The Truth Underneath the Sparkle:
The Psychological and Physiological Costs of Bodybuilding

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Abstract

Female bodybuilders strive to develop a symmetrical physique which exhibits both muscular size and definition. To attain this physique, training volume is increased while energy intake is decreased, and is often done in combination with supplement use. While female bodybuilders portray an image of aesthetics, some competitors suffer from eating disorder/bodybuilder type (ED/BT), exercise dependency, muscle dysmorphia (MD), hormonal imbalances, negative health consequences from supplement abuse or misuse, and in extreme cases rhabdomyolysis. When female bodybuilders seek out medical assistance, it is imperative for a nurse to understand the psychological and physiological differences in this client population. Nurses need to understand which specific tests should be reviewed, questions to ask upon admission or assessment, as well as resources – electronic, written, and other health professionals – available for reference. This would allow a nurse to create an appropriate and effective treatment plan for a female bodybuilder and help combat some of the current healthcare limitations when providing care for this patient population.

Keywords: nursing care, female bodybuilders
Introduction

There are three divisions in female bodybuilding – bikini, figure, and physique – in which 15,000 women compete annually (Flager, 2018). Bodybuilding is a sport which judges individuals solely on physical appearance and posing ability. The major aim for a competitor is to develop a symmetrical physique which exhibits both muscular size and definition. While bodybuilders are in a hypertrophic phase for most of the year, when preparing for a competition, training volume is increased while energy intake is decreased to lower subcutaneous body fat and enhance muscular definition (Ploeg et al., 2001). Contest preparation can last anywhere from 12 to 20 weeks, and supplement use is not uncommon among female competitors. While supplements can enhance a bodybuilder’s physique, when abused, detrimental physiological effects may occur. Each year, approximately 23,005 emergency department (ED) visits result from supplement use problems, of which half involve female bodybuilders, and 2,154 result in hospitalization (Sifferlin, 2015). With bodybuilding becoming an increasingly popular sport, it is imperative to understand how women are affected both psychologically and physiologically during contest preparation so when they seek out medical assistance, optimal healthcare can be given, and healthcare staff know what to assess.

Determinants/Factors Influencing Issues

Body dissatisfaction and unhealthy eating practices are common among sports and activities that require low body fat or low body weight. Competitive bodybuilding is a sport that requires participants to be exceptionally lean and mesomorphic (Goldfield, 2009). The average American woman has a body fat percentage ranging from 25% to 31%, while a bikini competitor has a body fat percentage anywhere from 8% to 13%, and a figure or female physique competitor falls somewhere within 6% to 10%. As a result of these competitive standards, participants are at a higher risk for developing unhealthy eating practices, exercise dependency, and body dysmorphia that can result in hormonal imbalances (Leal, 2018). The high rate of eating disorders among competitors suggests that individuals with a history of body image and eating problems may gravitate towards bodybuilding to achieve a personal expectation of body weight and shape.
(Goldfield, 2009). Physiological side effects from supplement intake may occur as a result from a knowledge deficit, and/or the fact the United States Food and Drug Administration (FDA) is not required to review dietary supplement products for safety and effectiveness before entering the market (U.S. Food and Drug Administration, 2017).

**Health Consequences & A Nurse’s Role**

**Behavioral Disorders**

Women bodybuilders may suffer from an eating disorder/bodybuilder type (ED/BT), a disorder marked by high protein, high-calorie, low-fat meals eaten at regularly scheduled intervals (Mann, 2000). The following criteria is used to identify individuals with ED/BT: (1) refusal to maintain body fat at a healthy level – defined in women as the level necessary for menstruation – accompanied by a desire to maximize muscle mass; (2) intense fear of gaining fat or losing muscle; (3) strict adherence to a rigid diet with at least 5 small meals per day consumed on a regular schedule, meals all consist of high-calorie, high-protein, low-fat foods or supplements, and/or a significant amount of time and money is spent acquiring, preparing, and eating these specialized meals; and (4) social and occupational opportunities are frequently given up because they interfere with the composition or timing of meals (Haycock, n.d.). In conjunction with ED/BT, a female bodybuilder may also develop exercise dependency. Exercise dependency goes beyond the simple enjoyment of exercise. It is a behavioral addiction that results in impaired psychological, social, occupational, physical, and behavioral functions – i.e. an inability to control the urge to exercise, continuing to exercise with injuries, social isolation, and/or feelings of irritability, restlessness, or anxiety after periods without exercise. Physical symptoms associated with exercise dependency include joint inflammation or damage, loss of muscle mass, sprained ligaments, and/or strained or torn muscles and tendons (Cornell, 2018). Treatment for ED/BT and exercise addiction typically use the same strategies found to be effective with other behavioral addictions, and often involves some form of talk therapy, such as cognitive behavioral therapy, with a therapist or counselor.
Muscle dysmorphia (MD), popularly known as “bigorexia,” is another psychiatric disorder common among female bodybuilders. It is classified as a subtype of obsessive-compulsive disorder, where patients often display disordered eating, rigid rules of protein consumption, must eat every “X” number of hours, must eat “X” grams of protein per body weight, and experience distress if the plan is not followed. From a nursing perspective, it is challenging to care for an individual with MD. Oftentimes those with it do not perceive it as a psychiatric condition, therefore, few women suffering from MD seek treatment (Gill, 2017).

A nurse caring for a female bodybuilder struggling with behavioral disorders must be non-judgmental and build a trusting relationship that encourages open communication. A nurse must also advocate for a non-judgmental environment for her patient to promote treatment and progress. A nurse can further educate the patient on resources available to her – i.e. counselors, support groups, and/or websites for further assistance.

**Hormonal Imbalances**

When women are preparing for competitions it is not uncommon for them to experience decreased levels of leptin, triiodothyronine ($T_3$), testosterone, and estradiol (estrogen) (Leal, 2018). Leptin is a hormone that regulates energy balance, fat stores, and signals satiety when eating. Fat cells produce leptin in proportion to body fat level; the more fat you have, the more leptin your body produces. A properly working leptin system leads to better metabolic performance, brain function, mental sharpness, memory, coordination, and regulation of mood and emotions. Over time, a caloric deprivation may result in low leptin levels and result in food cravings, hunger after meals, poor energy levels, weight gain, or trouble losing weight. Low leptin levels can also lead to low levels of $T_3$, which indicate hypothyroidism or starvation (Asprey, 2015). The hormone, $T_3$, plays an important role in regulating body temperature, metabolism, and heart rate. A patient may experience trouble sleeping, fatigue, difficulty concentrating, dry hair and skin, depression, sensitivity to cold temperatures, frequent and heavy periods, and/or joint and muscle pain when $T_3$ levels are low (Brady, 2018; Leal, 2018). Female bodybuilders may also experience
increased mood swings due to increased cortisol levels post-workout (McNary, 2018). High levels of cortisol, over a prolonged period, can result in a low sex drive, and infrequent to no menstruation.

Decreased estradiol levels result in many female competitors experiencing menstrual irregularities, or athletic amenorrhea. Long-term complications of athletic amenorrhea include reduced fertility, high levels of blood cholesterol, loss of bone density, and premature aging. Low testosterone in women can lead to muscle weakness, fatigue, sleep disturbances, reduced sex drive, decreased sexual satisfaction, weight gain, and fertility issues (Leal, 2018).

When a nurse is caring for a female bodybuilder, it is important to know if leptin, T₃, cortisol, estrogen, and testosterone levels are within normal ranges. To assess hormone levels, blood work should be drawn to exclusively test for these hormones. More specifically, the nurse should encourage testing before competition preparation begins to establish a baseline, and again after completing a competition to evaluate if values are within the normative ranges and/or back to a competitor’s baseline. If hormone levels are too low or too high, hormone therapy should be considered in the treatment plan for the competitor.

**Supplement Abuse**

Dietary supplements encompass vitamins, minerals, herbs, amino acids, and enzymes. The most commonly abused supplements among female bodybuilders are fat burners and energy products containing high levels of caffeine. Overconsumption of fat burners can result in hypertension, arrhythmias, insomnia, nervousness, tremors, headaches, seizures, heart attacks, strokes, or in severe cases death. Too much caffeine can result in nausea from increased stomach acid secretion, muscle tremors, heart palpitations, insomnia, headache, and anxiety. When fat burners are taken in conjunction with energy products, all symptoms become even more exacerbated (Barke, 2005).

As a nurse, it is important to specifically ask about supplement use. Female bodybuilders can procure supplements without a prescription, and often do not disclose supplement use to their healthcare providers (Tarn et al., 2014). When a complete supplement history is obtained, the risks – interactions, safety/harm, side effects/adverse effects – benefits, and efficacy can be discussed. Unfortunately, this
conversation is where many healthcare providers fall short. One study found among physicians, nurses, nutritionists, and pharmacists, there was only adequate knowledge, little confidence, and a lack of communication skills regarding nutritional supplements. Athletic trainers and coaches, however, were found to be reasonably knowledgeable, especially those working with female athletes and/or having more than 15 years of experience (Petroczi & Naughton, 2007). As a patient advocate, a nurse should be aware of the limitations of the healthcare staff and be able to provide other resources when specific questions and concerns cannot be addressed. A nurse should also explain to the female bodybuilder that while supplement manufacturers are required to produce dietary supplements in a quality manner, the FDA is not required to review dietary supplements before entering the market. Providing proper education regarding supplement use could significantly reduce ED visits related to supplement misuse or abuse.

**Rhabdomyolysis**

In extreme cases, rhabdomyolysis occurs which results in acute destruction of skeletal muscle, electrolyte disturbances, hypovolemia, metabolic acidosis, coagulopathies, and myoglobinuric renal failure (Criddle, 2003). Symptoms of rhabdomyolysis include muscle pain, red/brown urine, and muscle weakness. If a female bodybuilder presents with symptoms of rhabdomyolysis, a urine and blood test will be performed to assess her creatine kinase levels. Treatment depends on the underlying cause of the conditions, but typically IV fluids are administered, in addition to medications to correct electrolyte imbalances, diet changes, and/or dialysis to restore kidney function.

**Conclusion**

Bodybuilders are well-known for manipulating their bodies in preparation for a competition: “While athletes appear to be at the highest level of physical fitness and health while on stage, they are actually often on the brink of very serious health issue” (Marteski, 2018). Despite all the potential complications, professional trainers and doctors agree that the practice of bodybuilding can be beneficial if participants respect their body’s limitations. Healthy bodybuilding is possible if a woman can participate
in the sport without letting it impair her life. She also must have a complete understanding of her past psychological history and current physiological state to understand her risks of developing heath consequences associated with competing. Unfortunately, a lot of ugly can occur underneath the sparkle of the suit, and a woman must understand her health is more important than a few minutes of glory on stage.
References


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