

## Preconditioning Helps Skiers Conquer Slippery Slopes

By Katie Koch, MS

The leaves have fallen, your skis are waxed, and you've stockpiled sweaters and vests. Now all you need is that first snowfall. But there's one more step to take before ski season begins.

### Focus on fitness

Research shows that preconditioning before ski season will help improve your endurance, muscular strength and reaction times, decreasing your risk of injury. Injury risk rises dramatically with increased muscular fatigue, as our ability to maintain technique and form is compromised. So now is the time to get out those tennis shoes and whip yourself into shape.

Initiating a strength training program will help you to build strength and increase muscular endurance, prolonging the time it takes to reach muscle fatigue. Essentially, you train your muscles to work more effectively by increasing your body's ability to remove lactic acid.

Lactic acid is a byproduct of exercise that causes the muscle burn skiers often feel in the thighs. So strength exercises for your legs, such as the leg press or traditional wall squat, should be part of your workout. Round out your routine with some bridges, or hamstring curls with a machine or on the exercise ball.

### Remember your core

As skiers, we typically think working our legs is sufficient preparation for the season. While leg strength correlates significantly with performance on the slopes, our core musculature – abdominals, hips and lower back – helps maintain balance and proper form throughout a day of skiing.

Planks, "supermans," and basic and bicycle crunches are great core exercises to incorporate into your workout. Bridges and side hip raises will bring the focus to the hips and glutes, which are essential stabilizer muscles. Core exercises are especially essential for every snowboarder's workout, to improve overall stability. These exercises can be performed on the floor or on a stability ball for more of a challenge.



For your upper body, try seated rows or triceps kickbacks to strengthen muscles for the pulling motion skiers often use to move across flat terrain or up a small hill. Snowboarders will find it beneficial to focus on chest and arm strength as well because their sport requires more upper body strength.

Aerobic exercises of longer duration, like running, biking and using the elliptical trainer, should be done to improve cardiorespiratory endurance and overall fitness. Interval training – short bursts of intense activity alternating with lower-intensity active recovery – is also beneficial for skiers because it simulates the short bursts of activity typically seen in tackling a steep incline. For more advanced exercisers, plyometrics such as squat jumps can be incorporated to achieve the same result.

**Even if you have been preparing for the season, it is a good idea to keep general guidelines for injury prevention in mind:**

- Always have a few easy warm-up runs before you dive into black diamond.
- Take plenty of breaks.
- Stay hydrated and appropriately fueled.
- Eat foods with good nutritional value to keep your energy stores full.
- Stretch to aid in muscle recovery.

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**Katie Koch is an exercise physiologist in Cleveland Clinic Sports Health. For a fitness assessment or exercise prescription, please call 877.440.TEAM (8326).**



## How Exercise Builds Strong Bones at Different Ages

By Heather Nettle, MA

Bone density – the amount of tissue contained in bone – diminishes as we age. This increases our risks of osteoporosis, a serious disease in which bones become fragile and prone to fracture. Approximately 44 million Americans have osteoporosis, and about 80 percent are women.

Women can decrease risks of osteoporosis through physical activity, proper nutrition and hormone regulation. Activity plays a key role in bone health, but activity type may vary by age.

**Adolescents and young adults.** Young, highly active individuals have significantly higher bone density than their sedentary peers. Regular activities favored by adolescents and young adults, including bounding exercises like basketball, gymnastics and dance, contribute to bone health in developing athletes.

The exception is the young female who develops amenorrhea, or lack of menstrual periods, due to extreme levels of activity. Inadequate nutrition and caloric support for such activity can either postpone the start of menstruation or disrupt the menstrual cycle, leading to a phenomenon known as the female athlete triad.

The triad includes disordered eating, poor bone density and amenorrhea. Although older females can develop it, it is most common among young gymnasts, skaters and dancers. Their sports produce a lot of bounding stress on bone and should result in higher bone density. Yet the opposite is often true when a sport demands a certain body type or composition, triggering inadequate nutrition and a negative calorie balance.

**The best ways to keep adolescents and young adults from spiraling into this triad and missing out on healthy bone density gains are for coaches and parents to:**

- ensure adequate nutrition, with a proper caloric balance based on the demands of activity, and
- intervene when unhealthy body image issues arise.

**Healthy adults.** Throughout our 20s, we continue to build bone mass. High-impact, weight-bearing activities help promote this positive bone response. In our 30s, bone begins to break down faster than we can build it, so high-impact, weight-bearing activity becomes critical to preventing extreme bone loss.

**High-impact exercises include:**

- Running/jogging
- High-impact aerobics
- Repetitive stair climbing
- Dancing
- Racquetball
- Tennis
- Basketball
- Soccer

Adults with orthopaedic injuries or arthritis should check with their physicians before starting high-impact exercises.

**Older adults/adults with osteoporosis.** In our 50s, 60s and beyond, or if our bone density is low, we should do high-impact exercise only with a doctor's permission due to risks of joint pain and fracture. Low-impact exercises still benefit bone health, positively impact quality of life, increase comfort, help maintain balance and agility, and decrease the risk of falls leading to fractures.

**Cycling and swimming, while excellent forms of cardiovascular exercise, do not improve bone health as much as these low-impact exercises:**

- Walking
- Elliptical trainer
- Low-impact aerobics
- Stair-stepping machine

It's important to round out both high- and low-impact exercise routines with resistance training – for example, using machine weights or free weights.

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**Heather Nettle is Coordinator of Exercise Physiology Services for Cleveland Clinic Sports Health. To make an appointment with one of our exercise physiologists, call 877.440.TEAM (8326).**

## Meet Two New Physicians on Our Roster



Sports medicine surgeon **James Rosneck, MD**, specializes in knee, hip and shoulder arthroscopy. Dr. Rosneck joined us Sept. 1, 2009, and sees

patients at the Cleveland Clinic Sports Health Center, and at our Beachwood and Solon family health centers.

**Q: Dr. Rosneck, what really makes your day?**

A: Seeing an injured individual who has set goals for return to play and activity, persevered through treatment/surgery/rehab, and made it back to their desired level of activity or competition.

**Q: Any words of wisdom for athletes, parents and coaches?**

A: For athletes: Set lofty goals....It's always good to have something to work toward. For parents and coaches: Let kids be kids, and remember that to truly be good/great, you need to enjoy what you are doing!

**Q: Any myth you'd like to 'bust'?**

A: "No pain, no gain" really only applies in selected circumstances.

**Q: What do you do to keep in shape?**

A: Bike-riding and weight-lifting.

**Q: Do you have a 'favorite sports moment' or play?**

A: Jack Nicklaus winning the '86 Masters, LeBron's performances in game 2 versus the Magic in '09 and game 5 versus the Pistons in '07, Michael Jordan ending his Bulls career with a shot to beat the Jazz... too many to list!

**Q: Is there a professional athlete you admire?**

A: Jackie Robinson, more than anyone else, for obvious reasons.

**Q: What would people be surprised to learn about you?**

A: If I were not in medicine (or had more time), I would be coaching high school or college basketball.



**Anne Rex-Torzok, DO**, a primary care sports medicine specialist, treats sports-related musculoskeletal injuries, including adolescent low back pain and

spondylolysis (stress fracture of the low back). She joined us in November 2008 with husband Thomas Torzok, DC, a sports chiropractic physician, and sees patients at our Willoughby Hills Family Health Center.

**Q: Dr. Rex-Torzok, what really makes your day?**

A: Helping athletes successfully return to their sport as stronger players, after healing their initial injuries and addressing any underlying medical problems.

**Q: Any words of wisdom for athletes, parents and coaches?**

A: Athletes should listen to their bodies. Common sports-related injuries involve overuse, fatigue and stress. Often, by early rest and medical intervention, athletes can prevent an injury from becoming more difficult to treat.

**Q: How do you stay in shape?**

A: I try to lift weights and get in some cardiovascular training at the gym. It's difficult, working plus having 3-year-old twins at home. But part of caring for my family is caring for my own health. Returning to the gym since my kids were born has been a great feeling, and I would highly recommend it to all moms out there.

**Q: Do you have a favorite team?**

A: I enjoy rooting for the underdog! Growing up in Buffalo, I rooted for the Bills to win the Super Bowl year after year after year...

**Q: What would people be surprised to learn about you?**

A: If I weren't practicing medicine, I would probably be a starving artist. I was a studio art minor in college and love all things artistic: watercolors, acrylics, photography, drawing, stamping/scrapbooking.

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To make appointments with Dr. Rosneck or Dr. Rex-Torzok, call 877.440.TEAM (8326). To view our staff directory, visit [sports-health.org](http://sports-health.org).

## PRP and ESWT: New Treatment Options Help Athletes Avoid Surgery

Athletes whose tendon, muscle or ligament injuries do not respond to conservative treatment have two options to consider before resorting to surgery. Both platelet-rich plasma (PRP) therapy and extracorporeal shock-wave therapy (ESWT) accelerate the natural healing of soft-tissue injuries.

### Platelet-rich plasma for acute injuries

"If I had an acute muscle or tendon tear or injury as an athlete and wanted to get back to playing, I would consider PRP," says sports medicine surgeon Anthony Miniaci, MD, Executive Director of Cleveland Clinic Sports Health. He has performed dozens of the procedures.

"There are a lot of platelets and growth factors circulating through your bloodstream that allow you to heal," he explains. "We take your blood, separate out those factors that are good for the healing response, and inject them into the area of injury for quicker tissue recovery. PRP generally cuts healing times in half."

One to three 45-minute sessions are required. About 30 cc (six teaspoons) of blood are drawn and separated by centrifuge into three layers: blood cells, platelet-poor plasma and platelet-rich plasma.

### Injecting healing factors into injured area

"You end up with about 5 cc (one teaspoon) of very concentrated plasma and platelets. I use ultrasound to identify the area of injury and, under direct visualization, inject it right to that area to stimulate a healing response," he says. "Most patients are very happy with their results."

PRP therapy is FDA-approved but not yet covered by insurers. "Further study is needed to determine its true effectiveness," adds Dr. Miniaci.



### ESWT for chronic tendonitis

ESWT is better suited to active individuals with chronic, painful tendonitis. Completely noninvasive, it delivers sound waves in pulses from a device positioned at the injury site.

"If I had chronic tendonitis that hadn't responded to anti-inflammatories, bracing or physical therapy, I would consider shock wave therapy," says Dr. Miniaci. "For active people with chronic, painful conditions like tennis elbow or patellar (kneecap) tendonitis, studies show that ESWT is at least as effective as surgery."

### Shock waves stimulate healing

Delivering intense energy pulses to the inflamed area causes local micro-damage to the area that promotes a healing response. It can even break down calcium deposits.

"We use low-energy units that don't require general anesthetics. You will feel a pulsing, which causes some discomfort because it's over an inflamed area, but it is not intolerable," says Dr. Miniaci.

ESWT is not advised for growth-plate injuries or during pregnancy.

Three to five sessions of ESWT (approved for this use but not yet covered by insurance) are typically required. Should ESWT fail to relieve chronic tendonitis, Dr. Miniaci would next try PRP.

**To seek treatment from our sports health specialists for muscle, tendon or ligament injuries, please call 877.440.TEAM (8326).**

## Vitamin D Deficiency Hazardous to Athletes' Health – and Performance

By Anne Rex-Torzok, DO

Rickets, a severe form of vitamin D deficiency, may seem like a health problem of the distant past. Rickets is making a comeback, however, and ongoing research shows that vitamin D deficiency and insufficiency in general are epidemic today.

Our three main sources of vitamin D are sunlight (solar UVB exposure), our diet and dietary supplements. Many of us have difficulty getting adequate sunlight exposure, our natural dietary consumption of vitamin D is limited, and many people do not regularly supplement with vitamin D.

### Boosting bone – and more

Vitamin D is well-known for its role in our musculoskeletal health, specifically for its ability to prevent osteopenia (low bone density), osteoporosis and fracture.

Unlike other vitamins, vitamin D is actually a steroid hormone with the power to repair and maintain bone. Even in adolescence, low vitamin D levels can prevent our bodies from attaining maximal bone density.

Other health problems associated with vitamin D deficiency include cancer, cardiovascular disease, multiple sclerosis, type I diabetes and decreased immunity, to name just a few.

For these reasons alone, we should be interested in our vitamin D levels and whether or not we may benefit from a short course of prescription strength supplementation.

### D affects peak performance

Athletes have even more reason to be interested in their vitamin D levels. Vitamin D is directly correlated with the ability to attain peak athletic performance by improving strength, speed, endurance, balance and reaction time. Numerous studies looking at training seasonality and the relationship between solar UVB exposure and performance prove this to be true.

Vitamin D has also been shown to increase the size and percentage of type II (fast twitch) muscle fibers, which are crucial in generating quick bursts of speed and power.



Athletes also may not be training to their highest potential or may be missing time away from their sport because of vitamin D-related issues. Vitamin D-deficient athletes tend to have a higher incidence of stress fractures, repeated fractures, chronic musculoskeletal pain and repeated viral illnesses than their peers.

### Which athletes need screening?

Given this information, what should the athlete do? Not all athletes need to be screened for vitamin D deficiency. However, any athlete with chronic injuries, persistent pain or repeated illnesses should discuss the possibility of vitamin D deficiency/insufficiency with his or her physician.

### Strategies to boost your D include:

- Seek sensible sun exposure – no more than 10 to 15 minutes in the middle of each day. Keep in mind that overexposure and burning can lead to various skin cancers and accelerate skin aging.
- Take at least 1,000 IU of vitamin D<sub>3</sub> daily in a supplement.

Physicians will adapt patient care to recent findings about the prominent role that vitamin D plays in health maintenance. Soon, checking vitamin D levels and treating vitamin D deficiency will be as common as cholesterol or blood pressure management.

**To see Dr. Rex-Torzok, of Willoughby Hills Family Health Center, or our other primary care sports medicine physicians, call 877.440.TEAM (8326).**

## Concussions: Be Alert to Signs and Symptoms

Annually, approximately 1.6 to 3.8 million concussions affect football, soccer, field and ice hockey, lacrosse, basketball and other athletes. Concussions are brain injuries. Only about 10 percent of concussions cause loss of consciousness.

More common signs are:

- a dazed or stunned appearance
- confusion about the play
- clumsy movements
- slow responses to questions
- personality/behavior changes
- retrograde amnesia (forgetting play prior to "hit")
- anterograde amnesia (forgetting play after "hit")
- loss of consciousness (even temporary)

Common symptoms are:

- headache
- nausea
- balance problems
- double vision
- photosensitivity
- feeling sluggish
- changed sleep patterns
- cognitive (mental) changes

At the start of each season, athletes in contact sports should fill out a graded symptom checklist. Cleveland Clinic Sports Health recommends the ImPACT™ test, which scores the severity of 27 possible symptoms on a 0 to 6 scale.

Testing should be repeated whenever concussion is suspected. When an athlete is injured, Certified Athletic Trainers should conduct at least four sideline evaluations, including neurological and mental status testing. Any positive finding precludes a return to play.

After the game, neuropsychological, CT and MRI tests are also essential. Athletes need permission from a healthcare professional to return to play.

For details on the ImPACT graded symptom checklist and concussion management, please contact Bob Gray, ATC, Athletic Training Community Affairs Coordinator, at 216.518.3615 or grayb1@ccf.org.



## Competitive Edge

Competitive Edge offers active individuals, athletes, coaches and athletes' parents updates from Cleveland Clinic Sports Health professionals on nutrition, health and injury prevention.

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The information contained in Competitive Edge is for educational purposes only and should not be relied upon as medical advice. It has not been designed to replace a physician's medical assessment and medical judgment.

For a tour of the Cleveland Clinic Sports Health Complex just off I-480 in Garfield Heights, please contact Amy Byram-Bouthilet at byrama@ccf.org.

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## Home Gym Hang-Up

Elizabeth Sprogis, MA, Exercise Physiologist

Upper back exercises are an important part of an upper body strength-training routine. The muscles in the upper back are important for postural stability and shoulder motion. The rowing motion works different muscles of the upper back, depending upon the specific exercise. Below are variations using dumbbells and kettlebells. If you have machine equipment available, there are other options as well.

### ONE-ARM ROW:

Place right knee and hand on bench. Hold a dumbbell with the left hand. Pull weight up toward your side, until upper arm is just past parallel to the floor. Return to starting position with arm extended. Repeat for two to three sets of eight to 12 repetitions. Switch sides.

#### BEGINNER

1

2

3



### RENEGADE ROW:

Begin at the top of the pushup position, holding onto kettlebells on the floor, about shoulder width apart. Pull one hand up toward side until upper arm is horizontal. Return to starting position. Alternate sides for two sets of 20 repetitions.

#### INTERMEDIATE

1

2

3



### STABILITY BALL ROW:

Position your chest on a stability ball using your feet to stabilize you. Begin with dumbbells or kettlebells on the floor beneath your shoulders. Grab the weight and pull back toward your rib cage, alternating sides. Pause, then return to start. Repeat for two to three sets of eight to 12 repetitions.

#### ADVANCED

1

2

3



**KETTLEBELLS:** Kettlebells have been around for decades but have recently gained popularity.

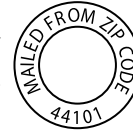
They can often be used interchangeably with dumbbells, but provide greater diversity of movement. With proper kettlebell training, athletes can improve power, strength, agility and muscular endurance while engaging core muscles and challenging balance in full-body motions.

**Disclaimer:** You should always check with your doctor before starting a new exercise routine or increasing intensity. If you experience pain while doing these or other exercises, stop immediately and contact your physician.



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# Sports Health Competitive Edge

A newsletter for athletes, coaches, parents and active individuals | Fall 2009

## MYTHBUSTER

Hold the Steak, Pass the Pasta!



**MYTH:** Eating protein builds muscles.

**FACT:** Muscles are made of protein, but we need adequate calories in the form of carbohydrates to actually build muscle. Without enough carbohydrates, it is like trying to build a brick house without laying any bricks! Carbohydrates produce energy inside the muscle that allows us to use the construction materials required for building muscle.

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By Tara Harwood, RD, LD, Cleveland Clinic Sports Health Registered Dietitian. To see one of our sports nutrition experts, call 877.440.TEAM (8326).

### Many Convenient Locations to Serve You

Get expert evaluation, medical care, surgery and rehab all under one roof at the new Cleveland Clinic Sports Health Center at I-480 and Transportation Boulevard. We also offer sports health and rehabilitation services at Cleveland Clinic's main campus and in Beachwood, Brunswick, Euclid, Independence, Mentor, Solon, Strongsville, Westlake and Willoughby Hills. Visit our website for maps and directions.

**877.440.TEAM (8326)**  
[sports-health.org](http://sports-health.org)

For expert advice on how to handle your sports injury, or for an appointment at any location, call our toll-free number or visit us on the web.

### Same-Day Acute Injury Clinic

If you have an acute sports injury, call 877.440.TEAM (8326) to arrange for a same-day appointment.