The Year of the Healthy Athlete

52 Weekly Tips to Keep You Injury Free and Performing at Your Best

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ABOUT DR. GEIER

I'm an orthopaedic surgeon and sports medicine specialist in Charleston, South Carolina. I aim to provide you leading commentary and education on injury treatment and prevention to keep you performing at your best.

I recently started my own practice after spending eight years as Director of MUSC Sports Medicine at the Medical University of South Carolina. I hold a board certification from the American Board of Orthopaedic Surgery in Orthopaedic Surgery as well as a subspecialty certification in Orthopaedic Sports Medicine.

At the time of this writing I serve as Chairman of the Public Relations committee for the American Orthopaedic Society for Sports Medicine. I serve on the Outreach committee for the STOP Sports Injuries campaign, the Publications committee for the American Orthopaedic Society for Sports Medicine, the Sports Medicine Evaluation committee for the American Academy of Orthopaedic Surgeons, and the Medical Aspects of Sports committee for the South Carolina Medical Association.

Education of healthcare professionals who treat athletes is extremely important to me. Therefore, I am actively involved with sports medicine journals and health publications. I am a member of the editorial board of the Orthopaedic Journal of Sports Medicine: An Open Access Journal for Orthopaedic Sports Medicine, Arthroscopy and Knee Arthroplasty and Outpatient Surgery Magazine. I am a principal reviewer for the American Journal of Sports Medicine and a reviewer for Sports Health: A Multidisciplinary Approach.

Professional and other elite athletes provide an amazing opportunity to work with individuals with unmatched strength, speed, and ability. It has been a honor to serve as Chief Tournament Physician for the Family Circle Cup women's professional tennis tournament for seven years. I have also served as head team physician for the Charleston Battery professional soccer team. I have also served as a physician for USA Rugby and the U.S. women's national soccer team during their appearances in Charleston. In my sports medicine fellowship, I worked with the medical teams who provided care for the St. Louis Cardinals and St. Louis Rams.

In my practice, I treat athletes of all ages and skills levels. While I treat musculoskeletal injuries throughout the body, I particularly focus on knee and shoulder injuries and the arthroscopic surgeries to treat them. I am also especially passionate about youth sports injuries. I work to prevent them in any way I can, both in my practice and through speaking and writing opportunities.

I started writing articles on my blog - drdavidgeier.com - in August 2010 as a hobby. My goal at the time was simple. I wanted to share sports medicine and wellness information in easy-to-understand language for athletes, parents, coaches and other healthcare providers. The blog quickly became a forum where readers could share questions and ideas.

What I never expected in 2010 was the passion I discovered for communicating this information. Despite long hours in clinic and surgery, I came home excited to open my laptop and write. That passion has created opportunities I never expected. I now write a regular column for The Post and Courier newspaper in Charleston, produce a weekly sports medicine podcast and contribute content for many publications and websites.

I am honored that you have downloaded The Year of the Healthy Athlete. I would love to hear your ideas about any of these tips. I would love for you to join me in the sports medicine discussions on my website and podcast. Send me your sports injury questions or questions about rules changes, safety measures or any other sports medicine topic. Share your thoughts about articles I post on my website or topics I discuss on my podcast. I look forward to hearing from you!

PLEASE READ FIRST

The *Year of the Healthy Athlete* is meant to serve as a source for basic information on injuries in sports and exercises and suggestions that could decrease the risk of those injuries. It is not meant to serve as a comprehensive source for all possible information on each topic. If you have any questions or would like further information, please do not hesitate to contact me.

The *Year of the Healthy Athlete* is also not intended to be a source of specific medical information. These sports medicine tips are intended for informational purposes only. Please consult your physician for your specific healthcare concerns.

INTRODUCTION

I'm writing this guide for you. Yes, you. You might not think of yourself as an athlete, but I would bet you are. You might not be a professional athlete. You might not even play organized team sports. It doesn't matter. If you like to jog or lift weights or stay active in any form of sports or exercise, this guide to keeping athletes injury free can help you.

People often ask me why I chose orthopaedic surgery, and ultimately sports medicine, as a career. My answer has nothing to do with being the team doctor for pro sports teams or performing challenging surgeries. Those are terrific aspects of my job, but it is far from the most appealing part for me.

I love sports medicine because I get to help people return to their sport or activity. It might be a high school athlete returning to soccer after her ACL surgery. It could be an avid weightlifter getting back in the gym after being sidelined with a shoulder injury. Seeing the excitement on my patients' faces when they are cleared to play is a daily privilege for me.

Likewise, my blog and podcast provide these opportunities on a much larger scale. I am honored to help athletes all over the world by explaining sports injuries and treatments in easy-to-understand language. Through this platform, I believe that I can make a real impact by promoting injury prevention.

Sports medicine needs to evolve further through a focus on injury prevention. There's no question new surgical techniques and rehab exercises will help athletes return from injuries faster. Those are worthy efforts. On the other hand, if we can prevent the injuries from happening in the first place, that would be a true victory.

To be fair, injuries are a normal part of sports. Athletes are bigger, stronger and faster than ever before. We will never eliminate every traumatic event. Along the same lines, we probably can't avoid every injury with daily exercise either. No matter how careful you are while jogging, you can't completely prevent an unfortunate fall or misstep.

We can prevent many injuries in sports and exercise, though. Or we can at least decrease their risks.

The Year of the Healthy Athlete is a collection of tips that I believe could keep you injury free and performing your best. Some tips apply to team sports, while others focus on individual athletes. Some of them aim to keep youth athletes safe, while others aim to protect adult weekend warriors.

I sincerely hope that this guide can help you stay in the game and out of the operating room.

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KNOW WHEN YOU SHOULD SEE THE DOCTOR

I'm often asked when an athlete should see his doctor or go to an orthopaedic surgeon after an injury. Is 24 hours after injury too soon? Is one week or six weeks a better timeframe?

Instead of suggesting an arbitrary amount of time after an injury that might indicate it's serious, allow me to propose a different approach.

If you cannot perform your sport or physical activity as well as you would like to because of pain or other symptoms, you should go to the doctor.

Obviously if you can't play at all, seeing a sports medicine doctor or orthopaedic surgeon is an easy decision. Those of you who can play or exercise but are limited by your injury should consider it as well.

For example, a 40-year-old female runner might have no trouble on flat surfaces, but she feels a dull pain in the front of both knees when climbing and descending hills. Her pain keeps her from running races.

A high school baseball pitcher might experience clicking deep in his shoulder with off-speed pitches. He can pitch through the discomfort, but he notices a loss of velocity and difficulty locating his pitches.

Both of them should consider having their injuries evaluated even though they can still play and exercise.

You might resist going to an orthopaedic surgeon out of fear of being shut down or finding out you need surgery. However, most of the time we can suggest activity modification, physical therapy or another nonoperative option to get you pain-free and back to sports. Often, these changes can eliminate the underlying problem before you develop a much more serious injury.

WORK WITH A TRAINER WHEN STARTING A NEW EXERCISE PROGRAM

Changing your exercise regimen can add fun and a much needed change of pace. It can also prevent injuries by shifting stress away from parts of your body you continually work with your normal program.

It is critical when you start any new form of exercise that you learn to do the exercises or moves properly. This idea applies to almost any form of exercise – free weights, yoga, kettle bells and many more.

Don't start by randomly flailing your arms and legs. Don't try exercises with no real understanding of proper form. Not only do you miss out on much of the benefit of the exercise, but you risk injury.

Instead, hire a trainer for one or two sessions if you're starting a weight lifting program. Hire a private yoga or Pilates instructor for a few sessions. Have a professional teach you proper form with each move.

Also whenever you start a new exercise regimen, remember to start slowly. Try shorter sessions, fewer reps and lower weights. Let your body grow accustomed to the new demands before you suffer a muscle strain or worse.

STAY SAFE ON THE SLOPES

Without question, snow skiing and snowboarding can offer tremendous thrills. Unfortunately those activities can lead to injuries. You can never completely avoid these injuries. There are a few steps you can take, though, that could at least lower your chances of injury or decrease the severity of injury should one occur.

Inspect skis, snowboards and other equipment to ensure that they are in top condition. Because ski professionals check and maintain it, rental equipment can often be very safe.

Wear a helmet to minimize the risk of head injury. Young skiers and snowboarders who wear helmets have been shown to suffer 43% fewer head, neck and face injuries than those who don't wear a helmet.[1]

Avoid fatigue throughout your sessions. Many injuries occur when you start to become tired. Take breaks periodically. Drink plenty of fluids. Stop for the day when you struggle to maintain good form.

Stay within the marked boundaries. The terrain outside of the boundaries creates unsafe conditions. If you crash outside of the boundaries and you can’t ski or you are knocked unconscious, ski patrols might have trouble finding you.

Consider a lesson simply to learn how to fall safely. If possible, try to keep every joint flexed somewhat as you fall. Keep your chin close to your chest and keep your feet together. Keep your arms up and in front of you. Try to move into a position where you can see where you’re going. Do not try to get on your feet until you stop sliding.

Finally, ski or snowboard with other people. If you do fall, they can help you get on your feet. If you suffer a serious injury, they can alert medical providers.

PREPARE FOR EXERCISE IN COLD WEATHER

If you live somewhere with cold, snowy weather in the winter, you probably adjust your exercise routines for several months each year. Staying indoors and running day after day on a treadmill or using the elliptical trainer can become monotonous. You would love to get outdoors and train. Can you do it safely?

Most of the time, you can. You need to prepare for the conditions, though. These are some suggestions to safely exercise in cold winter weather.

First you have to dress appropriately. Instead of one thick garment that can cause you to overheat, you should dress with layers. Layers allow you to remove a garment or put it back on to adjust to changes in temperature and your body's heat production. A combination of three layers is optimal to prevent heat loss. The innermost layer should consist of polyester fabric that wicks away moisture from your body. You should avoid cotton since it absorbs sweat and could keep your body wet. Your second layer can be thin or heavy depending on the climate and exercise. Your outermost layer should be a windproof and waterproof shell. Also remember not to overdress, as exercise generates heat and sweat.

Next, protect your head and extremities to prevent loss of body heat. Wear a hat, gloves or mittens, and warm, moisture-wicking socks. Also wear sunglasses and sunscreen on sunny days to protect your eyes and prevent sunburn from the ultraviolet rays that can reflect off snow and ice.

Try to run into the wind. If the second half of your run is directed into a strong wind, the air flowing past you can feel extremely cold when your clothes are damp with sweat and cause your body temperature to drop.

Wear shoes with appropriate tread for slick or icy conditions on trails, sidewalks and roads.

Finally, recognize signs of hypothermia and frostbite. Loss of feeling, tingling, or loss or color in your face, hands, fingers, and toes are signs of developing frostbite. Mental status changes such as confusion or disorientation, slurred speech, and uncontrolled shivering can be signs of impending hypothermia. If you notice any of these changes, you should get into a warmer environment immediately and slowly warm your body and the parts that are affected. Also consider training with a partner to watch out for each other.

LEARN AND USE AN ACL PREVENTION EXERCISE PROGRAM

Anterior cruciate ligament tears are devastating knee injuries for athletes. We probably can never eliminate all ACL injuries in sports. If we can take steps to prevent some of them, though, I think we should try.

Most ACL injuries result from noncontact mechanisms. An athlete might awkwardly land from a jump with her knee extended, and her knee buckles. Or she might plant her foot to change directions when her ACL ruptures.

ACL injury prevention programs aim to resolve the underlying factors contributing to these noncontact injuries. Usually they consist of 10 to 15 minutes of simple exercises that replace traditional warm-up exercises. They develop neuromuscular balance and coordination throughout the lower extremity and teach proper landing and turning mechanics.

Generally sports medicine programs, physical therapists and athletic trainers teach these programs to sports teams. They can instruct the athletes and demonstrate the proper ways to do each movement. They can watch and correct players' bad form. Then the players perform the exercises daily before and during the season.

Generally studies show that these programs decrease ACL injury rates. Some show significantly fewer ACL tears among players who do them compared to players who do not. Other studies show trends toward lower injuries but not as large of an effect.

Other than the 15 minutes or less each day spent doing these exercises, I don't see a real downside to these programs. These exercises will still help you warm up before practices and games, and they might keep you out of the operating room.

DON’T INCREASE TRAINING MORE THAN 10% PER WEEK

I see a surprisingly large number of runners injured as they train to run a marathon or half-marathon. Or they might be overweight people trying to lose a few pounds in one of those extreme weight-loss competitions. They might even be people preparing for beach season.

The underlying factor in their injuries almost always involves trying to reach a fitness or athletic goal too fast and increasing training too quickly. When they ask me what they could do differently to avoid injury next time, I recommend setting realistic goals and increasing their training to achieve those goals slowly.

This tip is easiest to explain for jogging, but the concept can be implemented with almost any form of exercise or training.

For example, if you haven’t jogged in two years, running a 10-K race six weeks from now might be a bad idea. Likewise, if you run 10 or 15 miles per week, you probably won’t be able to safely increase your training to complete a marathon two months from now.

Similarly, people who want to lose weight quickly or get in shape often hire trainers or join boot camps but start far too aggressively. If you haven’t lifted weights in years, doing large numbers of reps and sets many times a week could lead to shoulder or arm injuries.

Instead of doing too much too soon, you should increase training in a way that doesn’t overly stress your body’s ability to heal and get stronger. If you run 20 miles per week now and want to increase that amount, aim for 22 miles next week. If you want to run a marathon in 12 months, determine the mileage you need to reach. Then use the 10% rule backwards to figure out when you need to start training.

Increasing mileage, frequency of workouts and intensity of workouts can follow the same principle. Increase them a little bit at a time.

ENSURE MEDICAL SUPPLIES ARE AVAILABLE FOR SPORTING EVENTS

Having paramedics and emergency medical services at every tournament, game or practice would be ideal, but it probably isn't possible in most cases. I stress the importance of athletic trainers for schools and teams in another tip. They can certainly help with emergency medical situations.

Teams and sports facilities should prepare ahead of time and obtain some basic medical and first aid supplies. Cervical collars should be available in several sizes in case a head or neck injury occurs. Prepackaged, moldable splints, which can be applied to fractures quickly and used to stabilize the extremity to more comfortably move and transfer an injured athlete, would be useful. Additionally gauze bandages, gauze rolls, and tape for rapid application to wounds would be advisable.

Parents and athletes should know about severe allergies and have injectable epinephrine. Facilities should consider keeping an epinephrine injector as well. Often a physician or nurse must obtain one. Organizers should keep one accessible.

Communication ability with a cell phone or a nearby landline, if no cell service exists, is an absolute must.

It is also crucial to have a plan in place to handle emergencies. Organizers should know where the closest hospital is, and you should know the phone number of that hospital. It can be very helpful for people to call the emergency department and inform the doctors that someone seriously injured is on the way. You can also call to ask questions.

This list represents supplies and actions to help stabilize an athlete until paramedics have arrived. Hopefully you and your team will never need any of these supplies or need to use your action plan.

RECOGNIZE THAT CONCUSSIONS OCCUR IN SPORTS OTHER THAN FOOTBALL

Football has received tremendous scrutiny over the long-term dangers of concussions. At the high school and college levels, football has a higher rate of concussions than other sports. However, concussions do occur in other contact and collision sports, and they can be just as dangerous.

We need to do everything possible to decrease the risks of concussions in every sport, not just football. We won't prevent every head injury, but we can make a difference.

For example, boys' and girls' soccer both have high rates of concussions. Scientists debate the long-term effects of heading the soccer ball, but we can work to prevent serious brain injuries in the sport. We need to teach proper heading techniques to decrease the chance of head-to-head contact with another player and also teach proper landing techniques to try to prevent players hitting their heads on the ground. We might also consider placing pads on the goalposts to protect goalkeepers.

Between 1998 and 2008, concussions in cheerleading increased by an average of 26% per year. This increase is larger than that of any other girls' sport.[2] Since a majority of these injuries occur in stunts, cheerleaders should be trained in proper techniques for spotting and stunting. Each athlete should only attempt stunts after she has demonstrated the technical skills required for each maneuver.

Those are just a few sports and ideas for them. If you play any contact or collision sport, you can suffer a head injury. Learn how to best protect yourself.

Finally, if you coach a sport, or if you are a parent of a child who plays one of these sports, learn to recognize the signs and symptoms of a concussion. A concussed athlete could exhibit a headache, confusion, dizziness, nausea, vomiting, memory loss and more.

If there is any doubt at all that you or one of your players has suffered a concussion, get medical attention from a doctor or athletic trainer on the sidelines. Alternatively, go to a medical facility for proper evaluation and treatment.

HIRE AN ATHLETIC TRAINER FOR YOUR SCHOOL OR TEAM

Let me start by clearing up a common misperception. Athletic trainers are not “personal” trainers or “strength and conditioning” trainers. While many athletic trainers hold additional strength and conditioning credentials, they are healthcare professionals focused on evaluation, treatment, rehabilitation and prevention of injuries and illnesses.

Some athletic trainers are employed directly by schools, while others work for hospitals or sports medicine programs that contract with schools and teams to provide athletic training services. Unfortunately not every school has them. In 2009 only 42% of U.S. high schools had access to athletic trainers. [3]

It’s time that all high schools have access to athletic trainers. If you are a parent of a high school athlete, you should inquire about athletic trainers for their sports and push the school to hire one if there’s no such coverage. If you play on a competitive team outside of the school systems, you should try to find athletic trainer coverage. Quite frankly, athletic trainers play critical roles in sports programs.

In addition to serving as first responders for injured athletes, they can develop emergency action plans, monitor field, environment, and weather conditions, develop and coordinate injury prevention programs, prepare athletes for practice and games, communicate with physicians about injuries, treat and rehabilitate injured players, and help determine return to play for injured athletes.

Studies have shown higher injury rates and significantly higher reinjury rate among athletes at schools without athletic trainers compared to those at schools with them. Additionally, the presence of an athletic trainer has been shown to increases the chances of identification of concussed athletes. [4]

If you are an athlete on a team sport, or if you are the parent or coach of an athlete who plays team sports, work with the schools and teams to obtain coverage from a certified athletic trainer.

MAKE SIMPLE CHANGES TO PROTECT CHEERLEADERS

Whether you are a cheerleader or the parent or coach of one, you probably recognize the athleticism required in cheerleading. Competitive cheerleading requires tremendous strength, agility and power for the stunts and tumbling passes performed.

Cheerleading received some unflattering attention after studies found high rates of catastrophic injuries. Cheerleading was responsible for 65.0% of direct catastrophic injuries in female high school athletes between 1982 and 2009. At the collegiate level, cheerleading accounted for 70.8% of the direct catastrophic injuries. [5]

The cheerleading governing bodies made some changes that seem to have had a tremendous impact in decreasing these catastrophic injuries. At an individual and team level, there are some simple steps you can take to keep cheerleaders safe.

Cheerleaders must be trained in proper techniques for spotting and stunting. Each athlete should only attempt stunts after she has demonstrated the technical skills required for each maneuver.

Follow the rules for basket tosses and pyramids. It is essential that coaches and athletes understand the limits on height and number of participants for each maneuver.

A proper surface for cheerleading is essential. Pyramids, tumbling passes and other stunts should never be performed on wet, hard, or otherwise unsafe surfaces. Likewise, cheerleading teams should utilize mats whenever possible.

Cheerleaders, like all athletes, should perform routine strength and conditioning training. For example, it is critical that spotters and bases have enough upper body and core muscle strength and balance to support the flyers.

Recognize that cheerleaders are tremendous athletes whether or not you consider cheerleading to be a sport. These efforts can keep more of the athletes safe and healthy.

TALK TO YOUR CHILD ABOUT PAIN BEFORE AN INJURY BECOMES SERIOUS

All athletes want to compete. We all want to push through sore muscles and stay in the game or run a few extra miles.

Young athletes are no different in that sense. Even more than older athletes, kids don't want to let others down. They don't want to disappoint their teammates, coaches and parents. They often don't tell anyone they are hurting for that reason.

Many injuries in youth sports are overuse injuries. They often start as soreness that gets worse, come on sooner in a game or practice, or take longer to go away. If they keep playing through the pain, they can develop more serious overuse injuries.

Since kids often won't tell their coaches and parents they're having pain, adults might only notice trouble when performance starts to suffer. It is definitely important to watch for signs of trouble, but I would argue it is just as critical to listen for them too.

To foster communication with your kids, you might start with innocent topics. "How did practice go today?" "What drills did the team do?" "Did you have fun with the other kids?" Don't focus on performance or winning. Kids often feel pressure to win from coaches (and you).

Stick with lighthearted discussions, and your children will open up. It might take weeks or even months, but their trust and comfort talking to you will develop.

Eventually they will discuss problems with you. Your child might let you know his shoulder hurts because he knows you won't criticize him or push him to play through it. Most of these injuries resolve with some simple changes (a few days off, activity modification, or a short course of physical therapy). Catch them early by talking to your kids, and you might prevent more serious injuries from developing.

CRACK DOWN ON FOULS AND DIRTY PLAY

Rules in sports competitions generally try to keep one player or team from gaining an unfair advantage. In recent years, many sports have adopted rules aimed at preventing injuries as well. For good reason, fouls and dirty play cause a significant number of injuries.

Data from injuries in nine high school sports that occurred across the United States over a two-year period showed some startling statistics about injuries resulting from illegal activity. [6]

- Over 6% of injuries in all sports were caused by illegal activity
- Girls' basketball, girls' soccer and boys' soccer have the highest rates of injuries from fouls
- Concussions comprised over one quarter of the injuries caused by fouls
- Over 10% of these injuries caused the athlete to miss the rest of the season
- Over 5% required surgery

It might prove very difficult to completely eliminate dirty play in sports. Strict rule enforcement by referees and harsher penalties might cut down on some of these injuries in team sports.

DECREASE RISKS FOR CARDIAC EVENTS AT MARATHONS

I'm not sharing this tip to scare you away from running or other athletic competitions. The benefits of regular exercise, not just for physical health but also other aspects of health and well-being, are tremendous. While cardiac arrests are rare, and likely no more common in sports or regular jogging, they can occur.

A study in the New England Journal of Medicine showed an incident rate of cardiac arrest during marathons of 1 in 184,000 participants. The incidence of sudden cardiac deaths was even lower – 1 in 259,000.[7] Other studies have shown that the victims have previously completed at least one marathon, and the events often occurred in the final miles of the race.[8] Therefore experienced runners are not immune.

While it might not be possible to prevent every cardiac arrest or death in marathons, there are some ideas runners and race organizers could consider.

I think it is imperative for runners and their families, as well as spectators generally, to know how to administer CPR. Race officials might consider working with medical teams covering the race to spread out personnel trained in CPR along the course to perform it if needed, rather than having all personnel in a medical tent at the finish line. Any step that decreases the time between a cardiac event and the initiation of CPR would be helpful. Placement of automated external defibrillators (AED's) in the final miles and at the finish line is likely warranted as well.

Someone considering training for a marathon or half-marathon could see his or her doctor, undergo a thorough physical, and obtain labs and tests if needed. This recommendation seems especially applicable to males. Hypertrophic cardiomyopathy (HCM) is a significant risk factor for sudden death in these races. Athletes suffer sudden death without ever knowing they have HCM. A good physical exam, plus an electrocardiogram and echocardiogram if deemed necessary by the physician, can detect this condition.

A runner with any symptoms at all needs to see his doctor. Anyone with symptoms of chest pain, shortness of breath, lightheadedness, or any other unusual symptom needs to have it checked immediately.

DON'T ALLOW KIDS TO PLAY FOR MORE THAN ONE TEAM IN THE SAME SEASON

This form of overuse seems to be more common than many people might think. Youth baseball has been the sport most often associated with this problem. A gifted pitcher might play for his recreational league team during the week and compete for an elite travel team on the weekends. I have seen youth and high school athletes in many sports – swimming, soccer, basketball and others – perform these double duties.

For many of the same reasons I offer regarding showcase events, playing on multiple teams in the same season can increase your risk of injury. Your body is exhausted from daily practices and competitions. You need rest days, not games for other teams. You might take on even more stress than you would with showcases since you endure these extra demands over a long season.

Unrelated to its injury risk, playing for more than one team affects the other players. I hear the frustration of many young athletes who complain that they practice with their school teams every day only to lose their starting positions in games or tournaments to players who practice with their elite or travel teams all week.

Pick the team that is most important to you each season, and play only for that team.

DON’T LET KIDS PLAY ONLY ONE SPORT YEAR-ROUND

One of the most dramatic shifts in youth sports over recent years has been a shift toward single-sport specialization. When I was growing up, my friends and I played different sports each season. In my case, I played soccer in the spring, swam competitively in the summer, and played basketball in the fall. Today, more and more kids are being pushed to play only one sport all year as young as seven and eight years old.

The rationale that parents and coaches use is simple. By picking one sport and training only in that sport, the young athlete would be more likely to excel at that sport. This specialization would theoretically make dreams of college scholarships and pro contracts more achievable.

That early single-sport specialization also increases the chance a child gets hurt. Any sport involves repetitive motions. Over time, those motions cause stress that can build up and cause overuse injuries. By allowing a kid to play different sports, stress is limited to one region of the body for a few months. The next sport then works other body parts. For example, the baseball pitcher who uses his shoulder and elbow for the spring season can let his arm rest while running in soccer over the summer.

Plus, by playing a variety of sports, the child can really figure out for himself what sport he wants to play rather than the sport a parent or coach wants him to play. He might have more fun and avoid burnout.

As he gets older, and as his body matures, he can transition into playing one sport year round. (Remember, it is still important to take three months off each year!)

WATCH FOR SIGNS OF BURNOUT IN YOUNG ATHLETES

Burnout might seem like a strange term to associate with sports. We usually think burnout is a problem adults face in their jobs. It can be an issue for kids too, and sports are often involved. It is estimated that about 70% of kids quit organized sports by age 13, and burnout is thought to be one of the most common factors.[9]

Unfortunately children probably won't openly admit to their parents or coaches that there is a problem. Adults can recognize some of the warning signs of youth sports burnout and talk to them about it.

Burnout can manifest itself through changes in sports performance, emotion, attitude, and health.

In terms of on-the-field performance, young athletes might perform consistently worse than normal or might become more inconsistent. They might struggle with routine tasks of the sport, such as performing a play or guarding another player. They might appear to have no motivation to practice or display little enjoyment while playing. They might even argue with teammates and coaches.

Off the field, they might seem unusually depressed, tired, angry or irritable. They might not want to eat, or they might have difficulty sleeping. They also might withdraw and not talk to family or friends.

Lastly, sports burnout can take the form of health issues. Kids might frequently complain of vague pain or seem to take longer to recover from minor injuries. They might even get sick more often than normal.

Each young athlete experiencing burnout might show different signs. It is important to recognize that a problem could exist. Try to open the lines of communication before kids quit playing altogether.

FOCUS ON FUN, NOT WINNING, IN YOUTH SPORTS

According to the Stop Sports Injuries campaign, 70% of kids quit playing organized sports by age 13.[9] Burnout is one of the most common factors leading kids to drop out of sports. I discuss signs of youth sports burnout in another tip. Here I would like to focus on adjusting our priorities in youth sports. I feel that shifting our emphasis could have the greatest impact on preventing burnout.

It is time we stop pushing our kids to win at all costs. Youth sports should emphasize fun. Parents and coaches need to make fun, not winning, a priority.

Our drive to win manifests in many ways. A youth baseball coach needs to win so that parents bring their kids to play for him, so he starts his one or two good pitchers over and over. A parent pushes his son to play through pain. The coach wants success on the field, so he adds more practices and longer ones. A parent pushes her daughter to train more outside of formal practices, at the expense of schoolwork and friends.

Success in professional, college and high school sports does require hard work and commitment. On the other hand, a serious injury can derail those dreams. And they will never come true if the child quits playing sports altogether.

TAKE PRE-PARTICIPATION PHYSICAL EXAMS SERIOUSLY

I'm sure most of us recall the sports physicals where hundreds of athletes gather in gyms to undergo tests at different stations in order to be cleared to play sports. These mass screenings still take place at schools across the country. Athletes should not view the physical as simply a form that needs to be completed in order to play. The pre-participation physical exam (PPE) does play an important role in the health and safety of athletes.

If possible, you should try to see your regular pediatrician or family doctor for your PPE. Your doctor will be familiar with your medical history. You also might be more likely to discuss pertinent issues with a doctor with whom you have a relationship than an unknown doctor in the mass screenings. Plus your doctor can spend more time with you and perform the exam in a quiet room instead of a noisy gym or locker room.

You should also fill out the history portion with your family. Younger athletes often don't know the specifics about heart conditions or other medical problems in their families. Since many of the causes of sudden cardiac death have hereditary components, it is important for athletes to note these histories and alert the doctor.

The team's medical staff uses the information from these physicals throughout the year. They need to know about any medical illnesses so they can observe you for signs of problems during games and practices. They can also compare findings when they examine you after an injury during the season to the baseline exam during the PPE.

Lastly, you should not downplay or omit symptoms you are currently having. I realize you want to play, and you might worry that mentioning a problem could keep you from being cleared. Understand that many issues that might not seem like a problem could actually lead to injury. For instance, disordered eating or menstrual irregularities could lead to a stress fracture. Several years ago, an NFL player mentioned headaches to a team doctor during the PPE. The doctor then ordered appropriate tests and found a brain tumor.

You have to go through a pre-participation physical exam to be cleared to play most organized sports. You should take them seriously too.

PERFORM DAILY STRENGTHENING EXERCISES WHILE PLAYING OVERHEAD SPORTS

Much like running places a lot of stress on the foot and ankle over time, repetitive overhead activities have a similar effect on the shoulder. Baseball pitching, serving in tennis, swimming and other sports moves can take a toll on your shoulders.

As I have discussed in other tips, creating an offseason to allow a few months for the shoulder to rest and recover could prevent injuries in athletes of overhead sports. Likewise cross-training a few times each week can distribute stress to other parts of the body.

You can perform exercises that could strengthen your upper body and possibly prevent shoulder injuries as well. Baseball pitchers have been doing these exercise programs, like the Throwers' Ten, for years. These daily exercises might help all overhead athletes.

These programs consist of exercises designed to develop strength of the rotator cuff and other muscles around the shoulder used in those sports. For example, the Throwers' Ten program aims to develop the muscles specific to the throwing motion. These exercises can be adjusted based on the specific sport.

As with learning any new exercise program, you might want to learn proper techniques for the exercises before you start flailing your arms. In this case, athletic trainers and physical therapists can both design the program for your sport and teach you to perform the exercises properly.

OPTIMIZE BONE DENSITY TO PREVENT STRESS FRACTURES

In other tips I've discussed training risk factors, such as increasing your training too quickly, that increase your chance of suffering an overuse injury like a stress fracture. Poor shoe condition in runners and inadequate caloric intake are also important factors.

Poor bone mineral density plays a role in stress fractures too. Weaker bones cannot withstand the same level of repetitive stress. Better than giving up weight-bearing exercise like jogging, you might consider undergoing a baseline bone density screening. You could then observe or treat a deficiency if you have one.

You might also consider screening if you suffer a stress fracture. This injury could result solely from overtraining without enough time to rest. Underlying osteopenia or osteoporosis can be found, though, even in teenage female athletes. Since a sizable percentage of stress fractures are recurrent injuries, it could be worthwhile to undergo bone density screening after you suffer a stress fracture.

As always, you should check with your doctor if you have specific questions or concerns about stress fractures or bone mineral density.

TAKE ANTI-INFLAMMATORY MEDICATIONS SAFELY

Athletes of all ages and skill levels use anti-inflammatory medications, like ibuprofen and naproxen, as initial treatments for injuries from sports and exercise. Since we can buy them over the counter, we might assume that they're completely safe. Generally athletic people don't have problems taking them occasionally for minor injuries, but they should take some simple precautions.

After an injury occurs, non-steroidal anti-inflammatory medications (NSAID's) can decrease pain and swelling. You should use them in conjunction with other forms of treatment, though. Remember the acronym RICE – rest, ice, compression and elevation. Rest, or stay off the injured body part. Use ice or other cold therapy along with compression and elevation of the extremity to decrease swelling.

Stick to the recommended doses. Don't take a huge handful of pills at once. Exceeding the recommended daily dosage, especially if done repeatedly, can cause mild side effects, like heartburn, or more serious ones, like gastrointestinal bleeding. Adjust anti-inflammatory doses by body weight for small children.

Talk to your doctor if you have any medical conditions or take medications that warrant avoiding these drugs. Since NSAIDs have been associated with ulcers, G.I. bleeds, high blood pressure, kidney issues, and cardiovascular events, pay attention for signs of any side effects and alert your doctor.

Be careful when taking these medications for long periods of time. If pain or swelling persists for longer than 7 to 10 days, you should consider seeing a sports medicine doctor to have the injury evaluated.

PREPARE EARLY TO PREVENT HEAT DEATHS FROM SUMMER SPORTS

This tip focuses on football, as high school and college teams start their practices in the brutal heat of the summer. You can apply it to any sport or exercise done in the warmest months of the year.

Deaths due to heat illness are tragic because we can largely prevent them. A study looking at 20 years of data from high school and college football show that heat illness was the third most common cause of death. Of the 38 players that died of heat illness, all occurred between July and September. 83% occurred when doing two-a-day practices. 44% occurred on the first day of practice.

I make some recommendations for players and teams to acclimate to heat in another tip. I want to stress a measure you can take months ahead of the start of practice to decrease your risk of heat stroke.

The average body mass index of the football players who died of heat stroke was 33.9 (BMI greater than 30 usually defines obesity). Heat illness is mostly a problem among obese athletes.

Many football players are big and strong, but unfortunately many are obese. Rather than waiting for the start of summer practice to get in shape (and risking heat illness), start now to lose weight. Start lifting weights in the spring. Start running outside to lose pounds and grow accustomed to the heat. Build up your cardiovascular stamina.

Arriving to summer practice in shape will not only help your performance on the field, but it will most likely keep you alive.

TAKE THREE MONTHS OFF FROM YOUR SPORT EACH YEAR

This tip is a remedy to prevent the damage caused by repetitive stress to one or a few parts of the body. It can apply to just about any athlete, young or old. I know many of you who just want to get in shape cannot imagine taking three months off from jogging or weights. You might consider another tip to prevent overuse injuries from exercise – cross training – several days each week.

For competitive athletes in team or individual sports, long periods of rest are critical. Look at all the major professional sports – football, baseball, basketball, etc. They all have off-seasons for their players' bodies to rest and recover. You need that same recovery period.

Any sport places repetitive stresses on certain parts of the body. Overhead sports, like tennis, swimming, baseball and volleyball, involve repetitive motions of the upper body. Likewise, running sports, such as soccer and cross country, place a large amount of stress on the lower body. Over time the stress on the shoulders of the overhead athletes and the knees and feet of the running athletes builds up. Without time for rest and recovery, that stress will eventually lead to injuries.

Athletes often resist the idea of taking time off for fear of falling behind others in terms of performance. I would take the opposite view. If you suffer a stress fracture or rotator cuff tear, your performance will certainly suffer, and for months.

I'm not advocating you become a couch potato for three months. Play another sport or train in a different form of exercise. Make sure to choose one that stresses different body parts though. If you are a baseball pitcher, take one season off and play soccer. If you run marathons, rest your legs and feet for a few months and stay in shape through swimming.

As I mentioned in another tip, burnout is real issue in youth sports. It can also affect adults who perform the same types of exercise day after day, year after year. This three-month recovery period might not just help you physically, but mentally and emotionally too.

AVOID JET LAG AND PERFORM YOUR BEST AWAY FROM HOME

Any athlete who has traveled a long distance for a sports competition has undoubtedly faced jet lag. Add in some of the stresses of travel – cramped flights, finding local transportation, sleeping in a hotel – and it is not surprising that sports performance can suffer.

Here are some ideas that could help you perform at your best when competing away from home.

Perform physical activity while on the flight. That activity will probably decrease fatigue caused by sitting for long periods on the cramped plane.

Arrive with enough time to adjust to the new time zone. One day is usually required to adjust for each time zone crossed. Allow more time if traveling from west to east. If your team must travel from the west coast to the east (or overseas), you might think about traveling a few days earlier than normal to adjust.

If possible, change practice or training times before you leave to the time of the competition. For example, a California team might practice at 5 PM local time for a few days if they will play at 8 PM in New York.

Theoretically, fatigue and decreased concentration could lead to injuries. Limit training and exercise to moderate intensity in the first few days after arrival.

Avoid long naps during the adjustment period. A long nap reinforces your natural sleep cycle based on home time schedules. Short power naps might be acceptable.

Adjust meals as needed. Getting on a regular schedule of meals based on the new time can be helpful. Try high-protein breakfasts to increase arousal and high-carbohydrate dinners to increase drowsiness.

Avoid alcohol. Alcohol could increase dehydration through its diuretic effects. Plus it might decrease the quality of sleep.

Drink plenty of water. Hydration is key for sports performance generally. Athletes might be dehydrated after long flights. Plus, if you are traveling to a warm destination, the heat could add to the dehydration from travel.

CROSS TRAIN ONE OR MORE DAYS EACH WEEK

Believe me, I understand that you like whatever form of exercise it is that you do. I hear it all the time from patients. Runners, in my opinion, seem to be the athletes who most frequently refuse to do any other form of exercise. However, I see this phenomenon in cyclists, swimmers, weightlifters and many other athletes.

I am supportive of exercise in all forms. If you love one type of exercise, I'm sure it keeps you motivated to train. Over time, though, it could also lead to injury.

In another tip, I recommend that athletes who play the same sport year round take three months off. Similarly, repetitive stress on one or a few body parts day after day can build up in daily exercise. Pounding the pavement jogging seven days a week might not cause any trouble for a few weeks or months. Do it long enough, though, and overuse injuries like stress fractures or tendinitis will occur.

The upper body is no different. If you swim every day, or row every day, I will predict that a shoulder injury is in your future. Any form of exercise that involves a repetitive motion has this same risk.

You don't necessarily have to give up exercise, though. (Resting occasionally isn't always a bad idea!) Just pick a different exercise. Cut back from running six or seven days a week and substitute swimming, cycling or weights for one or two of those days. If you swim regularly, jog or use an elliptical trainer a couple of days a week.

An added benefit could come from the variety. Changing your training could actually make exercise more fun, increase motivation and prevent burnout.

Varying your exercise routine could prevent an injury that could shut you down completely.

DON'T PUSH KIDS TO COMPETE IN "SHOWCASE" EVENTS

I completely understand parents' desires to have their children seen and evaluated by scouts. Professional athletes often make millions of dollars each year. Parents hope that success in sports can lead to college scholarships, and maybe pro contracts, for their young athletes. Scouts play a huge role in that process.

Unfortunately, "showcase" events, where kids participate in exhibition games and skills competitions in front of these talent evaluators, can often do more harm than good.

Most of the events are held on the weekends. These kids have usually practiced and played in games throughout the week, so their bodies are often tired. As I discuss in another tip, young athletes competing through pain and fatigue increase their risk of suffering injuries, often significantly.

Kids understand the importance of impressing the scouts even without pressure from parents and coaches. They might try to throw harder than normal or try riskier slide tackles than normal. Trying to push the body harder when it is already weakened from a week's or season's worth of stress could be set up for failure – and injury.

SAFELY EXERCISE IN HOT WEATHER

This is one of several tips I share to decrease your risk of heat illness. I want to emphasize that most heat-related illnesses in sports and exercise can be prevented. If you play a team sport, please see the tips on adjusting practices and preparing well before the season.

First, an individual simply trying to exercise in the summer months should get acclimated to the heat. If possible, slowly ramp up your training over 10 to 14 days (or longer) to improve your cardiovascular fitness and adjust to the heat.

Try to train during cooler times of the day, such as early mornings or evenings. Adjust your clothing accordingly, too. Pick breathable, lightweight and light-colored clothes.

Stay hydrated. Drink plenty of water before, during and after training. If you want to gauge whether you're keeping up with body fluid lost through sweat, weigh yourself before and after training. If you train for longer than an hour, consider consuming sports drinks or adding electrolytes. Avoid caffeine or alcohol which can further dehydrate you. And limit exercise when you're sick to avoid further dehydration or problems with body temperature.

Finally, be careful during your training sessions. Gradually increase your intensity. Take breaks when you need them. Consider training with a partner so you can watch for signs of heat illness developing in each other.

DISCOURAGE HOME PLATE COLLISIONS IN BASEBALL

The idea of banning collisions at home plate in Major League Baseball has gotten more attention recently. A number of players and managers have called for a rule change to prevent some of the serious injuries that can occur when the base runner collides at full speed with the catcher.

Baseball purists argue that these collisions are part of the game. They also worry about teams essentially giving up runs if the catchers do not block the plate.

Proponents of the rule change note that the serious injuries that can occur cost a team far more than a few runs or wins. Concussions, fractures and other serious injuries can knock players out for long periods of time. Plus the pads that catchers wear are designed to prevent injuries from pitches and foul balls, not charging base runners.

Whether or not Major League Baseball changes its home plate rules, youth leagues can adopt changes to protect the players.

As a parent, you can encourage your child not to block home plate or barrel into the catcher. Home plate collisions might be a part of baseball, but that won't be much consolation to your child if he is too hurt to play it.

INCORPORATE CORE STABILITY INTO YOUR TRAINING

Core stability has become a popular concept among strength and conditioning trainers in recent years. Scientific research continues to look for definitive proof that core training will improve your performance. These programs, or aspects of them, have been adopted into injury prevention programs.

The core is a general term referring to the muscles and other stabilizing structures around the lumbar spine, abdomen, pelvis and hip. Core stability allows selective recruitment and stiffness of these muscles with sudden movements in sports and exercise. It allows transfer of momentum and torque to the lower extremities. It possibly aids in balance and neuromuscular control to prevent injuries with the sudden movements.

Weakness in these core muscle groups has been proposed as a factor in many injuries – ACL tears, ankle sprains, hamstring injuries, patellofemoral pain, iliotibial band syndrome and more. While research studies have yet to find definitive proof that core stabilization training can prevent some of these injuries, they might help.

You can perform the exercises separately to strengthen your muscles. Plank, supine bridge and side bridge exercises require no extra equipment. You can also perform regular strength exercises, like dumbbell presses, on a Swiss ball. Using an instability device like a Swiss ball forces you to recruit your core muscles for stability while strengthening the larger muscle groups.

As with any new training program, it could be valuable to work with a strength and conditioning trainer familiar with core stability programs in order to learn how to do the exercises with proper technique.

ADJUST SUMMER PRACTICES TO PREVENT HEAT ILLNESS

Almost 6,000 Americans are treated in emergency departments each year for heat illness resulting from sports and recreational activities. Football accounts for the largest percentage of these heat injuries, so I want to emphasize some changes to the initial practices at the beginning of the season. These guidelines can be modified to better prepare for any sport or exercise in the summer.

Many states have adopted guidelines for the first few weeks of football practices specifically to prevent heat injuries. These are newer rules enforced in South Carolina, but I expect similar guidelines will quickly become standard across the country.

These guidelines aim to get young athletes ready for the tremendous heat they will face in summer practice. Start activity with less equipment that traps body heat. Slowly add in equipment several days later but alternate short and long days to allow their bodies to recuperate.

The real value comes from taking judgment somewhat out of the picture. Sure, every football coach cares about the health and safety of his players. But the pressure to win is enormous. These rules might eliminate the temptation to run a few more drills or make kids come back for an extra practice later in the day.

We also cannot depend on players to tell coaches and athletic trainers when they are overheated. Young athletes don't want to let their teammates down or cause their coaches to think they are weak.

Despite many fans and former players claiming such rules weaken or soften kids, I would instead emphasize that we simply want to prevent heat illness and keep them alive and healthy enough to play.

UNDERGO BASELINE CONCUSSION TESTING BEFORE THE SEASON

One of the most difficult challenges when treating an athlete who suffers a concussion is knowing when she has completely recovered. Asking the player if she is experiencing headaches, dizziness and other symptoms is a good start, but athletes often deny symptoms in order to play. Physical examination and neurologic tests are also important, but they might not be sensitive enough to detect minor injuries. The risk of recurrent concussions and more severe brain injuries increase when the brain has not fully recovered. We need ways to determine when the athlete has reached full recovery.

Baseline concussion tests are an essential component of this process. Several companies provide these tests. Usually sports medicine programs administer the tests or teach coaches to do so with their players. These tests develop a neurocognitive “baseline” profile for each player. If you suffer a concussion during the season, a doctor can repeat the test to monitor your recovery. Only when these results return to baseline levels would the doctor consider allowing you to return to play.

All athletes who play contact or collision sports in which concussions are possible should undergo one of these tests before each season.

One precaution is worth mentioning: just as athletes will deny concussion symptoms in order to play, many admit that they intentionally try to perform poorly on the baseline tests. It’s crucial that we not only use these tests in sports, but athletes must understand their importance for long-term health.

PLAY ON TEAMS WITH CERTIFIED COACHES

It is critical that coaches of all sports – and all ages and skill levels – are qualified to coach. Sports and organizations vary in their certification requirements, but proper education and instruction are important nonetheless.

Coaches should be thoroughly familiar with the rules of their sports. Cheerleading coaches, for example, should know the rules for basket tosses and other stunts. Likewise, they should demonstrate knowledge and ability to teach all maneuvers in cheerleading.

Coaches should also be intimately familiar with equipment. Football coaches need to evaluate uniforms, helmets and pads for improper fit and poor condition.

Lastly, coaches need at least fundamental knowledge of injury evaluation and management. They should be able to recognize the signs and symptoms of concussions, heat illness and musculoskeletal injuries. They should know early management of injuries and illnesses until medical services arrive. Ideally, coaches would hold certification in basic life support.

I realize that finding qualified coaches can be challenging, especially at youth levels. Leagues might not have the funding or administrative staff to implement training and certification. Parents, though, can at least seek out leagues and teams for their kids whose coaches have passed courses on rules, safety and injury prevention in their sports.

DON’T LET YOUNG BASEBALL PLAYERS PITCH MORE THAN 100 INNINGS PER YEAR

Almost all shoulder injuries in young pitchers are related to overuse. Pitch count guidelines are largely used in youth baseball, although many coaches and sports medicine doctors disagree as to the use of limits by game, week or season.

Much debate also exists regarding the effect of throwing curveballs and other off-speed pitches at a young age. Generally we recommend that kids avoid throwing these pitches until they are old enough to shave.

A simpler strategy to prevent overuse shoulder and elbow throwing injuries might be to set a limit on the number of innings a kid can pitch over the course of an entire year. A study in the American Journal of Sports Medicine illustrated the danger of exceeding 100 innings per year. Pitchers aged 9 to 14 who threw more than 100 innings in a season were 3.5 times more likely to suffer a serious injury.[10]

Pitching too many innings doesn’t increase a kid’s risk of a few days of shoulder soreness or elbow tightness. They are more likely to suffer injuries that require surgery or end their playing careers. Despite what many young athletes and their parents think, the surgeries are not simple or minor. The younger the athlete is when he undergoes many of these arm surgeries, the less likely he is to make it back to baseball.

Parents and coaches can discuss ways to utilize the innings. Rather than spreading them out throughout the year, I would prefer kids take three consecutive months off from baseball each year. Regardless, I think limiting innings pitched is an easy way to avoid serious youth pitching injuries.

CHANGE YOUR ATTITUDE ABOUT INJURIES

Injuries are part of sports. I hear that from many of you when I write articles on injuries in different sports. I understand that idea. I also realize the desire to compete that many of you have. I know the pressure you feel to play so you don't let your coaches and teammates down or lose your starting position.

I also know that you can make injuries worse by playing through them. It's time we changed our attitudes toward injuries.

Take concussions, for example. If you don't tell your coaches or medical staff that you're dizzy or have a headache, no one may realize that you suffered a concussion. You might stay in the game without being evaluated. But you also risk suffering a more serious head injury that could have long-term consequences.

This concept applies to all of you and to all injuries and not just concussions. I'm not suggesting that you stop playing or training for any minor symptom. I do think that it's worthwhile, though, to have injuries evaluated to make sure you aren't at risk for making them worse.

I would ask all athletes to keep this idea in mind when trying to play through any injury. I'm talking to you, the 12-year-old pitcher with elbow pain for six weeks who now has an elbow fracture. And you, the high school senior gymnast who neglected foot pain for six months only to find out you have a stress fracture just as the season starts.

To all athletes: If you have pain, get it checked out. So many athletes resist going to the doctor for fear of being shut down from sports, or worse, fear of needing surgery. But most sports injuries actually don't need surgery. And despite what you think, sports medicine doctors generally don't want to shut you down. We want you playing and competing for titles. Having your injury evaluated might get you back playing sooner and with less fear of worsening the problem.

RECOVER LIKE AN ELITE ATHLETE

I'm asked by weekend warriors fairly often what they can do to recover from hard workouts or even injuries faster. They often see professional athletes return from injuries much quicker than they do from similar injuries. While each of these tips might not help your recovery and performance, they are components most elite athletes use regularly.

Sleep is crucial to rest and recovery. I realize that we all have busy work schedules and hectic personal lives. Sleep is important for proper hormone production, though. You need to find ways to get seven to eight hours of continuous sleep.

Experiment with ice or ice baths after strenuous exercise. There's no consensus among researchers on how effective ice baths are at relieving pain or sore muscles after intense training. Many high-level athletes use it routinely. Try very short applications of ice packs or cold baths to avoid the shock of ice-water baths. If you like the effects of this cryotherapy, you can slowly increase the length of time and lower temperatures.

Create an off-season. Most pro sports have at least two to three months off. These rest periods are crucial to allow the athletes' bodies to recover and prepare for the next season. You don't have to quit exercising altogether. You could vary your routine and cut back the intensity or frequency of training.

If you do suffer an injury, even a serious one, you still need to keep up your fitness. It's almost always possible to perform cardiovascular activity without stressing the injured body part. Depending on the injury, you could swim, ride a stationary bike, or perform another substitute exercise.

Lastly, elite athletes, especially in team sports, have athletic trainers and access to physical therapists and sports medicine doctors. They have every minor ache checked out before it becomes a major problem. While you might not have a medical staff with you every day, you can go to the doctor or work with a physical therapist soon after problems arise rather than pushing through them for months.

These tips might not help you make millions of dollars like pro athletes, but they might improve your performance and keep you healthy.

DON'T ALLOW PLAYERS TO RETURN TO THE GAME AFTER ANY CONCUSSION

I could write an entire chapter – or even a book – on sideline evaluations of concussions. I could discuss signs and symptoms of concussions. I could advocate having doctors or athletic trainers on the sidelines at sporting events to evaluate athletes after head injuries. I could also call for education of coaches to help them recognize the signs that their players might have suffered concussions.

All of those are good ideas, but they are beyond the scope of this tip. I'll offer a much simpler way to handle any head injury, no matter how severe.

Do not allow any player to return if there is any question a concussion has occurred.

That tip might sound overly simplistic and overly cautious. Maybe it is. But I would rather err on the side of safety than risk a much more serious injury.

First of all, there is no such event as a "mild concussion." Yes, there are certainly more serious brain injuries, but any concussion is potentially serious. It's time we eliminate "ding," "got his bell rung," and "concussion-like symptoms" from our sports vocabulary. All traumatic brain injuries are potentially serious.

The risk we run by allowing an athlete to return to play before his brain is fully recovered is that he suffers a much more serious brain injury. These "second impact" injuries can take months to resolve. Some players have lasting headaches and other problems for years. On rare occasions, a second brain injury can lead to death.

The essence of this tip is that sitting a player out with any possible concussion eliminates any decision-making. We know that athletes deny concussion symptoms in order to stay in the game. And coaches want to win. This rule would eliminate those pressures.

Instead, hold the player out and arrange for formal evaluation by a neurologist or other doctor and neuropsychological testing to properly determine a safe plan for return to sports.

This tip might keep some athletes out who possibly could have returned to the game 15 minutes later. I'd rather be overly cautious and keep athletes from further brain injuries than the alternative.

HAVE AN AUTOMATED EXTERNAL DEFIBRILLATOR ON SITE

Automated external defibrillators (AEDs) are standard equipment in hospitals and doctors' offices. They are becoming standard equipment for sports facilities. They offer athletes a better chance to survive cardiac emergencies.

If any facility hosts tournaments or events with large numbers of athletes and spectators, organizers should purchase an AED. Endurance events like marathons and triathlons with risks of cardiac events should have them as well. Even youth sports with a risk of commotio cordis – an injury in which an athlete is struck in the chest by an object that disrupts the heart's electrical rhythm – should try to have them. Baseball, lacrosse and hockey are a few of the sports in which players could suffer commotio cordis.

AEDs are not cheap, often costing between $1000 and $2500. That cost might seem prohibitive for individual teams and leagues. They can hold fundraisers to come up with money to try to buy one. They could partner with a sports medicine program or hospital to provide them for games or tournaments. If police will be present at an event, the police cars might even have them.

Once you obtain an AED, coaches should be trained to use it. With so little time available to institute the treatment, the coaches not only need to know exactly where the AED is but also how to use it properly. Certified athletic trainers should be trained in their use, but youth sports often do not have athletic trainer coverage for games, let alone practices. Coaches and even parents need to know how to use these devices.

WATCH OUT FOR DISORDERED EATING

Losing weight (or maintaining optimal body weight) is one of the main reasons most of us exercise, so you might be surprised I often recommend eating more. For many athletes, though, disordered eating can adversely affect performance and health.

Inadequate caloric intake can predispose to both menstrual irregularities and bone disorders in female athletes. Many athletes frequently consume less than the optimal number of calories. It has been shown that up to 70% of elite athletes in sports with weight classes try to lose weight and have some form of disordered eating before competitions (true for male and female athletes).[11]

Among female athletes, disordered eating is particularly common. Different studies show eating disorders to be present in 16% to 47% of female athletes compared to generally less than 10% of non-athletes.[12]

Females who compete in sports that involve judging, those that emphasize aesthetics or leanness, or those where low body weight and appearance are important appear to be at more risk. Gymnastics, dance, figure skating and cheerleading are some of the sports that would meet these criteria. Also females in individual sports or who experience tremendous pressure to excel might be more at risk.

Disordered eating can lead to abnormal menstrual periods or absence of them, which can subsequently cause osteopenia or osteoporosis. The relationship between inadequate nutrition, hormonal imbalance and bone density is far beyond the scope of this guide, but parents should consider all of these issues if their daughter develops a stress fracture. Often these issues require a multidisciplinary approach with a sports medicine orthopaedic surgeon, nutritionist, psychiatrist or therapist, along with the coach and parents. Ensuring adequate caloric intake for training is a good first step towards prevention.

AVOID MORE THAN ONE GAME PER WEEK IN COLLISION SPORTS

This tip requires more research to definitively argue that it will decrease injury rates in all collision sports. Regardless, it is a change that I believe would lower injury rates in the sports, especially over long seasons.

Researchers studied European professional soccer players, looking specifically for differences in injuries between players who played two matches per week compared to athletes who played in only one match per week. The soccer players who competed in two matches per week had injury rates over six times higher than the players who played one match per week. Plus knee, ankle and thigh injuries were all much more common among the two-match players.[13]

I suspect that this trend would hold true for most collision sports – football, rugby, lacrosse, soccer and more. Multiple games in one week can take a toll on the players physically. Extended over many weeks over a long season, serious injuries could occur.

I realize the scheduling difficulties, travel and field availability that many teams and leagues have. I think adjusting schedules in any way possible to better spread out games and tournaments would decrease injuries. Making this change might also allow athletes to play who might otherwise sit out with a relatively minor injury. Team performance and overall quality of competition would likely improve as well.

EAT HEALTHIER WHEN TRAVELING FOR TOURNAMENTS OR COMPETITIONS

Writing about proper nutrition for optimal sports performance could fill up an entire book. Instead I want to focus on better nutrition options when you travel for sporting events.

I'm sure you are familiar with the challenge of finding quick, affordable meals that are healthy and allow optimal performance. All of us know or remember the team bus stopping at a group of fast food restaurants, the coach handing each player a small amount of money, and the only advice given was what time to return.

You don't have to eat fast food on the road, and you shouldn't eat it. There are far better options that will help your sports performance.

Sit-down meals at restaurants should be your goal instead of greasy, fatty foods at fast food restaurants. They generally offer healthier options and better variety. Plus they offer high-carbohydrate foods like breads, pasta and potatoes, which are essential when playing multiple games in a weekend.

Plan ahead and pack snacks and recovery foods. These snacks can be individually packaged and therefore portable while still being affordable and optimizing performance. Examples include bags of fruit, fruit cups, granola bars, cereal bars, and other energy bars. Peanut butter sandwiches are quick and effective recovery foods because they provide carbohydrates with the bread and protein with the peanut butter.

The next time you or your kids have a sports competition out of town, don't choose fast food. Instead, make the same choices professional athletes do. Eat at healthy restaurants and bring cheap and healthy snacks and recovery foods.

PREVENT SKIN INFECTIONS IN TEAM SPORTS

Skin infections are common in sports with close contact among participants. For example, they make up approximately 20% of the reported conditions in wrestling at the collegiate level.[14] Since skin infections often spread by close contact, any team whose players use locker rooms, buses for travel or are in close proximity are potentially at risk.

Discussion of the many types of skin infections and how to best treat each one is well beyond the scope of this guide. Receiving appropriate treatment and not returning to play until the risk of spreading infection to others is gone are key steps in preventing skin infections.

Cleanliness of all athletic facilities is critical to prevent the spread of bacteria, viruses and other infectious agents. Athletic trainers and team personnel should regularly clean and disinfect playing surfaces, such as wrestling mats. Also frequently clean and disinfect tables in the training rooms, locker rooms, benches, showers, whirlpools and floors.

Athletes should not share athletic equipment with teammates. Likewise you should avoid sharing towels, razors and hair trimmers.

You should shower after practices and games with an antimicrobial soap. When your hands are dirty, wash them thoroughly with soap. Wash all clothing every day.

Finally, show any cuts, blisters or other skin lesions to the athletic trainers or team doctors. And ensure that even minor skin lesions are treated and covered. If a question of an infection exists, seek medical attention for it prior to returning to play.

DON’T LET YOUNG ATHLETES PLAY THROUGH PAIN

Kids are often reluctant to tell their parents and coaches that they are hurting. They don’t want to let them or their teammates down. They also tend to blame themselves more if their teams lose than older athletes do. I have dedicated another tip in this guide to encouraging communication with young athletes.

It is important that we better recognize when young athletes have pain in sports, but we also need to take it seriously.

Overuse injuries make up a large percentage of injuries in youth sports. Most of them start as discomfort with sports that resolve with rest. As they get worse, pain comes on sooner and takes longer to go away. Ultimately serious injuries can develop, leading to months of missed playing time and possibly surgery.

If parents respond to the pain differently early on, you could avoid a serious injury later. Instead of pressuring the child to push through the pain in order to play, you might give him a few days off to rest and recover. If the pain doesn’t improve, going to a sports medicine doctor can help find the cause and better plan treatment options.

INSPECT AND CHANGE RUNNING SHOES REGULARLY

Jogging offers tremendous exercise for millions of people every day. While traumatic injuries are fairly uncommon, overuse injuries to the lower body can develop over time. Your running shoes are your only real equipment protecting you from the impact of your feet pounding the pavement thousands of times each day.

Those running shoes will wear out over time. Replace them every six months or after every 500 miles you run.

Also inspect them to see if you're wearing them out in one location faster than others. For example, if you overly supinate, you'll likely see more wear on the outside of the soles. Noticing the wear patterns can help you select the appropriate types of running shoes for your feet.

I realize many joggers have switched to barefoot running or minimalist shoes. Discussion of the pros and cons of barefoot running goes beyond the scope of this tip. If you do wear traditional running shoes, though, ensure they are in good condition.

GIVE KIDS TWO OR THREE DAYS A WEEK TO REST

Two parents recently brought an eight-year-old soccer player to my office for an injury. Fortunately he had a mild condition related to overuse that would resolve with some rest and some daily exercise. The parents then informed me that rest was not an option since the boy was supposed to play in tournaments throughout the eastern United States every weekend for the next three months.

An adult athlete's body cannot withstand the same physical stresses day after day without rest. A growing child lacks the muscle strength of older adults and even adolescents. They need even more time to rest. Three months off from a year-round sport is critical, but kids need rest during the season too.

Daily practices and games take a toll on kids physically, and it can wear them out emotionally too. Give them a few days each week to rest their bodies. Allow them to catch up on schoolwork and spend time with friends. If your child worries about conditioning, let him lift weights or get cardiovascular exercise away from the sport.

As kids get older, their bodies will develop, and they will mature emotionally. They will be better prepared to withstand the time and physical commitments of competitive sports.

INCORPORATE FUNCTIONAL FITNESS TRAINING INTO YOUR ROUTINE

Functional fitness training has become a popular trend in the fitness world. This type of training shifts away from traditional resistance training in favor of exercises that mimic normal body movements. In theory, functional training could decrease injuries and improve quality of life.

Traditional strength training involves machines and weights that isolate a single muscle or muscle group. They hold the body in a controlled position and work that single muscle. A leg press machine is a good example.

Functional training involves working against resistance using both the muscles and nervous systems in a coordinated manner. Often functional training begins with only body weight. Instead of using the leg press machine, you might work on single leg squats, controlling only your body weight.

Once you develop neuromuscular control with these multiple joints and muscles, you can add resistance bands, fitness balls, kettle bells and weights. As with any new program, it is critical to work with a fitness trainer experienced in functional training to design a program appropriate for you and teach you to do each exercise with proper form.

Proponents of functional training claim that if done regularly, functional training could decrease pain or chance of serious injury with your activities of daily living. Maybe it could improve your quality of life.

ENCOURAGE SAFETY WHEN YOUNG ATHLETES LIFT WEIGHTS

A thorough discussion of the pros and cons of young kids lifting weights goes far beyond what is possible in this tip. What is key for parents to recognize is that some simple suggestions can allow kids to lift weights while minimizing the chance of injuries.

First, I would argue that kids who haven't reached puberty aren't going to develop a bodybuilder's physique, and they shouldn't try. Instead of performing a huge number of different exercises, I would encourage them to do a smaller number of exercises that work the larger muscle groups.

Next, you should teach them proper techniques with each move rather than flailing their arms or legs. Also encourage a higher number of reps with a lower weight they can control rather than a few reps with much heavier weights.

Having a spotter to pick up the weights if they can't complete a repetition can avoid serious injuries. Having an adult present not only to spot but also teach the correct form with exercises would be ideal.

You can argue the merits of young kids lifting weights. Regardless, I think these steps can at least allow them to do it more safely.

LEARN PROPER TECHNIQUES BEFORE BAD HABITS DEVELOP

Technique is critically important for athletic performance. Mastering the perfect golf swing or using good form in your tennis serve will definitely help you succeed in those sports.

The sooner you learn proper techniques, the better. If you use poor mechanics in a golf swing early, you might hit the ball farther by swinging harder. But you might never reach distances you could with better form. Once those bad habits form, they can become harder for you to fix them.

That technique cannot only impair performance, but they can also lead to injury. For this tip, I will use the example of a baseball pitcher, but almost any repetitive motion in a sport or exercise could apply.

Imagine a 12-year-old pitcher who throws harder than other pitchers in his league. He wins at that level because he can get kids out better than other pitchers. The coaches might teach him new grips to throw new pitches. His athletic ability alone helps him succeed.

Since the pitcher is doing his job and the team (and coach) is winning, no one corrects his mechanics. He continues to stress the muscles around his shoulder and elbow with improper trunk rotation and arm lag with each pitch. Those stresses don't start to take a toll until many years later. No one corrects his technique because he is succeeding now.

Now fast forward to his college or professional career. His pitching coaches recognize his flawed mechanics, but they can't fix them because he's pitched that way for years. If they do try to fix his technique, his performance might actually suffer. They claim they don't want to create an injury by altering his delivery. Regardless, his flawed delivery ultimately causes him to suffer a Tommy John elbow injury or labral tear of the shoulder. Maybe he needs surgery and misses an entire year of baseball. Maybe he never returns at all.

The take-home message is that all athletes should learn proper techniques and mechanics for the sports very early. Once you can reliably perform these motions correctly, then you can increase velocity, intensity and repetition. You might decrease the chance of injury – and improve your performance.

CUT BACK OR AVOID EXERCISE WHEN YOU'RE SICK

No one likes to get sick, but it happens. Knowing when it is safe to exercise or play sports and how to do it can be very difficult for dedicated athletes.

First of all, exercise caution when you're sick. One day off won't kill you or wreck your fitness.

If you do want to train, decide if it's safe to do it. If you have a fever, especially one greater than 101°, you should rest. If you have respiratory issues, the general rule of thumb is that exercise is acceptable if your symptoms are above your neck. If your symptoms are below your neck – cough, muscle aches, etc. – then take time off. If there is any question, check with your doctor.

If you do exercise or train when you're sick, make sure you drink plenty of liquids. Losing body fluids through sweat when you're likely already dehydrated can be dangerous.

Work out at lower intensity for shorter periods of time. If you've already missed a few days, gradually increase your training over several days.

Lastly, the best approach to exercise and sickness is to avoid getting sick in the first place. Eat a well-balanced diet. Maintain regular exercise. Get adequate sleep each night. Try to keep stress in check. Even consider using hand sanitizers when you come into contact with people who appear to be sick, including those at the gym.

PERFORM AN EXERCISE PROGRAM TO DECREASE YOUR RISK OF ANKLE SPRAINS

Ankle sprains are some of the most common injuries in sports. In fact, they are the most common injuries in basketball. They can take weeks to heal and cause athletes to miss weeks of playing time. Plus they often lead to recurrent injuries.

Over the years, ankle taping and bracing have received much attention both after acute ankle sprains and as efforts to prevent injuries.

A more recent approach to preventing ankle sprains in athletes is centered around injury prevention programs, similar to those for ACL injuries. Studies have shown that athletes performing these regular exercises have lower rates of reinjury after a primary ankle sprain. The programs might also lower rates of initial ankle sprains.

Most of the ankle sprain programs consist of a small number of exercises aimed at improving balance and neuromuscular control and optimizing sport-specific performance.

These exercise programs have essentially no risk of injury and only require a few minutes each day. They might save you many weeks that you would miss if an ankle sprain occurs.

CONSIDER SUPPLEMENTAL VITAMIN D

A number of studies have been published in the last few years touting the health benefits of vitamin D. Surprisingly it appears that a large portion of the population has deficient levels of vitamin D – over 50% of children and adolescents, about 75% of Caucasian adults and 90% of African-American and Latino adults. Even elite athletes are at risk. 81% of the New York Giants were found to be vitamin D deficient.[15,16]

Our diets don't provide close to the amounts of vitamin D we need. We get most of our vitamin D3 through ultraviolet exposure. If you work or spend most of your time indoors (especially those of you who live somewhere in cold climates), you are likely to have low vitamin D levels.

Many effects on physical performance, injuries and overall health have been studied. These are just a few of the possible reasons to optimize your vitamin D levels.

Lower levels of vitamin D might increase your risk of musculoskeletal injury. A study of players on an NFL team showed that players who suffered a musculoskeletal injury had levels much lower than those players who did not get injured.

Higher vitamin D levels might improve athletic performance. Increased vitamin D levels are associated with increased strength, jump height and power, and exercise capacity.

Vitamin D supplementation might prevent or decrease overtraining syndrome. The inflammatory cytokines, TNF-alpha and IL-6, are increased with vitamin D deficiency after intense exercise. Vitamin D supplementation might decrease inflammation after heavy physical training sessions, theoretically allowing athletes to resume training faster.

Higher vitamin D levels might have many other health benefits. Patients have lower rates of colds and flu with increased vitamin D levels. Many other aspects of physical and mental health are being investigated, including many cancers, cardiovascular disease, diabetes mellitus, hypertension, strokes, asthma, and depression.

It is possible that taking a daily dose to get your levels to normal could be a good idea. Again I am not making a specific medical recommendation but just suggesting that you could consider it. I would definitely recommend you talk to your doctor about vitamin D.

MODIFY ACTIVITIES AFTER INJURY TO STAY IN SHAPE

One of the excuses for not exercising I hear from patients is that some injury or painful joint keeps them from doing it. They can't run because they have mild knee arthritis. Or they can't exercise because of a shoulder injury from work. They use pain in one part of the body to justify not exercising at all.

Fortunately there are ways that you can get physical activity despite almost any injury.

For instance, osteoarthritis of the knee probably would make jogging difficult for many people (although most likely not impossible). You could still get an effective workout without repetitive impact on the knee. You could try biking outdoors, riding a stationary bike, swimming and much more.

An avid weightlifter might feel pain in the shoulder with certain exercises – military press, for example. Very likely you can still lift weights and not make the shoulder worse. You might give up military presses (or maybe all shoulder exercises) for a few workouts and focus on other body parts. You might even be able to work your shoulder by substituting different exercises that don't cause pain.

Don't use pain as an excuse not to exercise.

UNDERSTAND THAT NOT ALL PAIN IS GOOD PAIN

Almost everyone who plays team sports or has worked with a fitness trainer has heard the phrase, “no pain, no gain.” Sometimes that phrase is true. The muscle soreness that follows a vigorous weightlifting session probably doesn’t represent a serious injury. In fact, it might lead you to increased muscle strength and size.

Not all muscle, bone or joint pain is benign, however. Some musculoskeletal pain can suggest a real injury. Pushing through that pain could make an injury worse, or at least slow its recovery. How do you know what pain is potentially good and which one is likely bad?

I wish I could offer a simple, black-and-white answer. Some rule like, “dull pain is acceptable; burning pain is serious,” would be great if it was always true. Unfortunately pain after an injury is not always straightforward.

Rather than focusing solely on pain, you might look for other signs of a more serious injury. This list could be much longer, but I would start with swelling and mechanical symptoms.

Mild swelling of the knee, ankle or other joint might not be worrisome. If you notice that the body part you injured is visibly more swollen than the other side, it might be a different story. A grossly swollen knee or ankle might not result from an injury that needs surgery, but it’s worth going to a sports medicine doctor to find the specific cause.

Mechanical symptoms refer to specific limitations often caused by structural damage. A meniscal tear or loose body in the knee might cause locking, or getting stuck in a certain position, or catching, where the knee starts to lock but the athlete can push or twist her knee past it.

An ACL or other ligament tear could cause the knee to give way or buckle. A labral tear of the shoulder might create an uncomfortable clicking sensation deep within the shoulder.

Again, this is not a comprehensive list of signs that an injury might be serious. As I said in another tip, if pain or other symptoms are limiting your ability to play or perform your activity as well as you would like, it can be worthwhile to go the doctor to have the injury evaluated.

CONCLUSION

I truly hope this guide to injury prevention has been, and will continue to be, helpful to you. I would love to hear your thoughts on these tips. If you have other ideas you would like to share, I would love to hear them as well. Please go to the Contact page of my website and submit your comments and ideas.

Remember to keep reading the articles on my website - drdavidgeier.com. I share sports injury treatment, prevention, health and wellness information several times each week.

I would love for you to connect with me in social media. Read my latest updates, comment on my articles and shows, and ask me questions by connecting with me on Twitter, Facebook, YouTube, Google+, Pinterest and LinkedIn.

Lastly, if you like these topics and want to hear much more, check out my podcast, The Dr. David Geier Show. Each week, I discuss a hot topic in sports medicine, explain injuries of many professional and college athletes, and answer injury questions sent in from people all over the world.

I look forward to hearing from you! I wish you great athletic success!

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