

**Disordered Eating and Exercise Behaviour amongst
Young Men**

By

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Abstract

- **Objective:** Recent research suggests a higher prevalence of body image dissatisfaction and subsequent disordered eating and exercise behaviour amongst men than was previously assumed. This project aimed to assess the prevalence of such attitudes and behaviours.
- **Method:** 3 men were interviewed regarding their eating and exercise behaviours. They performed a somatomorphic matrix test as a means of assessing body image. Surveys were distributed and completed by 59 men to assess the prevalence of disordered behaviours. The surveys included the EAT-26, the Drive for Muscularity Scale and a selection of questions from the EDET and the EDE-Q5.
- **Results:** 2 of the men interviewed displayed abnormal eating and exercise attitudes related to bodybuilding behaviour and similar body image, including obsession with food, strict dietary behaviour, compulsive constant over-eating, extensive use of supplements and anabolic steroid abuse. 37.3% of survey participants displayed high pathology on either the EAT-26, the DMS or both. 100% of bodybuilding participants were a part of this group. A significantly larger number of participants scored highly on the DMS than on the EAT-26.
- **Conclusions:** Body image dissatisfaction is prevalent in men and requires much further investigation and attention. In contrast to women, much dissatisfaction in men centres on a desire to increase size and muscularity, resulting in disordered eating patterns and excessive exercise. Rather than restrict food intake, many men over-eat in order to achieve these goals.

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Introduction

This research project seeks to examine the subject of male body image and the consequential eating and exercise behaviour of young men. Body image and related behaviours such as eating disorders are highly researched and documented amongst women; however until recently there has been a distinct lack of investigation into the same topics amongst men and boys. Recognition is now being given not only to this area as being present, but research is beginning to find interesting and entirely different issues and attitudes amongst men than were previously suspected. For example, a disorder originally termed 'reverse anorexia' but now known as Muscle Dysmorphia has been identified and explored. This is regarded as a subtype of body dysmorphic disorder, which in itself is a product of Obsessive Compulsive Disorder. Described as the opposite of anorexia nervosa, sufferers perceive their muscle mass as inadequate and feel a constant pressure to change their appearance to be stronger and more muscular, striving to become bigger in size rather than thinner.

The purpose of this study is to gather a wide selection of both qualitative and quantitative data through personal interviews and widespread surveys. This will then be used to gain further knowledge of this area in order to assess the current attitudes of young men towards the subjects of eating, exercise, body image and fitness. This data will be analysed in order to determine whether or not the participant's behaviour can be classed as disordered, and, if so, whether the disorder supports the new theories regarding issues such as the prevalence of Muscle Dysmorphia and a current obsession with muscular body image amongst society.

Literature Review

2.1 Male Body Image – Historically and in Society

The concept of male body image is coming to light as a subject requiring attention, possibly as a result of the increase in the number of male eating disorder patients being admitted for treatment in recent years. This number is growing, with men making up approximately 10% of cases in the UK, and the Eating Disorders Association estimating a rise of four new cases of male anorexia and six new cases of male bulimia every year. With this and other issues in mind, the idea of body image and dissatisfaction amongst men has begun to be recognised as a problem area in the same way as amongst women.

Male body image has seen great changes in recent decades, many of these changes having some relation to the social changes occurring at the time. The most significant of these changes is often cited as being the changing social position of women, which in turn caused a dramatic disruption in traditional sexual politics. As is stated by Carrigan et al (1985) *“change in one term of a relationship signals change in the other”* and this transformation saw wide implications for men as well as women. With the development of feminism, the emergence of gay liberation politics became more pronounced. Consequentially, the 1970s saw a mass critique and analysis of masculinity and the ‘male role’, with new literature and research moving away from the traditional ‘sex role paradigm’ and the blind acceptance of male power. A large amount of literature describes the attitudes of men today as a result of the materialization of the feminine movement and the growing power of women in society, a direct reaction by

men to what they perceive to be a change in the balance of power between the sexes. Michael Kimmel (1994) agrees with this theory, believing that *“Our definitions of manhood are constantly changing, being played out on the political and social terrain on which the relationships between men and women are played out.”* Helen Hacker (1957) stated that *“masculinity is more important to men than femininity is to women”*, and to a certain extent it can be viewed that changes in male body image have come about due not to pressures of society, but as a male response to this movement in power relations, and their perception of themselves.

Much research in this area refers to ‘masculinity’ as a factor related to issues such as body dissatisfaction, and particularly muscle dysmorphic disorder. This idea of ‘masculinity’ has become a major area of research and study within the last two decades, and the sociology of masculinity is still a somewhat complex and evolving theory, with new developments constantly being made. Defined by Whitehead and Barrett (2001) as the *“behaviours, languages and practices existing in specific cultural and organisational locations, which are commonly associated with males”*, masculinity is a concept which can affect men of all ages and backgrounds. It is seen as relevant to this subject as common ideas of masculinity can shape the way that men view themselves and their bodies, and can also define what is seen as socially acceptable, or even desirable. Cafri and Thompson (2004) base their work on the assumption that *“the concept of masculinity is an essential feature of how males think about their bodies.”*

With relation to the problem of muscle dysmorphia amongst men, the issue of 'masculinity' is seen as playing a major role due to its undertones of dominance, aggression and power. It is built upon the traditional 'hunter-gatherer' views that men should be dominant of women and therefore strong, powerful and 'manly'. In short, masculinity prompts men to be the opposite of everything viewed as feminine. In this way, it promotes strength and muscularity, and it is through this that we see a possible reasoning behind the obsession harboured in some men to participate in excessive weights training and go to extreme measures such as anabolic steroid abuse in order to increase their muscle mass. Klein (1993) supports this view, believing that male bodybuilders indulge in these behaviours and live their elaborate and excessively 'manly' lifestyle in order to hide weakness and vulnerability, in other words to appear more masculine. This concept of attempting to hide weakness and vulnerability is seen throughout research on subjects relating to male body image, and it is often viewed as a symptom of underlying inadequacy felt by men. Indeed, Kimmel (1994) describes masculinity as *"a hedge against being revealed as a fraud, an exaggerated set of activities that keep others from seeing through us, and a frenzied effort to keep at bay those fears within ourselves"*. One of the problems with diagnosing the disordered eating and exercise behaviour seen in muscle dysmorphia patients is that, due to the concept of masculinity, these behaviours are not always recognised as problematic, instead they are praised. The attitude of striving to any limits to become bigger and more muscular is supported by the masculine attitude towards strength and power. As is stated by Whitehead and Barrett (2001) *"Countless numbers of men still act dominant*

and 'hard'... Moreover such performances not only often go uncriticised; they are in fact lauded by many, both women and men".

The type of body image that body builders and muscle dysmorphia patients aspire to has become more prominent in society within the last few decades, correlating with the timeline of social change in gender power relations. Study of advertising and both men and women's magazines shows a steady progression in the male body image being promoted, with decreasing amounts of body fat and increasing musculature being encouraged. Pope et al (1999) conducted a significant study into this area, examining the change in body image of Playgirl centrefold models from 1973 to 1997. Using estimations of Body Mass Index and Fat Free Mass Index, they found the models to have been progressing significantly in muscularity over time, and from this concluded that *"cultural norms of the ideal male body are growing increasingly muscular"*. On a similar note, Pope et al (1999) also found this trend when studying the physiques and measurements of male action figure toys over the last few decades, the results of which showed that *"figures have grown much more muscular over time, with many contemporary figures far exceeding the muscularity of even the largest human bodybuilder"*. In this way, the case for pressure among the media causing dissatisfaction amongst men can be seen as having merit. 'Barbie' dolls have often been the target of criticism for creating an impossible and unrealistic body image goal for girls to achieve, and Pope et al correctly liken their findings concerning action toys to this subject. The obvious promotion of such a generally unachievable physique can only have negative effects for young and adolescent boys.

Clearly the subject of male body image is a complex one, with many angles still to be examined. More research is now needed in order to make progress in understanding the current male body image as it stands today, in all its various forms. Both the issue of thinness and muscularity need to be addressed, and more in depth data is needed in order to develop guidelines for future assessment and treatment of body image disorders and dissatisfaction amongst men.

2.2 Eating Disorders – Their Prevalence in Men

Previously considered to be a problem only suffered by middle class adolescent white females, the issue of eating disorders has developed considerably in recent times. According to the 'B-eat' website, previously known as the Eating Disorders Association, research shows the number of male eating disorder patients amounts to between 10% and 20% of cases in the UK, yet these numbers still only reflect those that have sought help and been diagnosed. Men are often afraid or ashamed to ask for help, and it can be more difficult to recognise the symptoms of an eating disorder in men than in women; due to this it is possible that the actual numbers may be much higher than on record. Previous studies by the Eating Disorders Association have concluded that GP's are less likely to detect symptoms of eating disorders amongst men, the diagnosis is more complicated due to the fact that instead of simply restricting food intake men often over compensate with excessive exercise, therefore do not look 'starved' in the same way that many anorexic women do.

It is considered that socially there is less pressure upon men to be slim, and in particular earlier research focused solely on women due to the belief that male attitude and opinion was the main motivator for the development of eating disorders, therefore men themselves were not at risk. However in recent years the 'beach muscles' body image has been increasingly promoted through media such as advertising and film, and is now viewed as a pressure upon men to conform to a particular body shape. The idea of 'six packs' and a 'V-taper' as inspired by Charles Atlas seem to be accepted as important in male body image currently. This inspires both the problem of men trying to lose weight in order to gain such a shape, but also bulk up excessively in order to gain the musculature promoted, hence why there is now an increase in literature focusing on the changing image of men in the media as having an effect upon male eating disorders such as anorexia and, in particular, muscle dysmorphia. As Agliata et al (2004) state, "*Little research has attended to the effects of media exposure on males' body image*" and this is an area of research which is now becoming more prominent. Gray et al (2002) conducted a study to test the association of media images with muscle dysmorphia, with the results showing that subjects exposed to advertisements featuring muscular men scored negatively on an immediate body image perception test in comparison to a control group, exhibiting a large gap between their own level of perceived muscularity and the level they wished to achieve. Agliata et al (2004) found very similar results of higher levels of depression and muscle dissatisfaction in men exposed to advertisements featuring 'ideal' body images. Andersen et al (1992) went into more detail on this subject, with results showing that men's magazines contained less articles promoting weight loss but more promoting the idea of altering body shape, which could be viewed

as having a possible link to muscle dysmorphia in the sense that it encourages muscularity and ideal body image as opposed to simply weight loss. Duggan and McCreary (2004) found through their research that there was a positive correlation between levels of body dissatisfaction and the utilization of muscle and fitness magazines for both heterosexual and gay men.

The prevalence of male eating disorders is often thought to be higher amongst the homosexual community, as there is more pressure to appear slim and 'feminine'. Carlat et al (1997) described both homosexuality and bisexuality as a *"specific risk factor... especially for those who develop bulimia nervosa"*, while Kurtzman et al (1988) found that homosexual study participants scored higher on a huge amount of issues such as binge-eating problems, diuretic abuse, fear of being fat and the Eating Disorders Inventory Scale for drive for thinness, bulimia, body dissatisfaction and other such factors. Williamson and Hartley (1998) gained results from their study which verify these earlier findings. In this later study comparisons were made between measures of disordered eating and body dissatisfaction between gay and heterosexual men, the results of which showing the gay men to score higher in all areas, with significant correlation seen between sections. Atkins (1998) describes gay men as susceptible to eating disorders due to a perceived pressure to look the same as the stereotypical attractive woman, slim and beautiful, as this is what men are assumed to find attractive. One of her research subjects is also quoted as believing that the majority of homosexual men have problems with self esteem due to homophobic attitudes, and for this reason being sexually attractive "becomes an obsession" as a way of creating self-worth. A

large amount of studies have found that homosexual males place high emphasis on physical attractiveness when looking for a new partner or when valuing themselves to a potential new partner, more so than women looking for either men or women. In addition to this, Sergios and Cody (1986) identified that the main factor which would influence the gay men in their study to want to see a man again was their level of physical attractiveness. There is an even higher concern regarding the number of homosexual eating disorder patients who may be going untreated, as they face the barrier of homophobia as well as the general issues of male patients being less likely to seek treatment or be diagnosed.

2.3 Muscle Dysmorphia – The New Phenomenon.

Recent research has shown that body image dissatisfaction amongst men can also display symptoms which are the opposite of eating disorders such as anorexia. Studies now show that there is a large drive amongst men to gain weight as opposed to lose it, and to increase muscular size and strength. This is particularly true amongst high school and college students; research shows almost 70% of men at this age are dissatisfied with their body shapes and believe more muscular somatypes to be ideal. There has been some difficulty with studies due to a lack of distinction between putting on weight and putting on muscularity, but the general consensus is that boys and men who are interested in gaining weight equate muscularity with added weight.

‘Muscle Dysmorphia’ is dissatisfaction with muscular hypertrophy and an incorrect self body image perception, sometimes known as ‘bigorexia’. This is a subtype of body dysmorphic disorder, which in itself is a product of Obsessive Compulsive Disorder.

Described as the opposite of anorexia nervosa, bigorexia sufferers perceive their muscle mass as inadequate and feel a constant pressure to change their appearance to be stronger and more muscular. This is achieved by compulsively over-exercising, weights training and resistance training. It can also be accompanied by disordered eating behaviour, with obsessive over-eating and strict rules concerning food. Often, these people will either already be more muscular than most, or be considered normal in appearance. Pope et al (1997) describe sufferers of the condition as being *“pathologically preoccupied with their degree of muscularity”* and suggest that it is associated with *“severe subjective distress, impaired social and occupational functioning, and abuse of anabolic steroids and other substances”*. Research and studies on Muscle Dysmorphia are limited as it is a relatively new subject.

A large proportion of the existing research into this area focuses upon the sport of weight lifting and men that take part in bodybuilding, due to the intense focus in these activities on body image and appearance in relation to fat mass and muscular size. However, a number of these studies suggest that bodybuilders are no more prone to dysmorphia than other men, such as the findings of Pickett et al (2005) which state that *“competitive bodybuilders as a group are not more ‘muscle dysmorphic’ than either non-competitive weight trainers or physically active men who do not train with weights.”* Olivardia et al (2000) also found that muscle dysmorphia sufferers differed from a control group of weightlifters in a variety of ways including *“body dissatisfaction, eating attitudes and prevalence of anabolic steroid use”* as well as admitting to significantly more distressed pathology in terms of feelings such as shame and negative social

function. In contrast to these findings, other studies such as **'Body Image and Psychopathology in Male Bodybuilders'** by Pope et al (2001) found that *"bodybuilders exhibited a pattern of eating and exercising as obsessive as that of subjects with eating disorders, but with a 'reverse' focus of gaining muscle as opposed to losing fat"*, while Hildebrandt et al (2006) found that *"a significant percentage of weightlifters report symptoms common to Muscle Dysmorphia"* and Ravaldi et al (2003) reported *"a high degree of body uneasiness and inappropriate eating attitudes and behaviours"* amongst bodybuilders.

Muscle Dysmorphia and body image disturbance amongst men has also recently been related to eating disorders in a number of studies. Pope et al (2000) state that *"the phenomenology of muscle dysmorphia appears similar in many ways to the phenomenology of eating disorders"* and found that male sufferers of muscle dysmorphia were not only highly correlated with male eating disorder sufferers, but also showed significantly high pathology on the Eating Disorders Inventory, suggesting that *"the pursuit of 'bigness' shows remarkable parallels to the pursuit of thinness"*. In agreement with this, Olivardia et al (2004) remarked that *"clinicians treating men with body image disorders, depressive disorders, or eating disorders should be alerted to the possibility that all of these symptoms could cluster together in a given man"*, while Goodale et al (2001) reported that *"MD (Muscle Dysmorphia) significantly related to eating disorder pathology"*.

A problem that has arisen in much recent literature in this area is a lack of clarification throughout the studies concerning increase in body size. As is stated by Cohane and Pope (2001) *“most studies failed to distinguish between ‘bigness’ due to increased muscle and that due to fat”*. This has created some confusion with regards to results and analysis, as according to Fallon and Rozin (1985) it can lead to the incorrect assumption that men are satisfied with their body image and size. This is of massive importance when studying this area, as many studies have since concluded that there is a large difference between these two issues and that generally amongst men muscularity is more important than fat percentage. Olivardia et al (2004) found through their research that *“muscle belittlement, but not fat exaggeration, was positively correlated with depression. This finding suggests that, for men, muscularity is more consequential than fatness.”*

2.4 Supplements – Psychologically addictive and a gateway to steroids?

Supplements are mainly used in exercise and training for the purpose of creating fat free muscle mass, promoting muscle strength and function, and in particular muscle repair and growth after exercise. The theory behind their usage in sports such as bodybuilding is that they have the ability to repair muscle cells quickly after exercise and therefore make it possible to exercise continually at a high intensity rather than leaving time between exercise sessions. They also play an important role in the function of actin and myosin, the contractile filaments in the muscles, which makes them a crucial element of movements involving muscular contraction, particularly weight lifting.

The most widely recognised supplement, particularly amongst bodybuilders, is creatine. Creatine is a natural organic acid found in the body, and is the core of phosphocreatine, an important component of energy supply to nerve and muscle cells due to its role in the replenishment and transport of ATP. It is popular among weight lifters as it provides short, powerful bursts of energy, such as those used during weight lifting. A large number of studies, for example Becque et al (1999) and Birch et al (1994) have gained positive results concerning the use of creatine in relation to improvements in strength and recovery time. Creatine also increases the size and appearance of muscles through cell volumisation, by drawing water into the muscle cells, causing intracellular retention. However the negative side of this is that increased water retention can create a bloated look, and that once creatine supplementation is ceased there will be a marked decrease in appearance. In humans, the majority of creatine stores are obtained from food, namely fresh meat, particularly red meat and kidney meat.

Powdered forms of protein are also commonly used, generally immediately prior to or post exercise, or to replace a meal. Whey protein is the most frequently referred to protein, mainly because it can be absorbed into the body very quickly, and is used to hasten muscle development and aid recovery. All protein supplements contain the body's essential amino acids such as Glutamine, which supplement manufacturers claim is depleted during exercise. However studies by Candow et al (2001) and Antonio et al (2002) do not show significant effects of glutamine when used by bodybuilders, positive effects appear to be seen more in anaerobic exercise such as running.

The subject of performance enhancing supplements is surrounded with controversy and, as Schwenk and Costley (2002) describe, *“complex, constantly changing, and poorly studied”* with alleged lack of research and evidence to support the advertising claims made by the majority of manufacturers. A study by Grunewald and Bailey (1993) stated that *“Many performance claims advertised were not supported by published research studies”* while others had no research to corroborate their statements, or exaggerated the findings in order to benefit the advertising. This research is supported by Clarkson and Rawson (1999) who drew the conclusion that *“many of these supplements have little or no data to support their claims”*. In addition to this, Philen et al (1993) found through surveying supplement advertisements in magazines that the majority of supplements listed *“unusual or unidentifiable ingredients”* and that *“22.2% of the products had no ingredients listed”*, a fact which does not reflect positively upon them when looked at alongside the claims of lack of research, as it shows an unwillingness to give scientific information. The other issue which arises from this mystery surrounding ingredients is the fact that many supplements are suspected of containing more potent drugs, such as ephedrine. On top of the controversial claims surrounding the ingredients of such substances is the commonly held view that supplements do not actually hold any athletic benefit. For example, an extensive and frequently referred to study performed by Telford et al (1992) at the Australian Institute of Sport found that after up to 50 times the recommended daily intake of certain supplemented vitamins and minerals were supplemented into athlete’s diets, the only effect found was an increased blood level of such substances, with no increase in athletic performance being noted.

Interestingly, many consumers are aware of these facts yet continue their use of the substances due to their belief that they will bring the promised benefits. As Pope et al (2001) concluded, *“millions of men and women are currently using potent drugs, widely sold over the counter as 'supplements', despite their known adverse effects, unknown long-term risks, and possible potential for causing abuse or dependence”*. The question then remains, why do athletes and regular men continue their usage of these substances despite the lack of scientific evidence as to their success and with the presence of evidence to the contrary? It is even suggested that the benefits of supplements can be achieved by maintaining an athletic diet, indeed, as Clarkson and Rawson (1999) state, *“Although athletes have a greater protein requirement than sedentary individuals, this is easily obtained through the diet, negating the use of protein supplements”*, therefore the reasoning behind consumption of such products must be flawed, misinformed or perhaps psychological.

Perhaps the most worrying claim currently regarding dietary and performance supplements are the recent findings that many supplements when tested are found to contain doses of anabolic steroids, which of course are not declared on their labels. Geyer et al (2003) analysed three types of supplements and found all to be positive for the anabolic-androgenic steroid metandienone, with concentration levels of up to 28.9 mg/g, enough to warrant a positive score on a doping test. These findings of metandienone were exactly echoed in a study by Baume et al (2006), which also revealed large inconsistencies in the ingredients of many creatine supplements. The study by Geyer et al (2003) also found that the recommended consumption of such

supplements could lead to positive results if tested for caffeine and ephedrine, with traces of pseudoephedrine. An analysis by Green et al (2001) concluded that 11 of 12 tested 'over-the-counter' supplements were incorrectly labeled for content of banned steroid based substances, and that consequentially *“athletes who use them are at risk for positive urine test results”*.

With results of studies such as these in mind it is important to consider the idea that an overuse, or even dependence, on nutritional supplements could potentially be a gateway to the use of harder substances such as anabolic steroids. This is in many ways a natural psychological progression, with the user believing that the benefits of the supplements alone are no longer enough, and looking for other ways to improve and enhance either performance or body image. Like any form of supplement, the perceived benefits may eventually begin to subside, and if this happens the user must then either up their dosage or move onto something stronger. Similar to the theory behind cannabis being a gateway to harder drugs, it is possible to consider the extensive use of nutritional supplements as the beginning of a slippery slope. However, more research into this area is needed in order to clarify or disprove this theory. The gateway theory is challenged by the argument that supplements differ to steroids as they do not attempt to change or imbalance the natural hormone levels, such as testosterone, beyond natural levels. However, this argument has less influence when considered with the previously mentioned evidence of steroid presence within many “steroid free” supplements.

2.5 Steroids – Use and Abuse

Anabolic steroids are, as described by Sullivan et al (1998), “*synthetic derivatives of testosterone*”, originally developed in the 1930s as a therapeutic medicine for the condition of hypogonadism. The term ‘anabolic-androgenic steroids’ (AAS) is the correct one, due to the anabolic properties of promoting muscle growth and the androgenic properties of prompting male sexual characteristics, however in this project the term ‘anabolic steroids’ will be used due to ease and familiarity. These drugs are generally administered either orally or through injection into large muscle groups, prompting concern over fears of needle sharing between users which opens up a whole world of risk. Use through one or other of these methods can often progress to ‘stacking’ when a user begins to both inject and orally administer simultaneously. Users often perform ‘cycles’ of 6-12 weeks, particularly in accordance with competition seasons.

Since the 1950s, anabolic steroids have been abused in order to improve sporting performance and promote muscle growth. The reported use, or abuse, of anabolic steroids amongst both competitive and even non-competitive groups in Great Britain has been steadily increasing since the early 1990s. Perry et al (1992) described usage as having reached “*phenomenal proportions*” and continued to suggest that although competitive and elite level athletes might be the most obvious selection of users, usage by non-competitive individuals is much more widespread and “*with other reasons for use, mostly physical appearance*”. In addition to this, a PhD study by Wichstrøm and Pedersen of the Norwegian University of Science and Technology reported that steroid

use “*did not vary according to sports involvement and demographics*” and was, to a certain extent, related to “*involvement in power sports and disordered eating*”.

Much of the literature surrounding this subject is aimed at the negative effects and health risks associated with the use of these drugs, which are believed to affect both well-being and mortality. Superficial side effects which are reversible with discontinuation include acne, hair loss in men and hair growth in women. Other reported side effects which are irreversible include gynecomastia in men, a development of breast tissue, and clitoral hypertrophy in women. Usage has also been associated with serious health risks such as hypertension, heart disease, myocardial ischemia, ventricle mutations, strokes and sudden death, as well as hormonal disruption and increased risk of liver cancer. While the short term effects are now widely studied and documented, more research is needed into the long term health issues connected to the consumption of such drugs. This is supported by Brennan et al (2008), who state that “*the data on the use of high dose anabolic steroids in humans are mainly offered as case reports or small studies that lack adequate control groups.*”

There have been several case reports on the potentially fatal effects of anabolic steroids, for example the study by Kennedy and Lawrence (1993) of the deaths of two young Australian footballers aged 18 and 24, who suffered cardiac arrests and tested positive for the anabolic steroid Oxymesterone. This report concluded that “*while a causal relationship is hard to prove*” it was possible that the abuse of Oxymesterone contributed to the cardiac abnormalities that caused the fatalities. Wysoczanski et al

(2008) reported acute myocardial infarction in body-builder aged 31, however Fineschi et al (2001) reported from their study of two young bodybuilding steroid users that the association of anabolic steroids with myocardial infarct *“lacks any evidence of a cause-effect relationship”* and that their own findings and the findings of others *“do not prove the cardiac toxicity of anabolic-androgenic steroids”*. Further research, particularly longitudinal studies, and greater understanding are needed of the effects of different types of anabolic steroids on cardiac functions and general health in order to determine any kind of relationship between them, and to gain knowledge regarding the negative side effects of steroid abuse.

Other literature in this area has begun to focus on the less documented and studied suspected mental health and psychiatric side effects of such drug use. This is a new development, as the possible connection between steroid use and psychiatric pathology, including tendencies towards aggression has only recently been recognised. As is stated by Pope et al (2000), the findings of a wide range of recent literature and studies suggest that *“some illicit AAS users develop marked aggression, hypomania, and occasionally frank mania during AAS exposure, as well as depressive symptoms and even suicidality during AAS withdrawal.”* Research in this area has consisted of either studying the medical use of steroids, the effects of steroids on voluntary subjects or observation of prohibited use. However these observational studies experience the common limitations of such research, while laboratory studies undertaken have ethical limitations as to the dosage which they can utilise.

Through laboratory study, Pope et al (2000) concluded that a dosage of 500mg per week or above of testosterone would produce *“occasional prominent manic or hypomanic reactions”* and that this in itself had the potential to be labelled as *“an underrecognized public health problem”*. However, due to the process of ‘stacking’ it is possible that illegitimate steroid users may take significantly higher doses than can ethically be administered during a research study, and further investigation would be needed to investigate the effects of such abuse on psychiatry. In addition to this, ‘stacking’ involves consumption of a complex mixture of substances, and further research is also needed on the effects of different types of steroid. Bahrke et al (1990) believe from their research that psychiatric and behavioural consequences of steroid abuse *“appear to be related to type, but not dose, of anabolic-androgenic steroids administered”* and that more evidence is necessary in order to make more definite conclusions.

Despite these widespread suspected negative side effects, from mental instability and violence to early mortality, recreational and competitive athletes continue to use anabolic steroids. So far, the research into the harmful consequences is limited, and much further investigation is needed in order to gain explicit knowledge of this area and confidently intervene.

2.6 Bodybuilding – A Healthy Obsession?

Bodybuilding is a sport which centres itself on the ideals of muscularity, strength, power and perfection, through the process of excessive muscular hypertrophy and fat loss. In the early days of bodybuilding, the quest was for the ‘Grecian Ideal’, which viewed the

perfect male physique as being that which was closest to the figure of ancient Greek or Roman statues. Today, the most esteemed title which can be gained in professional bodybuilding competition is the 'Mr Olympia' title, an award given during 'Olympia Weekend' which is an international competition held annually by the International Federation of Bodybuilders (IFBB). This focuses on a body type which has absolutely minimal fat and maximal musculature, and is the award which elevated Arnold Schwarzenegger to super-stardom.

Recent literature has related the activity of bodybuilding to factors such as body image and eating disorders, as well as a high prevalence of anabolic steroid use. Blouin and Goldfield (2006) found that in comparison to runners and martial artists, bodybuilders admitted to considerably higher levels of body dissatisfaction and prevalence of bulimic inclinations and steroid abuse. From this they suggest that, as a group, bodybuilders are a high risk for disordered behaviour and display many of the *"psychological characteristics that have been commonly reported among eating disorder patients"*. In addition to this, Pope et al (1993) conducted a study on body image amongst bodybuilders and reported findings of both anorexia nervosa and 'reverse anorexia' (now termed Muscle Dysmorphia), concluding a possibility that both of these disorders *"occur frequently in men who lift weights regularly"* and may be related to anabolic steroid use. Other disturbances in the pathology of bodybuilders have also been researched. Porcerelli and Sandler (1995) reported a significant relationship between steroid use in bodybuilders and high levels of narcissism and low levels of empathy.

They advise that more evidence is needed in order to establish whether narcissism is a result of steroid use or a contributing factor to their consumption.

Much more literature is needed on the subject of bodybuilding in order to begin to build up a greater understanding and knowledge of both the potential mental and physical risks of the sport. The difficulty in achieving this is that research topics such as drug use and body image dissatisfaction are ones of a sensitive and personal nature, and it can be hard to find willing volunteers for such studies.

Research Methodologies

3.1 Aims and objectives:

This research project aims to gain a better understanding of young men's eating and exercise behaviour, particularly at a university age level. It will assess their own attitudes towards these subjects and their opinions of their own behaviour and personal body image. This data will be used to assess how prevalent the disordered attitudes and behaviours described by current literature and the works of figures such as Olivardia and Pope are amongst a selection of young and generally athletic men.

3.2 Quantitative and Qualitative Methods

These two opposing methodologies of research are much debated in terms of value and virtues, and the exact structure of each is variably defined. However, a generalisation of the features of these measurements can be seen as follows:

| Qualitative | Quantitative |
|---|---|
| Involves analysis of data in the form of words, pictures or objects (i.e. interviews) | Involves analysis of data in the form of statistics and numbers (i.e. surveys/questionnaires) |
| Looks to gain a detailed description of the subject | Looks to create statistical evidence for explanation |
| Data is collected through observation, referring to meanings, descriptions and concepts | Data is collected through structured questions, referring to measurements and figures |
| Advised for use in early stages of research | Advised for use in later stages of research |
| <i>Subjective</i> : individual interpretation is valuable. | <i>Objective</i> : facts and figures are vital for analysis |
| Produces 'rich' data which can be contextually used to generate understanding | Produces generalised data which can be used as a prediction, particularly of relationships |
| Researcher is involved in the data collection | Researcher is detached from the data collection |

Quantitative research is a positivist and systematic approach of investigation and its aim is to utilise mathematical theory to explain events and relationships in life. The key elements of quantitative research are measurement and analysis, which are used as a means to convert observational data into factual understanding which can then be used to prove or refine hypotheses. Research of this kind often makes use of methods such as questionnaires, which can then easily be converted into numerical data and relationships and conclusions can be drawn based on this evidence. Results are often presented in the forms of tables of data and graphs, and large samples are needed. In contrast, qualitative research is interpretive and requires small focused samples, usually specifically chosen as opposed to random, in order to gain an in depth understanding of the human behaviour being studied. Rather than being used to test a specific hypothesis, qualitative measures are often used in an investigative manner. Interviews and observation are the most common forms of qualitative research.

Much of the debate concerning the use of qualitative or quantitative data collection is based upon the conflicting opinions regarding the philosophies of Ontology, Epistemology and Human Nature, with quantitative research believed to be more Ontological while qualitative research is more Epistemological. There is an argument that the scientific methods of quantitative measurement lose important data by placing less importance on gaining non-measurable factors that change between individuals. The following table has been adapted from Morgan and Smircich (1980) to present these differences:

and surveys are included in an attempt to gain both an in depth and focused response alongside a widespread collection of data. The interviews were conducted initially, with a selected sample which included a variety of male subjects chosen for their sporting background and observed exercise and eating behaviour. The reason for conducting the interviews before the questionnaire was to use them as an investigative tool in order to analyse and determine the suitable and necessary survey questions and topics.

The interviews were recorded and consisted of five sections of questions, each concerned with a different topic. The interviews aimed for flexibility and a flow of conversation between questions. The first section established the basic details of each subject, including:

- Age
- Height (cm)
- Weight (Kg)
- Ethnic / Racial Grouping
- Home Town
- Perceived Physical Activity (Hrs/wk)
- Main Sport Participated In

The second section of the interview comprised of a somatomorphic matrix adapted from **'The Adonis Complex'** by Olivardia, Pope and Phillips (2002). This was constructed using a number of photographs of male torsos (See Appendix C), taken of anonymous subjects, all of which were informed of the reason for and usage of their photo and signed a consent form. The photographs were edited in order to ensure anonymity, with faces and distinguishing features removed. The torsos used were a variety of

somatotypes, and the interview subjects were requested to study them before answering a number of questions concerning the photographs and their own opinions. This psychiatrically assessed how the subjects viewed their own body shapes and body image in general.

The third and fourth sections of the interview addressed the subjects of eating and exercise behaviour respectively. Subjects were asked a variety of questions to describe their habits for both of these topics, giving their opinions of both their own behaviour and the subjects in general. The questions were aimed both directly at the subject, and at a general overview of the topics, in order to gain knowledge and information regarding the subject's personal habits and behaviour as well as their views and beliefs. This was continued further in section five of the interview, which assessed the subject's general knowledge of the topic, and their personal attitude towards such issues.

Kvale (1996) describes qualitative interviews as "attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world prior to scientific explanations." This is complimentary to the aims and objectives of this research project and therefore was advantageous. There are other obvious advantages to using interviews; however there are also limitations, which are outlined as follows:

| Advantages: | Disadvantages: |
|--|---|
| Creates relaxed atmosphere | May be viewed as intrusive |
| Answers not restricted, allows subject to speak freely about what they feel is important | Dependent upon personality, mood and depth of interaction between interviewer and subject |
| Allows interviewer to observe and listen to interviewee | For effective results the interviewer should be well trained |
| Allows complex questions to be asked | Questions must be appropriate |
| Evidence is highly valid and relevant | Time consuming |
| There may be no relevant existing questionnaires for your topic | Analysis and interpretation less straight forward than numerical data |
| Can be used to create a questionnaire | Subjective |

According to Patton (1990) there are three basic styles of interview, the **Informal Conversational Interview**, the **Interview Guide Approach** and the **Standardized Open-Ended Interview**. For this project, an Interview Guide Approach was chosen, where the interviewer has a general outline and knowledge of the subject areas to be discussed, but has no limitations on how this is done. In an interview such as this, the flow of conversation is able to remain informal and comfortable, but the data collection is more methodical and organised than during an Informal Conversational Interview. However, the data analysis is still somewhat limited as the interview structure is still informal and different interviewees will be answering different questions and discussing different issue depending upon the flow of conversation.

The information collected during the interviews was then taken into consideration when constructing the questionnaire which served as the quantitative method of research, and used to create a list of questions deemed relevant. The remainder of the questionnaire was created using questions adapted from four existing recognised tests, the **Eating**

Attitudes Test (EAT-26), The Drive for Muscularity Scale (DMS) by D. R. McCreary and D. K. Sasse (2000), the **EDET** and the **Eating Disorder Examination Questionnaire (EDE-Q5)**. No single test has been established as the most efficient or accurate tool for identifying an eating disorder and methods of testing for body image disorder or dissatisfaction are relatively new, therefore a variety of questions were taken from a number of tests and combined to form what was viewed as a relevant and detailed questionnaire.

The questionnaire was separated into four sections. The first section, echoing the interviews, gained general information about the participant such as age weight and participation, and was adapted from the EAT-26. This was a simple process of multiple text boxes in which the participant was free to write their own personal answer. The second, third and fourth sections involved a matrix of choices from which participants were required to choose a response to given statements. These sections were adapted from the EAT-26, the DMS, the EDET and the EDE-Q5, as well as a variety of statements deemed suitable and relevant due to the information gained through the interviews undertaken. In order to conserve time and resources, the questionnaire was constructed electronically online and distributed via a website link, which meant that participants could complete it online, when and where was convenient for them. It also ensured anonymity and ruled out the risk of valuable completed questionnaires being lost or not returned. 100 links to the questionnaire were distributed, and 62 were completed. The sample to which the links were distributed was chosen due to their observed and known sporting participation.

3.4 Ethical Considerations

As this research project involves human participants, before any research was undertaken an ethical clearance form was completed and submitted to the Ethical Advisory Committee for approval.

Patton (1990) comments that *“the very personal, conversational nature of interview situations highlight many of the basic ethical issues of any research or evaluation method”*. The two main ethical concerns for interviews are confidentiality and consent, which were taken firmly into consideration during this project.

- **Confidentiality** – the most important ethical concern with interviews is establishing the level of confidentiality required, preferred and able to be given. Certain issues, such as revelations which reveal a threat to an individual’s safety, must be reported. An interviewee must be aware of these clauses in a confidentiality agreement. If confidentiality and anonymity is promised then it must be determined how to fulfil this, and who apart from the interviewer will have access to the data. In this research project interviews were conducted without the presence of others, and no names were given on record. Subjects were referred to by letters or initials, and recordings were labelled with such headings.
- **Consent** – alongside confidentiality is the issue of informed consent, insuring that the subject is willing to participate after being informed of the nature of the interview and any possible risk. For children this consent must be provided by a

parent or guardian, but this was not applicable during this research project as all participants were over the age of 18. All interview subjects gave verbal consent and signed a consent form.

3.5 Analysis of Data

All interviews were recorded, and then listened to at a later date for analysis. The tone and attitude of each subject was assessed and all statements and answers which were relevant to body image or disordered eating or exercise behaviour were noted. The answers given to the somatomorphic matrix by each subject were cross referenced and analysed with reference to the bodily statistics of the photograph volunteers.

To analyse the results of the EAT-26 this project employed the recognised scoring system which sees responses to each statement weighted from zero to three, with numbers progressing linearly with responses deemed most 'symptomatic'. A total score was calculated, alongside separate scores for three subsections: Dieting, Oral Control and Bulimia and Food Preoccupation.

The results of the DMS were also analysed using the recognised scoring system, this time in the form of a 'reverse-direction' procedure. Responses are listed 1 (Always) to 6 (Never), but scored in the opposite direction, as high scores reflect a higher drive for muscularity. Again, a total score was calculated before two separate scores for the subsections of Muscle Development Behaviours and Muscularity Orientated Body Image Attitudes.

Those subjects who scored highly on either one or both of these sections were then analysed further using the results of their responses to the questions taken from the EDET and the EDE-Q5. Tables of data were created to reflect all areas of the survey, with a section for basic information, overall percentage responses for both all sections of the survey and each individual subject's score for both the EAT-26 and the DMS. Graphs and charts were also made regarding those subjects who displayed high pathology, in order to better reflect the sample and present their answers more clearly.

Analysis of Results

4.1 Subjects

From a choice of 6, 4 subjects were chosen as interview candidates. One of these was then excluded due to complications with anonymity when conducting the somatomorphic matrix, leaving 3 complete interviews. Out of 62 respondents, 9 surveys were either fully or partially excluded due to incompleteness. This resulted in 59 surveys being used in total, but only 53 being used in assessing the Drive for Muscularity, due to confusion with one of the questions among certain respondents. A complete set of results can be viewed in the tables provided.

4.2 Interview Results

The physical statistics of the interview subjects can be seen in the following table:

| Subject | Measurements | | Cross Sectional Areas (inches) | | | | |
|---------|------------------------|-------------|--------------------------------|-------|------------------|-----------------|-------|
| | Height (feet & inches) | Weight (kg) | Chest | Waist | Biceps (relaxed) | Biceps (tensed) | Quads |
| A | 5' 11" | 103 | 46.5 | 44.5 | 15.5 | 16.5 | 23 |
| B | 5' 11" | 99 | 41 | 38.2 | 15.5 | 17 | 27 |
| C | 5' 7" | 95 | 48 | 30 | 17 | 18.5 | 20.5 |

- **Basic Information:** This section established the above statistics as well as ethnicity and main sport participation. All subjects were Caucasian, Subject A participated in rowing and weights training, Subject B had previously been a bodybuilder but now concentrated on judo while Subject C participated in bodybuilding only.

- **Somatomorphic Matrix: (Photos in Appendix C)**

1. **The photo that best represents your own body** – Subject A chose a mixture of photos F and L, claiming he was *“fatter than L”* and believed himself to be closer to photo F with *“big arms and shoulders but a spare tyre”*. He described himself as *“quite big, quite strong, but not lean”*. The difference in weight was slightly disproportionate given that photo L was only 1kg lighter than subject A, while photo F was 11.8kgs heavier. Subject B likened himself to photos L and N, claiming to be as muscular as N but with a bigger frame. This was a more accurate comparison. Subject C likened himself to photo A as it was the *“leanest and most muscular”*, and from the statistics this was the most accurate of comparisons.
2. **The photo that most appeals to you** – Subject A chose photo L, stating that it was the most realistic body to attempt to achieve and commenting that by having a larger body size he felt *“powerful and bigger and stronger, and ‘L’ has all that but is leaner”*. Both subjects B and C chose photo A, subject B stating that the photo’s *“level of muscular development and definition”* was a *“sign of masculinity”*.
3. **The photo that would most appeal to women** – Subject A did not believe it possible to generalise, but stated that photo N looked like a “calendar model” and was the “stereotypical” idea of what a girl would look for. Both subjects B and C identified photos A and N, subject A stating that he believed “women like a strong masculine physique” but that photo A’s veins

were “a slight turn off”. Subject C commented that he felt “girls would feel too intimidated by what’s associated with A, the obsession”.

4. **The photo that least appeals to you** – Subject A chose photo A, stating “I would hate to be like that”, but also photo O, explaining “I would hate to be really scrawny or skinny” and that he would prefer to be “bigger in size, to look more powerful and more masculine”. Subject B chose photos O, K and E due to their “lack of muscle” while subject C chose photo F stating that he was the “most overweight” and that “being too fat is worse than being too skinny”.

5. **The photo that best represents the average male** – Subject A was undecided, first choosing photo B because it was “a little bit fat but in shape”, then photo F saying that “generally for the UK most people have a fair bit of stomach on them” and finally touching upon photo O because he believed “a lot of people don’t work out at all” and that “we definitely have a nation that doesn’t really take physical fitness that seriously”. Subject B chose a mixture of photos D, E and K because they were “not excessively skinny”, while subject C chose photo G, describing it as “not too overweight... but not gaunt and skinny, very average.”

- **Eating:** This section questioned and discussed the personal eating habits and the reasons and beliefs behind such habits of each interviewee. Subject A tended to eat “*a couple of large meals*” throughout the day, saying his eating habits were dictated by time restraints and convenience. He enjoyed eating, did

not worry about calories and claimed to be more concerned about *“common sense eating”* and being *“healthy”* by attempting to stick to the ‘5-a-day’ fruit and vegetable rule. He stated that his attitude was *“if I’m hungry, I’ll eat”* and that he would *“never let food dictate what (he) was doing”*. Subjects B and C displayed very different pathology to this, with a much stricter and more focused attitude towards eating. Subject B admitted that while bodybuilding he *“used to weigh and measure everything and calorie count obsessively”* and that he *“used to try and eat over 300g of protein a day”*, describing the routine as similar to *“force-feeding”*. He stated that it required *“so much commitment, you can’t concentrate on other things”* and that he *“used to panic”* if he felt his eating schedule might be disrupted. He also admitted missing social occasions because he *“used to panic going into town”* due to the potential disruption to his meal plan. Now he views his eating habits as more relaxed, claiming the only rule he applies to himself is to try and eat 1g of protein per lb of bodyweight (currently 218.3lb). Despite claiming to be *“trying to get away from the protein obsession”* he described using a large concoction of supplements on a daily basis, including amino-acids and protein based substances such as Glutamine. When questioned, he admitted that he is *“not sure how much Glutamine works”* but is using it due to bodybuilding reports. He also stated that he *“will try (creatine) again in future”* despite finding it non-beneficial so far, and admitted that although his eating patterns have changed, *“I’m still trying to get over my whole binging, I have the occasional binge, Tesco trips for cakes and chocolate”*. Subject C described his eating patterns as *“split into off-season and on-season”*.

While on-season he would consume six meals a day with a strict exclusion of carbohydrates, high levels of fat and even higher levels of protein, ensuring 50g of protein every three hours. During off-season he would consume ten meals a day totalling 6-7000 calories, ensuring 50g of protein every two hours. He claimed to have *“specific daily calorie targets and I won’t go over or under it, every day will be exact”* and stated *“my day revolves around my diet”*. Similar to subject B, he stated *“If my friends were going to a nightclub and I knew I couldn’t take food into that nightclub, I wouldn’t go”*, admitting *“my life now is dictated by my eating habits”*.

- **Exercise:** Subject A stated his main exercise regime as involving *“circuit weights”* due to their intensity and the fact that they left him *“knackered”* in a short space of time, as he became easily bored with long sessions of low intensity cardio. His main aim was currently *“all focused now on fat burning”* as he did not *“want to get bigger or stronger”* but was *“just trying to pack on lean muscle”* for *“health, fitness and image”* reasons. Subject B claimed that his new regime was intended to *“try and introduce cardio without sacrificing strength and size”*. He admitted that while he was attempting to become healthier in a cardiovascular sense, he would *“panic”* if he lost size, but stated *“if I was to see my weight drop a couple of kilos but started seeing my abs show through a lot more that would be fine by me”*. He described this new regime as difficult because he found *“there’s things all around that make me think ‘I want to be big again’”*, his reason for which was *“looking like a big strong man, feeling like a*

man". Subject C described his reasons for participating in bodybuilding as constant injuries in rugby and losing interest in the sport after being dropped from the Wasps squad. He explained his exercise routine as *"really structured"*, stating *"I'll know everything I'm doing weeks in advance before the specific session"*. He described himself as overly competitive and obsessive, saying that he was attracted to bodybuilding due to *"wanting to be the best and wanting to win"* and because the *"dedication required (for bodybuilding) sets you apart from everyone else"* which is worth it for *"the feel good factor (and) the look good factor"*.

- **General Attitudes:** Subject A displayed a good and well-rounded general attitude and knowledge of exercise, health and fitness. However, he did admit to feeling guilty upon missing exercise sessions and attempting to compensate for this by performing two sessions in one day, despite knowing that the second session was likely to be unbeneficial. He also felt strongly about the concept of masculinity, claiming that it was *"born by the media"*. Subject B admitted that his concept of health and fitness was previously simply *"get big, get big, get big"* and believes that *"subconsciously it was to have an image for myself as 'the big guy', to try and stand out a little bit"*. He claimed that, injuries aside, *"the harder you train the healthier you are"* and that the best form of exercise for the body was weights training, stating that *"you can't get stronger with running"*. He continued to claim that *"A strong body is a healthy body. If your muscles are weak, you're frail aren't you. More vulnerable."* Subject C acknowledged that

there was a definite difference between health and fitness, admitting *“I’m fit but I’m not healthy”* because *“I’m taking too many drugs”*. He admitted to taking a number of anabolic steroids and fat strippers, stating *“my cholesterol levels are high, my blood pressure will be high, my heart rate is inconsistent from the fat burning drugs I’m taking, I don’t sleep very well at night, I’m not healthy”*. Yet when questioned about the use of steroids he answered *“they’re not necessarily bad for you”* and stated that it was *“without doubt”* worth the risks in order to maintain his size and appearance. He agreed with subject B that an increased physical activity led to increased health, but believed that this stopped being the case *“when you become obsessed”* as he is, and admitted that bodybuilding was *“not at all”* a healthy sport. When questioned on the subject, he admitted *“I suppose what I have is an eating disorder”* and when relating his eating habits to those of an average person he stated *“In that sense I definitely have an extreme eating disorder, at the moment my dietary habits totally dictate my lifestyle.”*

4.3 Survey Results: EAT-26

17 of 59 respondents displayed high levels of pathology on the EAT-26 questionnaire. With referral to the recommended benchmark of 20, 8 (13.6%) of the subjects showed pathology that indicated an eating disorder. All of these subjects displayed their highest scores in the Dieting subsection. The mean score for the EAT-26 was 9.4, while the mode was 3, with many subjects reaching much higher numbers. The subject showing the highest levels of pathology was subject 43, who gained a total score of 47.

63.8% of subjects admitted to regular calorie content awareness of their food, and 56.9% number admitted to thinking about burning up calories while exercising. 49.2% agreed to some extent with the statement 'I am terrified about being overweight'. 60% claimed to feel a 'preoccupation' with food either 'Sometimes' or more regularly, as well as to giving 'too much time and thought to food'. 88.1% of subjects acknowledged the statement 'I am preoccupied with the thought of having fat on my body', yet interestingly only 42.4% acknowledged the statement 'I am preoccupied with a desire to be thinner'.

The three statements which were most negatively endorsed were Items 8 (71.2% Never: 'I feel that others would prefer if I ate more'), 9 (91.4% Never: 'I vomit after I have eaten') and 25 (81.4% Never: 'I have the impulse to vomit after meals').

4.4 Survey Results: Drive for Muscularity Scale

The highest result possible to achieve on this scale is 90. Higher scores reflect a stronger drive for muscularity, and this project viewed scores of over 65 as an indication of disordered pathology with 19 (35.8%) subjects achieving such numbers, the highest of which was subject 46 with a score of 89. The majority of subjects showing high pathology scored very closely on both the Muscle Development Behaviours and the Muscularity Orientated Body Image Attitudes subsections, some achieving identical scores in both. There were a significantly larger proportion of high scores in this section of the survey than in the EAT-26.

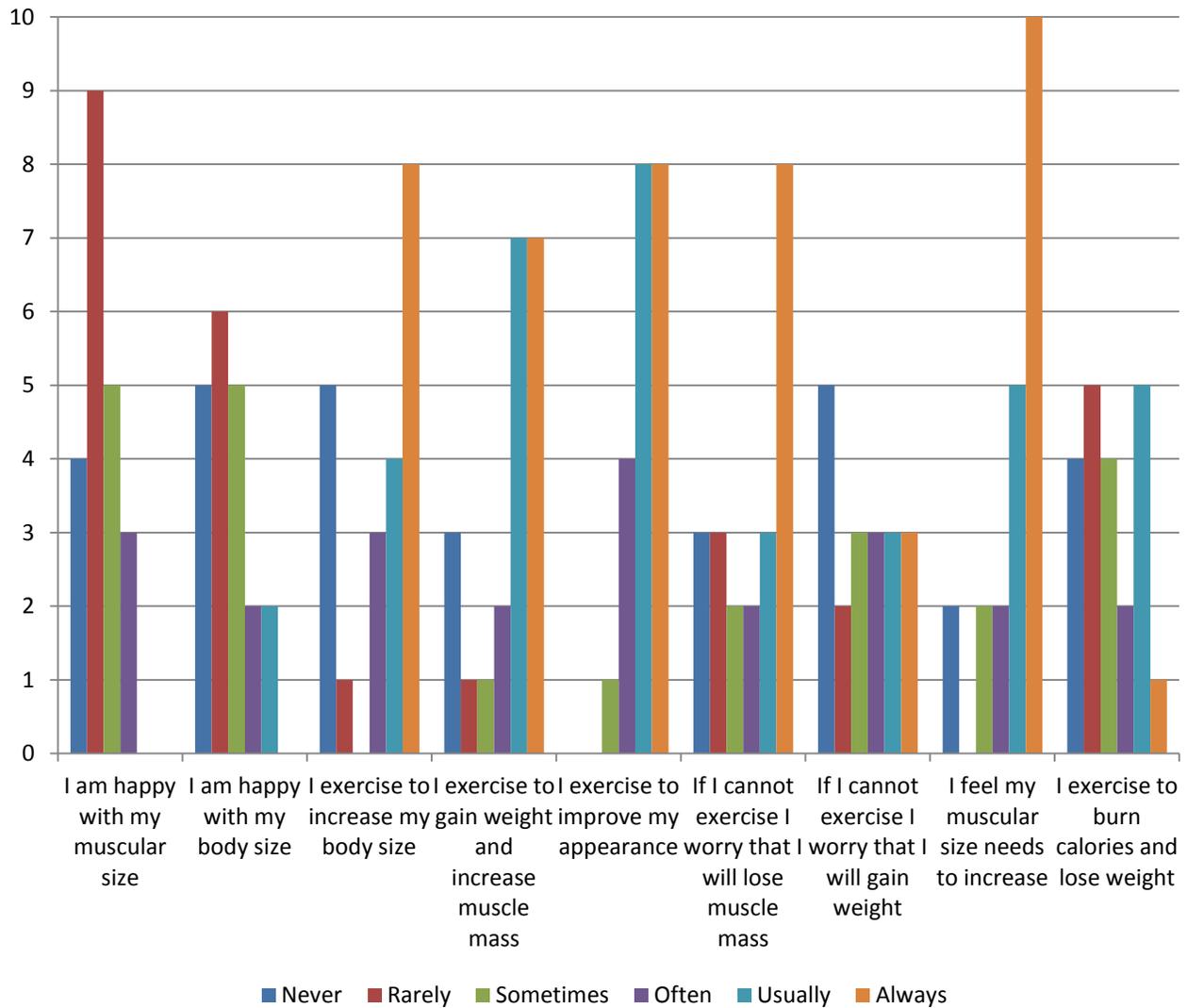
78.7% of subjects agreed to some extent with the statement 'I think that my arms are not muscular enough', 83.9% agreed with 'I think that my chest is not muscular enough' and 71.4% agreed with 'I think that my legs are not muscular enough.' 63.5% of subjects acknowledged the statement 'I think that I would look better if I gained 10 pounds in bulk' while 68.4% admitted 'I think I would feel more confident if I had more muscle mass'.

50% of subjects claimed never to 'think about taking anabolic steroids' and 44.6% did not feel that '(their) weight training schedule interferes with other aspects of (their) life'. 100% of subjects acknowledged to some extent the statement 'I wish that I were more muscular' and only 17.5% claimed never to use 'protein or energy supplements'.

4.5 Subjects with Significantly High Pathology Scores:

18 subjects displayed high pathology in the DMS, and 8 in the EAT-26. 4 subjects scored highly in both, meaning a total of 22 participants (37.3%). The majority of these were white Caucasian undergraduates participating in rugby union or bodybuilding / weight-lifting. Due to some anomalies between EAT-26 and DMS high scorers, a mean average did not provide an accurate reflection of the group, therefore a mode was calculated. The most frequent age was 20, height was 183cm and current weight was 99kgs.

Graph to show Responses to Body Image Related Questions by High Pathology Subjects



Disordered Eating and Exercise Behaviour amongst Young Men

Graph to show Responses to Exercise Behaviour Related Questions by High Pathology Subjects

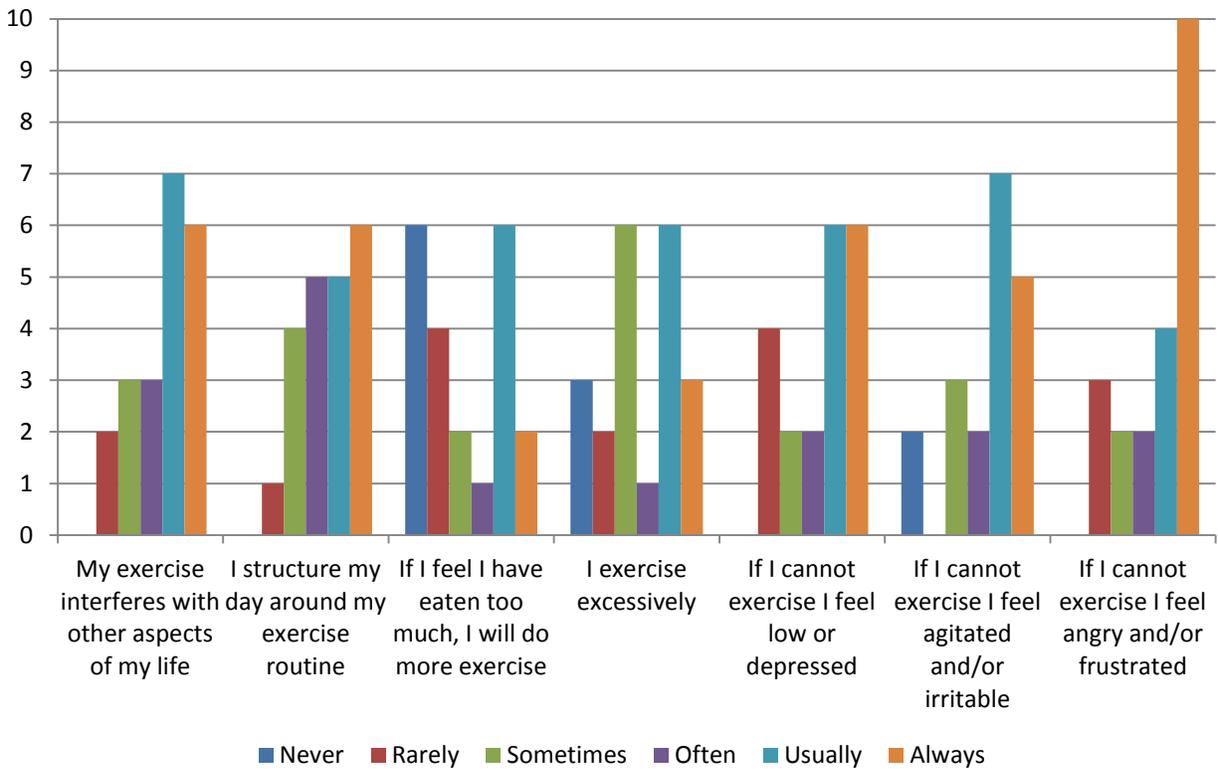
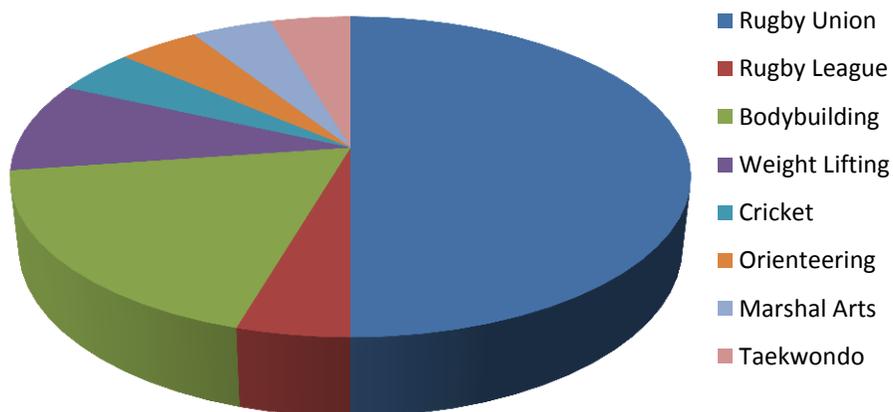


Chart to show Distribution of High Pathology Subjects Within Sports



Discussion of Results

Before reviewing and discussing the results of this study, several limitations should be considered. Firstly, the sample of men who volunteered to be involved in this project may not be an accurate reflection of men throughout the UK; Loughborough University is a highly focused and competitive hub of sporting excellence with a high concentration of serious athletes, which is not commonly found elsewhere. Secondly, it must also be taken into account that due to the personal nature of the topic, individuals with body image disturbances or dissatisfaction may have been less likely to take part. Thirdly, the somatomorphic matrix used was more basic than those used in other studies such as by Pope et al (2000), due to a lack of resources and specialist skills.

From the interviews conducted there is a clear indication of a strong desire for increased size and muscularity among the volunteers. As was suggested by Cafri and Thompson (2004), reference was made to the concept of masculinity when describing preferred body shapes and reasons behind eating and exercise behaviours. Reference was also made by subject B to the ideas of underlying and subconscious inadequacy suggested by Klein (1990) and Kimmel (1994) behind his bodybuilding behaviour, in attempting to stand out from the crowd by being “*a big strong man*”. The concepts of strength, power and dominance featured largely in the interviews as something to be strived for, and an aversion to both thin and overweight body shapes was clear, with all subjects favouring a muscular image. This study did not directly address the issue of media influence upon such choices, though it was loosely discussed with subject A, and it would be interesting

to conduct another study more focused upon the external factors pressuring these preferences.

However, little evidence was found throughout this study of traditional eating disorder behaviour amongst the subjects. Only a small number of subjects showed high pathology on the EAT-26, although some of these scores were significantly high, and none of the interview subjects described behaviour relevant to either anorexia nervosa or bulimia. Only a small number of those subjects displaying high pathology on the DMS also gained significant scores on the EAT-26, however it must be noted that the EAT-26 focuses on eating disorders that strive for weight loss and thinness. When analysing the results in relation to scores on the DMS, it can be seen that the strive amongst the majority of participants was to increase body and muscular size, which meant that generally the consensus was that to eat large amounts was not a bad thing. As could be seen from the interviews conducted, particularly with subjects B and C, when attempting to become bigger and increase muscularity a large food intake is actually preferable and more beneficial than a restrictive diet. However, this does not mean that such dietary behaviour is not disordered. Subject C displayed many symptoms of an eating disordered patient, such as preoccupation, obsession, strict rules, calorie counting, excessive exercise and social impairment, yet with the focus being to over-eat rather than under-eat. With this and the survey results in mind, it can be stated that the results of this project highly support the theories suggested by Pope et al (2000 & 2001), Olivardia et al (2004) and Goodale et al (2001) in that the quest for muscularity and size

may be just as problematic as the quest for thinness, and men displaying such pathology may also be suffering from a disordered eating pathology.

68.4% of survey participants admitted to the regular use of protein supplements, as did interview subjects B and C. Both subjects acknowledged the uncertainty surrounding this area in terms of ingredients and benefits, yet continue to utilise a wide variety of them, supporting the theory of Pope et al (2001). Subject B also confirmed the suggestion by Clarkson et al (1999) that supplements are unnecessary and such levels of protein can be achieved through diet, but stated that though he would prefer to gain such benefits through food, the supplements were too convenient to give up. In response to the gateway theory, the results of this study show a slight correlation between those who regularly use protein supplements and those who admitted considering anabolic steroid use. There was no focus on steroid use and its effects in this study, however the statements made by interview subject C as to his own anabolic drug use and the side effects he was experiencing as a direct result strongly support the literature that currently links anabolic steroid use to negative physical health. A link to mental health was not researched in this study.

100% of participants stating their main sport as bodybuilding and 50% of those who stated weight-lifting were among those displaying high pathologies. 83.3% of these subjects admitted either 'Very Often' or 'Always' thinking about the use of anabolic steroids and 66.6% claimed to 'Always' feel angry and/or frustrated if prevented from exercising. These results, though limited due to the survey being more generally aimed

at exercise and eating behaviour rather than particularly this area and this sport, support the ideas suggested by Pope et al (1993) in the sense that disordered pathology was displayed by all bodybuilders alongside high levels of steroid consideration and admittance of anger. The focus on body image and looks, as well as the judgement of other's bodies displayed by subject C during the interviews, also supports the theory of narcissism by Porcerelli and Sandler (1995), though its relation to subject C's steroid use could not be determined or assumed from this study. A more focused study with a more specific sample, aimed entirely at the sport of bodybuilding and the consumption of anabolic steroids, would be needed in order to progress this area of research further.

It can be seen from the results that amongst men there is a massive emphasis placed on muscularity, strength and size. Even those subjects who did not score highly enough to be considered disordered gave answers which suggested this, and many subjects still gained relatively high scores even if they did not quite reach the threshold. An interesting observation can also be made that, particularly with reference to subject B and C's interviews, much of the obsession with being 'bigger' and more muscular is aimed at personal body image and even competing between men rather than in an attempt to be attractive to the opposite sex. It appears that male body image is a problem amongst men rather than one inspired by women. It also seems that body image dissatisfaction and preoccupation is as much of a problem amongst men as amongst women, the prevalence of high pathology and discontent was higher than expected, but unfortunately is not recognised as such by the majority of men.

Conclusions

The intention behind this study was to collect a wide spread of data concerning the eating and exercise behaviours of young men, in order to determine both their current attitudes towards these topics and the prevalence of disordered strains of behaviour as has been described in recent literature.

The results of this project strongly support the occurrence of body image dissatisfaction and an obsession with muscularity amongst men. They show a higher drive for increased size and muscularity than for thinness. There is evidence of disordered eating behaviour in association with this attitude, but this behaviour is the opposite of disorders such as anorexia nervosa. This study showed a preoccupation with muscularity and excessive exercise to be correlated with a propensity for over-eating and excessive intake. There was a lack of evidence concerning eating disorders involving restrictive intake.

The results also reflect that men are less worried about gaining non-muscular body weight than they are about lacking muscularity, and that they consider it more acceptable to have a larger body size and be slightly overweight than to be 'skinny'. The results of the interviews show that men indulging in abnormal behaviours, particularly steroid usage, recognise the negative effects of their activities but continue regardless. It appears that for some men, the drive for muscularity and size outweighs all other considerations.

As previously noted, it is difficult to extrapolate this data and apply it to the population as a whole due to the lifestyle specifics of the sample that was used. All men involved in the study were based in the Loughborough area, the vast majority of them either undergraduates or graduates of the university, and all have been exposed to this highly competitive and sport-orientated atmosphere.

Further investigation in this area would need to utilise a larger, more representative, sample group in order to gain a slightly more balanced view which could be related to the normal population. Another area of interest would be to conduct a study specifically targeting bodybuilding participants to gain a better insight into the extreme behaviours displayed by such subjects. Also, use of a somatomorphic matrix in a study involving both men and women in order to compare the body shapes which women find attractive in comparison to what men are striving for would be interesting to conduct.

There are a large number of directions in which this research could next move but, regardless of which are pursued, it is both a fascinating and highly important area of study which is in need of further in-depth investigation. As this project has shown, this is a complex subject area concerning both physical and mental well-being that will continue to develop and evolve as times change. More evidence is needed in order for it to be fully understood, and for a chance that both intervention and preventative methods can be successfully developed in order to treat such behaviour.

Reference List

Books:

- **Atkins, D.** 'Looking Queer: Body Image in Lesbian, Bisexual, Gay, and Transgender Communities' Haworth Press, 1998
- **Barrett, F.J., and S.M. Whitehead** 'The Masculinities Reader' Oxford: Blackwell Publishers Ltd, 2001
- **Kimmel, M.S.** 'Masculinity as Homophobia: Fear, Shame and Silence in the Construction of Gender Identity'. In 'Theorizing Masculinities' Edition: 2, ed. **Brod, H and M. Kaufman**, Virginia: Sage Publications, 1994
- **Klein, A.** 'Little Big Men: Bodybuilding Subculture and Gender Construction' SUNY Press, 1993
- **Kvale, S.** 'Interviews: An introduction to qualitative research interviewing.' Edition: 4, Thousand Oaks, California: Sage Publications, 1996
- **Olivardia, R., K.A. Phillips, and H.G. Pope Jr.** 'The Adonis Complex: how to identify, treat, and prevent body obsession in men and boys' Touchstone, 2002
- **Patton, M.Q.** 'Qualitative evaluation and research methods' Edition: 2, Newbury Park, California: Sage Publications, 1990

Articles:

- **Agliata, D. and S. Tantleff-Dunn** 'The Impact of Media Exposure on Males' Body Image' *Journal of Social and Clinical Psychology* 23 (2004) Issue 1, Pgs 7 - 22
- **Andersen, A.E., and L. DiDomenico** 'Diet vs. shape content of popular male and female magazines: A dose-response relationship to the incidence of eating disorders?' *International Journal of Eating Disorders* 11 (Feb 2006) Issue 3, Pgs 283-287
- **Antonio, J., D. Kalman, M. Sanders, C. Street, and D. Woodgate** 'The effects of high-dose glutamine ingestion on weightlifting performance' *Journal of Strength and Conditioning Research* 16 (2002) Pgs 157-160
- **Auerbach, S.B., H. Falk, D.I. Ortiz, and R.M. Philen** 'Survey of advertising for nutritional supplements in health and bodybuilding magazines' *Journal of the American Medical Association* 268 (1992) Issue 8
- **Bahrke, M.S., C.E. Yesalis, and J.E. Wright** 'Psychological and behavioural effects of endogenous testosterone levels and anabolic-androgenic steroids among males: A review' *Sports Medicine* 10 (1990) Issue 5, Pgs 303-337
- **Bailey, R.S. and K.K Grunewald** 'Commercially marketed supplements for bodybuilding athletes' *International Journal of Sports Medicine* 15 (1993) Issue 2, Pgs 90-103
- **Baroldi, G., V. Fineschi, F. Monciotti, L. Paglicci-Reattelli, and E. Turillazzi** 'Anabolic steroid abuse and cardiac sudden death: a pathologic study' *Archives of Pathology and Laboratory Medicine* 125 (Feb 2001) Issue 2, Pgs 253-5

- **Baume, N., M. Kamber, N. Mahler, P. Mangin, and M. Saugy** 'Research of stimulants and anabolic steroids in dietary supplements' *Scandinavian Journal of Medicine & Science in Sports* 16 (2006) Issue 1, Pgs 41-48
- **Becque, M.D., J.D. Lochmann, and D.R. Melrose** 'Effects of oral creatine supplementation on muscular strength and body composition' *Medicine & Science in Sports & Exercise* 32 (1999) Issue 3, Pgs 654-658
- **Bergmann, S.R., M. Rachko, and M. Wysoczanski** 'Acute myocardial infarction in a young man using anabolic steroids' *Angiology* 59 (2008) Issue 3, Pgs 376–8
- **Biebl, W., C. De Col, C. Ebenbichler, A. Hausmann, G. Kemmler, J. Kinzl, B. Kreutner, B. Mangweth, and H.G. Pope Jr.** 'Body Image and Psychopathology in Male Bodybuilders' *Psychotherapy and Psychosomatics* 70 (2001) Issue 1
- **Birch, R., D. Noble, and P. L. Greenhaff** 'The influence of dietary creatine supplementation on performance during repeated bouts of maximal isokinetic cycling in man' *European Journal of Applied Physiology* 1994; Vol. 69 Pgs 268-270
- **Blouin, A.G., and G.S. Goldfield** 'Body image and steroid use in male bodybuilders' *International Journal of Eating Disorders* 18 (2006) Issue 2, Pgs 159 – 165
- **Boldrini, M., P. L. Cabras, E. Mannucci, L. Murciano, C. Ravalidi, V. Ricca, C. M. Rotella, A. Vannacci, and T. Zucchi** 'Eating Disorders and Body Image Disturbances among Ballet Dancers, Gymnasium Users and Body Builders' *International Journal of Descriptive and Experimental Psychopathology, Phenomenology and Psychiatric Diagnosis* 36 (2003) Issue 5
- **Borowiecki, J.J., G.H. Cohane, R. Olivardia, and H.G. Pope Jr.** 'Biceps and Body Image: The Relationship Between Muscularity and Self-Esteem, Depression, and Eating Disorder Symptoms' *Psychology of Men & Masculinity* 5 (2004) Issue 2, Pgs 112-120
- **Borowiecki, J.J., A.J. Gruber, J.I. Hudson, G. Kanayama and H.G. Pope Jr.** 'Over-the-Counter Drug Use in Gymnasiums: An Under Recognized Substance Abuse Problem?' *Psychotherapy and Psychosomatics* 70 (2001) Issue 3
- **Borowiecki, J.J., A. Gruber, R. Olivardia, and H.G. Pope Jr.** 'Evolving ideals of male body image as seen through action toys' *International Journal of Eating Disorders* 26 (1999) Issue 1, Pgs 65 - 72
- **Bredenhöft, M., H. Geyer, U. Mareck, M.K. Parr, and W. Schänzer** 'High Doses of the Anabolic Steroid Metandienone Found in Dietary Supplements' *European Journal of Sport Science* 3 (2003) Issue 1
- **Brennan, J.J., S. Kort, R. Mathews, J.F. Setaro, and K. Stergiopoulos** 'Anabolic steroids, acute myocardial infarction and polycythemia: A case report and review of the literature' *Vascular Health and Risk Management* 4 (2008) Issue 6, Pgs 1475–1480
- **Burke, D.G., D.G. Candow, P.D. Chilibeck, K.S. Davison, and T. Smith-Palmer** 'Effect of glutamine supplementation combined with resistance training in young adults' *European Journal of Applied Physiology* 86 (Dec 2001) Issue 2, Pgs 142-9.

- **Cafri, G., and J.K. Thompson** 'Measuring Male Body Image: A Review of the Current Methodology' *Psychology of Men & Masculinity* 5 (2004) Issue 1, Pgs 18–29
- **Camargo Jr., C.A., D.J. Carlat, and D.B. Herzog** 'Eating disorders in males: a report on 135 patients' *American Journal of Psychiatry* 154 (1997) Pgs 1127-1132
- **Cardinal, B.J., K.R. Goodale, and P.L. Watkins** 'Muscle Dysmorphia: a New Form of Eating Disorder?' *American Journal of Health Education* 32 (Sep-Oct 2001) Issue 5, Pgs 260-66
- **Carrigan, T., B. Connell, and J. Lee** 'Toward a new sociology of masculinity' *Theory and Society* 14 (September 1985) Issue 5, Pgs 551-604
- **Cash, T.F., R.J. Lewis, and T.C. Pickett** 'Men, muscles, and body image: comparisons of competitive bodybuilders, weight trainers, and athletically active controls.' *British Journal of Sports Medicine* 39 (2005) Issue 4, Pgs 217-222
- **Catchpole, E.A., V. Deakin, A.G. Hahn, A.W. Plank, and R.D. Telford** 'The effect of 7 to 8 months of vitamin/mineral supplementation on athletic performance' *International Journal of Sports Nutrition* 2 (1992) Pgs 135 –153
- **Catlin, D.H., G.A. Green, and B. Starcevic** 'Analysis of Over-the-Counter Dietary Supplements' *Clinical Journal of Sport Medicine* 11 (2001) Issue 4, Pgs 254-259
- **Choi, P., A.J. Gruber, R. Olivardia, K.A. Phillips and H.G. Pope Jr.** 'Muscle dysmorphia. An under recognized form of body dysmorphic disorder' *Psychosomatics* 38 (1997) Pgs 548-557
- **Chung, T., T. Hildebrandt, J. Langenbucher, D. Schlundt** 'Presence of Muscle Dysmorphia Symptomatology Among Male Weightlifters' *Comprehensive Psychiatry* 47 (March-April 2006) Issue 2, Pgs 127-135
- **Cody, J., and P. Sergios** 'Importance of physical attractiveness and social assertiveness skills in male homosexual dating behaviour and partner selection' *Journal of Homosexuality* 12 (1986) Pgs 71-84.
- **Cohane, G., and H.G. Pope Jr.** 'Body image in boys: A review of the literature' *International Journal of Eating Disorders* 29 (March 2001) **Issue 4, Pgs 373 – 379**
- **Clarkson, P.M., and E.S. Rawson** 'Nutritional Supplements to Increase Muscle Mass' *Critical Reviews in Food Science and Nutrition* 39 (1999) Issue 4, Pgs 317-328
- **Costley, C.D., and T.L. Schwenk** 'When Food Becomes A Drug: Nonanabolic Nutritional Supplement Use in Athletes' *The American Journal of Sports Medicine* 30 (2002) Pgs 907-916
- **Duggan, S.J., and D.R. McCreary** 'Body image, eating disorders, and drive for muscularity in gay and heterosexual men: The influence of media images' *Journal of Homosexuality* 47 (2004) Pgs 45–58
- **Fallon, A.E., and P. Rozin** 'Sex differences in perceptions of desirable body shape.' *Journal of Abnormal Psychology* 94 (1985) Pgs 102-105
- **Gallagher, E.J., P. Gennis, C.M. Martinez, and M.L. Sullivan** 'The Cardiac Toxicity of Anabolic Steroids' *Progress in Cardiovascular Diseases* 41 (Jul-Aug 1998) Issue 1, Pgs 1-15

- **Gray, J.J., R.A. Leit, H.G. Pope Jr.** 'Cultural expectations of muscularity in men: The evolution of playgirl centrefolds' *International Journal of Eating Disorders* **29** (2000) Issue 1, Pgs 90 – 93
- **Gray, J.J., R.A. Leit and H.G. Pope Jr.** 'The media's representation of the ideal male body: A cause for muscle dysmorphia?' *International Journal of Eating Disorders* 31 (2002) Issue 3, Pgs 334 – 338
- **Hacker, H.M.** 'The New Burdens of Masculinity' *Marriage and Family Living* 19 (August 1957) Pg 229
- **Hartley, P., and A. Williamson** 'British research into the increased vulnerability of young gay men to eating disturbance and body dissatisfaction' *European Eating Disorders Review* 6 (Dec 1998) Issue 3, Pgs 160-170
- **Hudson, J.I., D.L. Katz and H.G. Pope Jr.** 'Anorexia nervosa and "reverse anorexia" among 108 male bodybuilders.' *Comprehensive Psychiatry* 34 (Nov-Dec 1993) Issue 6, Pgs 406-9
- **Hudson, J.I., E.M. Kouri and H.G. Pope Jr.** 'Effects of Supraphysiologic Doses of Testosterone on Mood and Aggression in Normal Men: A Randomized Controlled Trial' *Archives of General Psychiatry* 57 (2000) Pgs 133-140
- **Hudson, J.I., R. Olivardia and H.G. Pope Jr.** 'Muscle Dysmorphia in Male Weightlifters: A Case-Control Study' *American Journal of Psychiatry* 157 (August 2000) Pgs 1291-1296
- **Johnson, R., and A.J. Onwuegbuzie** 'Mixed Methods Research: A Research Paradigm Whose Time Has Come' *Educational Researcher* 33 (2004) Issue 7, Pgs 14–26
- **Kennedy, M.C., and C. Lawrence** 'Anabolic steroid abuse and cardiac death.' *Medical Journal of Australia* 158 (1993) Pgs 346–8
- **Kurtzman, F., J. Landsverk, E. Wiesmeier and J. Yager** 'Behaviors and attitudes related to eating disorders in homosexual male college students' *American Journal of Psychiatry* 145 (1988) Pgs 495-497
- **Littlepage, B.N.C., H.M. Perry and D. Wright** 'Dying to be big: a review of anabolic steroid use' *British Journal of Sports Medicine* 6 (1992) Issue 4
- **Morgan G., and L. Smircich** 'The Case for Qualitative Research' *The Academy of Management Review* 5 (October 1980) Issue 4, Pgs 491-500
- **Pedersen, W., and L. Wichstrøm** 'Use of anabolic-androgenic steroids in adolescence: Winning, looking good or being bad?' Department of Psychology, Norwegian University of Science and Technology, Trondheim
- **Porcerelli, J.H., and B.A. Sandler** 'Narcissism and empathy in steroid users' *The American Journal of Psychiatry* 152 (1995) Issue 11, Pgs 1672-1674

Appendix A - Research Proposal

Disordered exercise and eating behaviour amongst young men.
An in depth study of their attitudes, behaviour and knowledge of specific areas.

The topic which this research project is investigating is relatively new and under recognised: the issue of disordered exercise behaviour amongst men. This issue has been brought to light over the last 30 years, yet is still widely un-discussed as the majority of these behaviours are viewed as 'normal' or 'masculine' rather than disordered. I plan to investigate the eating and exercise behaviours, and the social and psychological profiles of a group of young men, in order to determine whether their behaviour could be classed as disordered or not. This is a development since my original research plans which were based solely around the topic of Muscle Dysmorphia, however while researching this over the summer I discovered so many interesting related topics that I decided to broaden the scope of my project to include them.

Due to this, my research project is now broken down into subsections in order to focus on the following specific areas:

1. Male Body Image – Historically and in society.
2. Eating Disorders – Their prevalence in men.
3. Muscle Dysmorphia – The new phenomenon.
4. Supplements – Psychologically addictive and a gateway to steroids?
5. Steroids – Use and abuse.
6. Bodybuilding – A healthy obsession?

These are key areas of interest I came across when studying literature related to this subject, and I am going to delve into all of them in order to understand the topic. All of these areas will be addressed in during my research.

Arguably the most well established and renowned names in this subject are Roberto Olivardia and Harrison G Pope, and I have been studying a large range of their work. It was through their research that the idea of Muscle Dysmorphia as an extension of Body Dysmorphic Disorder was first put forward. This discovery was made during their research into male eating disorder subjects and men with body image problems, where they discovered symptoms of “a syndrome in men that (they) termed **‘reverse anorexia nervosa’**”. This research project will be referring to a large number of their recent relevant journals mainly published in the American Journal of Psychiatry, such as **‘Muscle Dysmorphia in Male Weight Lifters’, ‘Body Image Perception Among Men in Three Countries’, ‘Body Image and Attitudes Towards Male Roles in Anabolic Steroid Users’** and **‘Men, muscles, and body image, comparisons of competitive bodybuilders, weight trainers, and athletically active controls’**. There are many more of these articles and studies which will be named in a full reference list. All of them explain in detail the methods used to gain the results of the studies, and give a good insight into the areas in which I am interested.

I will also be referring largely to **‘The Adonis Complex’** by Olivardia, Pope and Phillips. This fascinating book focuses upon male body obsession and dissatisfaction, and is referred to as “the groundbreaking book that first gave name to this phenomenon”. The “Adonis Complex”, named after the character in Greek Mythology who embodied masculine beauty, is not presented as an official medical term but is used to “refer to an

array of usually secret, but surprisingly common, body image concerns of boys and men". It recognises that men "almost never talk openly about this problem" and discusses in depth a number of issues which will be addressed within this research project such as anabolic steroids, which it labels as a "dangerous fuel for the Adonis Complex", Muscle Dysmorphia and the Fat Free Mass Index. It also describes in detail two tests for the Adonis Complex which I will be referring to when conducting my own research, one of which is a questionnaire while the other is a computerised test called a 'somatomorphic matrix'. This test involves images of different male body somatotypes, with average muscularity, no muscularity (high or low fat content) and over muscularity such as associated with steroid use. Questions such as 'Choose the image that best represents your own body' must then be answered by choosing an image. The results can then be plotted on a graph, comparing the subject's actual Fat Free Mass Index with those in the images chosen.

I have also studied a large amount of literature relating to the subsections of my project, such as '**The Steroids Game**' by Dr. Charles Yesalis and Virginia Cowart, both experts in their field. This has provided useful information concerning the users of steroids and the health risks involved. However, it focuses mainly upon the prevalence of steroid use in athletes and competitive sport to gain a performance advantage, and I am also looking at literature which relates to the use of steroids purely for appearance purposes in order to assess their use in relation to body image and dissatisfaction. For example, the study '**Muscle Dissatisfaction in Young Men**' by A. Raevuori et al, which found that "Young men who are dissatisfied with their body shape and musculature may be more likely to turn to bodybuilding, dietary supplements, and anabolic steroids to shape their

bodies” and featured results showing that “supplement use increased monotonically with muscle dissatisfaction”. There is also a great deal of literature relating to the male body image, and I have been referring to a wide range of opinions, from G. Whannel’s **‘Media Sports Stars: Masculinities and Moralities’** to **‘Making Sense of Men’s Magazines’** by P. Jackson et al. Both of these give an informative insight into different aspects of male culture and potential reasons for the development of today’s male body image, particularly when related to sport.

The specific research aims and objectives of my project are to gain a better understanding of young men’s exercise and eating behaviour, particularly their own attitudes towards these behaviours and towards their own personal body image. I aim to collect data and therefore gain more knowledge about both the social and psychological profiles of young men who participate regularly in either moderate or excessive activity, and to then draw conclusions and comparisons from this information. I am interested to see how prevalent the attitudes and behaviours described by Olivardia and Pope are within an area so focused and concentrated on sport such as Loughborough University, particularly whether there is a higher concentration in different groups, such as those that train at a particular gym or those who play a particular sport.

My data collection methods have been constructed by studying the works of Pope and Olivardia, particularly **‘The Adonis Complex’** and **‘Muscle Dysmorphia in Male Weight Lifters’**. I plan to begin by conducting a small number of in depth interviews, and then based on the outcomes of these interviews I will construct a survey to distribute. Both the interviews and the survey will contain a version of the ‘somatomorphic matrix’

described above, constructed of faceless, anonymous photos of a number of volunteering male subjects, displaying a range of different body shapes and sizes. The height, weight, and cross sectional areas of main muscles will be taken of each of the male photograph subjects, and both the interview and survey subjects will also be asked for similar body statistics, in order to more accurately compare their own body shape to the photos which they choose in answer to questions. The reasoning behind this test is to analyse psychiatrically how the subject views themselves and body image in general. This will give an indication as to whether their perception of reality is correct or distorted, and to what their personal attitude towards body size and shape is.

My interviews will be recorded, and I plan to include material from a number of questionnaires and surveys described and used in '**Muscle Dysmorphia in Male Weight Lifters**'. However, my interviews will not be overly formal or structured, and while I will have a list of questions that I will try to ask, I plan to let the conversation flow in order to make it as non-threatening and comfortable as possible for my subject, in the hope that this will encourage them to open up to me. I appreciate that the topics I wish to discuss may be very personal and even distressing for some men, especially to talk about face to face, and for this reason I will try not to be too direct or forceful with my questioning. These interviews will help me to put together a basic profile of a small number of young men in Loughborough, and will give me in depth and personal qualitative data to compare with the statistical analysis I will gain from my survey results. From this, I hope to gain a better understanding of the eating and exercise patterns of young men, and see if the symptoms and behaviours described by Olivardia and Pope are present.

The timetable for my project is planned as follows:

Work completed:

- Main literature researched, selected and reviewed.
- Volunteers for somatomorphic matrix photos selected.
- Disclaimer form constructed for photo subjects to sign, informing them of purpose of study and their right to withdraw at any time.
- Three photos already gathered.
- Questionnaires listed by Olivardia and Pope to be referred to have been collected.

Future work planned:

- Remaining photos for somatomorphic matrix to be taken and collected by 06.11.08
- Interviews to be conducted and analysed by 10.12.08
- Literature for sections 1, 2 and 3 to be selected and reviewed (ongoing process)
- Sections 1, 2 and 3 to be written by 12.01.09
- Surveys to be worked on continuously, constructed and distributed by 12.01.09
- Sections 4, 5 and 6 to be researched (ongoing) and written by 15.03.09
- Analysis of survey results to be conducted continuously as surveys are completed and returned.

Appendix B – Interview Layout

Basic Details:

- Age
- Height (Ft & Inches)
- Weight (Kg)
- Measurements (Chest, Waist, Biceps, Quads)
- Ethnic / Racial Grouping
- Home Town
- Physical Activity (Hrs/wk)
- Main Sport

Somatomorphic Matrix:

- Pick the photo which you think best represents your own body (*why?*)
- Pick the photo which you most aspire to look like (*why? How would you do this?*)
- Pick the photo which you think would appeal most to the opposite sex (*why? Do 2&3 match?*)
- Pick the photo which appeals to you least (*why? How would you change this?*)
- Pick the photo which you think best represents the average male body

Eating: (*Discuss subjects attitude towards their eating behaviour, do they view it as normal?*)

- Describe your eating habits on an average day.
- Are you aware of the calorie content of your food? If not, why not? If so, are you strict with your intake, do you follow a calorie controlled diet?
- Do you follow specific rules with food?
- What do you know about the main food groups, do you employ this knowledge with your own diet?
- What is your view of carbohydrates?
- What is your view of protein?
- Do you feel that your eating habits play a major part in your day? Do your eating habits affect your decisions (for example to socialise etc)
- Do you ever feel preoccupied with thoughts of food?
- Do you indulge in any dietary behaviour? If so, describe.
- If you were attempting to lose weight, how would you do it?
- If you were attempting to gain weight, how would you do it?

Exercise:

- Build on physical activity information given in basic details.
- What sort of physical activity do you participate in ie team sports, athletic events or gym training?
- Team sports – discuss. What sport, what is the team like (close knit?) how often do you train, what type of training, how does the team get motivated, what is the purpose or intended outcome of the training?

- Gym training – discuss. How often do you go, for how long, what exercises do you perform, what percentage of your work out is CV compared to weights training, why do you choose to exercise in that way, do you train with a partner or alone (discuss).
- What is your main reason for exercising (ie sport, health, image)
- What, if anything, do you use as inspiration or guidance for your exercise regime (ie magazines, websites, other people)

General Knowledge:

- What is your perception of health vs fitness (what is the difference, is there a difference?)
- What do you perceive the relationship to be between physical activity and mortality/health?
- What type of physical activity do you believe is the most beneficial to the body?
- Do you know what your RDA is for the main food groups?
- Do you know your RDA for calories?
- Do your eating habits reflect these numbers? If not, what do you think of this, is it healthy or unhealthy, is it a bad thing?
- What do you know about eating disorders and the related behaviour?
- What is your definition of the word 'masculinity'?
- What do you perceive as being 'masculine'?
- What do you perceive as being 'feminine'?

Appendix C

Somatomorphic Matrix



Photo A



Photo B



Photo C



Photo D



Photo E



Photo F



Photo G



Photo H



Photo I



Photo J



Photo K



Photo L



Photo M

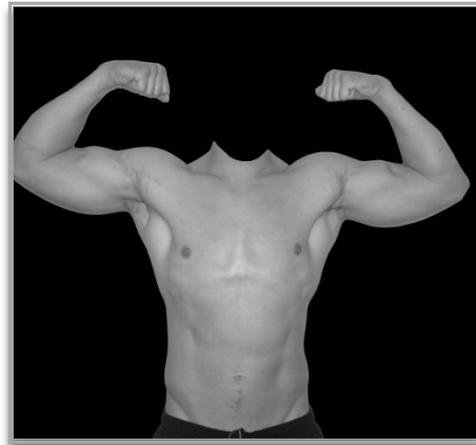


Photo N



Photo O

Photo Volunteer Statistics

| Volunteers | Measurements | | Cross Sectional Areas (inches) | | | | |
|------------|------------------------|-------------|--------------------------------|-------|---------------|--------------|-------|
| | Height (feet & inches) | Weight (kg) | Chest | Waist | Bicep Relaxed | Bicep Tensed | Quads |
| A | 5' 9" | 96 | 50 | 32 | 18.5 | 19 | 28 |
| B | 5' 10" | 95 | 42 | 36 | 15 | 16 | 25 |
| C | 6' 2" | 105 | 44 | 37 | 15.3 | 16.5 | 27 |
| D | 6' | 89 | 40.8 | 36 | 13 | 14.6 | 25 |
| E | 5' 11" | 94 | 41 | 37 | 11.8 | 14.5 | 23.5 |
| F | 6' | 114.8 | 45.8 | 43 | 15.1 | 16.6 | 25 |
| G | 6' | 81.5 | 39 | 33 | 12 | 13.5 | 20 |
| H | 5' 8" | 79 | 39 | 33 | 12.5 | 14.8 | 21 |
| I | 6' 2" | 79 | 39 | 33 | 12.1 | 14.3 | 21.4 |
| J | 6' 2" | 82 | 38 | 32 | 12.5 | 14 | 21.6 |
| K | 6' | 87.3 | 38.5 | 34 | 13.7 | 14.5 | 23 |
| L | 6' 1" | 102 | 47.2 | 38.4 | 14.5 | 16.6 | 24.5 |
| M | 6' 2" | 100 | 41.4 | 38 | 14.3 | 15.4 | 23 |
| N | 6' | 95.3 | 40.2 | 35 | 15.3 | 16.3 | 25 |
| O | 6' | 87 | 40.5 | 37.6 | 12.4 | 13.6 | 23.1 |

Disordered Eating and Exercise Behaviour amongst Young Men

Appendix D – Tables of Data

Table 1 – Raw Data

| Subject | Age | Height (cm) | Current Weight (kg) | Highest Adult Weight (kg) | Lowest Adult Weight (kg) | Education | Race | Sport | Level |
|---------|-----|-------------|---------------------|---------------------------|--------------------------|-------------------|-----------------------|----------------|-----------------------|
| 1 | 19 | 190.5 | 86 | 88 | 83 | Undergraduate | White Caucasian | Running | Casual |
| 2 | 22 | 186 | 98.4 | 107 | 92 | Undergraduate | White Caucasian | Rugby Union | IMS |
| 3 | 22 | 185.42 | 90 | 95 | 88 | Undergraduate | White Caucasian | Rugby Union | IMS |
| 4 | 25 | 183 | 97 | 107 | 82 | Post Graduate | White Caucasian | Rugby Union | Casual |
| 5 | 21 | 189 | 84 | Unknown | Unknown | Undergraduate | Unknown | Rugby Union | Regional |
| 6 | 21 | 167.64 | 95 | 97 | 80 | Undergraduate | Cypriot | Body Building | Amateur |
| 7 | 22 | 182.88 | 77.85 | 82.8 | 65.25 | Undergraduate | White Caucasian | Running | Casual |
| 8 | 23 | 183 | 85 | 89 | 66 | Post Graduate | White Caucasian | Unknown | Unknown |
| 9 | 23 | 173.99 | 81 | 86 | 70 | Undergraduate | White Caucasian | Badminton | Casual |
| 10 | 25 | 177 | 111 | 118 | 101 | Undergraduate | White Caucasian | Rugby Union | Regional |
| 11 | 23 | 175.26 | 82 | 82 | 73 | Undergraduate | White Caucasian | Weight Lifting | Casual |
| 12 | 23 | 177.8 | 84 | 85 | 10 | Undergraduate | Aisian White | Rugby Union | University/Academy |
| 13 | 19 | 202 | 91 | 95 | 82 | Undergraduate | White Caucasian | Basketball | IMS |
| 14 | 21 | 182.88 | 101 | 118 | 101 | Undergraduate | White Caucasian | Rugby League | Student International |
| 15 | 19 | 182.88 | 99 | 112 | 85 | Undergraduate | White Caucasian | Taekwondo | International |
| 16 | 19 | 182.88 | 83 | 86 | 80 | Undergraduate | Unknown | Rugby Union | IMS |
| 17 | 20 | 180 | 95 | 103 | 89 | Undergraduate | White Caucasian | Rugby Union | Regional |
| 18 | 30 | 177.8 | 83.25 | 91.35 | 69.3 | Post Graduate | White Caucasian | Weight Lifting | Casual |
| 19 | 20 | 172.72 | 64 | 67 | 60 | Undergraduate | White Caucasian | Football | Regional |
| 20 | 24 | 185 | 89 | 95 | 82 | Undergraduate | White Caucasian | Rugby Union | National |
| 21 | 23 | 178 | 74 | 79 | 68 | Undergraduate | White Caucasian | Cycling | Intrauniversity |
| 22 | 24 | 175.26 | 76.95 | 78.75 | 72.9 | Post Graduate | White Caucasian | Rugby Union | Intrauniversity |
| 23 | 21 | 187.96 | 100 | 107 | 95 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 24 | 21 | 193 | 100 | 103 | 96 | Undergraduate | Black Caribbean White | Rugby Union | International |
| 25 | 19 | 194.31 | 95 | 96 | 90 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 26 | 23 | 185.42 | 97 | 114 | 95 | Post Graduate | White Caucasian | Weight Lifting | Casual |
| 27 | 20 | 180.34 | 88 | 88 | 80 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 28 | 21 | 180.34 | 87.3 | 101.2 | 87.3 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 29 | 19 | 190.5 | 88.2 | 91.35 | 85.05 | Undergraduate | White Caucasian | Golf | Intrauniversity |
| 30 | 21 | 175.26 | 69.3 | 75.6 | 69.3 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 31 | 25 | 172.72 | 85.05 | 91.35 | 81.9 | Further Education | White Caucasian | Rugby Union | Regional |
| 32 | 20 | 187.96 | 80.55 | 96.3 | 76.5 | Undergraduate | White Caucasian | Cycling | Intrauniversity |
| 33 | 20 | 182 | 68.4 | 70.1 | 68.2 | Undergraduate | Black | Kickboxing | Intrauniversity |
| 34 | 20 | 170.18 | 81.9 | 94.5 | 81.9 | Undergraduate | White Caucasian | Body Building | Casual |
| 35 | 23 | 180.34 | 98 | 106 | 90 | Graduate | White Caucasian | Marshal Arts | Casual |
| 36 | 20 | 180.34 | 75 | 78 | 70 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 37 | 20 | 172.72 | 101 | 104 | 86 | Undergraduate | White Caucasian | Rugby Union | International |
| 38 | 21 | 182.88 | 110 | 128 | 110 | Undergraduate | White Caucasian | Rugby Union | National |
| 39 | 20 | 180 | 100 | 108 | 85 | Undergraduate | White Caucasian | Rugby Union | Intrauniversity |
| 40 | 20 | 165.1 | 63 | 74.25 | 60.75 | Undergraduate | Unknown | Swimming | Casual |
| 41 | 23 | 185.42 | 91 | 93 | 89 | Undergraduate | White Caucasian | Rugby League | Student International |
| 42 | 27 | 174 | 72 | 96 | 67 | Undergraduate | White Caucasian | Rowing | Intrauniversity |
| 43 | 20 | 167 | 47 | 60 | 40 | Undergraduate | Unknown | Orienteering | International |
| 44 | 24 | 185.42 | 91 | 99 | 86 | Post Graduate | White Caucasian | Rugby Union | National |
| 45 | 19 | 176 | 69.8 | 69.8 | 63.5 | Undergraduate | White Caucasian | Rugby League | Intrauniversity |
| 46 | 20 | 190.5 | 96.3 | 98.1 | 83.7 | School Leaver | White Caucasian | Rugby Union | National |
| 47 | 26 | 181 | 78.75 | 81.9 | 75.6 | Graduate | White Caucasian | Rugby Union | National |
| 48 | 21 | 175.26 | 92 | Unknown | Unknown | Undergraduate | White Caucasian | Rugby Union | County |
| 49 | 22 | 177.8 | 85.05 | 97.65 | 77.85 | Undergraduate | White Caucasian | Body Building | Regional |
| 50 | 20 | 182 | 109 | 109 | 101 | Undergraduate | White Caucasian | Rugby Union | County |
| 51 | 19 | 185.42 | 99 | 100 | 78 | Undergraduate | Unknown | Body Building | Casual |
| 52 | 21 | 181 | 95 | 100 | 78 | Undergraduate | White Caucasian | Cricket | Regional |
| 53 | 21 | 198 | 115 | 121 | 110 | Undergraduate | White Caucasian | Rugby Union | Regional |
| 54 | 19 | 172.72 | 75 | Unknown | Unknown | Undergraduate | White Caucasian | Cricket | Casual |
| 55 | 20 | 172.72 | 78 | 83 | 75 | Undergraduate | Aisian White | Rugby Union | Intrauniversity |
| 56 | 21 | 175.26 | 75.6 | 75.6 | 69.3 | Undergraduate | White Caucasian | Hockey | Intrauniversity |
| 57 | 22 | 187.96 | 101.7 | 113.4 | 90.45 | Undergraduate | White Caucasian | Rugby Union | International |
| 58 | 23 | 190.5 | 90 | 95 | 77 | Undergraduate | White Caucasian | Rugby Union | International |
| 59 | 20 | 185.42 | 108 | 120 | 90 | Undergraduate | White Caucasian | Weight Lifting | Casual |
| 60 | 25 | 168 | 58 | 58 | 53 | Graduate | White Caucasian | Skiing | Amateur |
| 61 | 21 | 176.53 | 85.05 | 85.05 | 66.15 | Post Graduate | White Caucasian | Rugby Union | Intrauniversity |

| | Age | Height (cm) | Current Weight (kg) | Highest Adult Weight (kg) | Lowest Adult Weight (kg) |
|--------|-----|-------------|---------------------|---------------------------|--------------------------|
| Mean | 22 | 181 | 87 | 94 | 79 |
| Mode | 20 | 185 | 95 | 95 | 82 |
| Median | 21 | 181 | 88 | 95 | 81 |

Disordered Eating and Exercise Behaviour amongst Young Men

Table 2 – EAT-26

| Column1 | Always (3) | Usually (2) | Often (1) | Sometimes (0) | Rarely (0) | Never (0) | Response Count |
|---|---------------|----------------|--------------|------------------|---------------|--------------|-------------------|
| I am terrified about being overweight | 5.10% | 6.80% | 15.30% | 22.00% | 23.70% | 27.10% | 59 |
| I avoid eating when I'm hungry | 0.00% | 1.70% | 1.70% | 6.80% | 39.00% | 50.80% | 59 |
| I find myself preoccupied with food | 6.80% | 8.50% | 15.30% | 28.80% | 27.10% | 13.60% | 59 |
| I have gone on eating binges where I feel I may not be able to stop | 0.00% | 3.40% | 5.10% | 18.60% | 23.70% | 49.20% | 59 |
| I cut my food into small peices | 5.10% | 1.70% | 5.10% | 27.10% | 23.70% | 37.30% | 59 |
| I am aware of the calorie content of foods I eat | 19.00% | 27.60% | 17.20% | 13.80% | 17.20% | 5.20% | 58 |
| I particularly avoid food with a high carbohydrate content | 6.80% | 1.70% | 8.50% | 18.60% | 39.00% | 25.40% | 59 |
| I feel that others would prefer if I ate more | 0.00% | 1.70% | 0.00% | 1.70% | 25.40% | 71.20% | 59 |
| I vomit after I have eaten | 0.00% | 0.00% | 0.00% | 5.20% | 3.40% | 91.40% | 58 |
| I feel extremely guilty after eating | 0.00% | 6.80% | 5.10% | 18.60% | 27.10% | 42.40% | 59 |
| I am preoccupied with a desire to be thinner | 0.00% | 8.50% | 15.30% | 18.60% | 25.40% | 32.20% | 59 |
| I think about burning up calories when I exercise | 19.00% | 24.10% | 13.80% | 19.00% | 10.30% | 13.80% | 58 |
| Other people think I'm too thin | 0.00% | 1.70% | 3.40% | 6.80% | 23.70% | 64.40% | 59 |
| I am preoccupied with the thought of having fat on my body | 6.80% | 16.90% | 13.60% | 27.10% | 23.70% | 11.90% | 59 |
| I take longer than others to eat my meals | 1.70% | 5.10% | 5.10% | 16.90% | 47.50% | 23.70% | 59 |
| I avoid foods with sugar in them | 1.70% | 6.80% | 13.60% | 27.10% | 30.50% | 20.30% | 59 |
| I eat diet foods | 0.00% | 5.30% | 8.80% | 26.30% | 31.60% | 28.10% | 57 |
| I feel that food controls my life | 0.00% | 10.20% | 6.80% | 15.30% | 25.40% | 42.40% | 59 |
| I display self-control around food | 8.50% | 18.60% | 20.30% | 30.50% | 16.90% | 5.10% | 59 |
| I feel that others pressure me to eat | 1.70% | 0.00% | 5.10% | 5.10% | 20.30% | 67.80% | 59 |
| I give too much time and thought to food | 8.60% | 5.20% | 17.20% | 29.30% | 27.60% | 12.10% | 58 |
| I feel uncomfortable after eating sweets | 8.60% | 3.40% | 13.80% | 20.70% | 31.00% | 22.40% | 58 |
| I engage in dieting behaviour | 5.20% | 5.20% | 22.40% | 20.70% | 22.40% | 24.10% | 58 |
| I like my stomach to be empty | 0.00% | 3.40% | 8.60% | 12.10% | 27.60% | 48.30% | 58 |
| I have the impulse to vomit after meals | 0.00% | 1.70% | 0.00% | 3.40% | 13.60% | 81.40% | 59 |
| I enjoy trying new rich foods | 13.60% | 25.40% | 27.10% | 22.00% | 10.20% | 58.00% | 59 |

Table 3 – Drive for Muscularity Scale

| Column1 | Always | Very Often | Often | Sometimes | Rarely | Never | Response Count |
|---|--------|------------|--------|-----------|--------|--------|----------------|
| I wish that I were more muscular | 19.30% | 35.10% | 21.10% | 22.80% | 1.80% | 0.00% | 57 |
| I lift weights to build up muscle | 33.30% | 29.80% | 15.80% | 10.50% | 5.30% | 5.30% | 57 |
| I use protein or energy supplements | 33.30% | 22.80% | 12.30% | 8.80% | 5.30% | 17.50% | 57 |
| I drink weight gain or protein shakes | 30.90% | 21.80% | 10.90% | 14.50% | 3.60% | 18.20% | 55 |
| I try to consume as many calories as I can in a day | 8.80% | 12.30% | 8.80% | 17.50% | 29.80% | 22.80% | 57 |
| I feel guilty if I miss a weight training session | 15.80% | 17.50% | 21.10% | 19.30% | 15.80% | 10.50% | 57 |
| I think I would feel more confident if I had more muscle mass | 19.30% | 15.80% | 17.50% | 15.80% | 17.50% | 14.00% | 57 |
| Other people think that I work out with weights too often | 14.30% | 7.10% | 5.40% | 17.90% | 19.60% | 35.70% | 56 |
| I think I would look better if I gained 10lbs in bulk | 14.50% | 23.60% | 14.50% | 10.90% | 20.00% | 16.40% | 55 |
| I think about taking anabolic steroids | 12.50% | 10.70% | 5.40% | 12.50% | 8.90% | 50.00% | 56 |
| I think that I would feel stronger if I gained a little more muscle mass | 28.60% | 26.80% | 17.90% | 12.50% | 8.90% | 5.40% | 56 |
| I think that my weight training schedule interferes with other aspects of my life | 8.90% | 10.70% | 16.10% | 19.60% | 25.00% | 19.60% | 56 |
| I think that my arms are not muscular enough | 14.30% | 30.40% | 16.10% | 17.90% | 14.30% | 7.10% | 56 |
| I think that my chest is not muscular enough | 23.20% | 19.60% | 23.20% | 17.90% | 7.10% | 8.90% | 56 |
| I think that my legs are not muscular enough | 19.60% | 25.00% | 17.90% | 8.90% | 8.90% | 19.60% | 56 |

Disordered Eating and Exercise Behaviour amongst Young Men

Table 4 – EDET and EDE-Q5

| Column1 | Never True | Rarely True | Sometimes True | Often True | Usually True | Always True | Rating Average | Response Count |
|---|------------|-------------|----------------|------------|--------------|-------------|----------------|----------------|
| I am happy with my muscular size | 10.90% | 27.30% | 23.60% | 25.50% | 12.70% | 0.00% | 2.02 | 55 |
| If I feel I have not eaten enough, I worry what effect this will have upon my performance | 12.70% | 12.70% | 21.80% | 18.20% | 21.80% | 12.70% | 2.62 | 55 |
| I like my days to be organised and structured, of which exercise is just one part | 7.30% | 9.10% | 30.90% | 14.50% | 23.60% | 14.50% | 2.82 | 55 |
| I feel that my exercise routine can interfere with other aspects of my life | 5.50% | 36.40% | 12.70% | 12.70% | 21.80% | 10.90% | 2.42 | 55 |
| I exercise for an increased sporting performance | 9.10% | 3.60% | 14.50% | 16.40% | 38.20% | 18.20% | 3.25 | 55 |
| I exercise to burn calories and lose weight | 18.20% | 21.80% | 25.50% | 12.70% | 16.40% | 5.50% | 2.04 | 55 |
| I feel happier and/or more positive after I exercise | 1.80% | 0.00% | 9.10% | 16.40% | 23.60% | 49.10% | 4.07 | 55 |
| I exercise to increase my strength | 0.00% | 9.10% | 12.70% | 16.40% | 41.80% | 20.00% | 3.51 | 55 |
| I feel intimidated by others when weights training | 34.50% | 20.00% | 29.10% | 5.50% | 7.30% | 3.60% | 1.42 | 55 |
| I feel pressurised to take part in cardiovascular exercise | 16.40% | 38.20% | 32.70% | 7.30% | 5.50% | 0.00% | 1.47 | 55 |
| I follow a set routine for my exercise sessions | 1.80% | 10.90% | 30.90% | 25.50% | 18.20% | 12.70% | 2.85 | 55 |
| I structure my day around my exercise routine | 10.90% | 27.30% | 21.80% | 16.40% | 10.90% | 12.70% | 2.27 | 55 |
| If I feel I have eaten too much I will do more exercise | 23.60% | 21.80% | 21.80% | 14.50% | 14.50% | 3.60% | 1.85 | 55 |
| I am happy with my body size | 10.90% | 23.60% | 25.50% | 23.60% | 16.40% | 0.00% | 2.11 | 55 |
| I exercise excessively | 23.60% | 25.50% | 23.60% | 5.50% | 14.50% | 7.30% | 1.84 | 55 |
| My weekly pattern of exercise is repetitive | 5.50% | 23.60% | 25.50% | 18.20% | 16.40% | 10.90% | 2.49 | 55 |
| I exercise to increase fitness and endurance | 5.50% | 10.90% | 20.00% | 20.00% | 32.70% | 10.90% | 2.96 | 55 |
| If I cannot exercise I feel low or depressed | 9.30% | 24.10% | 18.50% | 16.70% | 16.70% | 14.80% | 2.52 | 54 |
| I exercise to increase my body size | 11.10% | 5.60% | 22.20% | 25.90% | 18.50% | 16.70% | 2.85 | 54 |
| I exercise to gain weight and increase muscle mass | 7.40% | 11.10% | 18.50% | 20.40% | 29.60% | 13.00% | 2.93 | 54 |
| I feel pressurised to be strong and participate in weights training | 16.40% | 27.30% | 14.50% | 20.00% | 20.00% | 1.80% | 2.05 | 55 |
| I exercise to improve my appearance | 1.80% | 3.60% | 18.20% | 23.60% | 30.90% | 21.80% | 3.44 | 55 |
| I feel like I've let myself down if I miss an exercise session | 5.50% | 14.50% | 29.10% | 18.20% | 18.20% | 14.50% | 2.73 | 55 |
| If I cannot exercise worry that I will lose muscle mass | 11.10% | 11.10% | 24.10% | 22.20% | 14.80% | 16.70% | 2.69 | 54 |
| I do not exercise to increase muscle mass | 27.30% | 32.70% | 20.00% | 12.70% | 3.60% | 3.60% | 1.44 | 55 |
| I feel my muscular size needs to increase | 5.50% | 9.10% | 20.00% | 21.80% | 25.50% | 18.20% | 3.07 | 55 |
| I exercise for fitness rather than strength | 5.50% | 30.90% | 32.70% | 14.50% | 14.50% | 1.80% | 2.07 | 55 |
| If I miss an exercise session I will try and make up for it when I next exercise | 9.10% | 25.50% | 18.20% | 21.80% | 14.50% | 10.90% | 2.40 | 55 |
| I feel that an increase in body/muscle size is unimportant | 21.80% | 43.60% | 20.00% | 9.10% | 3.60% | 1.80% | 1.35 | 55 |
| I feel less anxious after I exercise | 14.50% | 12.70% | 14.50% | 25.50% | 23.60% | 9.10% | 2.58 | 55 |
| If I cannot exercise I feel agitated and/or irritable | 7.50% | 13.20% | 30.20% | 15.10% | 24.50% | 9.40% | 2.64 | 53 |
| If I cannot exercise I worry that I will gain weight | 18.50% | 20.40% | 25.90% | 16.70% | 11.10% | 7.40% | 2.04 | 54 |
| I do not exercise to be slim | 20.00% | 21.80% | 20.00% | 9.10% | 18.20% | 10.90% | 2.16 | 55 |
| I feel guilty if I miss an exercise session | 7.30% | 14.50% | 16.40% | 21.80% | 23.60% | 16.40% | 2.89 | 55 |
| I enjoy exercising | 1.80% | 3.60% | 12.70% | 10.90% | 36.40% | 34.50% | 3.80 | 55 |
| If I cannot exercise I feel angry and/or frustrated | 3.60% | 20.00% | 21.80% | 12.70% | 21.80% | 20.00% | 2.89 | 55 |

Disordered Eating and Exercise Behaviour amongst Young Men

Table 5 – Individual Scores for EAT-26 and DMS

| Subject | EAT-26 | | | | Drive For Muscularity Scale | | |
|---------|-------------|-----------|------------------------------|--------------|-----------------------------|-------------------------------|---|
| | Total Score | Dieting | Bulimia & Food Preoccupation | Oral Control | Total Score | Muscle Development Behaviours | Muscularity Orientated Body Image Attitudes |
| 1 | 7 | 4 | 1 | 2 | 41 | 10 | 30 |
| 2 | 16 | 12 | 2 | 2 | 70 | 35 | 31 |
| 3 | 11 | 8 | 1 | 2 | 53 | 28 | 22 |
| 4 | 4 | 1 | 3 | 0 | 67 | 32 | 30 |
| 5 | 2 | 0 | 0 | 2 | 27 | 7 | 19 |
| 6 | 5 | 1 | 3 | 1 | 75 | 37 | 36 |
| 7 | 1 | 0 | 1 | 0 | 35 | 15 | 19 |
| 8 | 14 | 11 | 2 | 1 | 43 | 8 | 34 |
| 9 | 8 | 6 | 1 | 1 | | | |
| 10 | 6 | 4 | 1 | 1 | 50 | 24 | 21 |
| 11 | 12 | 10 | 2 | 0 | 68 | 29 | 34 |
| 12 | 3 | 1 | 0 | 2 | 42 | 25 | 16 |
| 13 | 7 | 3 | 0 | 4 | 49 | 16 | 32 |
| 14 | 2 | 1 | 0 | 1 | 53 | 23 | 27 |
| 15 | 22 | 18 | 2 | 2 | 58 | 26 | 30 |
| 16 | 9 | 5 | 0 | 4 | 82 | 40 | 40 |
| 17 | 7 | 3 | 2 | 2 | 28 | 18 | 9 |
| 18 | 13 | 7 | 3 | 2 | 37 | 20 | 15 |
| 19 | 2 | 1 | 0 | 1 | 42 | 17 | 19 |
| 20 | 3 | 3 | 0 | 0 | 56 | 30 | 25 |
| 21 | 6 | 5 | 0 | 1 | 38 | 15 | 22 |
| 22 | 6 | 3 | 0 | 3 | 51 | 13 | 37 |
| 23 | 3 | 2 | 0 | 1 | 38 | 22 | 13 |
| 24 | 5 | 2 | 0 | 3 | 29 | 14 | 14 |
| 25 | | | | | | | |
| 26 | 6 | 5 | 0 | 1 | 76 | 36 | 37 |
| 27 | 1 | 0 | 0 | 1 | 53 | 28 | 24 |
| 28 | 12 | 7 | 1 | 4 | 64 | 26 | 36 |
| 29 | 4 | 4 | 0 | 0 | 55 | 39 | 28 |
| 30 | 10 | 5 | 1 | 4 | 73 | 31 | 41 |
| 31 | 20 | 13 | 4 | 2 | 62 | 29 | 28 |
| 32 | 12 | 7 | 2 | 2 | 49 | 21 | 27 |
| 33 | 0 | 0 | 0 | 0 | 29 | 11 | 16 |
| 34 | 32 | 19 | 5 | 8 | 71 | 36 | 29 |
| 35 | 3 | 3 | 0 | 0 | 69 | 28 | 36 |
| 36 | 1 | 0 | 0 | 1 | 51 | 17 | 33 |
| 37 | 3 | 3 | 0 | 0 | | | |
| 38 | 20 | 13 | 3 | 4 | 67 | 31 | 30 |
| 39 | 9 | 3 | 2 | 4 | 74 | 34 | 37 |
| 40 | 16 | 13 | 0 | 3 | | | |
| 41 | 2 | 0 | 2 | 0 | 38 | | |
| 42 | 8 | 5 | 1 | 2 | 41 | 17 | 21 |
| 43 | 47 | 23 | 8 | 16 | 21 | 7 | 13 |
| 44 | 5 | 4 | 0 | 1 | 47 | 27 | 20 |
| 45 | 3 | 2 | 0 | 1 | 77 | 34 | 39 |
| 46 | 9 | 6 | 2 | 1 | 89 | 42 | 41 |
| 47 | 2 | 2 | 0 | 0 | | | |
| 48 | 3 | 1 | 2 | 0 | 52 | 21 | 30 |
| 49 | 24 | 14 | 7 | 3 | 86 | 40 | 40 |
| 50 | 1 | 0 | 0 | 1 | 46 | 29 | 22 |
| 51 | 14 | 5 | 7 | 2 | 88 | 40 | 42 |
| 52 | 7 | 5 | 0 | 2 | 37 | 16 | 29 |
| 53 | | | | | | | |
| 54 | 25 | 23 | 0 | 2 | 17 | 8 | 8 |
| 55 | 9 | 7 | 2 | 0 | 82 | 39 | 37 |
| 56 | 8 | 6 | 2 | 0 | 61 | 31 | 28 |
| 57 | 11 | 9 | 2 | 0 | 68 | 34 | 35 |
| 58 | 1 | 1 | 0 | 0 | 66 | 31 | 31 |
| 59 | 33 | 21 | 7 | 5 | 83 | 39 | 39 |
| 60 | 14 | 10 | 2 | 2 | | | |
| 61 | 8 | 3 | 4 | 0 | 55 | 32 | 22 |

Key:

| | |
|---------------------------------|--|
| Blue Bold Italic Numbers | Reasonably high scores worthy of discussion |
| Red Bold Italic Numbers | Significantly high scores worthy of discussion |
| | Incomplete answers |