

Muscle: The Organ that Powers Vitality

In this series, discover how skeletal muscle, the body's largest organ, impacts health and longevity. From regulating hormones and blood sugar to boosting brain health, muscles are far more than just a source of strength.

By [Sheramy Tsai](#) (Epoch Health / The Epoch Times) August 14, 2024 Updated: August 14, 2024

Part 5

Reclaiming Strength and Rebuilding Lost Muscle

Muscle melts away quickly as we age and sit around—and rebuilding it can be the difference between thriving and declining into illness.

Muscle atrophy, the wasting or loss of muscle tissue, can occur astonishingly quickly, posing serious challenges for individuals recovering from prolonged illness or extended periods of inactivity.

A [study](#) in the Journal of Cachexia, Sarcopenia, and Muscle revealed that just three days of simulated bed rest resulted in a more than 10 percent loss of muscle tissue and increased fatty infiltration of the muscle.

“Believe it or not, you can start losing significant muscle mass in just five days of inactivity,” fitness and nutrition expert JJ Virgin told The Epoch Times. She noted that athletes can see the effects of reduced activity within about three weeks if they don’t maintain their workout routines.

Everson A. Nunes, a postdoctoral fellow at McMaster University, noted the variability in muscle loss during inactivity. In an email to The Epoch Times, he said that healthy young individuals can lose about 0.8 percent of muscle per day during a week of leg immobilization.

Nunes said that the primary cause of atrophy is the lack of mechanical stimulus.

“Muscles, tendons, and bones need mechanical stress to maintain size, function, and proper turnover rates,” he wrote. The key to healthy muscles, tendons, and bones is continuous breakdown and rebuilding.

Muscle loss can happen during extended periods of bed rest because of illness or injury, leading to disuse-induced atrophy.

“Disuse-induced atrophy will likely affect every person in his or her lifetime, and can be debilitating, especially in the elderly,” Sue Bodine, who holds a doctorate in neuromuscular physiology, [wrote](#).

“If you’re sidelined due to an injury or stuck in bed, your muscles aren’t getting the workout they need to stay strong,” Virgin said. Without movement, muscles begin to degrade, resulting in a noticeable loss of strength and function.

Aging and Atrophy

Aging is a significant contributor to muscle atrophy. Our bodies naturally lose muscle mass and strength as we age, a process known as sarcopenia. This decline begins as early as age 30, with muscle mass decreasing by 3 percent to 8 percent per decade, and the rate of loss doubling at about age 60, making it even more challenging to maintain muscle health, according to Virgin.

Even more troubling is the loss of strength and power, occurring twice and three times the rate of muscle mass loss, respectively, according to Virgin. These changes can significantly impact daily activities and overall quality of life.

“The maintenance of muscle mass is dependent on the balance of two processes: the rate of protein synthesis and protein degradation. Under atrophy conditions, there is a shift in the balance of these two processes such that there is a net loss of muscle proteins,” Bodine [wrote](#).

A 2021 [review](#) in Nature Communications supports this by highlighting the numerous factors affecting muscle health. The authors note that changes in muscle mass can significantly impact metabolism, movement, and even breathing. Their research shows that muscle function adapts to environmental and nutritional cues, emphasizing the importance of balancing protein synthesis and degradation.

The Role of Inflammation in Muscle Atrophy

Inflammation is a key factor in muscle loss, particularly for individuals with chronic illnesses or persistent low-grade inflammation. Nunes notes that chronic diseases and high body fat can cause anabolic resistance, meaning muscles do not respond well to muscle-building signals from protein intake or exercise.

In cases of severe injury, trauma, or systemic diseases, inflammation plays a critical role in helping the body heal. High levels of inflammatory mediators are released in response to these conditions, but this can also lead to increased muscle breakdown. This inflammatory response, while essential for healing and defense, can complicate muscle recovery by exacerbating muscle atrophy.

“With major injury or trauma or systemic diseases, inflammation scales up and causes massive behavior and metabolic changes contributing to muscle loss,” Nunes wrote.

“It has been difficult to find a sweet spot that is able to prevent unwanted effects but still having an effective healing/defense response,” Nunes wrote. This challenge is particularly evident when using anti-inflammatory drugs, which can inhibit both harmful and beneficial inflammatory processes.

For those with chronic inflammation, strategies to combat muscle loss include a combination of drugs and lifestyle changes. These may involve anti-inflammatory medications, anabolic agents, and therapies aimed at maintaining appetite and muscle function. It’s important that people exercise regularly and eat well, but these can be difficult habits to maintain.

Rebuilding Strength at Any Age

Many believe that muscle atrophy is irreversible, particularly as people age, based on the misconception that older adults can’t build muscle.

“This simply isn’t true,” Virgin said. “Muscle plasticity, the ability of muscles to regenerate and grow, persists throughout life. With the right training and nutrition, you can rebuild muscle at any age.”

Recovery for older adults often requires more time and a more focused approach than it does for younger people. In young, healthy adults, muscle mass recovery following disuse atrophy is usually complete, but in older people, it is often delayed and sometimes incomplete.

“As we age, our bodies naturally experience a decrease in muscle regenerative capacity and hormonal changes that can slow down the recovery process,” Virgin said.

Older adults must pay closer attention to their diet, particularly protein, to support muscle repair and recovery. With age, our bodies experience anabolic resistance, which means that eating protein or amino acids doesn't stimulate muscle building as much as when we were younger. Consequently, seniors may require more protein than younger people to achieve similar muscle repair and growth.

"Staying active is the most important thing we all should do on a population level to prevent anabolic resistance and help with recovery," Nunes wrote. He noted that physically active older adults do not exhibit signs of anabolic resistance.

Rebuilding muscular strength begins with movement, but it is crucial to address the underlying causes of inactivity, whether that be a specific ailment, lack of time, or something else.

"Treating the cause is the most important step, in parallel with physiotherapy or supervised exercises. These are the most effective strategies targeting the inactivity aspect," Nunes wrote.

Practical Exercises for Rebuilding Muscle After Inactivity

After a prolonged period of inactivity or illness, rebuilding muscle should be approached gradually and safely.

"Ideally, you want to get up and moving as quickly as possible," Virgin said. Virgin advises starting with simple isometric exercises involving holding a contraction without movement, such as planks. These exercises are beneficial for those with limited mobility, as they help rebuild strength with minimal injury risk and require no equipment. This approach allows muscles to engage even if walking is not possible.

As recovery progresses, incorporating resistance training becomes essential. Virgin recommends exercises that mimic daily activities, such as squats, bent-over rows, and dips. Starting with body weight or light resistance bands helps focus on proper technique before gradually increasing the resistance. Using a full range of motion and engaging the core are crucial for effective muscle rebuilding.

For individuals unable to handle significant resistance due to injury, blood flow restriction training (BFRT) offers an effective alternative. This involves exercising while wearing bands or other devices that restrict blood flow. For example, while

lifting a weight with the arm, a person may have a band tied around the arm similar to the tourniquet applied when giving a blood sample.

According to a [study](#) in the Journal of Lifestyle Medicine, BFRT can “prove to be a boon in many conditions such as muscle weakness and degeneration.” It can be an essential treatment in preventing disuse atrophy during the initial days of bed rest in post-surgical patients.

Maintaining consistent activity is key to recovery. Virgin suggests tracking daily steps and gradually increasing them. Adding a weighted vest, known as a rucking vest, can enhance strength and endurance.

Once a basic fitness level is established, high-intensity interval training (HIIT) can be introduced. HIIT involves short bursts of intense activity followed by rest periods or lower-intensity exercise. This method aids muscle building and growth hormone release, while improving cardiovascular health and boosting metabolism.

“Recovery strategies should also include adequate rest and stress management, as elevated stress hormones like cortisol can further impair muscle recovery and overall health,” Virgin said.

Nutrition’s Role in Muscle Recovery

Nutrition plays a pivotal role in muscle recovery and overall health during and after injury or illness. A 2020 [review](#) in Nutrients emphasizes that periods of disuse combined with poor dietary intake can accelerate muscle loss and weaken strength, especially in older adults.

“Protein is essential for muscle repair and growth,” Virgin said. Ensuring an optimal protein intake is critical, with a minimum of 100 grams per day, and ideally 1 gram or more per pound of ideal body weight.

However, Nunes noted that merely increasing protein intake does not prevent muscle loss. “Muscles need to be put to work in order to decrease the level of loss during inactivity or disease,” he wrote.

Virgin also recommends incorporating 15 grams of essential amino acids with one to two meals a day to provide the necessary nutrients for healing and preventing muscle breakdown. Additionally, extra collagen, either as a

supplement or through bone broth or bone broth protein powder, can be beneficial at an intake of 15 grams to 30 grams daily.

Virgin highlighted creatine's benefits for enhancing performance and recovery, making it a valuable addition to any recovery regimen.

The Mental Grit Behind Physical Recovery

Nunes noted that the mental factor directly affects nutrition, sleep, and overall activity levels.

“Mental resilience is absolutely crucial in physical recovery,” Virgin said. It greatly affects the speed and completeness of recovery from illness, injury, or prolonged inactivity.

When physical strength is weakened, mental grit is essential for maintaining focus, discipline, and positivity, enabling adherence to recovery protocols and coping with the often slow and frustrating healing process.

“It's like armor for your psyche, protecting and propelling you forward even when the going gets tough,” Virgin said, underscoring the importance of a strong mindset.

Cultivating mental resilience during recovery involves several key strategies, she said.

- Embrace a positive outlook. It's not just about thinking happy thoughts but strategically viewing challenges as opportunities for growth and learning.
- Visualize. Picture yourself healed, strong, and thriving, which can help steer your subconscious toward those outcomes.
- Practice resilience-building techniques. Gratitude journaling and mindfulness meditation are beneficial. These practices reduce stress and improve overall mental well-being.
- Build Your Community. Being surrounded by people who uplift and encourage provides emotional comfort and practical help, motivating adherence to recovery goals.

Setting Realistic Goals and Measuring Progress in Muscle Recovery

Tracking progress is essential for those aiming to regain muscle strength after inactivity, according to Virgin. One effective starting point is a DEXA scan, which

estimates skeletal muscle mass and assesses balance between limbs. This scan offers a detailed baseline, enabling precise progress monitoring.

Alongside DEXA scans, regular fitness tests can assess improvements in strength, power, endurance, flexibility, and balance. At-home tests include hand dynamometer grip strength, push-ups, flexed arm hang or pull-ups, vertical jump, sit and reach for flexibility, and standing balance.

For ongoing tracking, affordable bioimpedance scales can align with DEXA results, providing a convenient way to monitor changes at home. Virgin advises reassessing fitness tests every one to three months and repeating the DEXA scan every six months to track long-term progress.

Tracking progress offers tangible evidence of improvements and boosts motivation. Fitness trackers, apps, or workout journals can help monitor routines by recording exercise types, weights, and repetitions. This documentation aids in adjusting goals and ensuring continued progress.

“Always start out doing less than you think you can and progress carefully. Listen to your body,” Virgin said. If you experience joint pain or soreness, reduce your activity and consult an expert to check your form.

“Be sure to celebrate milestones, no matter how small, as they contribute to building your long-term strength and recovery.”

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