

Muscle Dysmorphia: Appearance, Diagnostic Approaches, Research and Treatment

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Abstract

Fitness training and corresponding forms of health centered lifestyles have been integrated into everyday life as a common and societal accepted phenomenon nowadays. It is furthermore associated with being healthy and through societal and industrial influences, a specific muscular and lean body image has become synonymous with fitness, sports and health. This has foremost affected male body image concerns. In recent years, the diagnostic concept of Muscle Dysmorphia (MD) emerged, addressing this relatively new, male oriented psychological disorder. Key features of MD are excessive resistance training routines combined with rigid eating or dietary habits, body image dissatisfaction, distorted body perception and in many cases androgenic anabolic steroid abuse. While the number of men affected by eating- and body image disorders are rising, societal acceptance and understanding of male body issues is still low. At the same time, research, treatment strategies and prevention programs are underdeveloped compared to efforts in female counterparts. This article highlights the current discussion about diagnostic features of MD, its appearance, state of research, prevention and treatment.

Keywords: *Muscle Dysmorphia; Eating Disorders in Men; Body Image; Anabolic Androgenic Steroids*

Abbreviations

MD: Muscle Dysmorphia; AAS: Anabolic Androgenic Steroids; AN: Anorexia Nervosa; BDD: Body Dysmorphic Disorder; BN: Bulimia Nervosa; BED: Binge Eating Disorder; BB: Bodybuilding

Introduction

In the past 40 years a rather substantial increase of awareness and commercialization within the fitness-industry has been observed. It is therefore not surprising that fitness centers and fitness-oriented lifestyles, in various forms, have become an omnipresent part of society and everyday life in western culture. With this comes a new phenomenon which can be observed to a rising extent: the negative emotional or psychological effect or impact on people, due to the disturbance of their training habits and meal intake. The people affected by this phenomenon are mostly men who engage in rigid training practices which are often associated with strict dietary behaviour. Daily training routines and other weight and body image related behaviours become the primary focus in all spheres of everyday life including education, professional life, and social life where family and friends are being neglected. Furthermore, in many of these young fitness athletes high body concerns about muscularity and high body dissatisfaction can be observed. Body appearance is constantly checked in

the mirror, often several hours a day and at the same time body exposure is avoided due to a high grade of shame towards one's own body. In its most dangerous and advanced form individuals start consuming illegal substances (i.e. anabolic androgenic steroids, AAS) with drastic side effects on physical and psychological health. This not only raises questions about the boundaries of a healthy weight training and fitness lifestyle, but further leads to assumptions about new forms of eating- and body dysmorphic disorders, its origins and factors influencing this sometimes risky health related trend.

In the year 2000 Harrison G. Pope published his book "The Adonis Complex" [1] and raised awareness of a new emerging problem, i.e. an increase in body dissatisfaction, particularly in younger men, often combined with excessive gym-training routines. He defined new diagnostic criterias, emphasizing two dominant aspects he observed in affected men: concerns about muscle size and/or muscle definition. His early literature utilised new terminology describing the phenomena: Reverse Anorexia, Bigorexia (both leaned on knowledge and diagnostic criterias of anorexia nervosa (AN) but at the same time focusing more on eating related problems). With respect to the high amount of body dissatisfaction and distorted perception of one's own body, earlier research in this field ended up using the term Muscle Dysmorphia (MD) [2], which is nowadays commonly used when describing this mixture of excessive weight training, rigid eating habits and body shape- and weight concerns. To date, the DSM-IV subsumarizes MD in the category of body dysmorphic disorders (BDD), which are part of the obsessive compulsive disorders spectrum [3]. This is due to the high amount of repetitive behaviours which is a central aspect of MD, be it in terms of training- and eating routines or frequent body checking behaviours. Yet, the high overlap with eating disorders such as AN, bulimia nervosa (BN) and binge eating disorder (BED) leads to questions as to whether or not this classification is still acceptable [4-6]. However, in clinical practice individuals might show a variety of muscular- and/or thinnes oriented behaviors and it remains challenging to distinguish between a healthy lifestyle and disordered eating- and training habits [7].

Prevalence and gender distribution

An indication of prevalence rates is still difficult to establish due to a high selectivity of samples studied or a sometimes unclear definition of MD in subjects under study [8,9]. Overall, existing prevalence data show a higher percentage of men than woman being affected by MD symptomatology. Rates indicate that up to 75% of subjects concerned are male [2,10]. Furthermore, it seems that men engaging in gym training routines are more prone to be affected by MD with approximately 10% to 20% of people in this subgroup showing symptoms of MD [11,12]. Whereas homosexual men are more likely to have an eating disorder from the spectrum of AN, BN or BED, it seems that homosexual and heterosexual men do not differ in the likelihood of developing MD [13-15]. Generally speaking, eating disorders in men have been overlooked to a large extent in the past leading to the assumption that men are less likely to develop an eating disorder, partly due to earlier diagnostic criteria which were focusing solely on females [16]. Additionally, there is a shortage, and sometimes even absence, of peer reviewed, scientific research, in the field of eating disorders among men [17]. This has led to mostly female oriented research, diagnostics and treatment approaches [18]. There is still a substantial backlog in development of male oriented diagnostic tools leading to a misdetection of disordered eating and body related problems in men [19,20]. In recent years, validated diagnostic instruments for MD have been published [21-24], leading to some improvement of diagnostics in the field of muscular- and often male oriented eating- and body related problems. Yet, in the past decade, the number of men with pathological eating behaviors have risen with prevalence rates in clinical settings reported between 25% up to 67% being male subjects with disordered eating [25-27]. Regarding the occurrence of eating disorders, BED is the most studied eating disorder in males and at the same time showing the least gender difference in prevalence rates [28,29]. It might be worth noting that food binges are an often observed correlation in men with symptoms of MD [30,31]. Specific and strict diet rules for muscle building and/or loss of body fat combined with a high overall stress with body image and training habits often fuel food cravings and result in a loss of control over eating behaviour. This leads to assumptions that men with MD might often show additional symptoms of BED as well as AN [4]. In fact, muscular oriented body dissatisfaction and related behaviours, associated with MD, seem to be an important aspect of eating disorders in men, and therefore in light of the increase in the number of men suffering from such problems, disprove assumptions of gender differences in the occurrence of eating disorders [16,18].

Bodybuilding, AAS abuse and MD

Bodybuilding (BB) can be seen as the most demonstrative form of a muscular orientated lifestyle, both in terms of appearance and routine-based habits [32]. Historically, BB existed as a subculture, taking place in small and often half improvised training centers. Societal acceptance of BB was low until the late 70's. At that time the Hollywood Film industry promoted several prominent bodybuilders such as Arnold Schwarzenegger and Sylvester Stallone, making BB more known and prominent in society [33]. The above mentioned period marks the starting point of the current and widely accepted muscle-and fitness phenomenon. It is only within the last 20 years, since the late 1990's, that research on BB and its descendants began to more closely study the development and influence of a muscle oriented lifestyle on individuals. Research on MD has in many cases been predominantly focused on bodybuilders [34]. This might lead to the conclusion that BB per se is a disorder and might lead to a dangerous misconception of MD and the person concerned respectively [34]. From a methodological point of view the definition of BB varies with some studies defining BB by a certain amount of training [35,36] or participation in BB contests [36-38]. This might often lead to a distortion in subjects under study [39]. Typical MD behaviours include a high and repetitive amount of resistance training, which is a core feature of BB as well. Results in research concerning MD in BB are mixed with some studies showing a high extend of MD in bodybuilders [34,36] whereas others do not [38]. Therefore, researchers might study people with MD who display a high amount of BB features but are not bodybuilders in the conventional sense as it originated and developed during the past century. However, BB must be seen as a central model for MD with all it's behavioral aspects. As such, a special focus lies on AAS consumption, in the case of BB it is primarily used for appearance enhancement [40]. Prevalence rates vary greatly and depend on the populations under study [40]. Estimated numbers of people having consumed AAS in the US range from 2.9 to 4 million, with up to 98% of these cases being men [41]. In Germany it is estimated that 20% of training men in fitness centers have used AAS [42]. The number of unreported cases might be higher as many people under study fear exposure or juridical consequences when admitting to AAS abuse, even in anonymous surveys [43,44]. Besides many dangerous physiological side effects such as sudden cardiac arrest or elevated risks for tumors in liver and testicals, psychological side effects can be distressing [41,45]. AAS abuse is linked to mood destabilizing effects with long term AAS consumption leading to the development of depression and short-term hypomania [45]. Risk for depression seems to be elevated even if AAS consumption has been terminated [46]. Furthermore, AAS abuse is also linked to psychotic symptoms [47]. Estimates suggest that one third of AAS abusers develop AAS dependence, which often arises through fear of loss of muscle mass and an elevated mood or enhanced self esteem resulting from AAS intake [48]. Altogether AAS abuse can be seen as one of the most important distinguishing features between devotion and pathology, especially in BB [32]. With BB comes a high degree of dedication which needs to be distinguished from pathological behaviors leading to impairment in social and occupational life as well as psychological functioning and health. Although some BB related behaviour could be seen as markers of pathological development, it is important to note that BB, even in extreme cases, should not be considered a psychological disorder.

Factors influencing MD

Regarding risk factors for MD, several relevant factors influencing the development of MD have been identified. Exposure to media which is focused on muscularity, pressure from peers already involved in resistance training and critical commentary from parents towards body image could possibly contribute to the development of MD in adolescence [49]. These factors also lead to higher levels of body dissatisfaction and act as a motivation to pursue and work towards the so called ideal body image presented by the media [49]. Body image problems, as a result of peer pressure, seem to be even higher in male than in female individuals affected by AN or BN [50]. In general, the influence of social pressure on MD seems to be crucial [51]. In addition, BMI [52], age [53] as well as the degree of orientation towards a body norm as transmitted by the media, a high influence of body image towards self esteem [54], emotion regulation difficulties [55] and attentional biases in image processing [56,57] are discussed as influencing MD symptomatology. The influence of media on the emergence of MD and body dissatisfaction in particular should be considered as highly relevant [58]. Websites and social media platforms show a large quantity of content focused on a muscular body and muscle oriented lifestyle habits, normalizing or even further promoting eating behaviours such as rigid eating practices, food binges, intake of supplements and in some cases use of AAS [59,60]. Additionally, it could

be shown that in homosexual men with symptoms of MD and body dissatisfaction a negative influence of consumption of pornographic material towards body dissatisfaction and depression exists [61], further extending the model of the media's influence on MD. Experimental studies concerning MD in men have determined a rise in body dissatisfaction and at the same time, an augmentation in drive to develop a more muscular body when confronted with images of bodybuilders and extremely muscular men [62,63]. This again highlights the importance of the consumption of fitness related content in today's media and its influence on MD. Regarding AAS consumption social comparison [49], amount of body concerns and depressive symptomatology [64] as well as belonging to social minority groups [65] are discussed as risk factors for AAS intake. In addition, consumption of legal muscle building and training enhancing food supplements is positively correlated with AAS use at a later stage [66], highlighting the importance of the development of a specific believe system, i.e. via intake of external products, training and body image are enhanced [67].

Yet, a psychological perspective alone might not lead to fully understanding ways in which the muscular ideal became as prominent as it is today [33]. Historically, societal body norms such as the muscular gods in northern mystics or athletic ideals in ancient greek art or in Japanese samurai-warriors still influence today's body perception in the respective parts of the world [68]. Also, attention should be drawn to the rise of the so-called fitness industry with a huge commercial agenda. To date, the biggest market lies in the US with revenues of over 26.6 billion EUR (30 billion USD) in 2018. In Europe, the biggest markets are located in Germany and the UK, with the German market revenue raising with 2.5% from 2017 to 2018 with a total of 5.3 Billion EUR. Memberships in Germany alone raised in the same time up to 11.09 million members which amounts to an increase of 4.5% compared to 2017 [69].

Prevention and treatment

In the field of prevention and treatment of MD and other eating- and body shape related disorders in men, research, approaches, strategies and manuals are scarce. This might with old men from searching for treatment but does not necessarily reflect the often high psychological strain that comes with it [70]. Stigmatization against men with body image problems such as MD are still high and educational work is still lacking [71,72]. Some evidence exists that guided talking sessions or a short-term program with an interview manual concerning questions about socio-cultural body norms and how one can improve body satisfaction in clinical- and non clinical settings reduce body dissatisfaction [73,74]. Regarding BDD, guidelines and treatment manuals exist [75,76] which can serve a basis for the treatment of MD e.g. mirror exposure treatment. Evaluated treatment manuals for MD are still lacking. Proposed strategies for MD include development of a comprehensive framework of MD related behaviours, cost-benefit analysis of behaviours, normalizing of eating- and training habits, cognitive restructuring of body- and training related thoughts and buildup of leisure- and everyday-activities outside of sports and nutrition [77]. Furthermore, interventions aim to reduce body related control behaviour (e.g. body checking) and avoidance. In the case of highly dysfunctional eating behaviours such as occurrence of binges, strategies to normalize eating include regular meal intake, reduction of forbidden foods as well as improvement of skills for emotion regulation and impulse control. Additionally, decoupling of self-worth and societal body norms and further improvement of self-esteem should be considered in the treatment of MD.

Conclusion

MD is a more common disorder than often presumed, predominantly affecting men. From a diagnostic point of view many difficulties exist, ranging from societal prejudices and ideas about health and fitness to a lack of diagnostic instruments. MD can occur in recreational as well as professional athletes in mild or severe forms with AAS abuse as the most dangerous expression of MD symptomatology. Some prevention strategies and therapeutic approaches exist, but MD in its full spectrum is not yet fully addressed. There is still an absence, and a significant demand for research and the development of new diagnostic standards and tools as well as treatment guidelines and prevention strategies which focus on the early onset of MD related problems, especially in men. One of the most challenging aspects in prevention and treatment probably lies in overcoming societal implications of fitness and associated health-centered lifestyles. Psychological disorders are often not associated with a healthy lifestyle and are therefore likely to be overlooked or dismissed.

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Conflict of Interest

The author declares no conflict of interest with any company or institution.

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