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At-home exercises for 4 common musculoskeletal complaints

This pictorial review can help you advise patients on how to reduce pain and increase ROM, strength, and balance following acute injury or in chronic impairment.

Carrie A. Jaworski, MD, FAAFP, FACSM; Thomas Moran, MD; Kathryn LaLonde, MS
NorthShore University Health System Primary Care Sports Medicine, University of Chicago, Pritzker School of Medicine (Drs. Jaworski and Moran); ATC National Athletic Trainers' Association (Ms. LaLonde)

cjaworski@northshore.org

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PRACTICE RECOMMENDATIONS

› *Have patients apply ice to an acute injury for 15 to 20 minutes at a time to help control inflammation, and prescribe an anti-inflammatory medication, if indicated.* (A)

› *Reserve heat application for use following the acute phase of injury to decrease stiffness.* (A)

› *Instruct patients who have an acute lateral ankle sprain to begin "ankle ABCs" and other range-of-motion exercises once acute pain subsides.* (C)

› *Consider recommending an eccentric heel stretch to help alleviate plantar fasciitis symptoms.* (C)

Strength of recommendation (SOR)

(A) Good-quality patient-oriented evidence

(B) Inconsistent or limited-quality patient-oriented evidence

(C) Consensus, usual practice, opinion, disease-oriented evidence, case series

The mainstay of treatment for many musculoskeletal (MSK) complaints is physical or occupational therapy. But often an individual's underlying biomechanical issue is one that can be easily addressed with a home exercise plan, and, in light of the COVID-19 pandemic, patients may wish to avoid in-person physical therapy. This article describes the rationale for, and methods of providing, home exercises for several MSK conditions commonly seen in the primary care setting.

General rehabilitation principles: First things first

With basic MSK complaints, focus on controlling pain and swelling before undertaking restoration of function. Tailor pharmacologic and nonpharmacologic options to the patient's needs, using first-line modalities such as ice and compression to reduce inflammation, and prescribing scheduled doses of an anti-inflammatory medication to help with both pain and inflammation.

Once pain is sufficiently controlled, have patients begin basic rehabilitation with simple range-of-motion exercises that move the injured region through normal patterns, as tolerated. Later, the patient can progress through more specific exercises to return the injured region to full functional capacity.

Explain to patients that it takes about 7 to 10 days of consistent care to decrease inflammation, but that they should begin prescribed exercises once they are able to tolerate them. Plan a follow-up visit in 2 to 3 weeks to check on the patient's response to prescribed care.

Which is better, ice or heat?

Ice and heat are both commonly used to treat MSK injuries and pain, although scrutiny of the use of either intervention has increased. Despite the widespread use of these modalities, there is little evidence to support their effect on patient

outcomes. The historical consensus has been that ice decreases pain, inflammation, and edema, while heat can facilitate movement in rehabilitation by improving blood flow and decreasing stiffness.[1-3] In our practice, we encourage use of both topical modalities as a way to start exercise therapy when pain from the acute injury limits participation. Patients often ask which modality they should use. Ice is generally applied in the acute injury phase (48-72 hours after injury), while heat has been thought to be more beneficial in the chronic stages.

When and how to apply ice. Applying an ice pack or a bag of frozen vegetables directly to the affected area will help control pain and swelling. Ice should be applied for 15 to 20 minutes at a time, once an hour. If a patient has sensitivity to cold or if the ice pack is a gel-type, have the patient place a layer (eg, towel) between the ice and skin to avoid injury to the skin. Additional caution should be exercised in patients with peripheral vascular disease, cryoglobulinemia, Raynaud disease, or a history of frostbite at the site.[4]

An alternative method we sometimes recommend is ice-cup massage. The patient can fill a small paper cup with water and freeze it. The cup is then used to massage the injured area, providing a more active method of icing whereby the cold can penetrate more quickly. Ice-cup massage should be done for 5 to 10 minutes, 3 to 4 times a day.

When and how to apply heat. Heat will help relax and loosen muscles and is a preferred treatment for older injuries, chronic pain, muscle tension, and spasms.[5] Because heat can increase blood flow and, likely, inflammation, it should not be used in the acute injury phase. A heating pad or a warm, wet towel can be applied for up to 20 minutes at a time to help relieve pain and tension. Heat is also beneficial before participating in rehab activities as a method of "warming up" a recently injured area.[6] However, ice should still be used following activity to prevent any new inflammation.

Anti-inflammatory medications

For an acute injury, nonsteroidal anti-inflammatory drugs (NSAIDs) not only can decrease inflammation and aid in healing but can alleviate pain. We typically start with over-the-counter (OTC) NSAIDs taken on a schedule. A good suggestion is to have the patient take the scheduled NSAID with food for 7 to 10 days or until symptoms subside.

Topical analgesics

Because oral medications can occasionally cause adverse effects or be contraindicated in some patients, topical analgesics can be a good substitute due to their minimal adverse effects. Acceptable topical medications include NSAIDs, lidocaine, menthol, and arnica. Other than prescribed topical NSAIDs, these products can be applied directly to the painful area on an as-needed basis. Often, a topical patch is a nice option to recommend for use during work or school, and a topical cream or ointment can be used at bedtime.

Graduated rehabilitation

The following 4 common MSK injuries are ones that can benefit from a graduated approach to rehabilitation at home.

Lateral ankle sprain

Lateral ankle sprain, usually resulting from an inversion mechanism, is the most common type of acute ankle sprain seen in primary care and sports medicine settings.[7-9] The injury causes lateral ankle pain and swelling, decreased range of motion and strength, and pain with weight-bearing activities.

Treatment and rehabilitation after this type of injury are critical to restoring normal function and increasing the likelihood of returning to pre-injury levels of activity.[9,10] Goals for an acute ankle sprain include controlling swelling, regaining full range of motion, increasing muscle strength and power, and improving balance.

Phase 1: Immediately following injury, have the patient protect the injured area with rest, ice, compression, and elevation (RICE). This will help to decrease swelling and pain. Exercises to regain range of motion, such as stretching and doing ankle "ABCs," should begin within 48 to 72 hours of the initial injury (**TABLE 1**).[9-11]

Phase 2: Once the patient has achieved full range of motion and pain is controlled,

Have patients avoid using heat in the acute injury phase because it can increase inflammation due to increased blood flow.

TABLE 1

Rehabilitation exercises for acute ankle sprain or chronic ankle instability[9-11]

The resistance bands shown below can be found online or at most sporting goods stores.

PATIENT HANDOUT	
Ankle ABCs While seated, write out the alphabet in the air with your big toe. Do a set of both upper- and lower-case letters. Your ankle should be moving as you perform this.	
Gastrocnemius stretch (ankle dorsiflexion stretch with towel) While seated, wrap a towel around the top of your foot and pull so that your toes are pointed toward your head. You should feel a stretch in the back of the leg. Repeat 3 times on each side, holding for 20-30 seconds.	
4-way ankle exercise program **Plantar flexion:** Point your toes toward the floor. While seated, extend your legs in front of you and wrap a resistance band around the foot and hold on to the ends of the band with both hands. Position your foot as shown in each of the 4 photos here. Do all 4 directions. Be sure to keep your heel in contact with the floor the entire time. Perform 10 repetitions.	
Dorsiflexion: Bring your toes toward your shin. Perform 10 repetitions.	
Eversion: With both legs extended, hold the band with the unaffected foot while you draw your affected foot outward. Perform 10 repetitions.	

PHOTOS COURTESY OF CARRIE A. JAWORSKI, MD, FAAFP, FACSM

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TABLE 1

Rehabilitation exercises for acute ankle sprain or chronic ankle instability[9-11] (*cont'd*)

PATIENT HANDOUT	
Inversion: Cross the affected leg over the top of the opposite leg and apply pressure to the band while you draw your affected foot inward. Perform 10 repetitions.	
Single-leg balance Stand and balance on one leg. Perform this next to a table or other sturdy object. Hold your balance in this position. Advanced version: Raise up on your toes while balancing first with your eyes open, then try it with your eyes closed. Hold the position for 30 seconds.	

begin the process of regaining strength. The 4-way ankle exercise program (with elastic tubing) is an easy at-home exercise that has been shown to improve strength in plantar flexion, dorsiflexion, eversion, and inversion (**TABLE 1**).[9-11]

Phase 3: Once your patient is able to bear full weight with little to no pain, begin a balance program (**TABLE 1**[9-11]). This is the most frequently neglected component of rehabilitation and the most common reason patients return with chronic ankle pain or repeat ankle injuries. Deficits in postural stability and balance have been reported in unstable ankles following acute ankle sprains,[10,12-15] and studies have shown that individuals with poor stability are at a greater risk of injury.[13-16]

For most lateral ankle sprains, patients can expect time to recovery to range from 2 to 8 weeks. Longer recoveries are associated with more severe injuries or those that involve the syndesmosis.

Plantar fasciitis

Plantar fasciitis (PF) of the foot can be frustrating for a patient due to its chronic nature. Most patients will present with pain in the heel that is aggravated by weight-bearing activities. A conservative management program that focuses on reducing pain and inflammation, reducing tissue stress, and restoring strength and flexibility has been shown to be effective for this type of injury.[17,18]

Step 1: Reduce pain and inflammation. Deep-tissue massage and cryotherapy

TABLE 2

Exercises to treat plantar fasciitis[17,18]

PATIENT HANDOUT

Plantar fascia roll

Use a frozen water bottle (plastic, no glass). While sitting or standing, roll the bottom of your foot with moderate pressure on top of the bottle. Use as much pressure as you can tolerate without discomfort (for about 5 minutes).

Eccentric heel stretch

Stand with the balls of your feet on the edge of a stair or curb. Slowly allow both heels to drop down to the point where a stretch is felt in the Achilles tendon. An advanced version is to do this stretch 1 heel at a time. Repeat 3 times on each side, holding the position for 20-30 seconds.

are easy ways to help with pain and inflammation. Deep-tissue massage can be accomplished by rolling the bottom of the foot on a golf or lacrosse ball. A favorite recommendation of ours to reduce inflammation is to use the ice-cup massage, mentioned earlier, for 5 minutes. Or rolling the bottom of the foot on a frozen water bottle will accomplish both tasks at once (**TABLE 2**[17,18]).

Step 2: Reduce tissue stress. Management tools commonly used to reduce tissue stress are OTC orthotics and night splints. The night splint has been shown to improve symptoms, but patients often stop using it due to discomfort.[19] Many kinds of night splints are available, but we have found that the sock variety with a strap to keep the foot in dorsiflexion is best tolerated, and it should be covered by most care plans.

Step 3: Restore muscle strength and flexibility. Restoring flexibility of the gastrocnemius and soleus is most frequently recommended for treating PF. Strengthening exercises that involve intrinsic and extrinsic muscles of the foot and ankle are also essential.[17,18] Helpful exercises include those listed in **TABLE 1**.[9-11] Additionally, an eccentric heel stretch can help to alleviate PF symptoms (**TABLE 2**[17,18]).

A reasonable timeline for follow-up on newly diagnosed PF is 4 to 6 weeks. While many patients will not have recovered in that time, the goal is to document progress in recovery. If no progress is made, consider other treatment modalities.

Patellofemoral pain syndrome

Patellofemoral pain syndrome (PFPS) is one of the most common orthopedic complaints, estimated to comprise 7.3% of all orthopedic visits.[20] Commonly called "runner's knee," PFPS is the leading cause of anterior knee pain in active individuals. Studies suggest a gender bias, with PFPS being diagnosed more frequently in females than in males, particularly between the ages of 10 and 19.[20] Often, there is vague anterior knee pain, or pain that worsens with activities such as climbing hills or stairs, or with long sitting or when fatigued.

In general, unbalanced patellar tracking within the trochlear groove likely leads to this pain. Multiple contributory factors have been described; however, evidence increasingly has shown that deficiencies in hip strength may

TABLE 3

Patellofemoral/hip strengthening exercises[24]

These exercises should be performed in 3 sets of 10 repetitions on each side.

PATIENT HANDOUT	
Non-weightbearing standing hip abduction Stand on your unaffected limb and move your affected limb away from your body while keeping your pelvis level. Repeat on the opposite side.	
Side-lying hip abduction Lie on one side with your hip and knee in neutral position, and lift your leg up, away from your body. Repeat on the opposite side.	
Clams Lie on one side with your knees bent at 45°. Slowly raise the top leg by tightening your butt muscles. Repeat on the opposite side.	

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contribute significantly to maltracking of the patella with resultant pain. Specifically, weakness in hip external rotators and abductors is associated with abnormal lower extremity mechanics.[21] One randomized controlled trial by Ferber et al found that therapy protocols directed at hip and core strength showed earlier resolution of pain and greater strength when compared with knee protocols alone.[22]

We routinely talk to patients about how the knee is the "victim" caught between weak hips and/or flat feet. It is prudent to look for both in the office visit. This can be done with one simple maneuver: Ask your patient to do a squat followed by 3 or 4 single-leg squats on each side. This will often reveal dysfunction at the foot/ankle or weakness in the hips/core as demonstrated by pronated feet (along with valgus tracking of the knees inward) or loss of balance upon squatting.

There is general consensus that a nonsurgical approach is the mainstay of treatment for PFPS.[23] Pelvic stabilization and hip strengthening are standard components along with treatment protocols of exercises tailored to one's individual weaknesses.

Numerous types of exercises do not require specialized equipment and can be taught in the office (**TABLE 3**[24]). Explain to patients that the recovery process may take

TABLE 3

Patellofemoral/hip strengthening exercises[24] (*cont'd*)

These exercises should be performed in 3 sets of 10 repetitions on each side.

PATIENT HANDOUT	
Forward lunge With your legs spread at shoulder width, lunge forward with the affected lower leg (up to 90° of flexion) while maintaining a level pelvis and vertical trunk. Be sure to maintain your front knee in line with your ankle. Repeat on unaffected side.	
Single-leg squat Stand on your affected leg with your hip and knee in 30° of flexion. Lower your body and then return to the starting position. The goal is to keep your knee aligned over your ankle. Repeat on unaffected side.	

several months. Monthly follow-up to document progress is essential and helps to ensure compliance with one's home program.

Neck pain

The annual prevalence of nonspecific neck pain ranges from 27% to 48%, with 70% of individuals being afflicted at some time in their lives.[25] First rule out any neurologic factors that might suggest cervical disc disease or spinal stenosis. If a patient describes weakness or sensory changes along one or both upper extremities, obtain imaging and consider more formalized therapy with a physical therapist.

In patients without any red flags, investigate possible biomechanical causes. It is essential to review the patient's work and home habits, particularly in light of COVID-19, to determine if adjustments may be needed. Factors to consider are desk and computer setups at work or home, reading or laptop use in bed, sleep habits, and frequency of cellular phone calls/texting.[26] A formal ergonomic assessment of the patient's workplace may be helpful.

A mainstay in treating mechanical neck pain is alleviating trapezial tightness or spasm. Manipulative therapies such as osteopathic manipulation, massage, and chiropractic care can provide pain relief in the acute setting as well as help with control of chronic symptoms.[27] A simple self-care tool is using a tennis ball to massage the trapezial

TABLE 4

Self-care exercises for acute and chronic neck pain and strains

PATIENT HANDOUT

Neck stretches

Using both hands, apply gentle pressure to the back of your head while allowing your head to flex forward until you feel a stretch along the back of the neck. Repeat this process with one hand applied to the opposite side of your head and gently flex your neck towards that arm. Repeat on the opposite side. Hold each stretch for 10-15 seconds.

Trapezial release

Place a tennis ball between you and a wall and lean against the wall. Move up, down, and around to "self-massage" your neck and shoulders. Another method of self-massage is to put 2 tennis balls in an athletic tube sock and tie off the end. Then place the sock on the floor and lie on it (with your head facing the ceiling). Again, move around to self-massage. Avoid placing the tennis ball directly on your spine.

muscles. This can be accomplished by having the patient position the tennis ball along the upper trapezial muscles, holding it in place by leaning against a wall, and initiating self-massage. Another method of self-massage is to put 2 tennis balls in an athletic tube sock and tie off the end, place the sock on the floor, and lie on it in the supine position.

There is also evidence that exercise of any kind can help control neck pain.[28,29] The easiest exercises one can offer a patient with neck stiffness, or even mild cervical strains, is self-directed stretching through gentle pressure applied in all 4 directions on the neck. This technique can be repeated hourly both at work and at home (**TABLE 4**).

Reminders that can help ensure success

You can use the approaches described here for numerous other MSK conditions in helping patients on the road to recovery.

After the acute phase, advise patients to

- apply heat to the affected area before exercising. This can help bring blood flow to the region and promote ease of movement.
- continue icing the area following rehabilitation exercises in order to control exercise-induced inflammation.
- report any changing symptoms such as worsening pain, numbness, or weakness.

These techniques are one step in the recovery process. A home program can benefit the patient either alone or in combination with more advanced techniques that are best accomplished under the watchful eye of a physical or occupational therapist. JFP

CORRESPONDENCE
Carrie A. Jaworski, MD, FAAFP, FACSM, 2180 Pfingsten Road, Suite 3100, Glenview, IL 60026; cjaworski@northshore.org

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