

**The Underrecognized Burden of Hypogonadism in Physical Medicine and Rehabilitation: Implications for Anabolic Therapeutics**

**Dear Editor,**

Testosterone deficiency (hypogonadism) can be highly prevalent among patients frequently encountered within the scope of care in Physical Medicine and Rehabilitation (PM&R) [1,2]. This condition negatively affects anabolic capacity, leading to decreased muscle mass, strength, and functional outcomes. Given its significant prevalence across diverse clinical populations, routine screening for hypogonadism and exploration of anabolic therapies must be prioritized to optimize rehabilitation outcomes [1,2].

Low testosterone levels contribute to sarcopenia, reduced strength, impaired recovery, and increased disability. Testosterone exerts anabolic effects by promoting protein synthesis, enhancing lean body mass, and improving muscle performance—functions essential for rehabilitation success [3]. In patients with chronic conditions such as stroke [4], spinal cord injury (SCI) [5], traumatic brain injury (TBI) [6], chronic pain [7], and multiple sclerosis [8], hypogonadism is particularly common.

**Prevalence Across PM&R Populations**

In stroke survivors, hypogonadism has been reported in up to 66.3% of male ischemic stroke patients, with higher rates in those with type 2 diabetes mellitus [4]. Similarly, hypogonadism affects between 35% and 65% of men with chronic SCI, significantly higher than the general population [5]. In multiple sclerosis, nearly 39% of men demonstrate testosterone deficiency, which correlates with worse clinical outcomes and disability [8].

Among patients with TBI, the prevalence ranges from 15% to 68% due to pituitary axis dysfunction [6]. Hypogonadism is also notably prevalent in chronic pain

patients on long-term opioid therapy, affecting up to 63%, with rates increasing with higher opioid doses [7]. These findings reflect a systemic issue that exacerbates functional impairment, muscle loss, and poor rehabilitation outcomes.

### Clinical Consequences of Hypogonadism

Testosterone deficiency has profound implications for rehabilitation. It accelerates muscle atrophy, reduces strength, and diminishes physical performance. In older men with mobility limitations and low testosterone, a recent systematic review has shown that testosterone replacement significantly may improve lean body mass, grip strength, and self-reported physical function [9]. Furthermore, testosterone therapy in ill older men demonstrated improved Functional Independence Measure (FIM) scores and grip strength compared to placebo, highlighting its role in enhancing rehabilitation outcomes [1-3].

Low testosterone is also associated with higher mortality rates. A meta-analysis involving over 16,000 men revealed a 35% increased risk of mortality among those with low testosterone levels [10]. This underscores the importance of addressing hypogonadism as part of comprehensive rehabilitation care.

### Potential Role of Anabolic Therapies

The use of anabolic-androgenic steroids (AAS), including testosterone derivatives, has shown promise in reversing catabolic states and improving clinical outcomes in chronic diseases [1-3,9]. Testosterone supplementation increases muscle protein synthesis, improves physical function, and enhances quality of life [1-3,9]. In critically ill patients, anabolic steroids have been proposed to counteract catabolism, improving muscle mass and recovery [3]. Evidence also suggests that AAS therapy in chronic illnesses, such as burns and renal disease, leads to significant improvements in lean body mass and physical function [1-3,9].

### Call for Action

Despite the growing body of evidence, routine screening for hypogonadism in PM&R remains underutilized. This represents a missed opportunity to identify and address a modifiable factor contributing to poor functional outcomes [1-3,9]. Given the high prevalence of testosterone deficiency and its significant impact on muscle preservation, strength, and recovery, systematic evaluation of testosterone levels should be integrated into PM&R practice. Furthermore, testosterone replacement therapy should be considered as a potential adjunct to rehabilitation in hypogonadal patients, with careful monitoring of benefits and risks.

Future research should focus on large-scale trials to confirm the efficacy and safety of anabolic therapies in PM&R populations. Robust data on the impact of testosterone replacement on long-term functional outcomes, independence, and quality of life are essential to guide clinical practice.

#### **Disclaimer (Artificial intelligence)**

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