

Why 'Unbalanced' Muscles Cause Pain

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December 26, 2024

STORY AT-A-GLANCE

- › Muscle imbalances occur when certain muscles become stronger or tighter than their opposing counterparts, disrupting musculoskeletal harmony and causing pain through altered movement patterns
- › Common causes include repetitive movements, poor posture, inadequate training routines and lifestyle factors like improper footwear, affecting both athletes and non-athletes
- › Hip muscle imbalances significantly impact lower back health, with weakness in hip extensors or flexors altering gait and placing excessive stress on your spine
- › Knee pain and injuries, particularly patellofemoral pain syndrome, often result from muscle imbalances
- › Natural options include avoiding excessive sitting, regular stretching, strengthening exercises targeting underactive muscles, proper footwear, balance training and maintaining good posture throughout daily activities

Have you ever felt persistent pain in your shoulder, elbow, wrist or lower back, especially after engaging in activities that involve repetitive movements? These discomforts might stem from muscle imbalances – where certain muscles become stronger or tighter than their opposing counterparts.

Muscle imbalances disrupt the harmony of your musculoskeletal system, leading to altered movement patterns and increased stress on joints. This imbalance is particularly

prevalent in athletes, including those who perform overhead movements, such as those in baseball, tennis, volleyball and water polo.¹ However, muscle imbalances affect non-athletes as well – even working at a computer for long hours each day puts you at risk.

No matter the activity, when one side of your body becomes dominant due to repetitive use, the non-dominant side often lags behind in strength and flexibility. Muscle imbalances aren't just a matter of asymmetry; they're significant contributors to pain and injury in both athletes and the general population.

The Causes Behind Muscle Imbalances

Several factors contribute to the development of muscle imbalances. Primarily, repetitive movements in one direction or pattern cause certain muscles to overwork while others become underutilized. For instance, in overhead sports, your dominant arm and shoulder undergo constant stress from throwing or swinging, leading to increased muscle volume and strength on that side.

This dominance results in weaker muscles on the non-dominant side, creating an imbalance. Additionally, inadequate training routines that neglect the non-dominant muscles, improper techniques and insufficient rest periods exacerbate these imbalances. [Runner's knee](#), also known as patellofemoral pain syndrome, is another condition often caused by overuse and muscle imbalances.

Even [chewing gum](#) on one side of your mouth more often than the other, it can also cause jaw muscle imbalance. Lifestyle factors, such as poor posture, improper footwear and sedentary habits, also play a role by promoting uneven muscle development. Understanding these causes is essential for preventing imbalances and the associated pain, ensuring that your body remains balanced and resilient against injuries.

Recognizing the Signs of Muscle Imbalance

Identifying muscle imbalances early helps prevent the progression to more severe pain and injuries. Common signs include persistent aches or soreness in specific joints,

reduced range of motion and noticeable differences in muscle size or strength between opposing sides of your body.

For example, you might find that one shoulder is significantly stronger or more developed than the other, or experience tightness in certain muscles that restrict your movement. Additionally, muscle imbalances may lead to compensatory movements, where other muscles or joints compensate for the weaker ones, causing further strain.

If you notice any of these signs, address them promptly through targeted exercises and proper training techniques to restore balance and alleviate discomfort.

Left untreated, unbalanced muscles significantly increase the risk of various injuries. In overhead athletes, for instance, shoulder injuries are among the most common, including rotator cuff tears, impingements and labral tears.² These injuries occur because the dominant shoulder undergoes excessive stress, leading to overuse and strain.

Elbow injuries, such as medial epicondylitis (commonly known as golfer's elbow), and wrist injuries like radial epiphysitis, are also prevalent. Lower back pain is another frequent issue, arising from compensatory movements and poor posture caused by muscle imbalances.³ These injuries not only cause pain but also hinder performance and reduce the overall functionality of affected areas.

Muscle Imbalances and Hip Health

Beyond the commonly discussed shoulder and upper limb issues, muscle imbalances significantly impact hip health, often leading to debilitating lower back pain.⁴ Whether you're an athlete or simply going about your daily activities, over time repetitive movements may lead to unequal muscle strength around your hips that disrupts the alignment and function of your pelvic girdle.⁵

Weakness in your hip extensors or flexors can alter your gait, placing excessive stress on your lower back. Studies have shown that hip extensor weakness and hip flexor

imbalances are closely linked to the development of chronic low back pain, especially in female athletes.⁶

Additionally, weakened gluteus medius muscles in the hip region are frequently associated with a positive Trendelenburg sign, indicating compromised hip stability. This instability not only causes pain but also affects your ability to perform movements efficiently. Addressing **hip muscle imbalances** through targeted strengthening exercises for your glutes and hip flexors helps restore balance, improve posture and alleviate lower back discomfort.⁷

Knee Injuries Linked to Muscle Imbalance

Knee pain is another prevalent issue linked to muscle imbalances, particularly patellofemoral pain syndrome (PFPS). PFPS affects approximately 22.7% of the general population and is often the result of weakened quadriceps and imbalanced muscle activation around your knee.⁸

When the vastus medialis, a key quadriceps muscle, fails to activate promptly, it disrupts patellar tracking, leading to increased stress on your knee joint. This imbalance causes pain and predisposes you to further injuries such as ligament strains and cartilage damage.

Moreover, weak hip muscles, particularly the gluteus medius, exacerbate knee problems by failing to stabilize your pelvis during movement, forcing your knee to compensate. Incorporating exercises that strengthen both your quadriceps and hip stabilizers helps correct these imbalances, improving knee alignment and reducing pain.⁹

Functional Assessments Help Identify Muscle Imbalances

Functional assessments are often used to uncover the underlying biomechanical issues that contribute to pain and injuries. Everyday movements like walking, squatting or even standing reveal how well your muscles work in harmony.

Functional assessments, such as single-leg squats, gait analysis and step-up exercises, provide valuable insights into your muscle coordination and strength distribution.¹⁰ For example, during a single-leg squat, discrepancies in hip and knee movements highlight weaknesses or tightness in specific muscle groups.

These assessments go beyond conventional strength tests, revealing how muscle imbalances affect your overall movement patterns. Identifying your unique imbalances and deficiencies enables the creation of personalized exercise programs tailored to restore balance and enhance your body's natural mechanics, ensuring a healthier, pain-free lifestyle.

Exercise Programs Relieve a Common Muscle Imbalance

Have you ever noticed a forward head posture or rounded shoulders, especially after long hours at a desk or intense training sessions? These are hallmark signs of **upper crossed syndrome** (UCS), a common muscle imbalance pattern that disrupts your upper body's alignment and function.

UCS is characterized by an imbalance between overactive and underactive muscles in your neck, shoulders and upper back. Specifically, your upper trapezius and pectoral muscles become tight and overactive, pulling your shoulders forward and your head into a forward position. Conversely, your lower and middle trapezius, serratus anterior and infraspinatus muscles become weak and underactive, failing to stabilize your scapula and maintain proper shoulder alignment.

This imbalance not only causes visible postural problems but also leads to **chronic pain in your neck**, shoulders and upper back. Studies have shown that a comprehensive corrective exercise program (CCEP) significantly enhances muscle activation, movement patterns and postural alignment in individuals with UCS.¹¹

Over an eight-week period, CCEP incorporates a variety of exercises designed to strengthen your underactive muscles while stretching and relaxing the overactive ones. What makes CCEP particularly effective is its holistic approach, addressing not just the

symptoms but the underlying neuromuscular and biomechanical factors that perpetuate muscle imbalances.

Participants in studies have reported lasting improvements in muscle balance and posture, even after a short period of detraining. Cobra yoga pose is one exercise to consider. This traditional beginner yoga pose is a gentle backbend position accomplished from a face-down, on-the-floor position.¹²

The goal is to strengthen your spine while opening your chest. It's an excellent counter activity to relieve upper crossed syndrome that occurs when you are working over a desk. Begin by lying on the floor on your stomach, stretching your legs behind you and placing the tops of your feet on the floor.¹³

Put your hands under your shoulders and keep your elbows close to your body. Press the tops of your feet, thighs and lower pelvis firmly into the floor while straightening your arms to lift your chest. Go only as high as you can while maintaining connection from your lower pelvis through your toes on the floor. Start by holding this for 15 seconds, building to 30 seconds as you grow stronger. Inhale on the way up and exhale with your release on the way down.

Tips to Relieve Muscle Imbalances

Achieving and maintaining muscle balance doesn't always require intensive training or specialized programs. Natural methods may effectively relieve muscle imbalances and enhance your overall musculoskeletal health. Start by incorporating regular stretching into your daily routine to improve muscle flexibility and reduce tightness in overactive muscles like the pectorals and upper trapezius.

Practices such as yoga help enhance flexibility and promote body awareness, helping you recognize and correct postural deviations. Additionally, flexibility routines also enhance muscle elasticity and joint range of motion, reducing the risk of tightness that contributes to imbalances. Additionally, mindfulness and proper breathing techniques

alleviate muscle tension and promote relaxation, addressing the stress that often contributes to muscle imbalances.

Strengthening exercises should focus on the underactive muscles – like your lower trapezius, serratus anterior and gluteus medius – to restore balance and stability. Simple bodyweight exercises, such as planks, side-lying leg lifts and scapular retractions – where you pull your shoulder blades together – can be done anywhere and require no special equipment.

Be sure to incorporate exercises that target both your dominant and non-dominant sides. Unilateral training, such as single-arm presses or single-leg deadlifts, ensures that each side of your body develops equally, preventing one side from compensating for the other.

Proper technique during physical activities is paramount; whether you're lifting weights, playing sports or performing daily tasks, ensuring that you move correctly minimizes undue stress on specific muscles. Equally important is allowing sufficient rest and recovery periods, giving your muscles time to repair and grow uniformly.

More Natural Methods to Relieve Muscle Imbalances

If you have a movement imbalance it will invariably tend to result in some type of injury over time. Further, your body is naturally asymmetrical. Balance is maintained through the integration of these system imbalances, and when balanced integration fails, structural weaknesses and pain often develop.

Spinal manipulation, commonly performed by physical therapists, chiropractors and osteopaths, is one tool to help relieve muscle imbalance by restoring alignment and reducing tension in your spine, which improves nerve function and alleviates compensatory muscle strain.

Proper footwear is another important element, as it provides stability and arch support, promoting balanced muscle engagement in your feet, legs and hips, which can help prevent muscle imbalances.

Conversely, improper footwear – such as shoes lacking arch support or with a narrow toe box – negatively alter posture and gait mechanics, leading to compensatory strain on certain muscle groups, which may over time cause muscle imbalances and contribute to issues like [bunions](#), knee, hip and lower back pain.

Incorporating balance training, such as standing on one leg or using a balance board, also enhances muscle coordination and prevents imbalances from developing. Moreover, maintaining an ergonomic workspace and being mindful of your posture throughout the day helps prevent the onset of muscle imbalances. You'll also want to avoid excessive sitting and incorporate plenty of daily movement.

Muscle imbalances, whether caused by repetitive athletic movements, poor posture or specific syndromes like upper crossed syndrome, play a significant role in the development of chronic pain and injury.

However, addressing muscle imbalances through targeted exercises and natural methods will restore harmony to your musculoskeletal system, enhance your physical performance and allow you to enjoy a healthier, more active lifestyle. Embrace these strategies today and take proactive steps toward a balanced and resilient body.

Sources and References

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- ¹² [Yogapedia, Cobra Pose](#)
- ¹³ [Yoga Journal, February 7, 2023](#)