

SPORTS SAFETY

2019 UPDATE

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ResourcesCheck with your doctor
before embarking on
any new diet or exercise
program.No use of medication
should be initiated
without first consulting
with your healthcare
provider regarding the
potential benefits and
potential risks of use.

Sports Injury Prevention

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How Reducing Your Injury Risk Can Make You a Better Athlete

Perform a dynamic warm-up before your workout. Cool down and stretch when you're done. Cross-train. Don't overdo it. These are all tips you may have heard to reduce your risk of sports-related injuries. But did you know they can also improve your sports performance?

That's right: paying attention to all components of your activity plan—cardiovascular fitness, flexibility, strength, hydration, nutrition and adequate equipment—will not only lower the chances of getting injured, but will also make you a better athlete.

Now that we've got your attention...

let's learn how you can work this wisdom into your workout!

Ease Into It

If you're going to run five miles, don't just lace up your shoes and hit the streets. A dynamic warm-up will help to prepare your body for the work ahead. Leg swings to the right and left (one leg at a time, of course) and then forward and back while holding onto a chair or other support is a great way to start. Don't forget your upper body and trunk, too: arm swings, trunk twists, and neck circles are helpful.

If you haven't been active in a while or are starting a new sport, be patient and ease into it. Many injuries happen when athletes jump into a level of activity they are not prepared for. Stress fractures, for example, can happen with a dramatic increase in load on a bone in a short period of time. Listen to your body and work your way up to your desired level of activity. It may take a few weeks or even months, but it will be worth it.



Pump Iron

Incorporate resistance training into your workout regimen. Strengthening your muscles will not only help you perform better, but reduce your risk of injury by supporting your joints, such as your knees and hips. Not sure how to begin? Work with a physical therapist or sports performance professional who can put together a training regimen that works for you. And don't forget your core: exercises that target your core muscles are key for supporting your lower back as well as the rest of your body.

Incorporate Cardio

Activities such as brisk walking, running, bicycling, and swimming will give your heart and lungs a great workout. Keep at it a few times a week, and you'll see your stamina improve. The less tired you feel while exercising, the less likely you'll be to get injured, and the more proficient you'll become at your sport.



Hydrate and Eat

It's important to drink enough water and eat the right foods to support your activity levels. Dehydration can not only make you feel tired, but can alter the way you move and subsequently raise your risk of injury. Fuel up and drink water before, during, and after exercise to perform at your best. (See the article on page 9 for guidance.)

Mix It Up

Cross-train by incorporating a variety of activities into your weekly workouts. If you run, take a break on some days and ride a bike or take a yoga class instead. If you usually swim, go for a brisk walk from time to time. Into racquet sports? Give your arms a break by adding other exercises that target your lower body. When you cross-train, you not only get a chance to strengthen different muscles, you give your muscles a break by not working the same ones every day.

Use the Right Equipment

Running in poorly fitting running shoes or playing tennis with a racquet of the wrong size can wreak havoc on your muscles and joints over time, raising your risk of injury. Make sure you are properly fitted with the equipment that is best suited for your body and movement patterns. For example, some runners' shops make shoe recommendations based on your foot type and running style.



Rest and Recovery Are important Parts of Your Workout, Too

If you exercise every day, you might think of a day off as slacking. But that's not the case at all. In fact, adding one or two rest days each week to your activity regimen is just as vital as working out. Those days give your joints, muscles, ligaments, and tendons a chance to rest, recover, and prepare for your next workout. Consider incorporating mindfulness or restorative breathing activities into your workout routine... you not only deserve it, but need it!

To learn how to put together an exercise plan that improves your fitness level while reducing your risk of injury, work with a physical therapist or sports performance specialist. You'll be on your way to a better, safer workout in no time!

For guidance in sports safety in children, visit the U.S. Centers for Disease Control and Prevention Sports Safety website at <http://bit.ly/2CJny6r>.

Dealing with the Twists and Turns of Knee Injuries

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Knee problems are among the leading reasons that people see their doctors. Whether it's an ACL injury in a high school football player or a meniscus tear in a middle-aged distance runner, damage to the knees can temporarily sideline any athlete. An even bigger issue is the increased risk of arthritis that follows. There are steps you can take to keep your knees healthy, however, through strengthening of the tissues around the joint and choosing activities that are best for you.

ACL Tears: Raising the Risk of Arthritis

One of the most common knee injuries is a tear of the anterior cruciate ligament (ACL), which is located in the center of the knee. The shape of the thighbone (femur) and shinbone (tibia) give the knee a high degree of mobility and allow the joint to bend quite far. As one of the knee's four main ligaments, the ACL is responsible for limiting how far the shinbone can rotate on the thighbone, and for helping to prevent the shinbone from twisting too much when the foot is on the ground.

Most ACL tears result when there is excessive stress on the ACL—more than it can bear—often due to abnormal jumping, landing, quick changes of direction (cutting), or speeding up or slowing down too quickly while running. When a tear does occur, the ligament often needs to be reconstructed surgically, especially if you want to remain active and do activities that involve jumping or a change of direction. It can take up to nine to twelve months to fully recover. The good news is that orthopedic surgeons have advanced and refined ACL repair techniques, so you have a very good chance of getting back to the sports you love.

You will have a higher chance of arthritis later in life, however, even with surgical reconstruction, so the best bet is to try to avoid ACL injuries as much as you can. That means strengthening the muscles around the knee and being aware of how you jump, land, and pivot during activity. A trained professional, such as a physical therapist, can provide guidance on the types of exercises that may help you.





Meniscus Tears: Injury to the Knee's Cushion

The menisci are wedge-shaped, rubbery pieces of cartilage in your knees that act as shock absorbers between your thighbone and shinbone. They provide cushion and stability in the knee. In young people, meniscus tears are most often due to trauma, such as excessive knee twisting during sports. But in people over age 50, the meniscus can tear due to degeneration with age. In fact, many older people have small meniscus tears that don't cause any symptoms (such as pain).

Not everyone needs surgery for a meniscus tear. In some people, reducing the inflammation and strengthening the knee joint with exercises are enough. For those who do have surgery, the tear can often be removed and at times repaired using minimally invasive arthroscopy. People who have a meniscus tear in a knee with arthritis typically don't benefit

from meniscus surgery. Many patients benefit from non-surgical treatment, but if the condition worsens, they may need a knee replacement.

Runner's Knee? Pay Attention to Your Glutes

Technically known as patellofemoral syndrome, runner's knee is characterized by pain under the kneecap and/or tendonitis. It often results from deficits in strength and flexibility, including deficiencies in the strength of the abdominal, hip, and gluteal (deep butt) muscles. Anti-inflammatory drugs like ibuprofen and cortisone injections can provide temporary relief. But to resolve the condition, you'll need to correct the deficits in strength that are causing your discomfort. Visit a doctor if you have knee pain with running; you may be prescribed physical therapy to learn exercises to strengthen your core, quads, and glutes to relieve your pain and prevent future discomfort.

When Arthritis Strikes

Arthritis in the knees is very common as people age, and is being diagnosed earlier in younger adults who experienced knee meniscus injuries and/or ACL tears as children or teenagers during sports activities. Arthritis doesn't have to limit your activities, however. The degree of arthritis you have does dictate the best choice of exercise for you. If you have more advanced arthritis, you should opt for low-impact activities such as walking or non-impact sports like bike riding or swimming, avoiding high-impact exercise like running. Otherwise, do what feels comfortable for you and listen carefully to your body.

Many knee injuries are preventable with strengthening exercises and awareness of how you move. Let common sense be your guide, and choose the activities that make your knees happiest!





Game, Set, Ouch!

Treating and Preventing Tennis and Golfer's Elbow

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What do tennis players and golfers have in common with painters, plumbers, and construction workers?

They're all at risk of epicondylitis—inflammation of the tendons that attach your forearm muscles to your elbow at the upper arm (humerus) bone. In the case of tennis elbow, the inflammation occurs on the outside of the elbow (lateral epicondylitis), while golfer's elbow affects the tendons along the inside of the elbow (medial epicondylitis). In both cases, the pain and tenderness result from overuse. The good news is that it is often preventable and, when it occurs, the disorder typically resolves with rest and physical therapy.



How Tennis and Golfer's Elbow Develops

While tennis and golfer's elbow can occur at any age, they most often develop in middle age after years of repetitive motion and overuse. Tennis elbow can be further exacerbated by improper stroke technique and inappropriate equipment. Symptoms include pain and swelling along the

elbow and forearm and weakened grip strength, and most often affect the dominant arm. The discomfort can become so severe that you may not be able to play your sport or do the job that brought on the pain in the first place.

Rest + Treatment = Recovery

If you have tennis or golfer's elbow, your doctor may recommend a period of rest while the tendons and muscles heal. Your treatment may include:

- **Non-steroidal anti-inflammatory drugs**, such as ibuprofen or naproxen, to relieve swelling and pain.
- **Physical therapy**, the mainstay of treatment, involving exercises specifically designed to strengthen your forearm muscles. Your therapist may also use ultrasound, ice, and muscle-stimulating techniques to relieve your symptoms. Physical therapy often takes six to 12 weeks to successfully treat the problem.
- **Bracing** of the forearm with a supportive device you wear around your arm to take the stress off the forearm during activity. A brace that immobilizes the wrist can also be helpful while you heal.
- **Cortisone injections** into damaged tendons to relieve symptoms.
- **Surgery**, in rare cases when nonsurgical treatment options have been tried and found to be ineffective after six months to a year. During the procedure, the surgeon makes a small incision to cut out the degenerated tendon and repair the attachment of the healthy part of the tendon back to the elbow bone. This can often be performed arthroscopically.

Some people with tennis or golfer's elbow benefit from platelet-rich plasma (PRP) injections. PRP is made from your own blood and contains high levels of growth factors that expedite recovery. Unlike cortisone injections, which can only be used a few times and do not speed healing, PRP reduces inflammation while promoting recovery of the injured tendon. Some people only need one PRP treatment, while others may need an injection once weekly for up to three weeks. PRP is not covered by insurance in many states, however.



Avoiding Future Injury

Once you've had tennis or golfer's elbow, you're at risk of developing it again if you subject your arm to the same repetitive forces and stress. Here are some exercises you can do to keep your forearm muscles strong and reduce your risk of injury to the tendons:

- **Squeeze an old tennis ball:** Repeatedly for up to five minutes.
- **Wrist Curls:** Holding a lightweight dumbbell or a soup can while your arm rests on a table, lower the weight to the end of your fingers and then curl it back into your palm. Then curl up your wrist to lift the weight another inch or two higher. Complete ten repetitions with one arm, and then repeat on the other side.
- **Reverse Wrist Curls:** Hold a lightweight dumbbell or soup can in your hand and stretch it out in front of you, palm side down. Place your other hand under the elbow of the arm you are exercising to limit the movement to your forearm. Using only your wrist, lift the weight up and down. Complete ten repetitions with one arm, and then repeat on the other side.

By performing these exercises twice a week, you can lower your risk of future injury and get back to the activities you enjoy.



Keeping Your Shoulders Strong and Stable



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Your shoulders are the most movable joints in your body. They helped support you as a baby when you first started to crawl. They carried you across the pool when you first learned how to swim. Today you may rely on them to do downward-facing dog in yoga class, wind up your racquet for a powerful tennis serve, or simply reach over head to grab something from a kitchen cabinet.

All of that mobility also means that your shoulders can become unstable, predisposing you to injuries such as rotator cuff problems, dislocations, and fractures. There are measures you can take, however, to keep your shoulders strong and stable and reduce the risk of injury so you can continue to take part in the activities you enjoy.

About Your Shoulders

Your shoulder joint is composed of three bones: the clavicle (collarbone), the scapula (shoulder blade), and the humerus (upper arm bone). Instability is common because the ball of the upper arm is larger than the shoulder socket that holds it. To remain in a stable position, the shoulder must be anchored by muscles, tendons, and ligaments. So it's no surprise that when these tissues become weakened or injured, the shoulder joint is put in jeopardy.

The Most Common Shoulder Injuries are:

- **Rotator cuff tears:** With normal aging, overuse, or trauma, rotator cuff tendons may degenerate and develop inflammation (bursitis), or a full rotator cuff tear may develop. Repetitive stress on the shoulder joint from sports like swimming and tennis can cause rotator cuff pain due to overuse.
- **Shoulder fractures:** A broken shoulder bone is fairly common as a result of trauma. Most fractures result from a fall on an outstretched hand. Fractures of the clavicle are common among bike riders who go over their handlebars and land on a shoulder.
- **Dislocations:** Dislocation occurs when the ball at the top of the bone in the upper arm pops out of the socket. It can happen if the shoulder is twisted or pulled very hard, or from a fall on an outstretched hand. Contact sports such as hockey, wrestling, and football are associated with high rates of dislocation. If you experience a dislocation, you are at increased risk of having another one after the first one has healed, so be careful if you engage in contact sports.

The Road to Recovery: Treating Shoulder Injuries

Many shoulder injuries resolve on their own with rest, ice, compression, and elevation. Doctors treat dislocations by “reducing” (positioning) the upper arm back into the socket, and then immobilizing the shoulder in a sling temporarily before prescribing exercises to regain range of motion and strength.

Rotator cuff pain may be relieved with anti-inflammatory drugs, ultrasound, gentle stretching and strengthening exercises, and—when appropriate—cortisone injections. If the pain continues after six months to a year or there is a tear that is not responding well to other therapies, surgery may be necessary.

A fractured shoulder needs to be immobilized in a sling or other device to keep the injured bone in place. After a few weeks, the bone will begin to heal and you can start exercises to restore movement. Some fractures may require surgery to set the bones with hardware if needed to achieve a good reduction (position of the bones).

If you’ve had a shoulder injury, your recovery and rehabilitation can vary widely depending on your health, your injury, and the level of activity you wish to return to. Your doctor and physical therapist will let you know what to expect. The only way to prevent trauma-related shoulder injuries is to avoid contact sports and falls.

Strengthening Your Shoulders with Exercise

To build shoulder strength and improve range of motion, exercises are essential. (See sidebar for some ideas.) If you’ve never done shoulder exercises before, see a physical therapist or certified personal trainer to learn which ones are best for you and how you can work your way up to stronger shoulders. There are many types of shoulder exercises and several that specifically target the rotator cuff, so it’s best to get professional guidance.

Take care of your shoulders now, and you’ll be able to spend more time participating and excelling in your favorite sports and activities.



Building Strong Shoulders

Exercises you can do to strengthen your shoulders and reduce your risk of injury:

Front Raises

With a light weight or can of soup in your hand, raise your arm straight out in front of you, with your thumbs pointing up, to just above the height of your nose. Then slowly lower in a controlled fashion, rather than letting your arm drop. Do three sets per side with 10-15 repetitions per set.

External Rotation

Lying on your side with your head supported on your hand, hold a light dumbbell or soup can in your opposite hand. Keep the elbow of the hand holding the weight at your waist throughout the exercise, bent at a 90-degree angle. Slowly raise and lower the weight by externally rotating the upper arm. Do three sets per side with 10-15 repetitions per set.



Fueling Up for Performance and Safety

Before, During and After Your Workout

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Just as your car needs gas to function, your body needs food and fluids to perform well during physical activity. A visit to your local runners' shop or health foods store reveals a bevy of products claiming to enhance endurance, build muscle, and make you perform better. And while some do have value for certain activities, you can usually take in the optimal number of calories and nutrients and stay hydrated with some simple steps. Here are ways to fuel up before, during, and after you exercise.



Get Ready

One to Three Hours Before

To prepare your body for increased activity, eat carbohydrates for quickly available fuel, and moderate levels of protein to promote muscle building or maintenance. Keep it light and low in fat and fiber, which can slow digestion and remain in your stomach during your workout. Aim for foods that are easy to digest.

How much should you eat? For very challenging workouts, research generally recommends 1g of carbohydrate per kilogram of body weight per hour prior to your workout. That means someone who weighs 150 pounds (68 kg) should

consume about 68 grams of carbohydrates (about 270 calories) an hour before exercising (Note: 1 kg = 2.2 pounds). You may not need to eat as much before a lighter workout. A good rule of thumb: don't start your workout starving or stuffed. Light meals such as these are excellent choices:

- Cottage cheese with fruit
- Low-fat string cheese with crackers
- Half a sandwich
- Tuna fish and crackers
- Cereal and low-fat milk

Make sure you drink enough fluids, too. Water will do just fine—about 12 to 20 ounces. If you perspire a lot or it's a hot day, food with salt is not a bad idea, such as crackers, pretzels, or low-fat cheese.

Get Moving

Fueling During Exercise

If you're working out for less than an hour, you typically only need water to stay hydrated. Twelve to 20 ounces per hour is fine for most. If you plan to exercise longer than that, you can consider enhanced water that contains electrolytes, including sodium, potassium, chloride, calcium, and magnesium. These minerals can help support your muscles during prolonged or intense activities. They help shuttle fluids into the right places in your body, just where you need it.



Fuel So You Can Move

Before Exercise

- 12–20 ounces of water
- Light meals, such as:
 - Cottage cheese with fruit
 - Low-fat string cheese with crackers
 - Half a sandwich
 - Tuna fish and crackers
 - Cereal and low-fat milk

During Exercise

- 12–20 ounces of water per hour
- Sports drinks, gel packets or gummies if desired, but reserve for activities lasting more than one hour
- Carbs such as raisins, pretzels, fruit packets or small jam sandwich for extended activity, if preferred, instead of sports products

After Exercise

- Similar choices as before exercise: easily digestible carbs plus moderate protein
- Replenish lost fluids

If you're participating in extended exercise for 60 to 90 minutes or longer, consider snacking on sources of easily digestible carbs such as sports drinks, raisins or other dried fruit, fruit packets, or a small jam sandwich. The extra carbs will fuel your muscles and enable you to continue moving. Pop a few raisins or pretzels every 15 to 20 minutes to stay on your game, and drink before you're thirsty. Some people like eating gel packets, "gummies," and similar sources of electrolytes and carbs while exercising for added support—especially during lengthy workouts, such as multi-hour runs or bike rides.

You may need more fluids and food during activity on hot or humid days, which add stress to your workout, or if you didn't eat or drink enough before you began. Be very aware of the signs of dehydration; rest if you experience unusual fatigue or weakness, loss of coordination, nausea, vomiting, wet pale skin, or headaches while exercising. These symptoms could be a sign of heat stress, and you'll put yourself at risk of injury if you don't stop and take care of yourself.

What about caffeine? Some sports supplements, such as gel packets, contain 20 mg of caffeine (about a

quarter of the amount in a typical cup of coffee). Caffeine may give you a little burst of energy while you exercise and make strenuous effort seem a bit easier; many long-distance runners find it to be helpful during marathons and other lengthy events. There's no harm in consuming it if it doesn't make you jittery or upset your stomach, and if you don't have a medical condition that prohibits caffeine (such as a heart arrhythmia).

Cooling Down

Eating and Drinking After Your Workout

The same kinds of foods you ate before your workout make excellent choices afterward: easily tolerated foods, including carbohydrates to replenish your glycogen stores and 15 to 30 grams of protein to rebuild your muscles. Replace lost fluids. Chocolate milk has become popular because it provides carbohydrates, protein, and fluid, all in one drink; cottage cheese and fruit or a sandwich are also good options.

Listen to your body and give it what it needs. You can optimize your performance and reduce your risk of injury by fueling up before, during, and after your exercise routine.



Programs and Resources

Hospital for Special Surgery offers a variety of wellness exercise classes designed to help you gain endurance, strength and flexibility. Meditation, relaxation, and general wellness programs are also offered.

Sports Safety Program

Aimed at raising awareness of the importance of programs that improve sports performance, reduce injury rates, and minimize lifelong exposure to preventable musculoskeletal health issues of youth and high school athletes.

Therapeutic Yoga

The slow, controlled physical movement of yoga can provide pain relief, relax stiff muscles, ease sore joints and help build strength.

Pilates

A series of specific movements designed to strengthen the powerhouse muscles of the abdomen, back and waist.

For more information on the schedule, location and cost of these classes, visit hss.edu/pped or call **212.606.1613**. Additional programs and offerings can be found by visiting hss.edu/pped.

Integrative Care Center (ICC)

The ICC, located in mid-Manhattan and affiliated with Hospital for Special Surgery, offers alternative care services including Pilates, acupuncture, massage therapy, chiropractic medicine and pain management. Please visit hss.edu/icc for more information or call **212.224.7900**.

Yogalates

A popular form of exercise that blends the best of yoga and Pilates.

T'ai Chi Chih®

Simple, rhythmic movements that provide benefits such as improved balance, strength, flexibility and maintenance of bone mass.

Dance for Fitness and Fun

Studies have shown that dance maintains cardiovascular fitness, enhances emotional well-being, strengthens weight-bearing bones and slows loss of bone mass.



Healthy Sport Index (HSI)

A sport selection tool created in partnership with HSS. Visit healthysportindex.com to help discover the most appropriate sports for you or your children based on the health benefits and athletic skill development.

Additional Sports Safety Resources

- Sports Injuries & Prevention - American Academy of Orthopaedic Surgeons: <http://bit.ly/2UiJuiN>
- Child Safety and Injury Prevention - U.S. Centers for Disease Control and Prevention: <http://bit.ly/2CJny6r>
- Preventing Injury During Your Workout - American Heart Association: <http://bit.ly/2FFdJXM>
- Workout Injuries: Prevention and Treatment - WebMD: <https://wb.md/2Uhl1cC>

Health Video Library

Check out our complimentary HSS health video library at hss.edu/health-videos. Featured topics include:

- Active and Aging
- Osteoarthritis
- Bones Health
- Pain and Stress Management
- Inflammatory Arthritis
- Health and Wellness

A short video excerpt on **“Meditation for Pain Management”** is also available for patients via **our YouTube playlist, Education for Public and Patients.**

2018 Report to the Community



The HSS Report to the Community provides information about the Hospital's contributions to the community in the areas of community programs and services, research and health professional education.

Visit hss.edu/community for more information and to download a copy of the 2018 HSS Report to the Community and the HSS Community Service Plan 2016–2018.

HealthConnection FastFacts



This recurring publication is a convenient one-page online health education newsletter designed to provide the public with fast, current, accurate musculoskeletal, and general health information.

View the latest edition at hss.edu/hcfastfacts

For more information, visit hss.edu.

To make an appointment, call our Physician Referral Service at **800.796.0486**.

For a complete list of our specialties visit hss.edu/departments.

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Physician Office Visits
Postoperative Care
Radiology and Imaging

- Digital X-Ray
- EOS Imaging
- MRI
- Ultrasound

Same Day Sports Medicine Injury Appointments
Direct Access Physical Therapy
Injections
Rehabilitation
Sports Performance
Community Education

For more information about services available at each site, visit hss.edu/locations.

Most major insurance plans are accepted.

Financial Assistance

Hospital for Special Surgery (HSS) offers a Financial Assistance Program to patients who have limited or no insurance coverage and experience difficulty in meeting their financial responsibility for our services. For further information, please contact the HSS Financial Advisory Department at 212.606.1505 or visit hss.edu/financial-assistance.

Locations

Hospital for Special Surgery

535 East 70th Street
New York, NY 10021

HSS ASC of Manhattan

1233 Second Ave at 65th Street
New York, NY 10065

HSS Ortho Injury Care

1233 2nd Avenue at 65th Street
New York, NY 10065

HSS Long Island Outpatient Center

333 Earle Ovington Boulevard,
Suite 106
Uniondale, NY 11553

HSS Paramus Outpatient Center

140 East Ridgewood Avenue, Suite 175 S
Paramus, NJ 07652

HSS Queens Outpatient Center

176-60 Union Turnpike, Suite 190
Fresh Meadows, NY 11360

HSS Stamford Outpatient Center

1 Blachley Road
Stamford, CT 06902

HSS Orthopedics at Stamford Health Stamford Hospital

One Hospital Plaza
Stamford, CT 06904

HSS Orthopedics at Stamford Health Tully Health Center

32 Strawberry Hill Court
Stamford, CT 06902

HSS Westchester

1133 Westchester Avenue
White Plains, NY 10605

Sports Rehab at Chelsea Piers CT

1 Blachley Road
Stamford, CT 06902

Integrative Care Center

635 Madison Avenue, 5th Floor
New York, NY 10022

The Public and Patient Education Department of Education Institute provides information to the general public and patients through a variety of health education programs. Professionals provide practical information to help prevent or manage orthopedic and rheumatological conditions. Programs are held at the hospital as well as in the community. The department is dedicated to providing education today, so that everyone can have a healthier tomorrow.

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