**Load-Bearing Exercises and Balance**

**Resistance** (noun)

re·​sis·​tance | \ ri-ˈzi-stən(t)s  \

**Definition of resistance**

**(Entry 1 of 2)**

**1a:**an act or instance of [resisting](https://www.merriam-webster.com/dictionary/resisting) **:**[OPPOSITION](https://www.merriam-webster.com/dictionary/opposition)

**b:**a means of resisting

**2:**the power or capacity to [resist](https://www.merriam-webster.com/dictionary/resist): such as

**a:**the inherent ability of an organism to resist harmful influences (such as disease, toxic agents, or infection)

**b:**the capacity of a species or strain of microorganism to survive exposure to a toxic agent (such as a drug) formerly effective against it

**3:**an opposing or retarding force

**4a:**the opposition offered by a body or substance to the passage through it of a steady electric current

**b:**a source of resistance

**5:**a psychological defense mechanism wherein a patient rejects, denies, or otherwise opposes the therapeutic efforts of a psychotherapist

**6***often capitalized* **:**an underground organization of a conquered or nearly conquered country engaging in sabotage and secret operations against occupation forces and collaborators

**Resistance**

[**adjective**](https://www.merriam-webster.com/dictionary/adjective)

**Definition of *resistance* (Entry 2 of 2)**

**:**of, relating to, or being exercise involving pushing or pulling against a source of resistance (such as a weight) to increase strength*resistance* training

**SOURCE:** <https://www.merriam-webster.com/dictionary/resistance>

**Strength, power, and postural control in seniors: Considerations for functional adaptations and for fall prevention**

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**Abstract**

The ageing neuromuscular system is affected by structural and functional changes that lead to a general slowing down of neuromuscular performance and an increased risk of falling. As a consequence, the process of ageing results in a reduced ability to develop maximal and explosive force, as well as in deficits in static and dynamic postural control. A decrease in the number and size of type II fibers in particular accounts for the age-related decline in muscle mass (sarcopenia) and strength performance. Multiple denervation and re-innervation processes of muscle fibers seem to be responsible for the reduced number of muscle fibers. Recently, it has been suggested that it is not the decline in motoneurons that accounts for the loss in number of muscle fibers but the disturbed potential of fiber regeneration and re-innervation. Furthermore, an age-related reduction in the number of satellite cells has also been associated with sarcopenia. The ability to compensate for platform and gait perturbations deteriorates with ageing as reflected in longer onset latencies and inefficient postural responses. All sites within the somatosensory system are affected by ageing and therefore contribute to postural instability. However, morphological changes of muscle spindles appear primarily to be responsible for the impaired ability to compensate for balance threats in old age. Given these neuromuscular limitations in old age, it is important to apply adequate training interventions that delay or even reverse the onset of these constraints. Strength training has the potential to enhance maximal as well as explosive force production capacity. This is accomplished by neural factors, including an improved recruitment pattern, discharge rate, and synchronization of motor units. Furthermore, an increase in number of satellite cells most likely accounts for training-induced muscle hypertrophy. Recent studies have investigated the impact of balance training in old age on the ability to develop maximal and explosive force. In addition, the effects of balance training on reflex activity during gait perturbations were also examined. Increases in maximal and explosive force production capacity and an improved ability to compensate for gait perturbations were observed. It is evident from the literature that researchers are increasingly studying the effects of more specifically designed training programs on performance in populations of older adults. Thus, in the near future, strength training could be replaced by high-velocity forms of power training and balance training by perturbation-based training programs. It is hypothesized that this new approach is more efficient in terms of fall prevention than the traditional approach.

SOURCE: <https://www.tandfonline.com/doi/abs/10.1080/17461390802478066>

**Strength Training Can Help Prevent Falls in Seniors**

By [**Gail Willowby**](https://seniorslifestylemag.com/author/gailwillowby/)

As bone density and muscle mass decrease over time, older people become more at risk for falls. Many of these [falls](https://seniorslifestylemag.com/health-well-being/preventing-falls-aging-in-place/) result in broken hips which require surgery and often lead to lack of independence for the senior involved. Strength training can improve your balance and help you gain muscle mass. It also increases the elasticity of your muscles and strengthens tendons, ligaments and connective tissues. All of these help to hold your body in an upright position. (Explain the importance of muscles and their ROM as it impacts posture and gait pattern)

**What are some tips on gaining strength as we age?**

* Before starting any new exercise program check with your doctor!
* The first step is [nutrition](https://seniorslifestylemag.com/health-well-being/are-you-at-risk-or-your-senior-know-the-nutrition-risks-for-seniors/) and protein is very important in building muscles. Seniors need 46 to 56 grams of protein each day.
* Up your water intake. Most of us don’t come close to drinking enough water each day. Water helps your body absorb and metabolize nutrients.
* Always warm up before exercising with slow stretches which will help to make your body more flexible.
* Take it slow. Strength training programs change as you go along. Adding more resistance helps to build stronger muscles. Start with 10 minutes and gradually work your way up to 30 minutes.
* Just a small increase in muscle mass will improve your ability to climb [stairs](https://seniorslifestylemag.com/housing/senior-stairs-issue/) and get out of chairs more easily.

Strength training has been known to help with the pain from arthritis and since it increases your metabolic rate, it can help you lose weight. An ongoing program of strength training will improve glucose levels in those who have diabetes and help alleviate chronic pain. You’ll notice an increase in flexibility and your range of motion, both of which will help prevent falls.

SOURCE: <https://seniorslifestylemag.com/health-well-being/strength-training-can-help-prevent-falls-in-seniors/>