**Orthostatic Blood Pressure and Falls**

* Falls are the second leading cause of unintentional injury deaths worldwide.
* Adults older than 60 years of age suffer the greatest number of fatal falls.

SOURCE: <https://www.who.int/news-room/fact-sheets/detail/falls>

**When does it occur?**

* When we stand up fast and get light-headed.
* When we get up at night to go to the restroom.

**What is Orthostatic Blood Pressure?**

***Orthostatic hypotension*** (OH) is a common cardiovascular disorder, with or without signs of underlying neurodegenerative disease.

SOURCE: <https://pubmed.ncbi.nlm.nih.gov/26271068/>

***Orthostatic hypotension*** *—* ***also called postural hypotension*** — is a form of low blood pressure that happens when you stand up from sitting or lying down. Orthostatic hypotension can make you feel dizzy or lightheaded, and maybe even cause you to faint.

Orthostatic hypotension may be mild, and episodes can last for less than a few minutes. However, long-lasting orthostatic hypotension can signal more-serious problems, so it's important to see a doctor if you frequently feel lightheaded when standing up.

Occasional (acute) orthostatic hypotension is usually caused by something obvious, such as dehydration or lengthy bed rest, and is easily treated. Chronic orthostatic hypotension is usually a sign of another health problem, so treatment varies.

 The most common symptom is lightheadedness or dizziness when you stand up after sitting or lying down. Symptoms usually last less than a few minutes.

Orthostatic hypotension signs and symptoms include:

* Lightheadedness or dizziness upon standing
* Blurry vision
* Weakness
* Fainting (syncope)
* Confusion
* Nausea

**When to see a doctor**

Occasional dizziness or lightheadedness may be fairly minor — triggered by mild dehydration, low blood sugar or overheating. Dizziness or lightheadedness may also happen when you stand after sitting for a long time. If these symptoms happen only occasionally, there's likely no cause for concern.

It's important to see your doctor if you have frequent symptoms of orthostatic hypotension because they can signal serious problems. It's even more urgent to see a doctor if you lose consciousness, even for just a few seconds.

Keep a record of your symptoms, when they occurred, how long they lasted and what you were doing at the time. If these occur at dangerous times, such as while driving, discuss this with your doctor.

**Causes**

When you stand up, gravity causes blood to pool in your legs and abdomen. This decreases blood pressure because there's less blood circulating back to your heart.

Normally, special cells (baroreceptors) near your heart and neck arteries sense this lower blood pressure. The baroreceptors send signals to centers in your brain, which signals your heart to beat faster and pump more blood, which stabilizes blood pressure. These cells also narrow the blood vessels and increase blood pressure.

Orthostatic hypotension occurs when something interrupts the body's natural process of counteracting low blood pressure. Many conditions can cause orthostatic hypotension, including:

* **Dehydration.** Fever, vomiting, not drinking enough fluids, severe diarrhea and strenuous exercise with a lot of sweating can all lead to dehydration, which decreases blood volume. Mild dehydration can cause symptoms of orthostatic hypotension, such as weakness, dizziness and fatigue.
* **Heart problems.** Some heart conditions that can lead to low blood pressure include extremely low heart rate (bradycardia), heart valve problems, heart attack and heart failure. These conditions prevent your body from responding rapidly enough to pump more blood when standing up.
* **Endocrine problems.** Thyroid conditions, adrenal insufficiency (Addison's disease) and low blood sugar (hypoglycemia) can cause orthostatic hypotension. So can diabetes — which can damage the nerves that help send signals regulating blood pressure.
* **Nervous system disorders.** Some nervous system disorders, such as Parkinson's disease, multiple system atrophy, Lewy body dementia, pure autonomic failure and amyloidosis, can disrupt your body's normal blood pressure regulation system.
* **Eating meals.** Some people have low blood pressure after eating meals (postprandial hypotension). This condition is more common in older adults.

**Risk factors (What puts you at risk?)**

The risk factors for orthostatic hypotension include:

* **Age.** Orthostatic hypotension is common in those who are age 65 and older. Special cells (baroreceptors) near your heart and neck arteries that regulate blood pressure can slow as you age. It also may be harder for an aging heart to speed up and compensate for drops in blood pressure.
* **Medications.** These include medications used to treat high blood pressure or heart disease, such as diuretics, alpha blockers, beta blockers, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors and nitrates.

Other medications that may increase your risk of orthostatic hypotension include medications used to treat Parkinson's disease, certain antidepressants, certain antipsychotics, muscle relaxants, medications to treat erectile dysfunction and narcotics.

Using medications that treat high blood pressure with other prescription and over-the-counter medications may cause low blood pressure.

* **Certain diseases.** Some heart conditions, such as heart valve problems, heart attack and heart failure; certain nervous system disorders, such as Parkinson's disease; and diseases that cause nerve damage (neuropathy), such as diabetes, increase the risk of low blood pressure.
* **Heat exposure.** Being in a hot environment can cause heavy sweating and possibly dehydration, which can lower your blood pressure and trigger orthostatic hypotension.
* **Bed rest.** If you have to stay in bed a long time because of an illness, you may become weak. When you try to stand up, you may have orthostatic hypotension.
* **Pregnancy.** Because your circulatory system expands rapidly during pregnancy, blood pressure is likely to drop. This is normal, and blood pressure usually returns to your pre-pregnancy level after you've given birth.
* **Alcohol.** Drinking alcohol can increase your risk of orthostatic hypotension.

**Complications**

Persistent orthostatic hypotension can cause serious complications, especially in older adults. These include:

* **Falls.** Falling down as a result of fainting is a common complication in people with orthostatic hypotension.
* **Stroke.** The swings in blood pressure when you stand and sit as a result of orthostatic hypotension can be a risk factor for stroke due to the reduced blood supply to the brain.
* **Cardiovascular diseases.** Orthostatic hypotension can be a risk factor for cardiovascular diseases and complications, such as chest pain, heart failure or heart rhythm problems.

Mayo Clinic

SOURCE: <https://www.mayoclinic.org/diseases-conditions/orthostatic-hypotension/symptoms-causes/syc-20352548>

Mayo Clinic

**Diagnosis and Treatment**

<https://www.mayoclinic.org/diseases-conditions/orthostatic-hypotension/diagnosis-treatment/drc-20352553>

**Orthostatic Hypotension and Falls in Older Adults: A Systematic Review and Meta-analysis**

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**Abstract**

**Objectives:**Orthostatic hypotension is a potential risk factor for falls in older adults, but existing evidence on this relationship is inconclusive. This study addresses the association between orthostatic hypotension and falls.

**Design:**Systematic review and meta-analysis of the cross-sectional and longitudinal studies assessing the association between orthostatic hypotension and falls, as preregistered in the PROSPERO database (CRD42017060134).

**Setting and participants:**A literature search was performed on February 20, 2017, in MEDLINE (from 1946), PubMed (from 1966), and EMBASE (from 1947) using the terms orthostatic hypotension, postural hypotension, and falls. References of included studies were screened for other eligible studies. Study selection was performed independently by 2 reviewers using the following inclusion criteria: published in English; mean/median age of the population ≥65 years; blood pressure measurement before and after postural change; and assessment of the association of orthostatic hypotension with falls. The following studies were excluded: conference abstracts, case reports, reviews, and editorials. Data extraction was performed independently by 2 reviewers.

**Measures:**Unadjusted odds ratios of the association between orthostatic hypotension and falls were used for pooling using a random effects model. Studies were rated as high, moderate, or low quality using the Newcastle-Ottawa Scale.

**Results:**Out of 5646 studies, 63 studies (51,800 individuals) were included in the systematic review and 50 studies (49,164 individuals) in the meta-analysis. Out of 63 studies, 39 were cross-sectional and 24 were longitudinal. Orthostatic hypotension was positively associated with falls (odds ratio 1.73, 95% confidence interval 1.50-1.99). The result was independent of study population, study design, study quality, orthostatic hypotension definition, and blood pressure measurement method.

**Conclusions and implications:**Orthostatic hypotension is significantly positively associated with falls in older adults, underpinning the clinical relevance to test for an orthostatic blood pressure drop and highlighting the need to investigate orthostatic hypotension treatment to potentially reduce falls.

SOURCE: <https://pubmed.ncbi.nlm.nih.gov/30583909/>