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## **EDITORIAL: FITNESS OR ADDICTION? BODYBUILDING, ILLICIT DRUGS AND THEIR CONSEQUENCES.**

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# FITNESS OR ADDICTION? BODY-BUILDING, ILLICIT DRUGS AND THEIR CONSEQUENCES.

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## INTRODUCTION

Health awareness is high on the Ministry of Health's three strategic priorities for the future.<sup>1</sup> The philosophy that health is everyone's business has seemingly been adopted by many health fitness club entrepreneurs with offerings of better competitive rates for the public and the more enthusiastic bodybuilder. Catchy slogans such as i) 'Turn Fat into Fit' and ii) 'Fitness is not a destination; it is a way of life' encapsulates part of the fitness revolution that is taking the nation by storm. A trip around town would reveal the extent and popularity of these fitness enterprises with health fitness clubs located at virtually every major complex in Brunei Darussalam. With fitness becoming increasingly affordable, convenient and accessible, shouldn't everybody then be a member of a fitness club? There is a vast evidence-based about the positive mood and metabolic altering effects of exercise with perhaps, only the perceived risk of minor musculoskeletal injuries.<sup>2</sup> There are physiological, social, and psychological factors to be considered as to how bodybuilding is potentially connected to fitness, addiction and drugs.

Firstly, consider national and health promotion campaigns. Fitness clubs and programs which were once restricted to professional athletes are now more accessible to aspiring bodybuilders and the recreational gym goer of various ages and fitness levels. Coupled with this access to fitness and endurance training is the wide choice of fitness trainers, sequential and unlimited fitness classes as well as extreme training (e.g. GET-FIT CrossFit) or unorthodox exercise practices. With the right guidance, the recreational gym goer can embrace the fitness way of life, improve body sculpture and athletic performance as well as potentially becoming a bodybuilder and/or a fitness fanatic.

It is thus not uncommon to see gym goers and bodybuilders exercising together in a health fitness club. The benefits of exercising with a crowd include enhancing conversation, inspiration, duration and motivation. These intangible effects are addition to the positive effects and boosts in self-esteem that are well known benefits of exercise.<sup>2</sup> The strength in numbers and the influence of peer pressure in the fitness centers cannot be underestimated especially in the culture and methods for bodybuilding.

Secondly, bodybuilding and fitness can be addictive especially to high risk individuals. Body builders who embrace a lifestyle of hard work, spend a lot of time metic-

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ulously crafting their physiques and maintenance of an aesthetic appearance. These groups of people tend to have strict caloric intake and fitness routines whilst maintaining high frequency exercise, which can be thought of as an addiction.<sup>3</sup> Exercise addiction, which can be assessed using an Exercise Dependence Scale (EDS-R) follows other phases of a) at risk- exercise and b) problematic exercise. It is currently hypothesized that people who are highly engaged with their fitness regimens share three common features with addiction.<sup>4</sup> These are i) frequent thoughts about exercising, ii) positive feelings in response to exercise and iii) tolerance to exercise. Intense, high frequency exercise is then required to maintain the activation of the reward circuitry of the cerebral mesolimbic dopamine system.

Thirdly, with the impact of the digital and internet revolution it has become easier than ever to access information, muscle building supplements, high protein diets and the fitness communities.<sup>5</sup> It is amazing how much information anyone can obtain with a click of the mouse. What more if a bodybuilder is looking for methods to a) build muscular mass, strength and endurance, b) reduce recovery time from injuries, c) strengthen muscles and/or bones, d) perform at a high level or e) improve one's body image with less effort and time especially if a picturesque figure is reinforced with potential monetary rewards, fame and recognition? A big motivation is to achieve their goal of national recognition, fame and glory like several Bruneian representatives have done by attaining success in international bodybuilding and fitness championships.<sup>6</sup>

Fourthly, competitiveness and the motivation to win has resulted in doping which has been an international issue even amongst Olympic athletes who had their titles stripped due to illicit drugs.<sup>7</sup> At the London Olympic games, it was estimated that six out

of ten athletes were taking banned substances according to a drug supplier's report.<sup>8</sup> Such is the will to win and to advance one's progress that an athlete may put their career or body on the line by using illegal and unethical methods to win. Producing strong performance amongst the non-drug addicted athletes would be one of the main challenges for sport trainers in this century.

The prevalence of abuse of drugs such as anabolic steroids, diuretics, testosterone, growth hormone, tamoxifen, ephedrine, clenbuterol and thyroid medication is unknown in Brunei. However, studies have shown that the abuse of illicit drugs, of which anabolic steroids is the most common, is around 2% in adolescent and college age samples, increasing from 20% to more than 50% in athletes involved in bodybuilding.<sup>9</sup> Young male adults are the most common users of multiple recreational drugs with 19.1 % of gym goers reported to ever have used an illicit substance in a Swedish study.<sup>10</sup> Shockingly, data from the National Household Survey on Drug Abuse 1991 indicated that there were more than one million anabolic steroid users in the USA.<sup>11</sup>

Polypharmacy with alcohol and other illicit substances have also been described.<sup>12</sup> There are positive correlations between anabolic steroid use and concurrent alcohol use, tobacco, cannabis, other illicit substances and legal performance enhancing drugs. Additionally, previous use of alcohol in the last year, use of crack, Gamma-Hydroxybutyrate (GHB) predicted future anabolic steroid use in one review.<sup>13</sup> Clenbuterol, ephedrine and thyroxine, are abused by bodybuilders as a training stimulant and to increase metabolic rate. Insulin has been abused by bodybuilders to increase total body mass accounting to several individuals suffering from hypoglycaemia in competitions, resulting in emergency presentations. Tamoxifen is used to prevent gynecomastia, whilst human chorionic gonadotro-

phin is to stimulate the testes when withdrawing from their exogenous androgens. Diuretics are used to counteract the adverse water retention of both steroids and growth hormone which has resulted in the adverse effects of hypokalaemia.<sup>14</sup> Growth hormone can be used to induce lipolysis and, in the belief, that it enhances muscles mass and strength.

The health risk appears to be minimized amongst drug abusers due to scientific gossip for the right cocktail of steroid use and testimonies that 'some' used for years without side effects. The reasons for self-therapeutics are complex and may include interplay between psychological, social, peer pressure and ease of access to black market pharmaceuticals. In bodybuilding competitions, participants are judged on their aesthetic appearance and this may be enhanced by increasing muscular definition by use of unorthodox dietary practices and self-therapeutics. Commonly used techniques to improve physique and exercise intensity during the preparation phase include restriction of oral fluids and inappropriate use of diuretics as in our case described.<sup>14</sup>

Worryingly polypharmacy and drug abuse amongst bodybuilders is suspected to continue in Brunei despite the risk of a) acute myocardial infarction as described in a Bruneian case series<sup>15</sup>, b) biventricular ventricular dysfunction in athletes,<sup>16</sup> c) endocrine effects including behavioral aggression, testicular fibrosis and infertility, d) the risk of contracting other serious blood borne illnesses and e) the potential for premature death as described in the literature mainly due to accidental drug toxicity (62.5%), suicide (16.7%) and homicide (12.5%).<sup>17</sup>

Lastly, psychological factors play an important role in the bodybuilder's or competitors' makeup and can be psychopathic. Factors such as lack of self-esteem, pain of

perceived shortcoming, boredom and problematic social relations as well as unrealistic portrayal of idealistic male and female bodies could play a powerful role in taking up such anti-normative behaviour to achieve a distorted or perhaps to the individual involved, a more sculptured and ecstatically pleasing body figure. Worryingly, there also has been a link established between bulimia nervosa, anorexia nervosa and bodybuilding related to perception of body image.<sup>4</sup> This can cause the individuals to resort to even more drug taking to counteract their altered body images. Misperceptions and attitudes about constructing a sense of masculinity linking manliness with size and maintenance of ego and self-esteem may perpetuate such behavior as described in the Maslow hierarchy of human motivation.<sup>18</sup> Additionally, other slogans such as 'Life's too short to die small' and 'Go hard or go home' and competition titles such as 'Mr. Universe' and 'Mr. Limbang' would further massage these individuals egos in the quest for glory or recognition.

There appears to be a link between fitness, bodybuilding and illicit drug use with adverse consequences potentially resulting in emergency hospital presentations due to adverse health consequences. An increase in the clinician's awareness of the psychological, physiological and social reasons for drug use in fitness activities such as body building would be the first step in prevention of such presentations. Furthermore, the next steps would be providing counselling and advice to change these potential dangerous anti normative behaviours as well as treatment of addiction with the goal of ensuring healthy participation in fitness programs. Further research would provide more insight into drug abuse amongst bodybuilders in Brunei as well as the true impact of fitness enhancing activities in terms of our nation's health, disease burden and economy.

**Declaration:**

**The author declares that there is no financial or other conflict of interest related to this article.**

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