

What Are Compound Exercises and Why Are They Good for You?

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STORY AT-A-GLANCE

- › Compound exercises target multiple muscle groups and joints at the same time. They mimic real-life activities, allowing you to build strength and stability, improve functional fitness and achieve a more balanced and coordinated body
- › A study in the journal *Frontiers in Physiology* found that people who performed compound exercises have better muscle strength and VO2 max, a key indicator of aerobic fitness and cardiovascular endurance
- › Compound exercises fall into three primary movement patterns – squatting, pushing and pulling. A well-rounded compound training routine features a combination of these movements
- › As you increase the intensity of your compound training routine, you also optimize your body's cellular energy production. However, make sure to stay within the Goldilocks zone for resistance exercises, otherwise your hard work will backfire

Maintaining muscle mass and strength is important for preserving mobility and balance, especially as you age. One of the effective ways to achieve this is through resistance training, also known as strength training or weight training. This type of exercise involves making your muscles contract against an external force, which can come from equipment or simply your own body weight.¹

Resistance exercises are generally categorized into two types: isolation and compound exercises.² Isolation exercises, such as bicep curls, leg extensions and calf raises, target

a single muscle group or joint.³ Although they're useful for building specific muscles, they often fall short in developing overall strength and functional fitness.⁴

If you're looking for a workout that is versatile, efficient and allows you to better handle the demands of daily life, consider incorporating compound exercises into your training routine.

Understanding Compound Exercises and Their Benefits

Compound exercises target multiple muscle groups and joints at the same time.⁵ These exercises fall into three primary movement patterns – squatting, pushing and pulling. These foundational movements form the basis for many resistance training routines, targeting major muscle groups and mimicking real-life activities, which allow you to build strength and stability, improve functional fitness and achieve a more balanced and coordinated body.

Compound exercises are time-efficient, as they stimulate greater growth in several muscle groups with a single movement. This efficiency makes them an ideal choice for those with busy schedules, ensuring you get a comprehensive workout within a short period of time.⁶

There is scientific evidence demonstrating the positive effects of compound exercises. For instance, in a study⁷ in the journal *Frontiers in Physiology*, 36 participants were divided into two groups. One group performed isolation exercises only, while the other performed compound exercises.

At the end of the experiment, the researchers observed that those who performed compound exercises experienced better results on measures of muscle strength and VO2 max (maximal oxygen consumption), a key indicator of aerobic fitness and cardiovascular endurance.

"[I]f one wants to improve body composition, an exercise program composed of either SJ [single-joint] or MJ [multi-joint] exercises may be of similar benefit. However, if the purpose is to improve general fitness, performing a resistance

training program composed of MJ exercises seems to bring better adaptations than SJ exercises alone," the authors concluded.⁸

Another study⁹ published in the journal *Nursing & Health Sciences* demonstrated that strength when performing total leg extensions, an exercise that involves multiple joints and muscles of the entire leg, better correlates with overall physical performance and the ability to carry out daily activities in older individuals than strength in doing knee extensions, an isolation exercise.

Further, compound exercises have been shown to help improve athletic performance. One study¹⁰ published in *Sports (Basel)* found that a five-week compound training program helped improve the ability of young soccer players to change directions quickly and jump higher.

Squats – One of the Primary Compound Exercises

Diving into the fundamental movements in compound exercises, squats primarily target the lower body muscles, including your glutes, hamstrings, quadriceps and lower back, and engage multiple joints, including your hips, knees and ankles.¹¹

These movements also mimic everyday actions such as sitting, standing, walking and going up or down stairs, which is why incorporating squats into your routine can significantly improve your functional fitness, as well as your core strength, balance and mobility.¹²

A study¹³ published in the *Journal of Strength and Conditioning Research* further elaborated on the benefits of squats. According to the authors, "Many health professionals whose focus is on performance enhancement often recommend the squat exercise to increase ligament, tendon and bone strength; develop strength, speed and power of the lower back, hip and knee musculature; and improve neuromuscular efficiency."

There is a wide variety of squatting exercises that you can try, including bodyweight squats, goblet squats, hack squats and barbell squats. I recommend starting with

bodyweight squats to build a solid foundation, mastering the proper form and technique before you incorporate advanced variations into your routine.

To perform a bodyweight squat, stand with your feet shoulder-width apart, toes slightly pointed out. Slowly lower your body by bending your knees and hips, keeping your chest up and back straight. Descend until your thighs are parallel to the ground, then push through your heels to return to the starting position.¹⁴



Bodyweight squat (Image source: Men's Health, August 1, 2023¹⁵)

Once you've built more strength and are ready to take on more advanced variations to challenge your muscles, consider doing goblet squats, which involve holding a dumbbell close to your chest, or hack squats, which use a barbell placed behind your legs to target different muscle groups. These variations add resistance, making the exercise more challenging and effective.



Goblet squat (Image source: Men's Health, August 1, 2023¹⁶)



Hack squat (Image source: Garage Gym Reviews, June 5, 2024¹⁷)

The Impact of Pulling Exercises on Fitness

Pulling exercises involve concentric (shortening) contractions of the muscles to pull a weight toward your body.¹⁸ Some examples include the inverted row, bent-over row, lat pulldown, deadlift, seated cable row and upright row. These movements engage the muscles on your back, including the latissimus dorsi, rhomboids and trapezius.¹⁹

They also work your biceps, forearms and shoulders, improving your posture and contributing to overall upper body strength and stability.²⁰ Moreover, a study²¹ published in the Journal of Functional Morphology and Kinesiology found that pulling exercises are not only effective in strengthening the back muscles but also in reducing the risk of back pain and injury.

A simple and effective bodyweight pull exercise I recommend you try is the inverted row. To perform it, set up a bar at hip height or use the edge of a sturdy table. Lie on your back underneath it and grip the bar or table edge with your hands shoulder-width apart, palms facing outward. Keep your body straight and engage your core as you pull your chest up to the bar. Squeeze your shoulder blades together at the top, then slowly lower yourself back down.²²



Inverted row

As you increase strength and proficiency with bodyweight pulling exercises, you can incorporate additional resistance to further challenge your upper body. Some good examples are bent-over rows and single-arm rows, which can both be performed using resistance bands or dumbbells to increase intensity and promote muscle growth.



Bent over row



Single-arm row

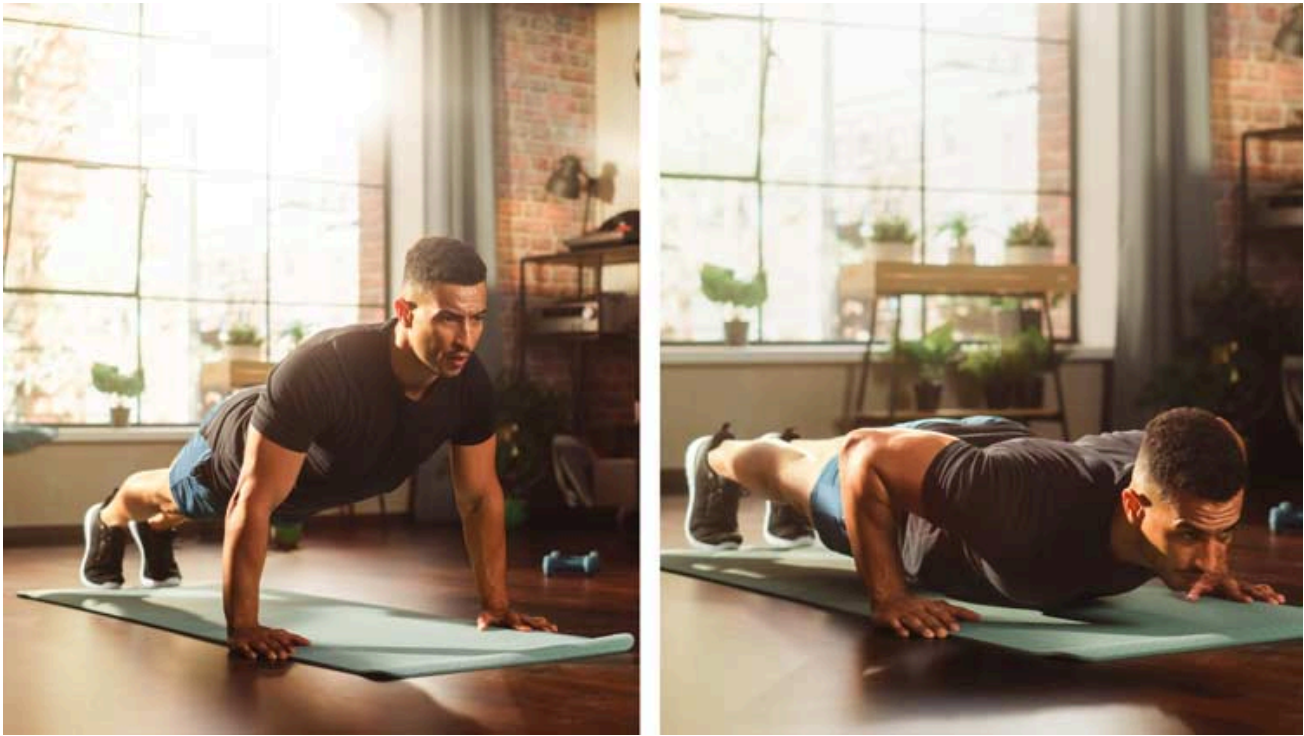
How Push Exercises Benefit Your Health

The opposite of pull variations, push compound exercises are movements involving the eccentric (lengthening) contractions of the muscles to push a weight away from your body.²³ These movements target primarily your chest, shoulders and triceps, and engage the joints in your shoulders, elbows and wrists.²⁴

The classic pushup is a bodyweight exercise known for effectively strengthening the upper body. Research has found it may have a positive impact on cardiovascular health, too. The study,²⁵ published in JAMA Network Open, evaluated data from 1,104 active adult men to determine the association between pushup exercise capacity and risk of future cardiovascular events.

Their findings showed that those who were able to complete at least 40 pushups in 30 seconds had a significantly lower risk of heart attack, heart failure or other cardiovascular problems over the next 10 years compared to those who were only able to complete less than 10 pushups.

To perform pushups, start in a plank position with your hands slightly wider than shoulder-width apart and your feet together. Keep your body in a straight line from head to heels. Lower your body by bending your elbows until your chest nearly touches the floor. Push back up to the starting position by straightening your arms, keeping your core engaged throughout the movement.



Pushup

Once you master this basic exercise, you can gradually increase the number of repetitions and explore other variations to ramp up the intensity and continue challenging your body. Other push variations of compound exercises you can try include bench press, overhead press, dips and dumbbell shoulder press.

Compound Exercises Can Boost Your Cellular Health

A well-rounded compound training routine features a combination of pushing and pulling exercises with squatting movements. Dedicating just 30 minutes of your time each week to resistance exercises like these can help you build a stronger, more resilient body.

What's more, as you increase the intensity of your routine, you also optimize your body's cellular energy production. Muscles are the body's most energy-demanding tissues, requiring substantial energy even when at rest. Engaging in strength training to build and maintain muscle mass can boost your body's energy needs, thereby raising your metabolic rate.

This increase in metabolism not only aids in achieving fitness objectives but also enhances general health and well-being. By pushing your muscles through compound exercises, you reap benefits that go beyond physical gains, improving your cellular function and overall vitality.

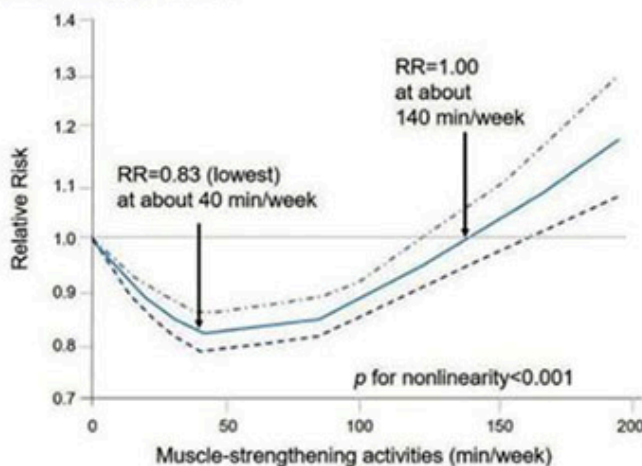
Remember Not to Overdo Strength Training

There is no question that strength training can improve muscle mass, as well as muscle and bone strength. However, it's important to stay within the Goldilocks zone, otherwise your hard work will backfire.

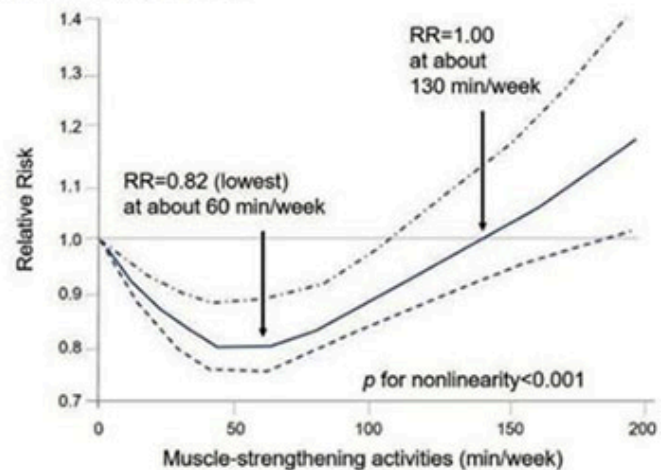
A 2023 study²⁶ published in Current Cardiology Reports suggested that the negative results of excessive strength training might be due to increased arterial stiffness and chronic inflammation. However, the researchers noted a lack of confirmatory evidence.

Adding to this perspective, a meta-analysis²⁷ published in Missouri Medicine showed that there's a J-shaped dose-response for strength training activities and all-cause mortality. As illustrated in the graphs below, the benefits max out right around 40 to 60 minutes a week. Beyond that, the advantages start to diminish, highlighting the importance of moderation in your training regimen.

All-cause Mortality (6 Studies)



All-cause Mortality (5 Studies)



They also found that at 130 to 140 minutes of strength training per week, the longevity benefit becomes the same as if you were sedentary. The key takeaway is finding a

balance – the researchers suggest that targeting 20 minutes, two or three times weekly on nonconsecutive days, or 40 to 60 minutes once weekly hits the optimal zone.

Anything above 60 minutes per week yields diminishing returns. However, I believe that just 30 minutes is enough to reap the benefits of resistance exercises.

It's also important not to do only strength training, but to integrate it as supplementary to moderate activity. You will get more benefits simply from walking or doing other moderate exercise (loosely defined as exercising to the point where you're slightly winded but can still carry on a conversation). There's no point at which moderate exercise starts becoming negative.

In late November 2023, I interviewed Dr. James O'Keefe the lead author of the Missouri Medicine study and a cardiologist with the Mid America Heart Institute at St. Luke's Hospital in Kansas City. You can watch our discussion below to learn more about the importance of not overdoing resistance exercises.

Sources and References

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