



The Secret to Success in Fitness: The Overload Principle

Do you have a goal to do something that you can't currently do? It might be to run a faster mile or to climb a set of stairs you used to be able to climb.

How could you get there? The answer is: The Overload Principle.



The overload principle, sometimes referred to as progressive overload, is at the center of fitness training. It involves pushing yourself (overloading) beyond your normal limits to force your body to adapt and improve. The overload principle is most often discussed in terms of building strength and muscle (1, 2). But it works equally well building endurance, improving flexibility and balance.

I will use building strength as an illustration of the overload principle. Let's say you can do 8 squats holding one 5lb dumbbell in front of your chest as in the photo below. You set a goal of doubling the weight, in other words doing 8 squats while holding a 10lb dumbbell. The standard overload process is to first increase your squat repetitions gradually up to 12. On day 1 you push yourself to do 9 reps, with the original 5lb weight. The idea is to push yourself to do more - but make sure not to overdo it. Find that sweet spot where you push yourself but not so hard that you need extra time to recover.



As it gets easier to do 9 reps per set, try pushing yourself to 10 reps per set. Maybe try pushing yourself by going for 3 sets of 10 reps with rest in between each set. As this gets easier, push yourself to do 11 reps per set and eventually go for 12 reps per set for 3 sets. Now that is real progress!

After that, you should be ready to jump to the next level. Put down the 5lb dumbbell and pick up a 7.5lb dumbbell and start again with 8 repetitions for 3 sets. Use the same process of adding reps, or sets if you prefer, as you are able to do so until you get to 3 sets of 12 reps each. This will take time so remember to be patient with yourself. Progress will go faster if you do multiple sets per training session.

Now you are ready for the big test. Pick up the 10lb dumbbell and go for 8 reps. You will be able to do it. Nice going! It's time to celebrate!



If you want to build enough strength to climb those impossible stairs, you would use the same process. Start by doing only the steps you can do easily. It might be one. Make sure you use the handrail and ask a partner to spot you to help prevent a fall. If you have any concerns about this process, talk to your medical professional and explain what you are trying to do and how you plan to do it.

In these examples I focused on two elements: number of repetitions and weight. Other elements include the number of sets and the rest time between sets. If you give yourself plenty of rest between sets, you will be able to do more reps and sets. But if you reduce your rest period you will be pushing yourself a bit harder and increasing your capacity. In this case you will also be pushing not just the muscles

that perform the exercise, but also your heart and lungs. They will also benefit by being pushed a bit by shorter rest periods between sets. Monitor your breathing and heart rate to make sure not to push yourself too hard.

The Overload Principle applies to all ages. A review of 8 research studies published in the journal Clinics in Geriatric Medicine, found that resistance training using the Overload Principle in people over 65 years old with osteoarthritis (OA) produced significant improvements in strength (3). The authors conclude that:

“Older adults with osteoarthritis will benefit from a strength training program that provides progressive overload to maintain intensity throughout the exercise program ... Clinicians should encourage participation in exercise training programs, even in the oldest old with OA.” (3, pg 445)

Endurance athletes use the overload principle by pushing for longer or faster runs and perhaps shorter recovery periods between runs. The same overload principle can be used to improve flexibility and balance.

In an ideal world you would use the Overload Principle to do two strength building workouts per week, two endurance workouts per week and flexibility and balance work every day. Of course, if you don't workout at all, start with fewer workouts per week and increase them gradually. You can use The Overload Principle in all areas of your life, including your daily habits. Start with what you can do and add more according to your ability. You will be amazed at what you can accomplish.

Let's Get Moving!

1. <https://www.issaonline.com/blog/post/understanding-and-using-the-overload-principle>
2. Plotkin D, et al. (2022). Progressive overload without progressing load? The effects of load or repetition progression on muscular adaptations. PeerJ 10:e14142 DOI 10.7717/peerj.14142
3. Latham, Nancy and Liu, Chiung-ju. (2010). Strength training in older adults: The benefits for osteoarthritis, Clin Geriatr Med. 26(3): 445–459. doi: [10.1016/j.cger.2010.03.00](https://doi.org/10.1016/j.cger.2010.03.00)

Fun Fact: Still Climbing Stairs at 100



Anne Raybin has accomplished a lot in her life. Mother, grandmother, great grandmother, schoolteacher, college professor and now, centenarian. And she is still climbing stairs.

According to her daughter, Turner, “When she was at the university, she would take advantage of the pool and the track. She lives in a two-story home with the laundry in the basement and she’s up and down the stairs constantly, and that’s still the case.”

Beyond exercise, Anne has life lessons for us too. She is grateful for the people in her life:

“Thank God for a good family. And not only good family, good friends. A good friend is like family. That’s very important.”

See also the article about Anne in her local newspaper (<https://tbrnewsmedia.com/still-climbing-stairs-at-100-setauket-womans-milestone-moment/>)

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Personal Note: Lessons in Over-Overloading



You need to find the right balance between realistic goals and over-overloading in your workouts.

Often I start my workouts feeling a bit low-energy and not ready to exert myself. Over the years I have learned a lesson that a gentle warmup can do wonders for my enthusiasm for exercise. I begin my workout by getting on a treadmill and starting slowly. Gradually, I increase the speed or slope to get my heart and lungs working a bit harder. After 10 minutes I go to the mats to do some gentle dynamic stretching. By the time I start doing my resistance exercises I am feeling more ambitious and I begin pushing myself harder.

There is a second lesson which is to be careful to not let my enthusiasm for my workout cloud my judgement so that I end up over-overloading. Last week I failed to do that. I got so pumped about doing my exercises that I pushed myself too far. I paid the price two days later when delayed onset muscle soreness kicked in. I was so sore that I couldn't go to my next scheduled workout. I pushed that workout two days to the right. I lost training time and took a step backwards in my fitness routine.

Apparently I haven't learned that second lesson yet.

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