HARVARD MEDICAL SCHOOL

Harvard Women's Health Watch

VOLUME 14 • NUMBER 7 | MARCH 2007

Lung cancer screening in women

Women seem to have a special vulnerability to lung cancer, whether they smoke or not. Is it time to be tested?

In the last 30 years, we've come a long way toward parity with men. Unfortunately, when it comes to lung cancer, we're passing them by. Women who smoke are more likely to develop lung cancer than men the same age with an equivalent smoking history. Even women who've never smoked are at greater risk for lung cancer than their male counterparts. The disease is the leading cause of cancer deaths in women, claiming more lives than breast, ovarian, uterine, and cervical cancers combined.

What's often lost in these grim statistics are the thousands of women who beat the odds. According to the National Institutes of Health, about 70% of women whose lung cancers are detected at Stage I (confined to the lung, with no lymph node involvement) are alive five years later. Their survival rate is mainly the result of serendipity: Their tumors have shown up on images taken for other purposes. The cancers were still very small when discovered, and most could be eliminated with surgery alone.

Sounds like the scenario for early breast cancer, doesn't it? And, like mammography for breast cancer, screening for lung cancer would seem to be the passport to a good prognosis. But it's a visa that hasn't officially been granted. Recent studies suggest that spiral computed tomography (CT) can detect lung cancer when it is still curable, but there isn't enough evidence (such as a decrease in lung cancer mortality with CT screening) to alter current public health policies.

The search for a screen

As early as the 1950s, public health officials were exploring the feasibility of lung cancer screening by sputum test and chest x-ray, but the effort was abandoned after a handful of studies in the 1970s indicated that neither method could identify lung cancers while they were curable.

In the 1990s, as CT scans became more common—and some began picking up tiny lung nodules—the imaging technology emerged as a potential screening tool. Two major studies—the National Lung Screening Trial (NLST), sponsored by the National Cancer Institute, and the International Early Lung Cancer Action Program (I-ELCAP)—were established to determine whether screening with spiral CT could prevent lung cancer deaths. The I-ELCAP is an observational study of 31,567 men and women who are at high risk for lung cancer due to factors such as age, smoking history, or environmental exposure to carcinogens like asbestos, radon, and secondhand smoke. Subjects were screened with spiral CT at medical centers in Asia, Europe, and North America. The NLST is a randomized trial testing spiral CT against x-ray in 50,000 people in the United States.

Reports from the I-ELCAP have been dramatic. Spiral CT detected 484 lung cancers, 85% of them at Stage I. Of the patients who then received standard treatment, 88% survived 10 or more years after diagnosis. Among those whose tumors were removed within a month of diagnosis, 92% survived. Only eight patients refused treatment, and

Selected resources

International Early Lung Cancer Action Program
www.ielcap.org

National Lung Screening Trial
www.cancer.gov/nlst

National Cancer Institute
www.cancer.gov/cancertopics/types/lung

IN THIS ISSUE

Harvard Women's Health Watch

Published by Harvard Health Publications, a division of Harvard Medical School

Editor in Chief Anthony L. Komaroff, M.D.

Publishing Director Edward Coburn

(ISSN 1070-910X) Proceeds support the research efforts of Harvard Medical School.

Harvard Health Publications
10 Shattuck St., Suite 612, Boston, MA 02115

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all died of lung cancer.

I-ELCAP data have also helped dispel a major concern about lung cancer screening—that many tumors would metastasize before CT could detect them. When the study surgeons removed patients' tumors and biopsied their chest lymph nodes, they found that 91% of patients whose tumors were less than 15 millimeters (mm) in diameter showed no evidence of cancer spread, regardless of tumor type.

The NLST study group isn't expected to release its findings before the end of the decade, but health policy groups like the National Cancer Institute, the American Cancer Society, and the United States Preventive Services Task Force eagerly await its reports. None of these groups currently recommends spiral CT screening, but none explicitly advises against it, either.

Should you be screened?

If you're a smoker or former smoker and are thinking of having a spiral CT scan, first discuss it with your clinician. Here are some things to think about:

The benefit. Women may have even more to gain from screening than men, in part because they tend to develop lung cancer earlier in their smoking lives. Also, when women develop lung cancer, they're more likely than men to have adenocarcinomas, slow-growing tumors that rarely show symptoms in the early stages. (Men mostly develop squamous cell carcinoma, which produces more symptoms and thus is detected earlier than other types of lung cancer.) There's also some evidence that women respond better to certain drug therapies that may be given after surgery.

The risks. One of the greatest problems caused by any screening program is the false-positive result. For one thing, the specter of cancer can cause terrible worry and fear until tests such as a biopsy show no cancer. Also, a biopsy (which may later prove to have been unnecessary) can cause injury. In the I-ELCAP study, 8.5% of patients underwent biopsies that revealed no cancer. That false-positive rate is roughly the same as for screening mammography. But a suspicious mammogram can be investigated using noninvasive techniques, such as diagnostic mammogram, ultrasound, and MRI. Also, if a breast biopsy is necessary, it's far less complicated than a lung biopsy. Tissue from suspicious lung nodules is sampled in one of three ways—a long needle inserted through the chest wall into the lung; a bronchoscope guided through the nose or mouth into the lung; or a surgical incision between the ribs. Each type carries some risk of a collapsed lung, bleeding, infection, temporary breathing difficulties, or heart arrhythmia. Surgical biopsy carries the added risks of general anesthesia.

Small nodules that don't grow are often caused by something that isn't cancer, such as an infection. The I-ELCAP researchers treated patients who had nodules under 15 mm with antibiotics to rule out infection and scanned them again. Nodules that continued to grow were biopsied. If the nodules didn't progress or disappeared, the patient returned to the annual screening cycle.

Your personal lung cancer risk. If you're a smoker, your risk of developing lung cancer depends on the number of cigarettes you've smoked over time. The earlier you quit, the lower your risk. Whether you smoke or not, lifetime exposure to secondhand smoke, asbestos, radon, and other environmental carcinogens is also important. Heredity is another factor: Anyone with a parent or sibling who developed lung cancer has a higher risk. If you'd like help in evaluating your risk, go to www.yourdiseaserisk.harvard.edu, and click "cancer" from the first list, and "lung" from the second.

The screening test. A patient having a spiral CT exam lies on a narrow table that passes through a donut-shaped x-ray machine. The machine rotates around the patient, scanning the chest in 12–20 seconds. Many cancer centers are promoting spiral CT screening for lung cancer; check the experience and reputation of the institution. Insurers don't cover the test for screening; the cost to you could be $300 to more than $1,500.

Follow-up. It's important to consider in advance how to handle a positive test. For example, if your test is negative, when should you have your next screening scan? There aren't any guidelines for lung cancer screening, so you and your clinician will need to share responsibility for decisions.

What to do about cataract

After treatment, you may see better than you have in decades.

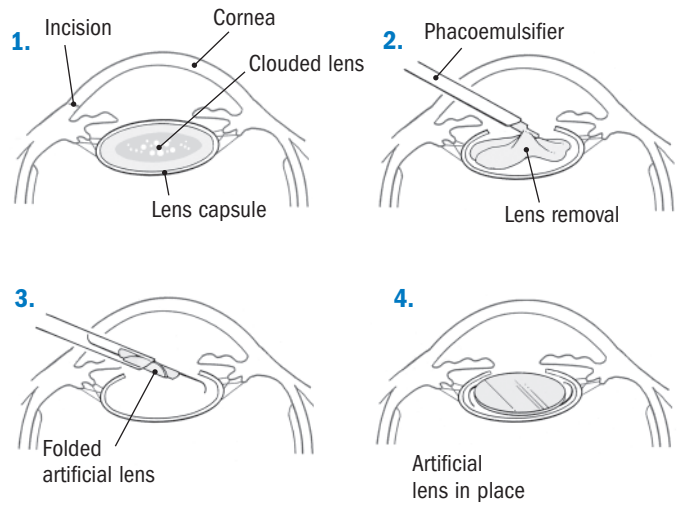
Have you noticed that colors aren't as bright as they used to be? That there is more glare at night? That your distance vision is hazy, even with new glasses?

By the time you turn 65, chances are about 50-50 that you will have begun to develop a cataract, a clouding of the clear lens that focuses light onto your retina (the light-sensitive tissue at the back of the eye that sends the image to your brain via the optic nerve). The lens is composed of water and proteins arranged to let light through with minimal distortion. With age, the proteins can clump together, letting less light through and blurring vision. You may also be at increased risk for cataract if you regularly take corticosteroids or the anti-cancer drug tamoxifen. (For other risk factors, see "Can cataract be prevented?" on page 5.)

Age-related cataracts start small, usually in the center of the lens, and may develop in one or both eyes. At first they cause no symptoms, but as they grow over months or years, problems such as blurring, glare, double vision, dull color vision, poor night vision, and worsening nearsightedness can make it frustrating to read and dangerous to drive.

Cataract surgery was once complicated and risky, so ophthalmologists usually waited until vision was severely limited before proceeding. Today, cataract surgery is one of the easiest, most common, and safest surgeries performed in the United States. Americans spend $6.8 billion annually to treat cataracts, which account for over half the medical costs for vision problems in people ages 65 and over. You should consider it as soon as vision problems start to interfere with usual activities. (See "Is it time for surgery?" on page 4.)

Cataract surgery



In the most common type of cataract surgery, the surgeon removes the clouded lens with a probe called a phacoemulsifier inserted through a small incision in the side of the cornea (2). The artificial lens, which is folded to fit inside the probe, is inserted through the same incision (3). The new lens unfolds inside the lens capsule and is held in place by tiny loops (4).

One treatment, many choices

Despite promises on the Internet and in other media, you can't get rid of a cataract with exercise, supplements, or eye drops. The only way to do it is surgical removal of the cloudy or discolored lens and replacement with a clear artificial lens. The procedure is usually performed under local or topical anesthesia on an outpatient basis.

The most common technique is phacoemulsification, also called small incision surgery. The surgeon makes a 1/8-inch incision in the side of the eye's clear domed surface (the cornea) and inserts a slender probe. The probe delivers ultrasound waves to break up the central part of the lens, then vacuums up the lens (see illustration). The replacement lens, folded to fit inside the probe, is inserted through the incision and into the lens capsule, where it unfolds. The surgeon may close the incision or allow it to heal on its own.

Conventional cataract extraction, also called large-incision surgery, is more invasive. Instead of breaking up the clouded lens, the clinician removes most of it in one piece through a larger incision (approximately 3/8 inch) under the upper eyelid. After the replacement lens is inserted, the incision is stitched. Recovery takes four to six weeks; during that time you must restrict exercises and activities, particularly bending that could put stress on the incision. This type of surgery can also worsen astigmatism by changing the shape of the cornea. If your ophthalmologist recommends the procedure, find out why. It may be necessary because of a particularly hard cataract or weak lens capsule. But if the surgeon is using conventional extracapsular surgery because he or she lacks training or experience with phacoemulsification, seek another opinion.

A third procedure, intracapsular surgery, carries a high risk of complications and is seldom used today.

Preparing for surgery

Before surgery, your clinician will use ultrasound to evaluate the shape of your eye and calculate the strength of the replacement lens. Insurers consider these essential parts of the process and will cover the cost. Your clinician may also suggest other specialized eye exams to help predict the outcome of surgery; insurers regard many of these as experimental and do not provide coverage.

Tell your surgeon about all medications you're taking. If you have glaucoma, you may need to stop or change your eye drops temporarily. Let your surgeon know if you take an alpha blocker or have ever taken one. Alpha block-

Is it time for surgery?

Cataract surgery is never an emergency procedure, so you have plenty of time to ask questions and consider some nonsurgical measures. Here are some things to think about:

- **Would a stronger distance prescription, increased lighting, or shielding your eyes against glare help you see better?**
- **Are you having trouble driving, reading, or performing your usual work and home activities? For example, a cab driver may need surgery sooner than someone who doesn't drive.**
- **How much improvement does your ophthalmologist expect from the surgery?**
- **Do you have other vision problems that might be easier to assess or treat after cataract removal? Would these conditions make surgery more difficult?**
- **Does your insurance cover cataract surgery? (It usually will be covered if your vision is impaired and tests as 20/50 or worse with glasses.)**

ers—including Flomax (tamsulosin), Hytrin (terazosin), Cardura (doxazosin), and Uroxatral (alfuzosin)—are used mainly to treat enlarged prostate in men, but they may be prescribed for high blood pressure or urinary retention in women. These drugs can interfere with the medications used to keep the pupils dilated during cataract surgery, so the surgeon may need to make adjustments to compensate.

Choosing your lenses

After the cataract is removed, the lens must be replaced. For most people, that means inserting an intraocular lens within the lens capsule at the time of surgery. Several types are available. The choice depends on the shape of your eye, other vision problems or eye diseases you may have, and your own preferences and priorities. Before surgery, you need to think about the type of lens best suited to your situation. Make sure your physician is aware of your usual daily activities and knows which of these you'd most like to perform without glasses. The options include the following:

Monofocal lenses. These lenses restore clear vision at a set distance. If you wear glasses or contacts for distance vision, your vision without glasses may be much improved after surgery. But you will need separate glasses for reading and perhaps also for intermediate distances (such as working at the computer or playing piano).

Advanced Medical Optics

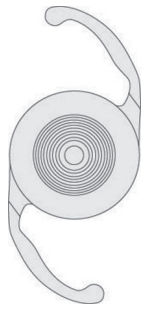
To eliminate the need for reading glasses, the surgeon can implant a distance lens in one eye and a close-up lens in the other (just as some people wear a different contact lens prescription in each eye).

"With this option, some people don't need eyeglasses," says Claudia Richter, M.D., a clinical instructor in ophthalmology at Harvard Medical School's Massachusetts Eye and Ear Infirmary. "But not everyone adjusts well—they may feel lopsided, clumsy, or bothered by diminished depth perception. If depth perception is very important to you, this is not a good option."

Toric lenses. These are shaped to correct astigmatism and reduce the need for glasses to correct distance vision. You should see better without glasses, but some astigmatism may still remain. Because of their shape, toric lenses (brand names Staar Surgical Intraocular Lens and AcrySof Toric IOL) occasionally slip out of alignment during the first few days after surgery and require a minor surgical correction.

Staar Surgical Company

Multifocal lenses. Like bifocals and progressive eyeglasses, multifocal lenses are designed to help with presbyopia, the age-related difficulty in shifting focus from far to near. Multifocal lenses (ReZoom and AcrySof Restor) combine correction for near, intermediate, and distance vision. Your vision will improve over the first couple of months as your brain learns to see at various distances through the new lenses. Training may help this process.



Alcon Laboratories, Inc.

In a 2006 Cochrane Library review of several controlled trials, multifocal and monofocal lenses provided similar distance vision without glasses. Multifocal lens users were more likely to be able to read without glasses (26%–47%) compared to those fitted with monofocal lenses (1%–11%). But users of multifocal lenses are more likely to be bothered by glare and see haloes around lights at night. They may also have more difficulty seeing in low light or distinguishing an object in front of a background of a similar color. One brand (ReZoom) incorporates two extra focusing zones to make vision clearer in low light.

Multifocal lenses do not work well in people with much astigmatism and certain other eye conditions. The size of your pupil also matters. If your pupils are small, light won't get through the part of the lens that provides near vision; if they are very large, you'll notice more glare and haloes at night.

Accommodative lenses. These hinged lenses (brand name Crystalens) move in response to your eyes' focusing muscles, providing distance, intermediate, and near vision.

A 263-person clinical trial submitted to the FDA found that accommodative lenses provided significantly better vision than standard monofocal lenses. At intermediate and near distances, about half of accommodative lens users (and fewer than 5% of monofocal lens users) had near vision of 20/25 or better. Distinguishing objects from backgrounds was equally

eyeonics, Inc.

Can cataract be prevented?

Age is the major risk factor for cataracts. If you live long enough, you'll probably develop them. Other factors that affect risk include the following:

Tobacco. Smokers develop cataract earlier. The risk slowly declines after you quit, but never returns to average.

Alcohol. Alcohol consumption slightly increases the risk of cataract, and the more you drink, the greater the risk. Swedish researchers found that women who had one or more alcoholic drinks per day were about 11% more likely than nondrinkers to need cataract surgery, and they needed surgery about two years earlier.

Sunlight. Long-term exposure to ultraviolet B rays from the sun can increase risk. Protect your eyes with sunglasses and a broad-brimmed hat.

Diet. There's some evidence that a well-balanced, low-fat diet with plenty of fruits and vegetables may help reduce your risk of cataracts.

easy with both kinds of lenses. Accommodative lenses haven't been directly compared with multifocal lenses in clinical trials. If you have a high level of nearsightedness, farsightedness, or astigmatism, accommodative lenses will not be offered.

Medicare and most insurers cover cataract surgery, but not treatment of presbyopia, which is regarded as an elective procedure. If you choose to implant multifocal or accommodative lenses, Medicare will pay only the amount required for surgery and implantation of standard lenses. You must pay the remainder out of pocket, and some choices can cost thousands of dollars extra.

After surgery

Unless you have a medical condition that warrants close observation in the hospital or makes it unsafe to recuperate at home, someone will drive you home after you leave the recovery room. Ask your clinician about permitted activities. After phacoemulsification, you will probably be able to use your eyes within hours and resume all but the most strenuous activities within days. You will take antibiotics and use cortisone drops or ointment and nonsteroidal anti-inflammatory drops to prevent infection and reduce inflammation while your eyes heal.

Depending on which kind of lens you have implanted, you may see better immediately, or your vision may improve over several weeks. More than 98% of people eventually have improved vision. Possible complications include bleeding within the eye, glaucoma, and infection; you'll also always be at a slightly increased risk of a detached retina.

After about 30% of cataract operations, the lens capsule supporting the implant eventually becomes cloudy. This is sometimes called an after-cataract or secondary cataract. To remedy the problem, the ophthalmologist can drill a tiny hole in the capsule with a laser to let the light through. This is usually a quick and painless office procedure. Some ophthalmologists do it preventively, but in that case it's not covered by insurance.

Selected resources

The Aging Eye: Preventing and Treating Eye Disease (Harvard Health Publications, 2006)
www.health.harvard.edu/AE

Cataracts: A Patient's Guide to Treatment, by David F. Chang, M.D., and Howard Gimbel, M.D. (Addicus Books, 2004)

IN BRIEF

Hot flash herb no better than placebo in large trial

Black cohosh is the most popular herbal supplement used by perimenopausal and menopausal women, but its effectiveness against hot flashes and night sweats remains unproven. The herb, extracted from the roots and underground stems (rhizomes) of a perennial plant native to North America, is available over the counter in tablet, liquid, or capsule form. While there's no dearth of black cohosh studies, their inconsistency in design and results have made it difficult to evaluate the herb's effectiveness and safety, especially beyond three months.

Now, in the longest and largest placebo-controlled trial to date, researchers have found that black cohosh—used alone or with other botanical supplements—is no better than placebo in relieving hot flashes and night sweats. The yearlong investigation, called the Herbal Alternatives (HALT) for Menopause Study, was funded by the National Institutes of Health. Results were published in the Dec. 19, 2006, *Annals of Internal Medicine*.

The HALT researchers randomly assigned 351 women, ages 45–55 and with an average of six hot flashes per day, to receive one of five therapies: black cohosh alone; a multibotanical supplement containing black cohosh; the black cohosh–containing multibotanical plus advice to increase soy intake; hormone therapy (estrogen with or without a progestin); or a placebo. After one year, there was no significant difference in hot flash frequency (or intensity) between any of the three black cohosh groups and the placebo group. On the other hand, women taking hormone therapy had, on average, four fewer hot flashes per day than women receiving the placebo. There were no significant differences in reported side effects, except the hormone therapy group noted more breast pain and menstrual difficulties.

The benefits of balance training

Though not included in official exercise guidelines, balance training can do a lot to help keep us on our feet and active.

Last month, in our article on ankle sprains (*HWHW*, February 2007), we highlighted the importance of restoring ankle function as soon as possible after an injury. One important goal is to prevent the ankle from giving way recurrently during weight-bearing activity, such as running, walking, or even standing. This chronic ankle instability, often caused by inadequate healing or rehabilitation after a sprain, can result in increasingly injurious sprains, arthritis, or tendon problems.

Experts in sports medicine and physical therapy say that in addition to the usual range of motion, flexibility, and strengthening exercises, rehabilitation should include exercises aimed at training (or retraining) the body's sense of its position in space—in particular, its sensation of limb and joint movement. This largely unconscious capacity—the medical term for it is "proprioception"—is what allows us, for example, to walk in the dark without losing our balance or to distinguish the brake from the accelerator without looking at our feet. Aging and injury to muscles and ligaments can take a toll on proprioception.

One form of proprioceptive exercise—balance training—has been shown to prevent ankle re-injury and reduce the risk of ligament problems in athletes. It's also under study for wider use to improve mobility and prevent falls and injury.

Not just for athletes

Balance training helps reduce the risk of falls in older adults with balance problems and women with low bone mass. It also improves postural stability after a stroke. More research is needed to identify which components of balance training do the most good and to test them for preventing falls and injuries in healthy adults. So far, the evidence hasn't been sufficient for an official recommendation, such as the one for physical activity that most of us know (by heart!): To reduce your risk for chronic disease and preserve function, get at least 30 minutes of moderate-intensity activity (such as brisk walking) on all or most days of the week, plus resistance and flexibility exercise a couple of times a week.

Many organizations, including the National Institute on Aging, recognize the importance of balance for preventing falls—especially among older people—and recommend certain techniques for improving it, often as part of strength training (see "Selected resources"). Besides being one of the normal challenges of aging, balance problems are also a concern for people with such conditions as Parkinson's disease, arthritis, multiple sclerosis, and osteoporosis.

Selected resources

Exercise: A program you can live with (Harvard Health Publications, 2007)
www.health.harvard.edu/E

Exercise: A Guide from the National Institute on Aging (National Institute on Aging, 2006)
www.nia.nih.gov/HealthInformation/Publications

Staying on our feet

Balance relies on input from several of the body's systems, including the following:

Visual system. To get an idea of how important vision can be for balance, see if you can stand on one leg with your eyes closed for 30 seconds. (If your performance is wobbly, don't worry; balance training can help stabilize it.) Our eyes also help us adjust our body's position, so we can steer around obstacles in our path.

Vestibular system. If you've ever suffered from vertigo, you know about balance problems caused by inner ear trou-

Ways to work balance exercise into everyday life

It may be easier than you think to fit balance training into your daily routine. Try some of the following activities:

- Stand on one leg whenever you're waiting in line at the theater, bank, or grocery store.
- Stand on one leg while brushing your teeth: one minute on one leg while brushing the upper teeth, and another minute on the other leg while brushing the lower teeth.
- Keep a wobble board (see example, page 7) in your office; stand on it during a break or whenever you're on the phone.
- Ask someone to toss you a Frisbee or beach ball while you balance on one leg and then on the other.
- Practice sitting down and getting up from a chair without using your hands.
- Practice walking heel to toe—that is, like a tightrope walker, placing the heel of one foot just in front of the toes of the opposite foot each time you take a step.
- Take a tai chi or dance class (or use DVDs at home), or take up social dancing. Although more research is needed, there's evidence that dance can improve balance and stability. Studies comparing dancers to nondancers suggest that dancers rely more on proprioception than on visual cues.
- Visit a fitness center and find out if it offers balance classes or the use of (and training on) balance or wobble boards.

ble. Nerve receptors in the semicircular canals, the utricle, and the saccule—parts of the inner ear—are sensitive to movements of the head and relay its position to the brain.

Proprioception. Receptors called proprioceptors in the skin, joints, ligaments, tendons, and muscles receive stimuli (for example, pressure on the bottoms of the feet) indicating the position, orientation, and movement of the body, and convey information to the brain, which uses it to create a constantly changing map of your position. When you lift your right leg, for example, the map is revised, and you maintain your balance by unconsciously shifting your weight to your left leg.

You need sensory input, central processing (motor control), and muscle power to maintain stability during both purposeful movements, such as lifting the foot off the ground during an exercise routine, and reflexive ones, such as recovery from a sudden stumble. Injury, illness, neurological disorders, medications, and advancing age can affect all the systems involved in balance.

Better balance

Balance tends to erode with time, especially if you're not active—neural connections, for example, may be lost if they're not used. So whether you want to recover from an ankle sprain or maintain your long-term health, balance exercise should probably be on your "to do" list.

Fortunately, you don't need a lot of equipment and training to perform the basics. In fact, good balance starts with good posture—something you can practice almost anytime, anywhere (for more on posture, see *HWHW*, August 2005). Some strength is also important for balance. Strong hip, knee, and ankle muscles will give you a solid foundation and help you stay upright (for more on strength and other types of exercise, see "Selected resources").

Much of what we know about balance and proprioception comes from research on ankle sprain and instability in athletes. For example, athletic trainers and rehabilitation experts at the University of Kentucky recommend exercises to improve proprioception at the intermediate stage of rehabilitation following injury—that is, once the ankle is able to bear full weight without pain (*Journal of Athletic Training*, December 2002). This training also helps cut down on ankle injuries, says Timothy L. Uhl, Ph.D., a faculty member in the university's athletic training program in the Department of Rehabilitation Sciences.

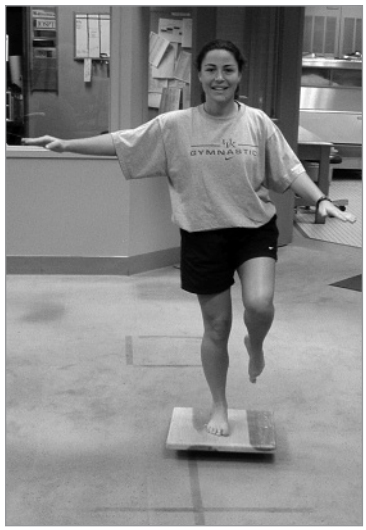


Photo provided by Carl G. Mattacola, Ph.D., University of Kentucky

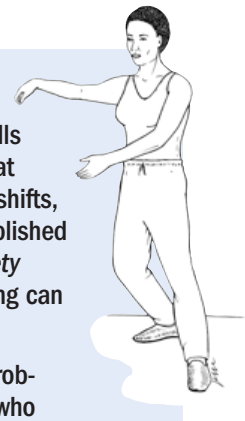
The basic idea is to stabilize the body under increasingly difficult circumstances—for example, balancing on one leg first on a flat surface, then on a wobble board (see photograph), and eventually on a wobble board while catching a ball or receiving a push to the shoulder.

Athletic training and ankle rehabilitation programs often involve various pieces of equipment, but you can start your own training much more simply with a routine that Dr. Uhl recommends to people with some ankle or hip weakness:

1. Stand on one leg on a wood floor or other hard surface for 30 seconds. (You may want to stand in a doorway or near a table, in case you need to stabilize yourself at any point.) Repeat using the other leg. When you can do this without touching the door frame or table, go to step 2.
2. Stand on one leg for 30 seconds, then on the other, with your eyes closed—again, don't hold onto anything. After you've accomplished that, go to step 3.
3. Place an old foam pillow on the floor. (Foam is better than feathers because feathers pack down. Foam has some spring to it.) Stand on the pillow on one leg for 30 seconds; switch legs and repeat. Then do the same exercises with your eyes closed.
4. Do the above pillow exercise on tiptoe. Stand on one leg, then on the other, for 30 seconds—first with your eyes open, then with them closed.

According to Uhl, standing on one leg not only helps rehabilitate the ankle, it also appears to reduce knee and hip pain.

Balance training and tai chi



Healthy older people can reduce the risk of falls with tai chi, an ancient Chinese martial art that incorporates slow turning movements, weight shifts, and deep breathing. But research recently published in the *Journal of the American Geriatric Society* (December 2006) showed that balance training can outperform tai chi.

The study involved older adults with balance problems. The researchers found that participants who practiced combined balance and step training (CBST)—exercises designed to improve balance and speed while stepping in different directions—made greater gains in balance and mobility than participants who practiced tai chi. The CBST routine included walking backward and sideways, walking on a plank, stepping on and off curbs, practicing heel and toe rises, and catching a ball while standing on an unstable surface.

This study shouldn't be taken as an unequivocal endorsement of balance training over tai chi. The advantage of CBST was modest, and variants of both methods have been shown to reduce falls when tested individually. In other studies, tai chi has also been shown to improve cardiovascular fitness, strength, and flexibility.

Does lysine prevent cold sores?

Q For years, I was plagued by cold sores and took antiviral drugs to treat the outbreaks. But at a friend's suggestion, I started taking lysine every day, and it seems to prevent them altogether. What do you know about this supplement?

A Cold sores (sometimes called fever blisters) are painful fluid-filled lesions on or near the lips that are caused by the herpes simplex virus (HSV). There are two kinds of HSV: HSV-1, which causes most cold sores, and HSV-2, which is mostly responsible for genital herpes. HSV-1 infection is very common and easily transmitted by kissing or other contact with saliva. Once you're infected, the virus lays dormant in the nerve cells that supply sensation to the skin. When the virus becomes active, it travels to the skin surface and multiplies, causing an outbreak.

Oral antiviral drugs (acyclovir, valacyclovir, and famciclovir) are used to treat both cold sores and genital herpes. Taken at the first inkling of a cold sore, they can help shorten the duration of symptoms. So can topical acyclovir and penciclovir.

Since we first wrote about cold sores (*HWHW*, January 2005), we've heard from several readers who, like you, have had good luck using L-lysine. L-lysine, or simply lysine, is an essential amino acid involved in making proteins and metabolizing carbohydrates and fatty acids. In the laboratory, it hampers the activity of arginine, an amino acid that promotes the growth of HSV. This suggests that increasing lysine intake might work against HSV infections. But results of studies in humans have been inconclusive, and no standard dose has been determined. Research doses have ranged from 500 to 3,000 milligrams (mg) daily.

Because scientific evidence isn't solid, we can't make a general recommendation about lysine supplements. Doses up to 3,000 mg per day aren't likely to do any harm, but we have no long-term studies on these supplements. For now, it's best to follow the dosing recommendations on the package.

Zinc is another supplement that's received some attention as a treatment for HSV infection. In tissue cultures, it inhibits the growth of both HSV-1 and HSV-2. A topical zinc solution has been shown to shorten cold sore outbreaks, and small preliminary studies suggest that daily oral zinc may do so as well. A safe long-term treatment is topical application of lemon balm (*Melissa officinalis*). It doesn't prevent cold sores, but it appears to speed healing.

Does taking Prilosec cause hip fractures?

Q I heard that taking a proton-pump inhibitor could cause hip fractures. I've been taking 20 mg of Prilosec every day for a year. Should I be concerned?

A You're referring to a study published in the Dec. 27, 2006, *Journal of the American Medical Association* (JAMA), which found a link between hip fracture and the use of proton-pump inhibitors (PPIs)—drugs that block acid production in the stomach. Data gathered from 1.8 million people over age 50, most of them women, found that those who used PPIs for more than 12 months increased their risk of having a hip fracture by 44%. The risk increased with both the dosage and the duration of PPI therapy—findings that compel scientists to take a closer look.

There are good biological reasons why PPIs (Prilosec, Protonix, Prevacid, Aciphex, Nexium) might play a role in hip fracture. The drugs reduce acid production by inhibiting the "pumping" of hydrogen ions into the stomach to make hydrochloric acid. They're very effective in treating gastroesophageal reflux disease, gastritis, and stomach ulcers. But we need some acid to absorb most forms of calcium. It's possible that PPIs, especially at high doses, reduce bone density by interfering with calcium absorption. They may also block another proton pump important in bone remodeling, but we're not sure how this might influence hip fracture.

Although the *JAMA* study was not a randomized clinical trial, it involved a large number of subjects, which reduces the likelihood that this was a chance effect. However, many women benefit from long-term PPIs. So don't stop taking Prilosec; just be sure you're taking only enough to control your symptoms and only for as long as you need it. Get enough calcium, preferably from your diet, and adequate vitamin D. If you use supplements, take them with a meal, or take calcium citrate, which requires less stomach acid for absorption than other supplements.

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Send us a question for By the way, doctor

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Because of the volume of mail we receive, we can't answer every letter. Nor can we provide personal medical advice.