

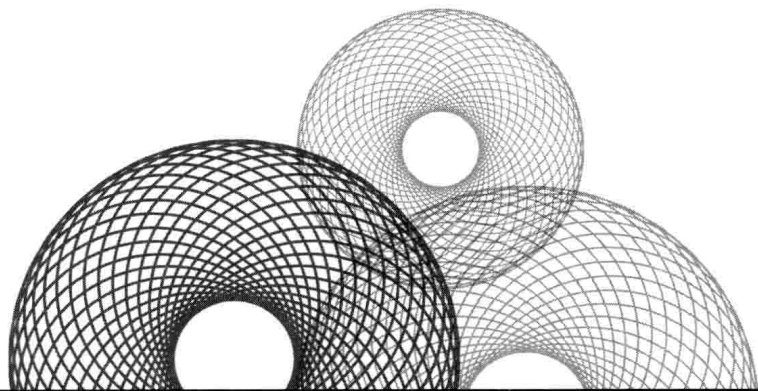
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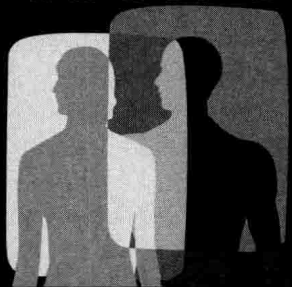
guides

LIVING with **SPORTS** **INJURIES**

Clifford D. Stark, D.O.
with **Elizabeth Shimer Bowers**



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Living with Sports Injuries

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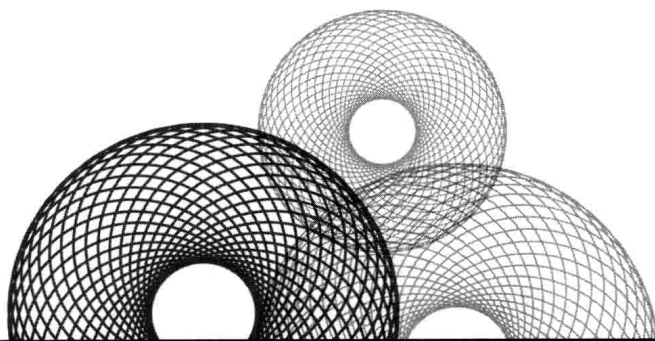
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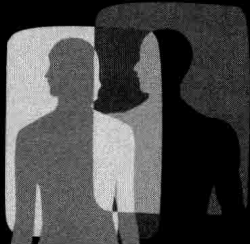
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A Crash Course in Sports Injuries

Aaron, age 16, is the second-best runner on his high school cross-country team. But during the last few practices, Aaron slowed slightly, due to a nagging pain in his leg. After a trip to his family doctor, he learned that the pain is not due to shin splints, as he had thought; instead, he has a *stress fracture*. Aaron's doctor has advised him to refrain from running for the next six weeks, but Aaron's coach is urging him to run in the upcoming meet—against their rival team—and then start his rest period. Aaron is upset for a number of reasons: He is disappointed about his injury, restless because he knows he will have to take a break from running during the peak of his competitive season, nervous about letting down both his team and his coach, and afraid to go against his coach's request that he still compete despite his doctor's orders.

Unfortunately, Aaron's situation is all too common. Injuries are quite prevalent among high school athletes; each year, approximately 30 million students participate in organized sports in the United States, and an estimated 20 percent experience sports-related musculoskeletal injuries. And by virtue of being a teen, Aaron is more at-risk for sports injuries than an adult athlete: Teens grow rapidly during puberty, which puts them at an increased risk for several exercise-related injuries.

Although most coaches are supportive of necessary rest periods, a select few—such as Aaron's—are not. Knowing how best to deal with this type of coach will help speed healing and prevent future injury. This book can help.

AN INTRODUCTION TO SPORTS INJURIES

As a teenager, participation in sports and physical activity is a wonderful way to spend your time. Not only will you get your body in shape, improve your coordination, and engage you in healthy competition, you will form enriching relationships with your teammates and coaches. However, by virtue of participating in a sport, you also put yourself at risk for injury.

This chapter will provide an overview of sports injuries in teens—why they happen, where on the body they can occur, and what teen athletes can do to prevent and treat them. It will also discuss how injuries make teenage athletes prone to reinjury due to weakness of the muscles and ligaments in the area that was hurt.

In addition, this chapter will offer tips on how teen athletes like Aaron can talk to their coaches about their injuries and handle the “middleman” role between their physicians and coaches when it comes to the decision of whether or not they should play.

Sports injuries come in many forms, but they fall into two general categories—*overuse injuries* and *acute injuries*.

Overuse injuries occur when muscles, tendons, growth plates, or bones cannot keep up with the stress put on them, so they break down and cause pain. These types of injuries tend to occur in sports with repetitive motions, such as gymnastics, running, tennis, soccer, dance, and baseball. If you practice your sport all year round, or you play multiple sports in the same season, you are at an increased risk for overuse injuries. Specifically, teen athletes who train more than 10 to 12 hours per week, play in games more than three times a week, or have had a recent increase in exercise intensity, duration, or frequency are at an elevated risk for these types of injuries.

At first, pain with an overuse injury typically occurs only during the activity that caused it; later, it also starts to hurt when you’re not practicing your sport, during your normal daily activities, or even at rest.

Acute sports injuries, on the other hand, usually occur after a sudden trauma. For instance, they may occur as a result of a twisted ankle on the soccer field, a fall during a football game, or a collision with another player on the basketball court. Acute sports injuries in teens commonly include *bruises* (also called contusions), *sprains* (also called partial or complete ligament tears), *strains* (also called partial or complete tears of muscles or tendons), and *fractures*.

PREVENTING SPORTS INJURIES

Most teens have probably heard the expression, “Don’t merely play a sport to get in shape; get in shape to play a sport.” Sure, sports like

football, basketball, and cross-country are great forms of exercise, but it is also important for young athletes to stay in shape and participate in the right kind of training to do well in their sports and prevent injuries at the same time.

One of the best ways to deal with sports injuries is to prevent them in the first place, and an effective way to prevent injuries is to stay in shape. That's right—even if you play a low-impact sport such as golf, good overall general conditioning will help you avoid injury.

Specifically, effective conditioning will help strengthen your heart, lungs, and musculoskeletal system, and it will help reduce body fat, improve balance and coordination, and make you more flexible. Proper conditioning includes stretching, endurance training, and strength training.

In general, physical activity falls into one of two categories: *aerobic activity* and *anaerobic activity*.

AEROBIC ACTIVITY

The word *aerobic* means “with oxygen.” Aerobic conditioning involves activities that increase your heart rate, and therefore, strengthen your cardiovascular system. Because your cells need oxygen to burn fat, aerobic activities such as swimming, cycling, and jogging help your muscles burn fat for energy. By strengthening your cardiovascular system, aerobic exercise helps your heart to pump blood with fewer beats and your lungs to process air more easily, both of which give more blood to your muscles and organs and make injuries less likely. In addition, aerobic activity boosts your energy level, allows you to play your sport longer without getting tired, improves your muscle tone, helps control your weight, reduces stress, and helps you sleep better—all of which help protect you against injuries.

For maximum benefits, some experts recommend you do some sort of aerobic activity, be it jogging, swimming, biking, or brisk walking for 30 to 60 minutes most days of the week at 70 to 85 percent of your *maximum heart rate*, although some studies show that you get the same benefits from exercising less often than this. The most important thing is that you get regular aerobic exercise at least a few times a week for a minimum of 20 minutes at a time. In terms of heart rate, exercising below your *target heart rate* will not yield significant benefits, and exercising above your target heart rate may put you at risk for strain or injury.

To calculate your maximum heart rate, take 220 minus your age. For example, if you are 17 years old, your maximum heart rate is 203 beats per minute (BPM). Then, to calculate your target heart

rate, take 70 to 85 percent of your maximum; if your maximum heart rate is 203 BPM, your target heart rate will be between 142 and 172 BPM.

To monitor your heart rate, you can buy a heart rate monitor (they cost between \$150 and \$350), or you can simply take your own pulse (which is free).

To take your pulse, place your index and middle fingers on the underside of your wrist (on your radial artery) or the side of your neck on either side of your windpipe (on your carotid artery). Count your pulse for 15 seconds and multiply it by four to get your heart rate per minute. If you are within your target heart rate range, you should continue to exercise at your current pace. If you are below it, you should increase the intensity. If you are above it, you should pull back. Also keep in mind that your target heart rate will give you only an idea of how hard your body is working—if you feel dizzy or faint, or if something starts to hurt, you should decrease your intensity.

ANAEROBIC ACTIVITY

Anaerobic exercises, such as weight lifting and sprinting, are done without the use of oxygen. Instead of fat, anaerobic activities burn carbohydrates for fuel. You will get some indirect fat-burning benefits from anaerobic activities, however; because they increase your overall metabolism, anaerobic exercises do contribute to fat burning in the long run.

In addition to sufficient physical conditioning, here are some ways you can help prevent sports injuries.

Warm up before practices and competitions. Warm your muscles by jogging in place, riding a stationary bike, or jumping rope for about three to five minutes. When you warm up by doing light activities before your main exercise routine, it raises your body temperature slightly, which helps warm your muscle fibers. Warm muscles are softer, stronger, and less likely to pull or tear. Warming up also lubricates your joints, which helps them move more freely with less energy expenditure and protects them from excessive wear. You will know you have warmed up sufficiently when you break a sweat; when your body starts sweating, it means you have raised your temperature about two degrees.

Cool down after you have finished exercising. Once you have completed your workout or training routine, you should continue to

move for five to 10 minutes at a slower pace with slow jogging or walking. Cooling down helps transport oxygen-rich blood to your brain and other organs, and it prevents the muscle cramps, nausea, and dizziness that can sometimes set in after exercise. It also enhances the removal of lactic acid from your muscles, helping to prevent soreness.

Stretch, and then stretch again. Whether you are a runner, swimmer, dancer, or tennis player, stretching is important. For best results, you should stretch often, always after you warm up, and then again at the end of your practice or competition, after you cool down. Stretching at the proper times—when your body is warm, and before and after your main exercise—is very important. A cross-country runner who rolls out of bed in the morning and immediately starts stretching risks tearing her muscles. If she stretches after she has warmed up for a few minutes, however, she will help lengthen her muscles and improve the range of motion of her muscles and joints. To stretch properly, stretch gradually and gently; perform a static stretch, holding each muscle still for 10 to 20 seconds. As you stretch, imagine your muscles becoming softer and more flexible. Avoid bouncing stretches, which can actually shorten the muscle fibers and do more harm than not stretching at all. Aim for a total of 10 to 20 minutes of stretching time after both your warm-up and cooldown. Although it may be tempting to skip your stretches when you are in a hurry, keep in mind that your stretching time may be the most important part of your workout—stretching is a powerful tool against injuries, soreness, and stiffness.

Strength train. If you are a runner or a swimmer, you might think, “Why do I need to lift weights?” But the truth is that strength training is an important part of overall good athletic conditioning, and it can benefit any athlete, from a defensive back on a football team to a cheerleader on the sidelines. To be most effective, weight training should be adjusted to meet the requirements of your sport. For example, if you are a linebacker on the football team, you will need to improve both upper and lower body strength to make your tackles. If you are a running back, you should concentrate on lower body strength training to develop your legs. Strength training is equally as important for female athletes as it is for males, particularly when it comes to strengthening the upper body. Talk to your coach or the physical trainer at your school about developing a strength training program that matches your individual sport, and if applicable, your specific position on the team.

Stay hydrated by drinking sufficient water or sports drinks. If you are dehydrated, you will feel tired and be less coordinated, both of which will make you more likely to get injured. Warning signs of dehydration include thirstiness (once you feel thirsty, it indicates that you already have a water deficit), headache, dark-colored urine, and weakness. If you experience any of these signs during exercise, stop activity immediately, drink fluids, and eat a light snack. To prevent dehydration in the first place, you should drink at least eight to 10 glasses of water or sports drinks per day, and more on days that you train or compete. If you are sweating a lot, make sure you drink one to 1.5 liters of fluid per hour of intense activity. To avoid the stomach cramps that can result from drinking too much at once, pace yourself with a cup of water or sports drink every 15 to 20 minutes. You should also drink fluids before and after periods of exercise. Drinking adequate fluids is even more important if you are going to compete or train in hot weather, when your body loses more water and thus is more at-risk for dehydration. You should avoid drinking liquids that contain alcohol or caffeine, as they can increase fluid loss and put you at greater risk of dehydration.

Cross train. Cross-training—or participating in aerobic activities other than your sport—is a great way to tone different muscle groups and take some of the strain off the muscles you use during your chosen sport. Cross-training is particularly helpful in reducing the risk of injury that comes with repetitive motions in sports such as running and gymnastics. Effective, joint-friendly cross-training activities include low-impact forms of aerobic exercise such as biking and swimming, weight training, and flexibility exercises like yoga and Pilates. These activities can be done in place of your sport in the seasons you take off, and they can be performed in addition to your sport in the season(s) when you are competing.

Diversify. If you play the same sport all year round, you will put yourself at risk for an overuse injury. To develop different muscles and different skills, play different sports in different seasons. Not only will this help you become a more well-rounded person overall, it will make you a more effective athlete. For example: Play soccer in the fall; run winter track in the winter; play baseball in the spring. Also, if possible, avoid playing more than one sport per season—participating in multiple sports at the same time will also put you at risk for injury.

Use appropriate protective devices for your sport. Safety gear is sport-specific and includes goggles, mouth guards, elbow, knee, and shin pads, and helmets. For instance, if you play football, use pads and helmets that fit you well. If you play baseball, wear helmets and gloves as needed. If you play field hockey, wear shin and mouth guards. If you run, make sure you wear running shoes that offer sufficient support and padding. No matter what type of protective gear you use, make sure it fits you properly.

If you suspect you may have an injury, see a doctor right away.

TREATING SPORTS INJURIES

No matter how a sports injury occurred or where on your body it took place, it's important that you start to take care of it as soon as possible. Depending on the severity of the injury, with proper rest and treatment, you may be able to continue participating in your sport through the season. If you ignore the pain, on the other hand, the injury may turn into a much more serious problem and keep you out for the season and perhaps beyond.

The proper treatment for an injury depends on the location of that injury on your body, its severity, and how it occurred. Specific treatments will be covered in the chapters devoted to specific areas of the body, but there are some general steps you should follow in the treatment of *all* sports-related injuries.

First and foremost, pay attention to pain. Pain is your body's way of telling you something is wrong. So if you feel pain in an area, rest it. Next, depending on the severity of your injury, you may need to ice it to decrease the swelling.

In some cases, your injury may necessitate a trip to a medical professional. The following are indications that a trip to the doctor is in order:

- ▶ Intense pain or tenderness
- ▶ Pain that increases with activity
- ▶ Persistent pain
- ▶ Limping
- ▶ Numbness
- ▶ Swelling
- ▶ Stiffness
- ▶ Loss of range of motion

Once your injury has been diagnosed, you will go through a series of recovery stages before you can get back on the field or court. In all

these stages, you should be closely monitored by your doctor and/or a physical therapist.

During the first stage—the acute stage—if your injury involves swelling, you should try to minimize it with the RICE formula (rest, ice, compression, and elevation), and reduce your activity level. Depending on the type of injury, the acute stage may also involve bracing, casting, or in severe cases, surgery.

It is important that you try to maintain your physical conditioning in the acute stage. If your injury is on your lower body, this may take some creativity, but it is often possible. For instance, if you have a leg injury, you can use a stationary bike or run in water. If one leg is in a cast, you can perform strength-training exercises to stay active.

In the second stage of recovery, you should work to maintain your range of motion in the area of injury. Many muscles will automatically get tight and others will immediately become weak in the setting of an injury, so your doctor or physical therapist will help guide you and provide you with safe range-of-motion exercises.

Once you have regained normal strength and motion in the area, you can begin exercises that continue to improve strength and agility if you have lost any during the rest period. Then, with the approval of your doctor and/or physical therapist, you can start sport-specific movements, possibly with the aid of tape, a brace, or another form of support.

Finally, when you can practice your sport with ease, and your doctor assures you that your likelihood of reinjury is low, you can start to compete again. When you return to competition, you should look out for any warning signs of injury or reinjury, and you should be exceptionally diligent about warming up and cooling down properly.

Depending on the location and severity of your injury, treatment may include the following:

- ▶ Pain relievers
- ▶ Anti-inflammatory medications
- ▶ Physical therapy and/or home exercises
- ▶ Splint or wrap
- ▶ Cast

Most sports injuries in teen athletes respond well to nonsurgical treatments. However, in some more severe cases, surgery may be required. The more common sports injuries in teen athletes that require surgery are dislocated shoulders, tears in the anterior cruciate ligament (ACL), and occasionally severe fractures.

Reinjury

According to a study published in the *American Journal of Epidemiology*, high school athletes with a previous injury are two times as likely to injure themselves again. Why? Too many athletes are under pressure to return to play too soon.

In addition to a previous injury, the same study revealed that certain sports—namely, football and soccer—make injury more likely, and that boys are 33 percent more likely than girls to get hurt. It also showed that injuries in high school athletes are more likely to occur during a competition than on the practice field.

So what does all this mean? Be aware of your injury risk factors. The more you realize what puts you at risk for injury, the more you can do for injury prevention. If you have been hurt before, make sure your coach knows this—he or she is likely to be more understanding when you want to pull back due to pain, be it new pain or familiar pain from the old injury.

GETTING BACK IN THE GAME

As soon as you first hear the word *rest*, your number-one question will probably be, “When can I start playing again?” Understandably, you want to get back to the sport you love as soon as possible. But rushing into play too soon may not only extend your time on the bench, it could even do permanent damage and take you out indefinitely. So giving your body adequate time to heal is imperative.

The amount of time necessary to sufficiently rest and heal your injury will depend on your specific situation, and you and your doctor will have to determine a plan of action together. Mild injuries may take you out of only a game or two; moderate injuries may take you out of your sport for three to six weeks or longer; more severe injuries may require surgery and take up to one year (or more in rare cases) to heal. Luckily, in most cases, (and again, depending on the site of your injury), you will be able to stay fit with alternative activities such as swimming, water therapy, rowing, or stationary biking while your injured body part heals.

As you recover, you may need to engage in some sort of rehabilitation (rehab) program, which will also be of help for you to stay in shape and get back to your sport as soon as possible. Rehab may be required as part of your treatment program, or you may decide to engage in it on your own (under the direction of your doctor, of course) to keep your body fit and healthy. Rehab may include manual therapy from a physical therapist, exercise, or technology such as ultrasound, which heats the injured area, speeds healing, and increases your range of motion. No matter what your treatment regimen, the more diligently you follow it, the faster you will return to play.

As a basic rule of thumb, you will be able to return to play when you have regained full range of motion of the injured area without any pain, and you have at least 85 percent full strength. If you suffered a head injury, you will have to be completely symptom-free and back to baseline mental status before you can compete again.

When you finally get the green light from your doctor to return to your sport, you may be tempted to go back to it full-force and play at your preinjury level; after all, you will be eager to get back in the game. It is important that you take it slowly, however. Be sure to warm up adequately before you practice or compete, and take time to cool down when you're done. If you have received any special instructions from your doctor, follow them. And to reduce your risk of reinjury, stop right away if you feel any pain, either in the injured part or any other body part. If any pain persists, tell your doctor.

Also keep in mind that as you ease back into your sport, you may need some new protective gear to help avoid reinjury, including shoes with special inserts or arch supports, tape to wrap and support the injured area, or knee or elbow braces.

TALKING TO YOUR COACH

As a student athlete, your relationship with your coach may be one of the most important and enriching in your life. After all, beyond helping you stay fit and excel in your sport, your coach can teach you a lot about teamwork and dedication, and he or she can act as a mentor for both sport- and nonsport-related issues in your life.

Within your sport, your coach can also provide you with expertise on how to improve your skills, deal with a loss, or psych yourself up before competition. Many coaches have played the sports they coach themselves, so they can offer valuable advice and guidance. Overall, a good relationship with your coach—one based on mutual respect and trust—will be of help to get the most out of your chosen sport.

As with any good relationship, communication will be a crucial part of the relationship with your coach. If you become injured or

have a physical limitation that requires certain activity restrictions, an important step in determining when you can get back into the game or how to alter your training schedule will be talking with your coach about your injury and your doctor's treatment plan for you. Most coaches are very understanding and supportive about athletes' injuries, and they respect doctors' orders. However, there are some coaches like Aaron's who pressure students to return to play too soon.

The best way to get your coach's support in the proper healing of your injury or respect of your physical limitation is to keep the lines of communication open. Keep your coach informed throughout the entire course of your injury, from the time it first happens to your diagnosis to your ultimate recovery. The more your coach knows about your injury or condition and your doctor's plans for you, the less likely he or she will be to impart his or her own agenda.

Healing Like a Pro

As a teen athlete, you no doubt pay attention to professional sports. So surely you've noticed that when they are injured, the pros get back on the court or playing field much faster than your average high school quarterback. Why? Professionals are very good at following effective treatment regimens. For that reason, you should take a lesson from the pros.

Professional athletes get prompt treatment as soon as an injury occurs, and this early treatment helps lessen swelling, stiffness, and loss of muscle tone. In addition, professional athletes stay in tip-top shape during their recovery, usually with the help of a personal trainer. And because they love their sports, many professional athletes approach injury with the same positive attitude that they display during competition.

Although you may not have access to many of the resources professional athletes have at their disposal—namely, immediate medical care and 24-hour personal trainers—you can make sure you follow your treatment plan diligently and with a positive attitude. With the right outlook and appropriate amount of rest and cross-training, you will be back out there in no time.