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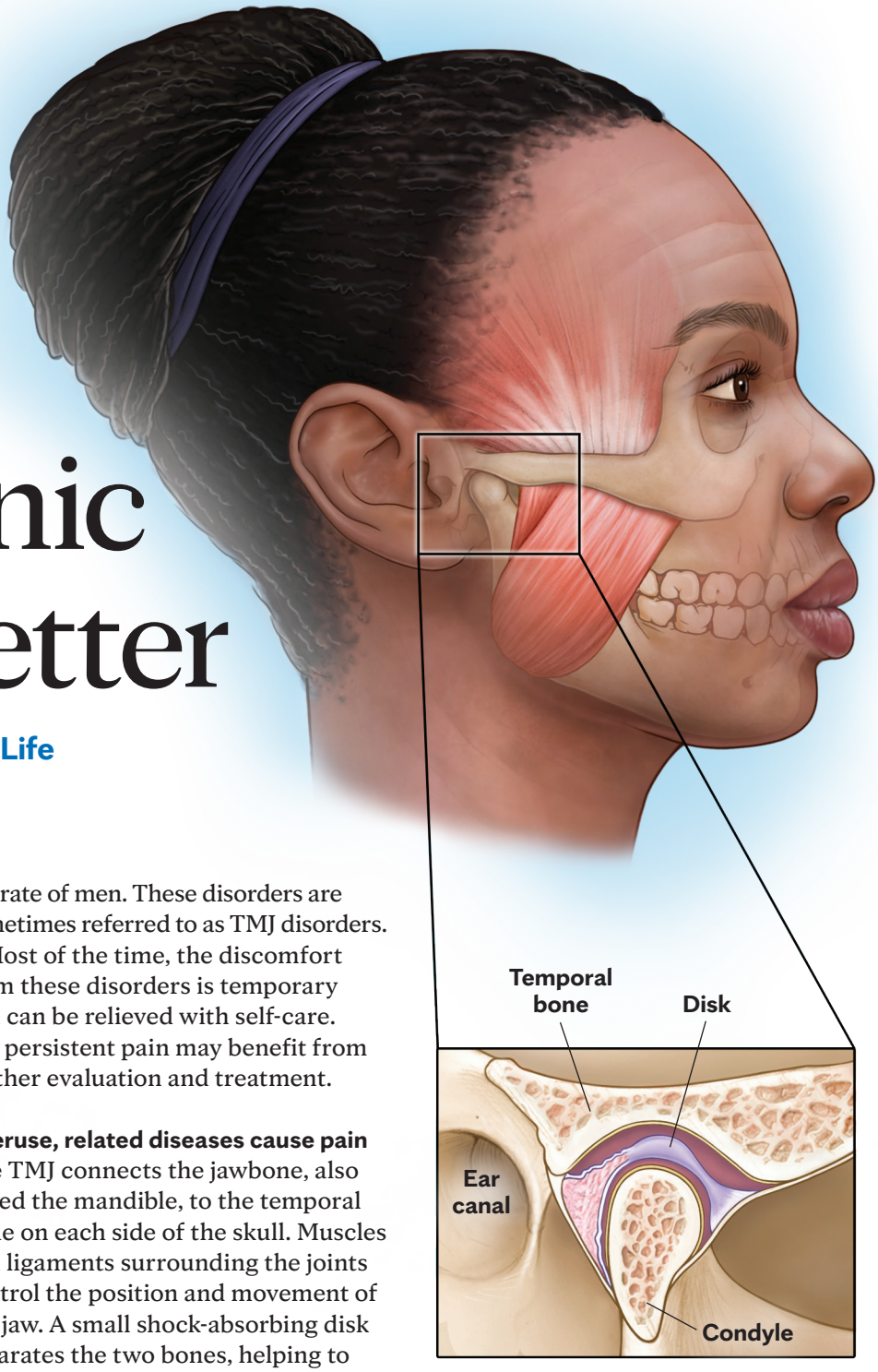
Mayo Clinic Health Letter

Reliable Information for a Healthier Life



The temporomandibular joint (TMJ) resides on your face, in front of each ear. The TMJ connects your jawbone, also called the mandible, to the temporal bone on both sides of your skull. TMJ disorders result from issues that arise in the joint or in the muscles that surround and support the joint.

Jaw pain

Treatment hinges on many factors

Put a finger on your face just in front of one ear. If you open and close your mouth, you'll feel a bulge as your mouth moves. That's your temporomandibular (tem-puh-roe-man-DIB-u-lar) joint, also known as the TMJ. It feels as though it's right beneath the skin but is actually about an inch below it.

The TMJ may not get the attention other joints do. It's similar to a ball-and-socket joint, just like the hips, and serves a hugely important purpose. When it doesn't function properly, you might have trouble eating, drinking and talking. Problems in the joint and surrounding muscles can include a clicking sound, pain, headaches and soreness. It's estimated that about one-third of adults will experience temporomandibular disorders at some point in life, with women at double the rate of men. These disorders are sometimes referred to as TMJ disorders.

Most of the time, the discomfort from these disorders is temporary and can be relieved with self-care. But persistent pain may benefit from further evaluation and treatment.

Overuse, related diseases cause pain

The TMJ connects the jawbone, also called the mandible, to the temporal bone on each side of the skull. Muscles and ligaments surrounding the joints control the position and movement of the jaw. A small shock-absorbing disk separates the two bones, helping to keep movements smooth. To allow for the jaw to move both up and down and side to side, the joint functions as a hinge and can slide sideways.

TMJ disorders typically stem from issues in one of two places — the joint or the muscles. In some people, both may be involved. Trauma to the jawbones or TMJ plays a role in some

temporomandibular disorders. The shock-absorbing disk may erode or move out of alignment, or the TMJ itself may be damaged by impact or overworked with time.

Degenerative or inflammatory diseases such as rheumatoid arthritis also increase your risk. In fact, it's estimated that over half of people with rheumatoid arthritis also experience a TMJ disorder. Because women are affected more often than men, many experts speculate that a hormonal link may be involved as well.

Certain behaviors also may increase the likelihood of developing a TMJ disorder. These include clenching or grinding your teeth and repetitive jaw motions such as from chewing gum, biting fingernails or smoking a pipe. Poor head and neck posture can contribute to muscle pain. For instance, musicians who use their jaw frequently, including singers, violinists and woodwind players, also commonly experience jaw pain.

Pain and other symptoms

Facial pain is the most common symptom of TMJ disorders. Pain may occur in the muscles of the jaw, in the area in front of the ear, or with either or both joints. It's common for pain to occur with chewing. Sometimes you'll hear a clicking sound too. Other symptoms are headache, earache, difficulty opening and closing the mouth, and tooth pain.

Most people develop only a mild form of TMJ disorder. Symptoms usually improve significantly or disappear fully within a few weeks to months, especially with good self-care. However, other people may develop pain that can be long-term and even debilitating.

Talk with your healthcare team if you have jaw symptoms that last for a week or longer. TMJ disorders are usually diagnosed based on your symptoms, health history and findings from a physical exam. Imaging tests aren't typically needed but may be used with long-term symptoms and to check for underlying causes of pain, such as arthritis.

Self-care and medications often can tame the pain

Some initial treatment options for TMJ disorders include:

- *Cold or heat therapy* — Applying warm, moist heat or an ice pack to the side of your face may ease pain, depending on your symptoms. Acute pain is best treated with an ice pack. Chronic dull pain is best treated with heat therapy.
- *Changes to daily habits* — Avoid teeth clenching and nail biting. Eat soft foods or take smaller bites of food, and avoid other large jaw movements such as with gum chewing and wide yawning. Practice good resting jaw posture with your tongue gently resting on the roof of your mouth, teeth apart and jaw in a relaxed position.
- *Oral occlusal appliances* — Often, people with jaw pain benefit from wearing a device inserted over their teeth at night. These devices not only protect the teeth but also support the TMJ and surrounding muscles. This may reduce pain and other symptoms.
- *Physical therapy* — Along with exercises to stretch and strengthen jaw muscles, treatments might include dry needling therapy and transcutaneous electrical nerve stimulation, also known as TENS. Also, moist heat and stretching are effective in repeated applications throughout the day.

Nonprescription pain medications such as ibuprofen (Advil, Motrin IB, others) may be used to provide temporary relief. Or your care team may recommend other options, such as a stronger pain medication, muscle relaxant or antidepressant drug, to help relieve symptoms.

Cognitive behavioral therapy (CBT) may be recommended to help you understand the factors and actions that may aggravate your pain so that you can avoid them. This may be particularly beneficial for people who also experience anxiety or depression along with a TMJ disorder.

More-involved procedures

For severe or long-lasting jaw pain, other options may be considered. These include:

- *Arthrocentesis* — Arthrocentesis (ahr-throe-sen-TEE-sis) is a minimally invasive procedure that involves inserting small needles into the joint so that fluid can be flushed through it to remove debris and inflammatory byproducts.
- *Injections* — In some people, corticosteroid injections into the joint may help. Rarely, injecting onabotulinumtoxinA (Botox) into the

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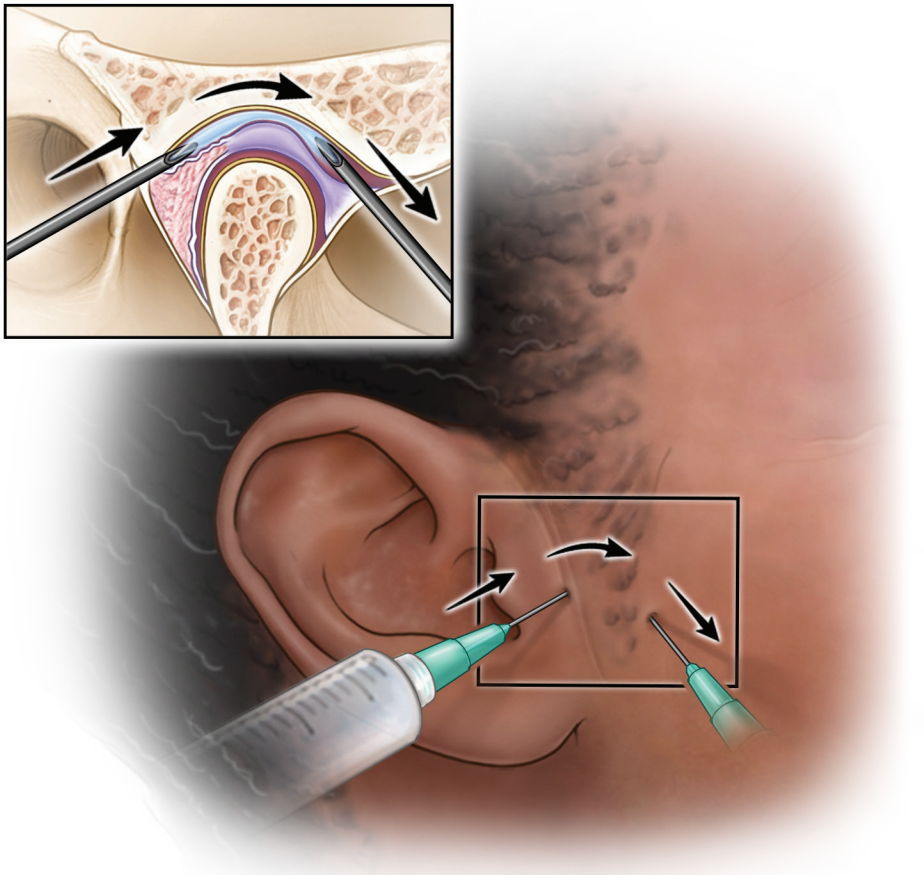
jaw muscles used for chewing may ease pain related to TMJ disorders.

- *TMJ arthroscopy* — A small, thin tube called a cannula is placed into the joint space. Then a lighted viewing instrument called an arthroscope is inserted, and small tools are used for surgery. TMJ arthroscopy generally has fewer risks and complications than open-joint surgery does.
- *Modified condylotomy* — This procedure addresses the TMJ indirectly, with surgery on the mandible but not in the joint itself. It increases joint space to allow the rounded end of the mandible, called the condyle, to move more freely. The procedure may ease pain and locking.
- *Open-joint surgery* — If your jaw pain does not go away with more-conservative treatments and a structural issue in the joint appears to be causing the pain, open-joint surgery may be worth considering to repair or replace the joint. But open-joint surgery involves more risk than other procedures. ■



With arthrocentesis, small needles are inserted into the TMJ so that fluid can be flushed through the joint to remove debris.

HEALTH TIPS

PROTECT YOUR FEET FROM DIABETES COMPLICATIONS

Diabetes can damage nerves and reduce blood flow to your feet, causing pain, numbness or a sore that doesn't heal well. The best ways to protect your feet from serious conditions are good blood sugar management and a foot care routine that you can follow each day:

- *Watch how you wash* — Use warm water no hotter than 95 degrees Fahrenheit, a soft cloth and soap. Wash your feet and in between your toes. If you soak your feet, be careful, as it can dry out your skin. After washing, pat dry with a clean towel.
- *Check for potential problems* — Look for cuts, sores, skin color changes, blisters, ingrown toenails, corns, calluses and plantar warts. Make note of any warm spots on your skin, which could be signs of infection. If you can't see the bottoms of your feet, use a mirror or ask someone to help. You might even take pictures of your soles with a cellphone, which can allow you to zoom in to identify problems.
- *Add moisture* — Rub a light coat of lotion or petroleum jelly on the tops and bottoms of your feet. But avoid applying between your toes, where added moisture can encourage growth of fungus or bacteria. After moisturizing, put on socks or slippers to prevent slips.
- *Keep nails straight and smooth* — When needed, trim straight across with toenail clippers after you wash and dry your feet. Gently smooth each nail with an emery board or nail file. Safe nail care can prevent ingrown toenails and other wounds from forming.
- *Never go barefoot* — Wear clean socks and shoes or slippers that fit well, even when you're indoors. Shake out your shoes after wearing them to make sure that they're free of pebbles. Routinely look at the inside lining of your shoes for signs of wear and replace your shoes when needed. When you buy new shoes, try to stick to styles with plenty of room for your toes, such as walking or athletic shoes.
- *Keep the blood flowing* — Throughout the day, wiggle your toes and move your ankles up and down and in circles. When sitting, put your feet up. It also helps to get regular exercise and not smoke.

Tell your healthcare team if you have any foot injury or swelling that isn't healing, skin that's warm or has changed colors, or patches of thick skin on your feet. Also mention if you're having trouble with daily care. Your team may be able to provide helpful resources. ■

Pain in the Achilles

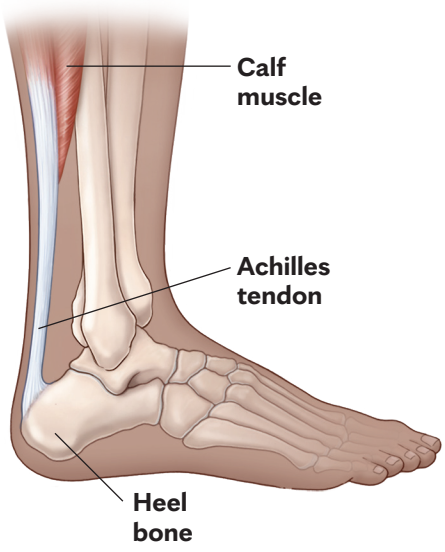
Stretching and strengthening more critical with age

Depending on where you live, spring is likely in full bloom. For many, that means more walks outdoors, along with other activities that tend to get sidelined if you live somewhere with dark, cold winters.

But if you increase activity too quickly, you risk developing an overuse injury, especially in the Achilles tendon. This strong, fibrous cord connects the muscles in the back of your calf to your heel bone. You use it whenever you point and flex your feet, such as pushing off the ground during walking, running or jumping.

"As people get older, their tendons gradually lose their elasticity and flexibility, making them more susceptible to stress," says Edward Laskowski, M.D., who specializes in sports medicine and physical medicine and rehabilitation at Mayo Clinic in Rochester, Minnesota.

Without protective measures, the tendon is more likely to become inflamed, especially with overuse. This condition is called tendinitis.



The Achilles tendon is a strong, fibrous cord that connects the muscles in the back of your calf to your heel bone. With age, the tendon loses elasticity and flexibility, making it susceptible to injury.

What is Achilles tendinitis?

If you have Achilles tendinitis, you'll likely notice tenderness and stiffness directly over your heel bone or higher up toward your calf muscle. At first, you may experience a mild ache, especially after activity. You also might feel tenderness or stiffness in the area, especially in the morning. In addition, the first few steps after sitting may be particularly painful.

Certain factors make Achilles problems more likely:

- You're middle-aged or older.
- Your Achilles tendon or lower leg muscles (gastrocnemius and soleus) are tight.
- You abruptly change your activity level, such as running or walking longer distances than usual, switching from flat roads to trails or hills, or starting new activities — such as pickleball or basketball — that involve sprinting, jumping or pivoting.
- You've been diagnosed with obesity, flat arches, psoriasis or high blood pressure.
- You've recently taken an antibiotic called a fluoroquinolone. Drugs of this type are associated with Achilles tendonitis.
- You've had a previous Achilles tendon injury.

Achilles tendinitis can weaken the tendon, making it more vulnerable to a tear (rupture) — a painful injury that often requires surgical repair.

Prevention

To keep your Achilles tendon healthy, especially if you are a runner, you'll want to increase your activity level gradually. Follow the 10% rule, increasing your mileage or activity level by no more than 10% a week.

These steps also help:

- *Wear the right footwear* — Shoes with adequate heel cushioning and firm arch support can reduce the tension in the Achilles tendon. If your shoes are in good condition but don't seem to support your arches well, consider purchasing stand-alone insoles for both shoes. Consult a healthcare professional for help choosing the right shoes for your feet and activity level. Be sure to replace shoes every 400 to 500 miles.
- *Stretch your calves* — "Tight calf muscles can increase the strain on your tendon," says Dr. Laskowski. To keep your calves supple, do a runner's stretch (shown above) in the morning, before exercise and after exercise. Try to avoid stretching without warming up. Stretching after exercise is especially beneficial because that is when blood flow is increased and your muscles and tendons are warmed up.
- *Strengthen your calves* — Calf-strengthening exercises also can help the muscles and tendon absorb more force and help protect against injury, says Dr. Laskowski. To keep your calves strong, do heel raises (shown on page 5) several times a week.

Runner's stretch — *Stand an arm's length from a wall or a chair. Put your palms flat against the wall or hold on to the chair. Place one leg forward and one behind. Keep your back knee straight and your heel flat on the floor as you slowly bend your elbows and front knee. Move your hips forward until you feel a stretch in your calf. Hold for 30 to 60 seconds. Switch leg positions and repeat with your other leg forward.*

Heel raise — *Stand with your hands against a wall or sturdy object for balance. Slowly lift both heels and rise onto the balls of your feet. Then, slowly lower. Repeat up to 20 times. As you grow stronger, increase the challenge by holding hand weights or lifting and lowering yourself while balanced on one leg only.*

How to treat tendon pain

If your tendon is already sore and inflamed, treat it like any other musculoskeletal injury.

- *Rest* — Switch to lower impact activities that do not stress your tendon or worsen the pain. For example, if walking worsens the pain, try biking, elliptical exercise or swimming.
- *Use ice to reduce inflammation* — Freeze a plastic foam cup of water. Then, peel back the top of the cup to reveal the ice. Hold what remains of the cup, placing the ice against your tendon. Massage the ice against your tendon for up to 15 minutes after exercising or when you have pain.
- *Soothe pain with anti-inflammatory drugs* — Short-term use of nonprescription pain medications, such as ibuprofen (Advil, Motrin IB, others) and naproxen sodium (Aleve), can help reduce swelling and pain. Consult with your healthcare team for long-term use. ■

NEWS AND OUR VIEWS

SERIOUS FALLS AND THE RISK OF DEMENTIA

Falls are the leading cause of injury among older adults. Could they also be an early indicator of cognitive decline? A new study found that a diagnosis of dementia in older adults was more likely within one year after they had a serious fall.

The study looked at data from almost 2.5 million adults age 66 and older who did not have an existing dementia diagnosis but had a traumatic injury that caused them to go to the emergency room or be hospitalized. About half of them, or around 1.2 million, were injured by a fall. Those who had fallen were 21% more likely to be diagnosed with Alzheimer's disease or a related dementia in the next year compared with those whose injuries were due to something else. Just over 10% — about 130,000 — were diagnosed with some form of dementia within the next year.

The researchers who conducted the study, which was published in *JAMA Network Open*, noted that the results could not directly link falls and dementia. They emphasized that some of the people may have had undiagnosed dementia at the time of their falls or had mild cognitive impairment that progressed to dementia afterward. But the researchers say their findings suggest that having older adults undergo cognitive screening after a serious fall might help detect dementia sooner.

Mayo Clinic experts say more research is needed to better understand the connection between falls and dementia. If you or a loved one recently had a serious fall, talk with your healthcare team about whether cognitive screening would be a good idea. It's also important to discuss how you can prevent further falls. ■

COULD BODY MASS INDEX HAVE A COMPETITOR?

For decades, body mass index (BMI) has been a clinical standard to estimate body fat and screen for being overweight. Carrying excess weight — especially around the belly — is a known risk factor for health concerns such as diabetes, heart disease, sleep apnea and some types of cancer. In fact, obesity is a top 5 risk factor for early death.

BMI is quick and easy to calculate with your height and weight. Although BMI estimates total body fat better than weight alone, it has flaws. It's a one-size-fits-all guide that doesn't take into account your sex, age, race, ethnicity, frame size or muscle mass. That's why Olympic athletes — fit and at the top of their games — can be categorized as overweight or even obese on the BMI scale due to their muscular builds.

BMI doesn't measure body fat percentage or distribution. Thus, it can't differentiate between the fat around the buttocks or thighs and the more dangerous fat around the belly. The fat you can pinch is located under your skin and is less concerning. The fat you can't pinch, known as visceral fat, is located deep inside your abdomen and surrounds your organs. Visceral fat raises your risk of many serious health conditions and early death from any cause.

There's growing research that suggests there may be a better way to measure body fat distribution: body roundness index (BRI). BRI uses height and waist circumference — or sometimes hip circumference — to measure fat distribution.

Studies suggest that BRI may be a better barometer for predicting risk of health conditions such as cardiovascular disease, kidney disease, cancer, depression, anxiety, sleep disorders, metabolic syndrome and diabetes.

While BRI appears to be a contender as a public health screening tool, Mayo Clinic experts don't foresee a seismic shift away from BMI anytime soon. More research is needed to validate recent findings, especially to account for differences in age, sex, race and ethnicity. BRI also may be more difficult to use because it requires correct waist or hip measurements. ■

Hair loss

Distressing but treatable

Up to 100,000 hair follicles can be found on your head. In youth, the buds that emerge out of follicles pop through the scalp without hesitation, like flowers shooting out of the soil in spring. Hairs cover the head, looking vibrant and regrowing at a healthy rate. Later in life, it's more common for growth to slow or even stop. The buds form, but they may not be able to breach the scalp line.

Gradual thinning is a typical part of aging. But people with androgenetic alopecia, the most common type of hair loss, experience additional changes. The length of the growth phase shortens over time, and hair doesn't grow as thick or as sturdy, a process called miniaturization. Eventually, the growth phase becomes so short that the hair produced fails to reach the surface of the scalp.

Hereditary hair loss with age is the most common cause of baldness. But effective treatments are available to prevent hair loss and restore growth.

Differs in men, women

For men, hair loss can begin as early as the teens, although it usually becomes more prominent at and after midlife. Male-pattern hair loss is characterized by a receding hairline at the temples and balding at the top of the head.

About half of men experience some degree of androgenetic alopecia by age 50. It tends to run in families, indicating a genetic predisposition, with multiple genes likely involved. Androgens — hormones that figure prominently in male development — drive the process of hair follicle miniaturization.

Patterns of hair loss are a bit different in women. Hair loss often occurs after menopause, although sometimes the process begins earlier. Rather than getting a receding hairline, women usually lose density, generally around the top of the head, temples or middle part line. Though the scalp may be visible in these places, complete hair loss is unusual in women.

The causes of hair loss in women aren't as clear. Hormones are likely involved, including androgens, but not all women with hair loss have high androgen levels. Multiple genes and hereditary components likely play a role in female-pattern hair loss.

Androgenetic alopecia is recognized less often in women. But the psychological impact of thinning hair can be considerable.

Diagnosis and treatment

Before making a diagnosis, your healthcare team will likely examine you and ask about your diet, hair care routine, and medical and family history. You also might have blood tests, a scalp biopsy or a pull test, in which a medical professional gently pulls out several dozen hairs to test follicle strength.

Treatments are available to help minimize hair loss and promote hair growth. Options include:

- *Minoxidil (Rogaine, others)* — This nonprescription medication is for men and women. It comes as a liquid or foam that you rub on your scalp regularly. You may experience some hair regrowth, a slower rate of hair loss or both. Early on, some existing hair may fall out as the follicles are stimulated to produce new growth. Experts recommend that you use the treatment for about nine months before assessing the results. Once you stop treatment, you lose any regrowth.
- *Finasteride (Propecia)* — This is a prescription medication available as a pill or a cream. The pill form is approved to treat male-pattern hair loss. Full effects of the treatment may take up to a year and require continued use. Finasteride stops the conversion of testosterone into dihydrotestosterone, a hormone that can shrink hair follicles.
- *Hair transplant surgery* — Transplants may offer permanent improvement for some people, particularly those who have plenty of hair elsewhere on their heads that can be transplanted. During a transplant session, a medical professional takes tiny patches of skin, each containing one to several hairs, from the back or side of the scalp. Sometimes a larger strip of skin containing multiple hair groupings is taken. The patches or strip is then implanted into the affected areas follicle by follicle. The new hair stays there for the duration of the growth and rest cycles. But hereditary hair loss progresses with time, so some hair loss occurs eventually.
- *Laser therapy* — The U.S. Food and Drug Administration has approved a low-level laser device as a treatment for hereditary hair loss in men and women. A few small studies have shown that it improves hair density.
- *Platelet-rich plasma injections* — This treatment uses the body's restorative capability to help improve and maintain hair growth. Platelets are isolated from a person's own blood. The resulting concentrated platelets are then injected into the scalp.
- *Hair products* — Your hair stylist may be able to recommend volumizing hair products or styling techniques that make your hair look fuller. There also are tinted creams and powders that can help minimize the color difference between your hair and scalp. Other options are wigs and hairpieces, which can effectively cover hair loss. A dermatologist or hair stylist can help you find high-quality resources. ■

During a hair transplant, hair is removed in a thin strip of skin, cut into thin grafts and inserted into tiny slits made in the balding area. New hair growth occurs within several months.

Eat the rainbow

Breakfast, lunch and dinner ideas

Many health organizations recommend eating five servings of fruits and vegetables daily. But why five?

According to one analysis, people who consumed five servings of fruit and vegetables daily experienced a 13% lower risk of death from all causes over the 30-year study compared with people who ate two servings a day.

Other research highlights the benefits of reaching a five-a-day goal by choosing a variety of bright-colored plant foods. One study found that people who consumed more than 30 different plant foods a week had greater gut microbiome diversity — a predictor of improved health — than did people who consumed fewer than 10. This finding included all plant foods — beans, nuts, seeds, coffee, tea, whole grains, herbs and spices — as well as fruits and vegetables.

"The different colors found in plant foods provide powerful phytochemicals and other nutrients that can boost your immune system, protect your heart and decrease your risk of a wide range of diseases," says Tara Schmidt, RDN, LD, lead dietitian with The Mayo Clinic Diet. "Phytochemicals also give foods their distinct aroma and taste."

Although legumes, nuts, spices, coffee and tea count toward your daily servings and can improve health, also aim for five different colored fruits and vegetables daily. If five a day feels out of reach, try to increase your daily consumption by one additional serving. Once that feels easy, add another, says Schmidt.

To do so, look for opportunities to sneak brightly colored produce into the meals you already eat. Use the following ideas for inspiration.

Breakfast

- Create a yogurt parfait with blue, black and red berries.
- Top cereal with chopped fruit.
- Puree greens, cauliflower, avocado and berries into smoothies.
- Mix chopped onions, bell peppers, mushrooms and greens into omelets.
- Use sliced radishes or red cabbage as a crunchy topping for avocado toast.
- Sweeten oatmeal with berries or cherries.
- Top toast with peanut butter and sliced bananas or strawberries.

Lunch

- Serve tuna or chicken over a mixed green salad.
- Add diced celery, onions and apples to tuna or chicken salad.
- Tuck sliced tomato, greens or shredded cabbage into sandwiches.
- Include an apple, radish, baby carrots or bell peppers as a side dish.
- Try a soup made from sweet potato or tomato puree.
- Add cucumbers, avocado or shredded carrots to a wrap.

Dinner

- Include a small salad with most meals.
- Roast sliced onions and bell peppers as a taco topping.
- Add diced zucchini or mushrooms to dishes with ground meat or pasta.
- Build a bowl with edamame, rice, cucumber, avocado and salmon.
- Add diced kale, tomatoes or spinach to rice-based sides.
- Grill or roast kebabs with onions, peppers, mushrooms and a protein.
- Swap "zoodles" (spiralized zucchini) for pasta or mix the two together. ■

Colors and food examples	Key nutrients and health effects
Red — Tomatoes, beets, radishes, cherries, strawberries, red onions, red peppers	Lycopene — May improve heart health, decrease prostate and breast cancer risk, contribute to stroke prevention and improved brain function.
Orange and yellow — Carrots, winter squash, apricots, yellow peppers, sweet potatoes, bananas, pineapple, mangoes, pumpkins, peaches, oranges	Carotenoids — May reduce risk of heart disease and inflammation, strengthen the immune system, build healthy skin, improve vision.
Green — Spinach, arugula, broccoli, Brussels sprouts, avocados, kiwis, green tea, asparagus, fresh green herbs, kale, artichokes	Indoles and isothiocyanates — May reduce inflammation, protect cells from damage, help prevent cancer.
White and brown — Onions, mushrooms, cauliflower, garlic, leeks	Flavonoids and allicin — May help prevent tumor formation, reduce cholesterol and blood pressure, improve bone strength, decrease risk of stomach cancer.
Blue and purple — Blueberries, blackberries, eggplant, figs, purple cabbage, Concord grapes, plums	Anthocyanins and antioxidants — Linked to improved brain health and memory; may lower blood pressure, reduce risk of stroke and heart disease.

Second opinion

Q My doctor says I don't have diabetes yet, but I am at risk of developing it. Would Ozempic be a good option for me?

A Ozempic and other similar drugs are approved to treat type 2 diabetes and obesity. If you have prediabetes —meaning your blood sugar levels are elevated but you don't have type 2 diabetes — your question is a little harder to answer.

Whenever you eat, your blood sugar rises and triggers your pancreas to release insulin. Insulin carries the sugar in your blood into your cells, lowering the amount of sugar in the bloodstream. But when you have prediabetes, this process doesn't work well. Semaglutide (Ozempic, Wegovy, Rybelsus) is one of several drugs that work by mimicking the action of a hormone called glucagon-like peptide 1 in the body. These drugs, called GLP-1 agonists, help your body release more insulin in response to food.

Similar drugs include dulaglutide (Trulicity), liraglutide (Victoza, others) and tirzepatide (Mounjaro, Zepbound), which also works on another hormone. These drugs are another tool for people who've already changed their lifestyle and tried other medicines, yet their blood sugar remains elevated. In people with obesity, these medicines also tend to cause weight loss. A recent study found that people with prediabetes and obesity who took tirzepatide for more than three years were less likely to develop type 2 diabetes than were those who took a placebo.

However, the U.S. Food and Drug Administration has not approved GLP-1 drugs to treat prediabetes. The high cost of these drugs can be a concern, and most insurance companies won't cover them to treat just that condition, with the potential exception of people who have both prediabetes and obesity. There also are potential side effects and needed precautions with these medications, and the risks may outweigh the benefits for some.

The American Diabetes Association recommends making lifestyle changes as the first and most effective step in stopping prediabetes from progressing to diabetes. Changing your diet, getting more physical activity and losing weight can help. If those steps don't bring your blood sugar levels under control, talk with your healthcare team about medication options. ■

Q My walking buddies have been picking up the pace lately. They say they're trying to get to a "fat burning zone." Does this really exist?

A Yes. This zone refers to a level of exertion during exercise that can be roughly described as faster than an easy walk but slower than a full run. If you are exercising and you reach 60% to 80% of your maximum heart rate, you're likely to be in the fat-burning zone.

Some research suggests that exercising in that way has significant benefits for two reasons. One, the exertion is enough for the body to burn fat as fuel. Two, the reasonable exertion level allows you to keep going for long enough to achieve a significant calorie deficit.

Generally speaking, there are five heart rate zones. At Zone 5, think of a car when you put pedal to the metal. Your heart, like the car's engine, is "redlining." Zone 1 is similar to a car minding the speed limit on a residential street. You're moving and your heart is pumping, but you've got enough breath to sing. Zone 2 is a step up from there and ensures a light- to moderate-intensity workout. Higher zones will be even more intense or vigorous and allow for an even greater calorie deficit in a shorter time, but staying in these zones comes with risk of injury for those who aren't conditioned to them.

You can use an online calculator that asks for your age and resting heart rate to provide an estimate of the Zone 2 range for you. Another method is known as the talk test. During typical Zone 2 exercise, you should be able to comfortably hold a brief conversation, speaking around 3 to 5 words at a time. But you shouldn't be able to sing. Some fitness devices also report what zone you're in while exercising.

When considering whether to try any new exercise routine, you may want to consult your healthcare team, especially if you have a history of any medical concerns. Some people need a cardiac exam or stress test before engaging in more-vigorous exercise.

If you're new to exercise or to Zone 2, ease into it with shorter bouts of five minutes at a time and gradually work your way up. In general, the best training program for you is one that you'll keep doing consistently and doesn't lead to burnout or injury. It's great news that exercise benefits can come without pushing to extremes. ■

Have a question or comment? We appreciate every letter sent to Second Opinion but cannot publish an answer to each question or respond to requests for consultation on individual medical conditions. Editorial comments can be directed to:

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