few countries reported prevalence rates above 3% (Croatia 6%, Italy, Malta and Great Britain 4% respectively).

^c The questions in this survey pertained to 'performance enhancing drugs', and was thus not restricted to anabolic steroids.

Ask Vest Christiansen

A German research group have introduced a promising method to investigate doping prevalence while avoiding the bias caused by social disapproval, often affecting traditional surveys (Pitsch and Emrich, 2012; Pitsch *et al.*, 2007). The method, known as randomized response technique (RRT) has, to the author's knowledge, hitherto (October 2013) only twice been used to determine the use of steroids among recreational athletes. One was in a small Dutch study in which the results from a traditional questionnaire study were compared with the RRT method. While the traditional method found a prevalence rate of approximately 0.4 per cent of drug users (anabolic steroids, insulin and stimulants) in the gym population under study the RRT method found a much higher rate – 8.2 per cent – of users of the same drugs (reported in Anti Doping Denmark *et al.*, 2012). In the other study, the method was used among gym users and revealed a prevalence of anabolic steroid use of 12.5 per cent (Simon *et al.*, 2006). These studies clearly demonstrate how traditional questionnaire surveys are likely to systematically under-report drug use in gyms.

The measurement problems are illustrated by the oscillating figures for the prevalence of use of anabolic steroids found in various studies. As is evident from Table 33.1, even in relatively homogeneous cultures such as those in the Nordic countries figures fluctuate, while Table 33.2 shows a somewhat similar pattern for the rest of the world. The question is whether these differences reflect real differences in prevalence of use or merely whether they are an expression of the difficulties in measuring use. If the apparent differences reflect real differences, why are these not bigger, given the variance in culture, rules and regulations around the world? Or conversely, why do data fluctuate so much in culturally, politically and economically similar societies such as those in the Nordic countries? If prevalence data are to be trusted, what is then the impact of the overall vs. local culture, and to what extent do local policies, laws and regulations influence patterns of use? Research-based answers remain to be found for these questions.

Causes and motives for drug use in gyms

When comparing use and users across cultures, it is important to recognize that in some countries, not least in the USA, there is a general cultural acceptance of anabolic steroids. Sports historian John Hoberman has illustrated this by pointing to the 500 per cent rise in sales of testosterone on prescription between 1993 and 2003. And he stresses that this was not caused by a rise in the administration of the drug to men with hypogonadism: 'The IOM [Institute of Medicine] committee reported that most of the 1.75 million testosterone prescriptions written in 2002 went to men who did not suffer from hypogonadism, the principal indication for which the drug is supposed to be prescribed' (Hoberman, 2005: 285). But the increase in prescriptions did not stop there. According to a *New York Times* article from 2011, testosterone prescriptions in the USA skyrocketed from the 1.75 million in 2002 by another 260 per cent to 4.5 million in 2010 (Kettmann, 2011). This may have been related to aggressive advertisements from the pharmaceutical industry directed at men with supposedly low testosterone levels, or 'Low T' as advertisers like to call it. One company, AbbVie, for instance, spent 80 million USD advertising its version of testosterone cream, AndroGel, in 2012 (Rosenthal, 2013). As Hoberman stated in 2005, in the USA 'testosterone had already become a predominantly off-label drug' (Hoberman, 2005: 285). An ambiguous and paradoxical relationship thus exists between on the one hand the stigmatized use of drugs in sport and gyms and, on the other, the accepted and even encouraged use of various types of enhancers in the wider performance-driven society.

Hence, whereas drug use in sport in general can be explained by the necessity of obtaining a competitive edge on the sports field, such an explanation has limited power in a setting where the majority of drug users do not compete. Most studies find that drug use in gyms is motivated

Drug use in gyms

by an ambition of attaining what is perceived to be an ideal body – whether this is a stronger, bigger, more muscular or leaner body (e.g. Bojsen-Møller and Christiansen, 2010; Cohen *et al.*, 2007; Gray and Ginsberg, 2007; Monaghan, 2001; Parkinson and Evans, 2006; Pope *et al.*, 2000). However, such ambition does not come from nowhere. There must be structural, cultural and social conditions that make people strive for their bodily ideal to a much greater degree than previously.

Since Pope, Phillips and Olivardia's book *The Adonis Complex*, along with their other work in the area, has been very influential, it may be useful to take their explanatory framework as a point of departure. Against the backdrop of American culture the book, as noted, pointed at the extensive focus on *body and appearance* in TV, films, commercials and other kinds of popular culture as a key element in understanding the apparent widespread use of anabolic steroids in gyms. Pope *et al.* documented how male *models* were not only much more prevalent in popular culture and more often appeared half-naked, but also how they exhibited a more pronounced musculature than previously. They also drew attention to how boys' *action toys* such as G.I. Joe, Batman and Superman had, over a 30-year period, gone through a metamorphosis from originally looking like well built, but recognizable men, to displaying a musculature that far exceeded what is seen in even the most muscular bodybuilders. To this, one could add the increased exposure to professional *sports* through TV and thereby to athletes who train significantly more today than did the average Olympic athlete only 40 years ago. An apparent consequence is that the athletic body, which is often held as a model for the ideal body (e.g. Barland and Tangen, 2009; Dixson *et al.*, 2003; Etcoff, 1999), has also changed over the last 40 years. Also, as sociologists Ivan Waddington (2000) and Deborah Lupton (1995), among many others, have pointed out, *health* has become an imperative in itself for modern people. However, our perception of health is not based simply on biomedical facts but often on what *looks* or appears healthy (Etcoff, 1999). So, while the practical reality of bodybuilding may not be healthy, it has been promoted with images of beautiful and well-built men and women, and have thus drawn upon wider cultural currents of health that have enabled it to gain credibility as essential in a healthy lifestyle (Klein, 2007).

To this development in *popular culture* two other important societal and cultural circumstances must be considered: the increasing *availability* of anabolic steroids and the *crisis in masculinity*. As regards the former, doping investigator Alessandro Donati and Latizia Paoli, a professor in criminology, have documented how the availability of doping products, not least anabolic steroids, has dramatically increased over the last two decades (Donati, 2007; Paoli and Donati, 2013). And today the internet has changed the situation 'so much so that users can nowadays bypass the whole domestic distribution chain and comfortably order doping products on the internet and have them delivered by mail at home' (Paoli and Donati, 2013: 19).

The crisis in masculinity is related to the wider social processes associated with women's liberation in western societies, as Klein has pointed out. The thesis is that women's liberation in the west has led to a situation where men no longer have the same privileges and status in society, which has caused a feeling of threatened masculinity among many men, hence the notion of masculinity in crisis. In order to regain their masculine appeal, many men have turned towards hyper-masculinity as expressed by big muscles – and have started building them. Women can be police officers, pilots, professors and presidents, but they can never – no matter how liberated they become (or how hard they train, or how many drugs they take) – gain the same muscle mass as men. To work with one's muscles is therefore a primary – albeit atavistic – expression of one's status as a man (Barland and Tangen, 2009; Cafri *et al.*, 2005; Gray and Ginsberg, 2007; Klein, 1993; Pope *et al.*, 2000).

Ask Vest Christiansen

However, such cultural changes would not have the impact they have had unless humans were receptive to them. Such receptiveness may be located both at the individual level as an (extraordinary) psychological predisposition, and at the level of our species as part of our evolutionary heritage. The former has had most attention in the literature, so I will attend to that before turning to the latter.

Bigorexia, muscle dysmorphia, or plain vanity?

In many western nations the use of anabolic steroids among non-elite athletes is widely considered to be a societal or even a public health issue. This has generated academic discussion designed to understand steroid use as part of a certain ‘disease pattern’. This discussion, which has centred on the assumed ‘malignant’ biological or psychological phenomena with which steroid use in gyms may be associated, casts some light both on the phenomenon itself, and also on the desire to contain the ‘problem’ by the help of a social construction that defines the relevant behaviour – steroid use – as deviant. Further, such framing also plays a role when policy makers draft rules and regulations aimed at the problem (see section on ‘Politics and regulation’ below). It is therefore worth attending to how this discussion has evolved and its current status.

In the early 1990s the term *bigorexia nervosa* (sometimes also referred to as *megarexia*) was coined by Harrison Pope and his group to denote the sort of inverse anorexia nervosa they believed they saw in bodybuilders who were ashamed of being too small, even though they were actually big and muscular. They later changed the term to *muscle dysmorphia*, arguing that the condition was not really an eating disorder as the former term indicated, but that it described men who were chronically preoccupied about being ‘insufficiently muscular’ even if they were ‘far more muscular than average’. Also, ‘[t]o achieve their desired body image, many individuals with muscle dysmorphia adopt an all-consuming lifestyle revolving around their workout schedule and meticulous diet’ (Pope *et al.*, 1997; 550). The group thus proposed the term ‘muscle dysmorphia’ as a replacement for their earlier term ‘bigorexia nervosa’ to describe individuals preoccupied with bodybuild and muscularity. Since then muscle dysmorphia has been the term used to denote the condition where people develop a pathological preoccupation with their muscularity (Kanayama *et al.*, 2006; Olivardia *et al.*, 2000; Pope *et al.*, 2012).

Although Pope’s group proposed the conditions for the diagnosis, it did not resolve the issue. Part of the argument has since been whether muscle dysmorphia should be regarded as a subclass of body dysmorphic disorder, as suggested by Pope’s group (and which is how it is also officially categorized today in both ICD-10 and DSM-5²), an instance of obsessive compulsive (spectrum) disorder (Chung, 2001; Hildebrandt *et al.*, 2006; Pope *et al.*, 2005), or, as newer research has also suggested, an eating disorder since it has strong conceptual similarities with anorexia nervosa (Murray *et al.*, 2010).³ The classification of muscle dysmorphia as a disease has thus changed over the years from being conceptualized as an eating disorder, as an obsessive compulsive disorder, and as a type of body dysmorphic disorder. So far there is no consensus.

The lack of consensus over the technical term may explain why Pope and his colleagues have not discarded the broader term ‘Adonis complex’ and just stayed with muscle dysmorphia.⁴ Another reason for holding on to the Adonis complex may be that muscle dysmorphia is a very poor instrument in predicting anabolic steroid use. Although lifetime prevalence of muscle dysmorphia is higher in anabolic steroid users, the correlation between the two is weak. Thus in a study of 93 male weightlifters, of whom 48 used anabolic steroids and 45 did not, only eight of the AAS users (16.7 per cent) met the criteria for muscle dysmorphia, but so did 3 (6.7 per cent) of the nonusers (Kanayama *et al.*, 2003; 2006). Thus in general muscle dysmorphia can only to a very limited degree explain the use of anabolic steroids in gyms.

Drug use in gyms

The suspicion thus arises as to whether muscle dysmorphia fits one category better than the other, or whether it simply is not a disease at all. There are for instance other cultural arenas where similar patterns of behaviour are not considered a disease. Given that bodybuilders take up their activity in order to build their bodies, and hence want to be bigger/more muscular/leaner than they are, and that like other athletes they likely have the ambition of always being better than they are, it may be difficult to 'differentiate between a healthy enthusiasm and muscle dysmorphia, given that the proposed behavior indicators and underlying motivation may, in fact, be the same for both' (Chung, 2001: 571). Also, elite athletes in disciplines such as cycling, gymnastics or rowing, where body weight is a determining factor, may train for several hours a day, be preoccupied with body size, weigh their food, give up important social events to maintain diet and workout schedules, and take supplements and anabolic steroids. Elite athletes thus may, Chung suggests, 'easily meet the suggested criteria for muscle dysmorphia' (Chung, 2001: 570). But, contrary to the non-competitive athletes who lift weights in the gym and who meet the same criteria, their aim, leading to their behaviour, is culturally endorsed and may even be encouraged.

This blurring of the condition according to the social and cultural context in which it occurs is also in line with Pope's group's proposal that the condition of muscle dysmorphia can also be referred to as the Adonis complex (Pope *et al.*, 2000). During an ABC News chat Pope explained what the Adonis complex entailed:

It [the Adonis complex] refers to all types of body image preoccupations in boys and men. Some boys and men worry that they aren't muscular enough; others worry that they aren't lean enough and still others worry that they have some unattractive feature, such as hair, facial features, etc. All of these worries represent different forms of the Adonis Complex.

(quoted from Darkes, 2001)

From this it appears that any man that worries about being too small, too fat, or unattractive, in almost any way might have the Adonis complex. Hence, it may be suggested that muscle dysmorphia (or the Adonis complex) are not diseases but simply expressions of vanity and narcissism. That is, they may be odd and extreme expressions of society's moral standards. As Chung puts it:

Vanity is, after all, one of the seven deadly sins, and is looked upon as an 'ugly' human characteristic. Gluttony and the results of gluttony have become associated with obesity and undesirability; body dysmorphic disorder may very well follow suit. The key element to medicalizing moral standards, or to associating morals with medical conditions, however, is the presence of a biological consequence when a moral standard is broken. Thus, society views the biological consequence of gluttony or overeating as obesity, of homosexual sex as AIDS, and perhaps of narcissism as muscle dysmorphia.

(Chung, 2001: 570-1)

The fact that there is no consensus over the status of muscle dysmorphia may indeed be due to its various ways of expressing bodily preoccupations or obsessions that all, in one way or another, make reference to the culture of bodybuilding, a culture over which an atmosphere of public disrespect still hovers (Klein, 2007).

Ask Vest Christiansen

Evolutionary explanations

So, if a psychological condition located at the individual level cannot explain steroid use in gyms, what can? As noted above, there might be an element at the level of our species which is part of our evolutionary heritage that can help to explain the phenomenon.

In her influential 1991 book, *The Beauty Myth*, Naomi Wolf writes that beauty as an objective and universal entity does not exist. She explains: 'Beauty is a currency system like the gold standard. Like any economy, it is determined by politics, and in the modern age in the west it is the last, best belief system that keeps male dominance intact' (Wolf, 1991: 12). Like many other intellectuals, Wolf wants us to believe that beauty is just a myth – and a trivial one since it explains nothing, solves nothing and teaches us nothing. It should thus have no place in intellectual discourse. And so we should all breathe a collective sigh of relief.

But outside the realm of academia and intellectual discourse beauty still rules. Nobody has stopped looking at it, nobody has stopped enjoying it, and many people put in a lot of effort to get it. The idea that beauty, and the drive to get it, is in our nature therefore springs to mind.

That idea is pursued by Nancy Etcoff in her book with the suggestive title: *Survival of the Prettiest* (1999). Etcoff's hypothesis is that appreciating beauty is not learned; rather, it is a biological adaptation. She argues against the cliché that 'beauty is in the eye of the beholder' by suggesting that sensitivity to beauty is due to an instinct that has been shaped by natural selection. Boiled down to its essence, Etcoff's answer to the general question on why we love to look at curved waists and symmetrical bodies is that 'in the course of evolution the people who noticed these signals and desired their possessors had more reproductive success. We are their descendants' (Etcoff, 1999: 24). Across cultures we find that men are attracted to luscious hair, delicate jaws, narrow waists and full hips and lips, probably because these features signal youth and a high oestrogen level – which means fertility and fecundity. And women are attracted to muscles, height, broad shoulders and square jaws, probably because they signal a high testosterone level – an ability to protect and feed a family. 'What was biologically advantageous became an aesthetic preference', Etcoff writes (1999: 106). As an example, it has been shown that British and Sri Lankan women share the same view on what is the most sexually attractive male body type; namely the muscular build mesomorphic body with narrow hips and broad shoulders. The study suggested that a fundamental preference may exist among women rather than a purely culturally conditioned one (Dixson *et al.*, 2003). Of course this fundamental preference may be influenced by external factors. A more voluminous or plump body ideal has for instance been observed in cultures or historical periods under the influence of food shortage. Such body-type would then signal surplus, prosperity and, thus, status and therefore indicate better life outcomes. That, however, does not mean that our perception of the ideal body is a mere social construction. Rather, the shift in what is perceived as ideal is itself an adaptation to a shift in the environment. Thus, when shortcomings of food are no longer prominent, the ideal tends to shift back to the mesomorphic body type (Dixson *et al.*, 2003; Etcoff, 1999).

Individual tastes, historical periods and, most especially, particular cultures have certainly influenced – and, in the case of cultures, exploited – these preferences, but they did not create them, any more than Coca-Cola or McDonald's created our cravings for sweet, salty and fatty foods. The connection to the gym seems obvious. Lifting weights to grow more muscular is an expression of an ambition to obtain a beauty in shape that is universally recognized. And with this recognition one receives advantages that the person with a less beautiful or muscular body does not receive.

*Drug use in gyms***Identity, recognition and precarious manhood**

It has been shown how men with strong upper bodies are more likely than tiny men to be treated with respect by other men. Two men with different physiques will have different learning histories, develop different self-concepts, and schemas for interpreting social situations (Kenrick *et al.*, 2004). Andy, one of the young men I interviewed during my studies on the use of drugs in gyms, experienced how this played out in his life:

I have never been bullied. But I think I have always had poor self-esteem. Both when it came to girls and in general. But then I noticed when I started training, my confidence grew and it grew and I became stronger and stronger. And suddenly you were stronger than your mates and suddenly you were bigger. And then people started to have a different tone and respect towards me. Things just changed. People's behaviour changed. The way people talked to me changed. And then you get a totally different confidence.

Andy thus presents an immediate and strong motive for building a muscular body. The gains in respect he experienced were not caused by knowledge in his surroundings of what his muscles actually could do, but what they looked like they could do. That is what makes them appealing. Further, respect is intimately linked with recognition and identity. What we are and who we become has to do with how we react to others and how others react to us. The fundamental idea that connects recognition with identity is well established. Briefly put, the connection between recognition and identity consists in the well-known sociological and historical fact that as a consequence of modernity we no longer are what we are because of our family, our blood or our property, but because of our skills and efforts (e.g. Giddens, 1991). In reality, socio-economic background may still be the best predictor for life-outcomes in terms of education, occupation, housing and health, but it is nevertheless the general impression that identity and especially recognition is something that must be won, not inherited.

While the kind of recognition we receive from being a citizen in a state and a member of a family are important, they are also unconditional in nature. In contrast to this, the recognition we receive in the social arena is conditional since it is based on our skills, abilities and efforts. It is thus in the social arena we must seek to distinguish ourselves (Honneth, 2007). So, the struggle for identity takes place in an arena where recognition requires difference, because special recognition requires a special effort or performance that deviates from the normal. Deviation therefore is not only a negative thing, but also something positive, such as a special talent. Because identity requires deviation, recognition will inevitably take on sub-cultural forms. Recognition requires a difference – and therefore a particular ‘we’ that can be shaped in contrast to a particular ‘them’.

The struggle for identity may be coupled to the evolutionary theories and the idea of masculinity in crisis through the proposition of manhood as a precarious social status. In their studies on gender and masculinity the social psychologists Joseph Vandello and Jennifer Bosson have thus come up with the thesis that, as opposed to womanhood which is ‘viewed as resulting from a natural, permanent, and biological developmental transition, manhood must be earned and maintained through publicly verifiable actions’ (Vandello and Bosson, 2013: 101). Because of this, in times when gender status is challenged or uncertain, men will experience more anxiety over their gender status, which can act as a motivator for a variety of risky behaviours. This is why manhood, as opposed to womanhood, is a precarious social status that is ‘hard won and easily lost’. It's interesting to note that this view of manhood ‘transcends cultural boundaries:

Ask Vest Christiansen

regardless of culture-specific markers of masculinity, cultures around the world view manhood as a social status that must be earned and can be lost' (Vandello and Bosson, 2013: 101). The specific meaning of manhood may change across time and culture, but the underlying need to prove masculinity has remained a constant.

Accordingly, young men's pursuit of the ideal body could be seen in the light of their struggle for establishing their social status as men while creating an identity including the need for gaining respect and recognition for what they do. It is thus no coincidence that the use of anabolic steroids is most prevalent in the same period where our identity is gradually established. The fact that the prevalence of anabolic steroid use decreases dramatically after the age of 35, when most people are settled with jobs and family, and hence shift their attention to these arenas, may therefore also bring some comfort against the fear of an anabolic steroid pandemic.

Culture did not invent our preference for tall, symmetrical, muscular bodies with narrow hips and broad shoulders, but it certainly exploits that preference, and has been exploiting it still more over the last couple of decades, as discussed above. However, both the cultural and the evolutionary psychological explanatory frameworks suffer from the fact that although 100 per cent of the population are exposed to them, it is still only a very small minority that takes up steroid use. It would therefore be useful if the psychological theories could help to identify individuals who are specifically prone to respond to those cultural and evolutionary cues. However, as we saw, muscle dysmorphia is only evident in less than one in five steroid users and the Adonis complex is a category broad enough to embrace everyone and therefore explains nothing. And as noted earlier there are not many common traits for anabolic steroid users. It thus appears that individual learning histories, and identity formation in line with Andy's experience, with their many different variables, may be the key to an understanding of anabolic steroid use in gyms.

Politics and regulation

Unlike the situation in elite sports there is no international coordinated effort against the use of drugs in fitness and strength training environments. Some countries have a rather laissez-faire approach to drug use in gyms while others have taken an approach similar to that towards doping in elite sport. More countries, however, have shown an interest in adopting stricter policies against steroid use (Anti Doping Danmark *et al.*, 2012). An example of an approach mirroring that in elite sport is the Danish one. The Danish national anti-doping organization, Anti Doping Denmark (ADD), has since 2005 by law had the obligation to conduct doping controls targeted at individuals training in gyms. The Danish strategy is unique in that ADD control officers can perform doping controls on any individual exercising in a gym that is part of the national anti-doping scheme. Under the scheme, which in 2010 embraced approximately 80 per cent of all Danish gym-members, doping controls was until 2014 conducted in agreement with the World Anti-Doping Code (Christiansen, 2011). However, it is uncertain whether the strategy has had the desired impact. Despite the hope that the controls would act as deterrents for those tempted to use anabolic steroids, the rate of positive tests in gyms has been stable since the testing scheme was introduced in 2005 (ADD, 2013). ADD has since 2013 also worked with an outreach and education programme focusing not only on control, surveillance and exclusion, as previously, but also including dialogue with gym owners and gym users (Anti Doping Danmark *et al.*, 2012).

Other less punitive approaches have been suggested. Harm minimization is one such approach (Dawson, 2001; Evans-Brown and McVeigh, 2009; Kayser and Broers, 2013). As opposed to the idealistic ambition of playing sport (or taking exercise) in a drug free world,

Drug use in gyms

which has been the overarching ambition of international anti-doping policy for the last 40 years, harm minimization rests on a much more pragmatic, utilitarian approach of limiting the health hazards and the costs associated with drug use for the individual and society (Kayser and Broers, 2013). Stakeholders have generally been reluctant to undertake such an approach due to the anticipated confusion that could arise from having a government sponsored anti-doping organization apparently condoning the use of drugs. Those against harm minimization schemes thus argue that harm-minimization consultants could be considered complicit in recreational athletes' drug use. The counter-argument is that if it is known that people are going to engage in risky and dangerous behaviours that are preventable at comparatively little cost in resources, then there is a strong ethical case that society ought to act to steer them away from these risks (DrugScope, 2004).

In line with the often applied 'Just say no to drugs' approach, educational campaigns on anabolic steroid use have often utilized a discourse embracing classic health-related ideals such as vigilance, good health and moderation (Goldberg and Elliot, 2000; Møller, 2009; Nilsson *et al.*, 2004). Qualitative research in the area has, however, demonstrated how such standards are often not compatible with the sub-cultural values possessed by steroid-using gym-users (Barland and Tangen, 2009; Christiansen and Bojsen-Møller, 2012; Grogan *et al.*, 2006; Klein, 1993; Monaghan, 2001; Pope *et al.*, 2004), and consequently the message has not had the intended impact on the target group. This does not mean that these individuals can be characterized as belonging to an anarchistic drug subculture where health is simply abandoned, which is evident from the number of individuals addressing health concerns in relation to anabolic steroid usage (Bojsen-Møller and Christiansen, 2010; Monaghan, 2001; Parkinson and Evans, 2006). Rather, it points to differences in the cultural premises, where one side accepts the validity of potential harm minimization through competent risk assessment and risk management while the other rejects it.

Even so, there are good reasons for pursuing an open and non-judgemental dialogue with users of anabolic steroids. Whereas elite athletes have been denying the use of drugs for the last 40 years, users of drugs in the gym environment still appear willing to share their knowledge, experiences and attitudes on the use of drugs. Since it is health and not fair play that is the primary concern regarding drug use in gyms, this alone is a weighty reason not to apply a too repressive policy in the area. If users of anabolic steroids experience stigmatization and criminalization their activities will likely go underground and the possibility for health professionals to interact with this population will be drastically diminished, which in turn will be counterproductive for minimizing the health risks associated with drug use (Christiansen and Bojsen-Møller, 2012; Evans-Brown and McVeigh, 2009).

Conclusion and perspectives

Even if the use of anabolic steroids in gyms is related to bodybuilding, and if one video clip with Mr Olympia, Jay Cutler, training his triceps was seen 1.5 million times on YouTube by November 2013,⁵ the interest in muscles has a much broader base than the subculture of bodybuilding. The media has certainly promoted this interest over the last couple of decades by the frequent portrayal of good-looking, well-built bodies, but they did not invent our aspirations for and instinctive attraction to them. And even men who reject the idea that muscle plays a role in informing their identity have to negotiate the issue to define their masculinity. As Klein points out:

Every man engages in some sort of dialogue with muscle; it does not matter whether he embraces or repudiates it – he holds an internal dialogue concerning muscle. It is

Ask Vest Christiansen

an essentialist cultural principle and one that distinguishes men from women. Size matters when it comes to muscle.

(Klein, 2007: 69)

It is thus not surprising that anabolic steroids are used by many men as part of their training regimes for longer or shorter periods of time. They can play a crucial role in the individual's identity formation. On his journey from being smaller and with less self-esteem to being bigger, more confident and being treated with respect, Andy – whom we met above – used anabolic steroids. He knew anabolic steroids have side effects, and he experienced some of them himself. But it did not stop him using them. As has been pointed out in other studies (e.g. Christiansen and Bojsen-Møller, 2012; Cohen *et al.*, 2007; Grogan *et al.*, 2006; Monaghan, 2001), he approached steroids and the associated risks in a calculative manner, where the risks and benefits of use are weighed against each other. The demanding task for any anti-drug-use education system is thus to convince Andy and those who think like him that they were better off without steroids, but with low confidence, respect and recognition, than they are with the higher levels of confidence, respect and recognition – in short, an appreciated identity – that steroid use may help generate.

As long as anabolic steroids are readily available it is not likely that people's use of drugs to enhance their life situation, to reach their performance goals or perhaps to help their vain ambitions of a more beautiful body – with all the pros and cons that come with it – will be significantly reduced.

Notes

- 1 Monaghan most likely borrowed the term from *The Journal of Ethnopharmacology* (published since 1979) which, among other things, is concerned with 'the documentation of indigenous medical knowledge [and the] scientific study of indigenous medicines' Verpoorte, R. 2013. *Journal of Ethnopharmacology. An Interdisciplinary Journal Devoted to Indigenous Drugs* [Online]. Journal of Ethnopharmacology: Elsevier. Available: www.journals.elsevier.com/journal-of-ethnopharmacology/ (Accessed 25 October 2013). The subtle irony in this, of course, is that we do not have to visit South Pacific islands to study subcultural, non-conventional use of medicine. Monaghan has never published in the journal.
- 2 ICD-10 is the tenth revision of the *International Statistical Classification of Diseases and Related Health Problems (ICD)*, a medical classification list by the World Health Organization (WHO). DSM-5 is *The Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition, which is the 2013 update to the American Psychiatric Association's (APA) classification and diagnostic tool.
- 3 Body dysmorphic disorder is a so-called somatoform disorder, which is a mental disorder that suggests physical illness, but where physical examination does not indicate the presence of a medical condition that could cause the symptoms. Obsessive compulsive disorder is an anxiety disorder thought to have a number of biological causes.
- 4 On the face of it, the Adonis complex appears to be the broader term, since, as evident from the quote from the ABC News chat (see below), it encompasses a wide range of body image concerns. On the other hand, women cannot suffer from the Adonis complex whereas they can – and also have been diagnosed to – suffer from muscle dysmorphia. Therefore, technically speaking, individuals who have the Adonis complex must belong to a subclass of those who have muscle dysmorphia.
- 5 See Jay Cutler 2011 Tricep Training 7 weeks out at www.youtube.com/watch?v=LVHfQRahRDY (visited 23 November 2013).

References

- ADD. 2013. Steroids.dk [Online]. Anti Doping Danmark. Available: www.antidoping.dk/sitecore/content/steroids_dk/FrontPage.aspx (Accessed 18 November 2013).
- Anti Doping Danmark, Dopingautoriteit, STAD, Instytut Sportu and CyADA 2012. *Strategy for Stopping Steroids*. Copenhagen: Anti Doping Danmark.

Drug use in gyms

- Barland, B. and Tangen, J. O. 2009. Kroppspresentasjon og andre prestasjoner – en omfangsundersøkelse om bruk av Doping. Oslo, Politihøgskolen.
- Bojsen-Møller, J. and Christiansen, A. V. 2010. Use of performance- and image enhancing substances among recreational athletes: a quantitative analysis of inquiries submitted to the Danish anti-doping authorities. *Scandinavian Journal of Medicine and Science in Sports*, 20, 861–7.
- Brohm, J.-M. 1978. *Sport, a prison of measured time: Essays*, London, Ink Links.
- Butler, G. and Fiore, R., 2010. Pumping iron, Directed by Butler, G. and Fiore, R.: NTC.
- Cafri, G., Thompson, J. K., Ricciardelli, L., McCabe, M., Smolak, L. and Yesalis, C. 2005. Pursuit of the muscular ideal: Physical and psychological consequences and putative risk factors. *Clinical Psychology Review*, 25, 215–39.
- Centraal Bureau voor de Statistiek. 2009. Drugsgebruik, kenmerken van gebruikers [Online]. Centraal Bureau voor de Statistiek. Available: <http://statline.cbs.nl/StatWeb/publication/default.aspx?DM=SLNL&PA=80167ned&D1=a&D2=a&D3=0&D4=%281-11%29-l&VW=T> (accessed 22-04 2013).
- Christiansen, A. V. 2011. Bodily Violations: Testing citizens training recreationally in gyms. In: McNamee, M. and Møller, V. (eds.) *Doping and Anti-Doping: Ethical, legal and social perspectives*. 3rd edn. London: Routledge, 126–41.
- Christiansen, A. V. and Bojsen-Møller, J. 2012. ‘Will steroids kill me if I use them once?’ A qualitative analysis of questions submitted to the Danish anti-doping authorities. *Performance Enhancement and Health*, 1, 39–47.
- Chung, B. 2001. Muscle dysmorphia: a critical review of the proposed criteria. *Perspectives in Biology and Medicine*, 44, 565–74.
- Cohen, J., Collins, R., Darkes, J. and Gwarty, D. 2007. A league of their own: Demographics, motivations and patterns of use of 1,955 male adult non-medical anabolic steroid users in the United States. *Journal of International Society of Sports Nutrition*, 4, 12.
- Darkes, J. 2001. An Introduction to the Adonis Complex (aka Bigorexia or Muscle Dysmorphia) [Online]. Thinksteroids.com. Available: <http://thinksteroids.com/articles/adonis-complex-bigorexia-muscle-dysmorphia/> (accessed 15 November 2013).
- Dawson, R. T. 2001. Drugs in sport – the role of the physician. *Journal of Endocrinology*, 170, 55–61.
- Dixon, A. F., Halliwell, G., East, R., Wignarajah, P. and Anderson, M. J. 2003. Masculine somatotype and hirsuteness as determinants of sexual attractiveness to women. *Archives of Sexual Behavior*, 32, 29–39.
- Dodge, T. and Hoagland, M. F. 2011. The use of anabolic androgenic steroids and polypharmacy: A review of the literature. *Drug and Alcohol Dependence*, 114, 100–9.
- Donati, A. 2007. *World Traffic in Doping Substances*. Montreal: WADA.
- DrugScope 2004. *The Doping Scandal: A Question for Sport?* Drug Think Series. London: DrugScope.
- Dunn, M. and White, V. 2011. The epidemiology of anabolic-androgenic steroid use among Australian secondary school students. *Journal of Science and Medicine in Sport*, 14, 10–14.
- Etcoff, N. 1999. *The survival of the prettiest: The science of beauty*, London, Little, Brown.
- Evans-Brown, M. and McVeigh, J. 2009. Anabolic steroid use in the general population of the United Kingdom. In: Møller, V., McNamee, M. and Dimeo, P. (eds) *Elite sport, doping and public health*. Odense, University Press of Southern Denmark, 75–97.
- Fussell, S. W. 1991. *Muscle: Confessions of an unlikely bodybuilder*. New York, Avon Books.
- Giddens, A. 1991. *Modernity and self-identity: Self and society in the late modern age*, Stanford, CA, Stanford University Press.
- Goldberg, L. and Elliot, D. L. 2000. Prevention of anabolic steroid use. In: Yesalis, C. E. (ed.) *Anabolic Steroids in Sport and Exercise*. 2nd edn. Champaign, IL, Human Kinetics, 117–35.
- Goldman, B., Bush, P. J. and Klatz, R. 1984. *Death in the locker room: Steroids and sports*, London, Century Publishing.
- Gray, J. and Ginsberg, R. 2007. Muscle dissatisfaction: An overview of psychological and cultural research and theory. In: Thompson, J. K. and Cafri, G. (eds) *The muscular ideal: Psychological, social, and medical perspectives*. 1st edn. Washington, DC, American Psychological Association, 15–39.
- Grogan, S., Shepherd, S., Evans, R., Wright, S. and Hunter, G. 2006. Experiences of anabolic steroid use: in-depth interviews with men and women bodybuilders. *Journal of Health Psychology*, 11, 845–56.
- Hibell, B., Andersson, B., Bjarnason, T., Kokkevi, A., Morgan, M. and Narusk, A. 1997. *The 1995 ESPAD report. Alcohol and Other Drug Use Among Students in 26 European Countries*. Stockholm: CAN (The Swedish Council for Information on Alcohol and Other Drugs).
- Hickman, M., Higgins, V., Hope, V. D. and Bellis, M. A. 2004. *Estimating prevalence of problem drug use: Multiple methods in Brighton, Liverpool and London*. London. Home Office.

Ask Vest Christiansen

- Hildebrandt, T., Schlundt, D., Langenbucher, J. and Chung, T. 2006. Presence of muscle dysmorphia symptomology among male weightlifters. *Comprehensive Psychiatry*, 47, 127–35.
- Hoare, J. and Moon, D. 2010. *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey, England and Wales*. London: Home Office.
- Hoberman, J. M. 2005. *Testosterone dreams: Rejuvenation, aphrodisia, doping*. Berkeley, CA, University of California Press.
- Hoffinan, J. R., Faigenbaum, A. D., Ratamess, N. A., Ross, R., Kang, J. and Tenenbaum, G. 2008. Nutritional supplementation and anabolic steroid use in adolescents. *Medicine and Science in Sports and Exercise*, 40, 15–24.
- Hoffinan, J. R., Kraemer, W. J., Bhasin, S., Storer, T., Ratamess, N. A., Haff, G. G., Willoughby, D. S. and Rogol, A. D. 2009. Position stand on androgen and human growth hormone use. *Journal of Strength and Conditioning Research*, 23, S1–S59.
- Honneth, A. 2007. *Disrespect: The normative foundations of critical theory*. Oxford, Polity.
- Ip, E. J., Barnett, M. J., Tenerowicz, M. J. and Perry, P. J. 2011. The Anabolic 500 survey: Characteristics of male users versus nonusers of anabolic-androgenic steroids for strength training. *Pharmacotherapy*, 31, 757–66.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G. and Schulenberg, J. E. 2010. *Monitoring the Future: National Survey Results on Drug Use, 1975–2009. Volume II, College Students and Adults Ages 19–50*. Washington, DC, U.S. Department of Health and Human Services.
- Kanayama, G., Barry, S., Hudson, J. I. and Pope, H. G., Jr. 2006. Body image and attitudes toward male roles in anabolic-androgenic steroid users. *American Journal of Psychiatry*, 163, 697–703.
- Kanayama, G., Hudson, J. I. and Pope, H. G., Jr. 2008. Long-term psychiatric and medical consequences of anabolic-androgenic steroid abuse: a looming public health concern? *Drug and Alcohol Dependency*, 98, 1–12.
- Kanayama, G. and Pope, H. G., Jr. 2012. Illicit use of androgens and other hormones: recent advances. *Current Opinion in Endocrinology, Diabetes and Obesity*, 19, 1–9.
- Kanayama, G., Pope Jr, H. G., Cohane, G. and Hudson, J. I. 2003. Risk factors for anabolic-androgenic steroid use among weightlifters: A case-control study. *Drug and Alcohol Dependency*, 71, 77–86.
- Kayser, B. and Broers, B. 2013. Anti-doping policies: Choosing between imperfections. In: Tolleneer, J., Sterckx, S. and Bonte, P. (eds) *Athletic Enhancement, Human Nature and Ethics*. Dordrecht, Heidelberg, New York, London: Springer Netherlands, 271–89.
- Kenrick, D. T., Trost, M. R. and Sundie, J. M. 2004. Sex Roles as Adaptations: An evolutionary perspective on gender differences and similarities. In: Eagly, A. H., Beall, A. E. and Sternberg, R. J. (eds) *The psychology of gender*. 2nd edn. New York: Guilford Press, 65–91.
- Kettmann, S. 2011. Are We Not Man Enough? *New York Times*, 17 December.
- Kindlundh, A. M., Hagekull, B., Isacson, D. G. and Nyberg, F. 2001. Adolescent use of anabolic-androgenic steroids and relations to self-reports of social, personality and health aspects. *European Journal of Public Health*, 11, 322–8.
- Klein, A. M. 1993. *Little big men: Bodybuilding subculture and gender construction*, Albany, NY, State University of New York Press.
- Klein, A. M. 2007. Size matters: Connecting subculture to culture in bodybuilding. In: Thompson, J. K. and Cafri, G. (eds) *The muscular ideal: Psychological, social, and medical perspectives*. 1st edn. Washington, DC: American Psychological Association, 67–83.
- Kulturministeriet 1999. *Doping i Danmark: en hvidbog*, København, Kulturministeriet.
- Lasch, C. 1980. *The culture of narcissism: American life in an age of diminishing expectations*, London, Abacus/Sphere Books.
- Leifman, H. and Rehnman, C. 2008. Studie om svenska folkets användning av dopningspreparat. STAD:s rapportserie. Stockholm: STAD.
- Leifman, H., Rehnman, C., Sjoblom, E. and Holgersson, S. 2011. Anabolic androgenic steroids—use and correlates among gym users—an assessment study using questionnaires and observations at gyms in the Stockholm region. *International Journal of Environmental Research and Public Health*, 8, 2656–74.
- Luciano, L. 2007. Muscularity and masculinity in the United States: A historical overview. In: Thompson, J. K. and Cafri, G. (eds) *The muscular ideal: Psychological, social, and medical perspectives*. 1st edn. Washington, DC: American Psychological Association, 41–65.
- Lupton, D. 1995. *The imperative of health: Public health and the regulated body*, New York, Taylor & Francis.

Drug use in gyms

- Mattila, V. M., Parkkari, J., Laakso, L., Pihlajamäki, H. and Rimpela, A. 2010. Use of dietary supplements and anabolic-androgenic steroids among Finnish adolescents in 1991–2005. *European Journal of Public Health*, 20, 306–11.
- Møller, V. 2009. Conceptual confusion and the anti-doping campaign in Denmark. In: Møller, V., McNamee, M. and Dimeo, P. (eds) *Elite sport, doping and public health*. Odense: University Press of Southern Denmark, 13–28.
- Monaghan, L. F. 2001. *Bodybuilding, drugs, and risk*. London, Routledge.
- Murray, S. B., Rieger, E., Touyz, S. W. and De la Garza Garcia Lic, Y. 2010. Muscle dysmorphia and the DSM-V conundrum: where does it belong? A review paper. *International Journal of Eating Disorders*, 43, 483–91.
- Nilsson, S., Allebeck, P., Marklund, B., Baigi, A. and Fridlund, B. 2004. Evaluation of a health promotion programme to prevent the misuse of androgenic anabolic steroids among Swedish adolescents. *Health Promotion International*, 19, 61–7.
- Nilsson, S., Baigi, A., Marklund, B. and Fridlund, B. 2001. The prevalence of the use of androgenic anabolic steroids by adolescents in a county of Sweden. *European Journal of Public Health*, 11, 195–7.
- Nutt, D. J., King, L. A. and Phillips, L. D. 2010. Drug harms in the UK: a multicriteria decision analysis. *The Lancet*, 376, 1558–65.
- Olivardia, R., Pope, H. G. and Hudson, J. I. 2000. Muscle dysmorphia in male weightlifters: A case-control study. *The American Journal of Psychiatry*, 157, 1291–6.
- Pallesen, S., Josendal, O., Johnsen, B. H., Larsen, S. and Molde, H. 2006. Anabolic steroid use in high school students. *Substance Use and Misuse*, 41, 1705–17.
- Paoli, L. and Donati, A. 2013. *The Supply of Doping Products and the Potential of Criminal Law Enforcement in Anti-Doping: An Examination of Italy's Experience – Executive Summary*. Montreal: WADA.
- Parkinson, A. B. and Evans, N. A. 2006. Anabolic androgenic steroids: a survey of 500 users. *Medicine and Science in Sports and Exercise*, 38, 644–51.
- Pitsch, W. and Emrich, E. 2012. The frequency of doping in elite sport: Results of a replication study. *International Review for the Sociology of Sport*, 47, 559–80.
- Pitsch, W., Emrich, E. and Klein, M. 2007. Doping in elite sports in Germany: Results of a www survey. *European Journal for Sport and Society*, 4, 89–102.
- Pope, C. G., Pope, H. G., Menard, W., Fay, C., Olivardia, R. and Phillips, K. A. 2005. Clinical features of muscle dysmorphia among males with body dysmorphic disorder. *Body Image*, 2, 395–400.
- Pope, H. G., Gruber, A. J., Choi, P., Olivardia, R. and Phillips, K. A. 1997. Muscle dysmorphia: An underrecognized form of body dysmorphic disorder. *Psychosomatics*, 38, 548–57.
- Pope, H. G., Phillips, K. A. and Olivardia, R. 2000. *The Adonis complex: How to identify, treat, and prevent body obsession in men and boys*, New York, Free Press.
- Pope, H. G., Kanayama, G., Ionescu-Pioggia, M. and Hudson, J. I. 2004. Anabolic steroid users' attitudes towards physicians. *Addiction*, 99, 1189–94.
- Pope, H. G., Kanayama, G. and Hudson, J. I. 2012. Risk factors for illicit anabolic-androgenic steroid use in male weightlifters: A cross-sectional cohort study. *Biological Psychiatry*, 71, 254–61.
- Rosenthal, E. 2013. A push to sell testosterone gels troubles doctors. *New York Times*, 15 October.
- Simon, P., Striegel, H., Aust, F., Dietz, K. and Ulrich, R. 2006. Doping in fitness sports: Estimated number of unreported cases and individual probability of doping. *Addiction*, 101, 1640–4.
- Singhammer, J. and Ibsen, B. 2010. *Motionsdoping i Danmark: en kvantitativ undersøgelse om brug af og holdning til muskelopbyggende stoffer*. Odense, Center for forskning i Idræt, Sundhed og Civilsamfund, Syddansk Universitet.
- Skårberg, K. and Engstrom, I. 2007. Troubled social background of male anabolic-androgenic steroid abusers in treatment. *Substance Abuse Treatment and Prevention Policy*, 2, 20.
- Skårberg, K., Nyberg, F. and Engstrom, I. 2010. Is there an association between the use of anabolic-androgenic steroids and criminality? *European Addiction Research*, 16, 213–19.
- Swedish National Institute of Public Health 2010. *Doping in Sweden: An inventory of its spread, consequences, and interventions*. Östersund: Swedish National Institute of Public Health.
- Tahtamouni, L. H., Mustafa, N. H., Alfaouri, A. A., Hassan, I. M., Abdalla, M. Y. and Yasin, S. R. 2008. Prevalence and risk factors for anabolic-androgenic steroid abuse among Jordanian collegiate students and athletes. *European Journal of Public Health*, 18, 661–5.
- Taylor, W. N. 1985. *Hormonal manipulation: A new era of monstrous athletes*, London, McFarland.

Ask Vest Christiansen

- Thompson, J. K. and Cafri, G. 2007. The muscular ideal: An introduction. In: Thompson, J. K. and Cafri, G. (eds) *The muscular ideal: psychological, social, and medical perspectives*. 1st edn. Washington, DC: American Psychological Association.
- Todd, T. 1987. Anabolic steroids: The gremlins of sport. *Journal of Sport History*, 14, 87–107.
- Vandello, J. A. and Bosson, J. K. 2013. Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. *Psychology of Men and Masculinity*, 14, 101–13.
- Verpoorte, R. 2013. Journal of Ethnopharmacology. An Interdisciplinary Journal Devoted to Indigenous Drugs [Online]. *Journal of Ethnopharmacology*: Elsevier. Available: www.journals.elsevier.com/journal-of-ethnopharmacology/ (accessed 25 October 2013).
- Waddington, I. 2000. *Sport, health and drugs: A critical sociological perspective*, London, E & F N Spon.
- Wolf, N. 1991. *The beauty myth: How images of beauty are used against women*, London, Virago.
- Yesalis, C. E., Kopstein, A. N. and Bahrke, M. S. 2001. Difficulties in estimating the prevalence of drug use among athletes. In: Wilson, W. and Derse, E. (eds) *Doping in elite sport: Politics of drugs in the Olympic Movement*. Champaign, IL: Human Kinetics, 43–62.