

Active Bones

Orthopaedic Surgery and Sports Medicine
Teaching and Research Foundation Newsletter

otrfund.org

Spring 2016

Dear Reader:

After a long winter, spring's warm temperatures are a magnet that draws everyone outside for any excuse—work or play. But after hibernating, jumping into any activity can lead to an injury. I strongly recommend you warm up before performing any task or activity. To help you safely tackle your spring chores, you'll find an informative article in this issue on *Getting out the Cob Webs*. We've also included a warm-up and exercise program you can download and print to help ensure you stay injury-free regardless what job you tackle.

This issue also contains an article on injury prevention for bike riders. There are precautions that should be taken while riding to prevent injuries, or worse. We cover the most common bicycling injuries and treatments. Even without a calendar, I know when spring arrives and my patients are riding their bikes because of all the unnecessary fractures and sprains I see in clinic.

Spring also signals the return of baseball—America's pastime. In this issue, we address the growing problem of overuse for throwers—pitchers and catchers. In the article on *Little League Elbow*, we discuss the causes of this avoidable condition and the sidebar has information and interval throwing programs to get throwers into form for the season and return injured players safely back to the game. This is a must read for every parent and coach with baseball players of any age.

Last, but certainly not least, this issue has free copies of our newest sports performance programs to download for lacrosse players and for anyone performing chores—at home or work. Based upon research and my years of experience treating injuries, these programs will help prevent injuries and keep you "in the game." For copies of our other sports performance programs, visit our website, otrfund.org and click on the tab labeled Sports Performance Programs.

Steven Chudik, MD
President OTRF
Orthopaedic Surgeon and Sports Medicine Physician



When a bicycle ride goes south

by

Kurt Gengenbacher, PT, DPT, OCS, SCS, CSCS, ATI Physical Therapy

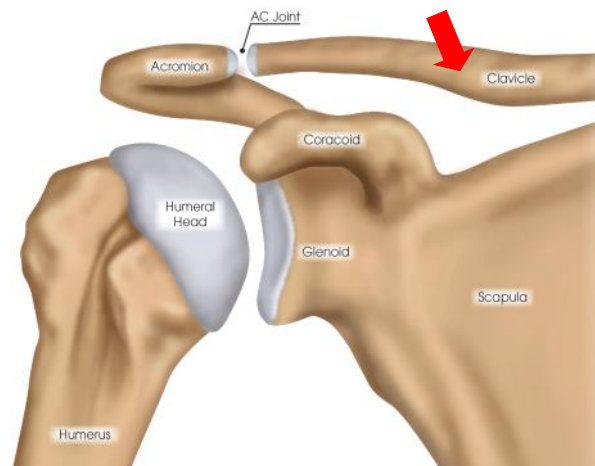
It is time to dust off those bike seats and get back in the saddle! With warm weather approaching, people will soon be enjoying outdoor exercise. Riding a bike is one of the most popular outdoor activities and great form of exercise. Unfortunately, no matter your level of biking experience, accidents happen. Bike accidents can result in injuries to the head, neck, hip, knee, shoulder, elbow and hand. However, injuries to the clavicle, or collar bone, are most common when riders land on their shoulder or an outstretched arm used in their attempt to brace the fall. A five-year study of the Register's Annual Great Bike Ride Across Iowa (RAGBRAI) revealed 44.4 percent of all fractures were to the clavicle.

How do you know if you have injured your clavicle?

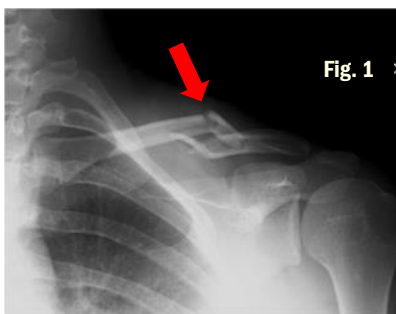
After you fall, it is often painful along the clavicle, or on the top of the shoulder and the pain can travel down the side of the arm. Typically, the pain does not extend past the elbow, and if it does, there may be another injury present. Along with pain at rest, it is usually difficult to raise your arm from your side and movement usually worsens the pain.

What should I do?

If you had a bike accident and are concerned you may have broken your clavicle, you should see an orthopaedic surgeon, or go to an orthopaedic immediate care clinic, especially if there is any obvious bony deformity. Injuries involving the clavicle are best diagnosed by taking a detailed history, performing a physical exam and taking X-rays of the clavicle and shoulder to make a proper and timely diagnosis and insure the most effective treatment is prescribed for the best outcome.



How is a fractured clavicle injury treated?



Cyclists most often break their clavicle ("collarbone") in the middle third of the bone (Fig. 1). Most mid-shaft clavicle fractures heal on their own without complications in six to 12 weeks. Children typically heal faster than adults. Fractures with significant displacement, more than 2 cm, have a higher risk for not healing, or healing with deformity that may result in shoulder limitations. Significantly displaced and open fractures (when the bone breaks through the skin) require surgery to restore the proper bony alignment and promote healing. Patient

lifestyle factors, such as smoking, can prevent normal healing.

For minimally displaced clavicle fractures, initial treatment consists of ice, compressive dressing and over-the-counter medication to relieve pain and reduce swelling. An arm sling usually is recommended.

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Patients should avoid risky activities, including excessive arm movement, smoking, etc., until the fracture heals, usually six weeks, or longer. Pain generally subsides after two to four weeks as the fracture begins to heal and use of the arm becomes more comfortable for activities of daily living that do not involve overhead motion.

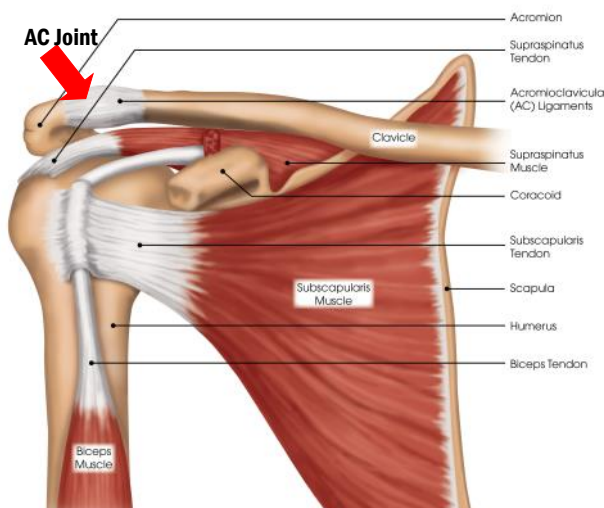
For significantly displaced fractures, open fractures, or fractures associated with neurovascular or other multiple extremity injuries, surgery is recommended. Surgery stabilizes the fracture in the proper position to allow bone healing and mobilization by the patient. Surgery consists of repositioning the fracture fragments and holding them in place with plates, screws, wires, sutures, or pins. After the fracture heals, these fixation devices may be removed, if needed.



Post-operative X-ray of a fractured clavicle repaired with a plate and screws

Exercises to regain shoulder motion and strength lost as a result of the injury and healing process are necessary before returning to sports and activities. These exercises may be done on your own, or you may be referred to a physical therapist or athletic trainer for further evaluation and treatment. Return to sports requires healing of the bone and usually takes three to four months depending on your age and severity of the fracture.

Although the most common bone-related injury in cycling is fracture of the clavicle, a separated shoulder, which also involves the clavicle, is another common cycling injury.



Acromioclavicular separation or “separated shoulder”

Acromioclavicular (AC) joint sprains are injuries to the ligaments at the joint where the clavicle attaches to the acromion (roof of the shoulder) of the scapula (shoulder blade). These injuries are commonly referred to as “shoulder separations.” The ligaments that run from the clavicle to the acromioclavicular ligaments, or to the corococlavicular ligaments of the scapula, help anchor the collar bone to the scapula. A sprain indicates the ligament between the bones is either stretched or torn, and disrupts the stability of the clavicle. AC joint sprains are graded I through VI, from least to most severe.

The treatment and outcome depends upon the severity of the ligament injury. The time to return to activities varies by the type of sport and position, arm injured (dominant versus non-dominant), and severity of sprain. Lower grade sprains (I, II, and most III's) generally do not require surgery and most patients can return to activity in two to six weeks. Treatment consists of rest, ice and anti-inflammatory

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medication to relieve pain. Initially a sling is utilized for comfort, followed by gentle range of motion (ROM) exercises and progressive strengthening as the pain and limitations resolve. ROM exercises help prevent shoulder stiffness and modification of activities. Intermediate grade III sprains may take six

X-ray of AC joint separation (Grade III)



to 12 weeks to return to activities, but sometimes can cause persistent symptoms that require additional surgery. Higher grade sprains (IV, V, and VI) usually require surgery to reduce (relocate) the AC joint and repair the torn ligaments, particularly for those who are heavy laborers, throwing athletes, or those whose condition has not improved after two to six months of conservative treatment. Return to full activities generally takes four to six months of recovery and physical therapy.

Surgical treatment typically involves reducing the clavicle to the acromion, sometimes removing the end of the clavicle (if the cartilage surface is damaged) and repairing or reconstructing the acromioclavicular and coracoclavicular ligaments.

Both injuries, fractured clavicle and separated shoulder, can be painful and limit your ability to participate in sports or daily activities. However, with proper management by your healthcare team and diligence on your part to complete physical therapy, you should be able to resume your normal chores, work tasks and recreational activities.

OTRF launches new, improved website

To accommodate mobile users and to make the website more useful and educational, OTRF recently unveiled a new website filled with all of its frequently requested materials and program information.

Need a copy of a sports performance program? Not a problem. Past issues are archived as PDFs for quick reference and printing. The new site also has a library of past *Active Bones* e-newsletters. For those interested in learning more or applying to OTRF's numerous educational opportunities for athletic trainers, pre-med and medical school students, marketing students and medical fellows, the website contains program descriptions, applications and comments from past students. Also new to the site is information on conferences and presentations, orthopaedic research and even a donation page so people can help Dr. Chudik and the Foundation's Board of Directors continue its non-profit mission. To check out the new site, go to [**otrffund.org/**](http://otrffund.org/).



Getting out the cob webs

As the weather gets warmer, people start tackling their “spring cleaning” and participating in outdoor activities. While these activities may provide a great deal of personal benefit, both physical and mental, it is



important to remember they also are a potential for injury. Rather than risk injury, Dr. Steven Chudik, board certified orthopaedic surgeon and sports medicine physician, along with his OTRF health performance team recommend keeping these tips in mind and incorporating a simple warm-up and stretching program into your daily routine.

Stay Hydrated

The human body needs water to function properly and, as people perform more strenuous activities the risk of dehydration becomes greater, especially as the temperature increases. As muscles get tired, they are at a higher risk of becoming injured, “pulled” or strained.

Warm Up

The human body is similar to an automobile in that it runs better after a brief, five to 10 minute warm-up and injuries are more likely to occur when people jump right in and perform strenuous activities without a proper warm-up. Therefore, performing warm-up exercises

available in OTRF’s program before beginning strenuous activities can help prevent injuries. Even better, make the exercises and stretches on the following pages as part of your regular exercise routine to avoid injury as unexpected tasks or opportunities may come up any time.

To download this free program and other free sports injury programs from Dr. Chudik and OTRF, visit the OTRF website, otrfund.org and click on the sports performance tab. Or, you can email contactus@chudikmd.com for a printed version. Make sure to include your mailing address.



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Warm-up, stretching and good body mechanics helps prevent injuries

As the weather gets warmer, people start tackling their “spring cleaning” and participating in outdoor activities. While these activities may provide a great deal of personal benefit, both physical and mental, it is important to remember they also are a potential for injury. Rather than risk injury, keep these tips in mind as prevention is the best medicine.



Stay Hydrated

Many forget, or don’t realize, that staying hydrated is very important to prevent injury. The human body needs water to function properly and, as people perform more strenuous activities like cleaning out the garage/house, lawn care/gardening, and other home projects, the risk of dehydration becomes greater, especially as the temperature increases. Signs and symptoms of dehydration include, but are not limited to, headache, dizziness, loss of coordination, muscle fatigue and a decrease in physical and mental performance. As muscles get tired, they are at a higher risk of becoming injured, “pulled” or strained.

Guidelines for hydration, according to the American College of Sports Medicine, generally are:

- 16 to 32 fluid ounces before exercising and strenuous activities
- Three to 8 fluid ounces every 15 to 20 minutes during exercising (water if exercising for less than 60 minutes and sports drink if exercising longer than 60 minutes)
- 20 to 24 ounces of water or sports drink after exercising for every pound lost of water in the form of evaporation (perspiration)

Staying hydrated is crucial to feeling good and working or exercising injury-free. Alternatively, it is important not to drink too much water—no more than one quart per hour of fluid—as this can result in over-hydration (hyponatremia) and be very dangerous.

Warm Up

The human body is similar to an automobile in that it runs better after a brief five to 10-minute warm-up and injuries are more likely to occur when people jump right in and perform strenuous activities without a proper warm-up. Therefore, performing the warm-up exercises in this program before beginning strenuous activities can help prevent injuries such as:

- Rotator cuff tendinitis and tears
- Sprains and strains
- Achilles tendinitis and tears
- Hamstring strains

Even better, make the exercises and stretches on the following pages as part of your regular exercise routine to avoid injury as unexpected tasks or opportunities may come up any time.

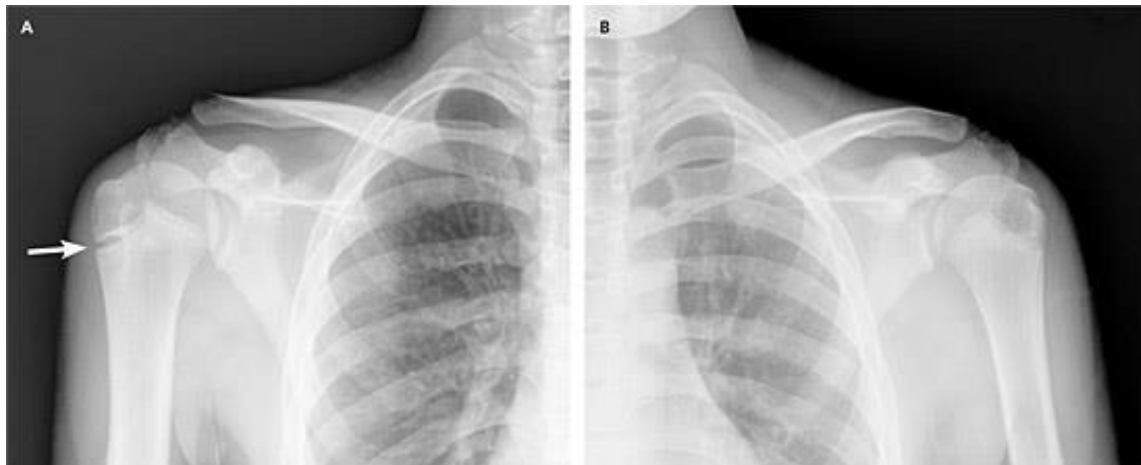
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Little Leaguer Shoulder

Shoulder injuries are common in throwing athletes. One injury unique to the shoulder of early adolescents is termed Little Leaguer Shoulder. It is important to recognize this condition early to allow proper healing and safe return to play.

Little Leaguer Shoulder is a stress injury to the growth plate of the upper arm bone (the humerus). The growth plate, known as the physis, is the weakest part of a bone. Overhead throwing creates rotation and traction stresses on the growth plate. Repetitive stress can injure the growth plate resulting in a stress fracture and pain.

Little Leaguer Shoulder usually develops between ages 11-15. It occurs primarily in baseball players, but it has been reported in softball, swimming, tennis, volleyball and gymnastics. Patients complain of pain in the outer shoulder and upper arm when the arm is overhead. Pain increases during practices and games. Eventually pain causes weakness and inability to throw.



X-rays show the right humerus physis (at left) is widened which is typical Little Leaguer Shoulder as compared to the left humerus physis (at right).

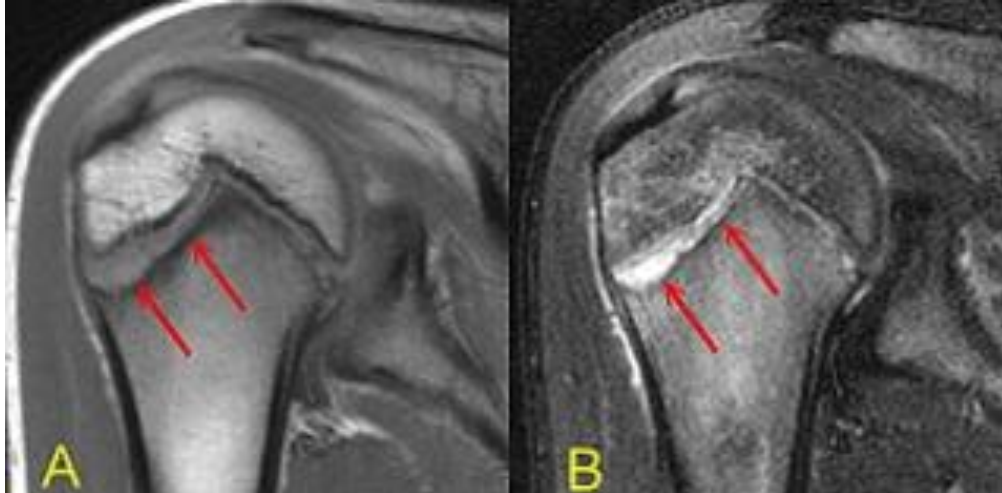
The main cause of Little Leaguer Shoulder is over use with an excessive amount of throwing. Other contributing factors include poor throwing mechanics, weak core and hip muscles and especially scapula stabilizing weakness. Inflexibility of the back, hip and hamstring muscles also are contributing factors.

Little Leaguer Shoulder usually can be diagnosed by a physician taking an injury history and performing a physical examination. Typically, the growth plate is tender to palpitation and pain occurs with cocking the arm as if to throw a ball. A simple X-rays can confirm the diagnosis

Treatment for Little Leaguer Shoulder includes rest from throwing for three weeks to three months depending on the severity and length of time the condition is present, followed by rehabilitation and a **gradual return to throwing** (six weeks or longer). To prevent re-injury or permanent damage, the athlete's throwing mechanics should be carefully evaluated and modified, if necessary.

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Areas of muscle weakness or tightness also should be addressed. Your physician should guide this rehabilitation process and the **gradual return to throwing**. With complete athlete compliance to the throwing restrictions and gradual progressive return to throwing, the condition should not recur or cause permanent problems.



MRI (A) shows widening at the humerus physis. MRI (B) shows inflammation. Both are indicators of Little Leaguer Shoulder

Interval Throwing Programs Prevent Re-Injury

Unfortunately, overuse shoulder injuries such as Little Leaguer's Shoulder, are all too common in young throwing athletes. It is important to recognize and treat this condition early to allow proper healing and safe return to play. Treatment for Little Leaguer Shoulder includes rest from throwing, rehabilitation exercises to increase strength and endurance, evaluation/modification of the athlete's throwing mechanics and a gradual return to throwing, rehabilitation exercises to increase of the athlete's throwing mechanics and a gradual return to throwing program.

An interval throwing program allows the athlete to increase demands on the throwing arm gradually progressing from no throwing to throwing at game volume. Typically, the program consists of four phases:

- Return to throwing
- Intensified pitching
- Return to pitching
- Game situation

Dr. Steven Chudik, board certified orthopaedic surgeon and sports medicine specialist in shoulder and knee injuries, and his health performance team used three data-based interval throwing programs that are age specific and take into account field dimensions, performance restrictions, in vitro biomechanical studies and an understanding of healing tissue physiology. They are:

- Little Leaguers (ages 9-12)
- 13/14 year-olds
- High School, College and Professionals

"Interval throwing programs provide the safest means for progressive training or the graded return of an injured pitcher to the mound," said Dr. Chudik. "Once back, it is critical coaches, parents and the baseball community make player health their number one priority to help prevent and minimize injuries," he added.

Email contactus@chudikmd.com for a free PDF copy of Dr. Chudik's age-specific interval throwing programs. Please provide your email or mailing address and the program title(s) you want.

Strength, conditioning program helps prevent lacrosse injuries

Lacrosse is one of America's oldest sports with roots in Native American culture. Today it is one of America's fastest growing sports played by athletes of all ages. Because lacrosse is a free-flowing, fast paced sport with quick changes of direction this can lead to non contact ligament injuries especially to ankles and knees. Boy's lacrosse is considered a moderate contact sport with full shoulder pads and chest protector, whereas girl's lacrosse is relatively non-contact and the only protective equipment is goggles. The difference between girl's and boy's lacrosse can lead to a slightly different set of injuries, but both are at risk to various contact injuries.



While common contact injuries may be difficult to prevent (contusion, concussion, fracture), proper training and preparation can help reduce non-contact injuries such as muscle strains, ankle and knee sprains. Knee and ankle sprains not only are among the more common lacrosse injuries, they also can result in a longer injury recovery time. The most familiar knee sprain is an anterior cruciate ligament (ACL) tear. It typically requires surgery and minimum four month rehabilitation. Proper training has been proven to reduce the incidence of ACL tears.



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Incorporating an in-season leg strengthening and conditioning program to help prevent lacrosse injuries

The ability to properly cut, run, jump, land and decelerate in soccer is important to prevent knee injuries, particularly anterior cruciate ligament (ACL) injuries. There are more than 400,000 ACL injuries annually with a disproportionate number occurring in females—up to 2 to 3 times higher than their male counterparts. ACL injuries are a major concern because of the growing numbers of injuries affecting young athletes, rising treatment costs, lost time from sport for treatment and recovery, the permanence of the injury and surgery, and the associated development of early knee arthritis. In response to the ACL injury epidemic, a great deal of research has been focused on how and why ACL injuries occur and the best methods of prevention.



Most do not realize that ACL injuries occurring with sports are typically a "noncontact" injury—occurring without any external contact to the knee. In fact, the common cause seems to be a cutting, stopping, landing or another decelerating maneuver on a planted, single leg with a slightly bent knee in a "buck-knee position" and possibly internal rotation of the lower leg. With the knee in this position, it appears the landing forces combined with the athlete's own muscle forces are responsible for damaging the ACL as they work to stop with the planted foot.

Factors such as the playing surface, shoe surface and weather also can contribute to the likelihood of an injury, with higher rates occurring in conditions with higher friction between the playing surface and the shoe. Other important contributing factors are the athlete's anatomy and patterns of neuromuscular control. Also, athletes with specific anatomical differences in the size and shape of their joint surfaces, or differences in muscle activation patterns are at a higher risk for an ACL injury. Anatomical factors are not easily correctable, but patterns of movement can be modified with specific ACL prevention exercise programs. Exercises that improve cutting, landing and stopping mechanics of the knee, improve strength and endurance and address core balance and agility have proven helpful. Unfortunately, most of these successful programs are off-season regimens that, like all exercise programs, quickly lose their benefit once they stop leaving the athlete most vulnerable to injury during the season when their exposure is the highest.

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To help prevent these injuries, Dr. Steven Chudik, board certified orthopaedic surgeon and sports medicine physician, along with his health performance team, Larana Stropus and Keith Tesch, developed a research-based in-season strength maintenance program. The program is quick and efficient and should be properly incorporated around games and practice schedules and avoid training too close to a specific competition and negatively impacting performance.

To download this free program and other free sports injury programs from Dr. Chudik and OTRF, visit the OTRF website, otrfund.org and click on the sports performance tab. Or, you can email contactus@chudikmd.com for a printed version. Make sure to include your mailing address.

Research Roundup

Osteoarthritis and fish oil?

According to recent research published in *The American Journal of Orthopaedics*, there's something fishy about the benefits of treating osteoarthritis (OA) with fish oil. United States 2005 census data, the most recent available, shows osteoarthritis is the leading cause of disability affecting more than 50 million people. Current treatments target inflammation that occurs from the destruction of articular joint cartilage.



Lead researcher, Dr. C. Thomas Vangsness, professor of orthopaedic surgery and chief of sports medicine at University of Southern California Keck School of Medicine, explained they reviewed all relevant literature and laboratory studies related to omega-3 containing supplements and its effect on OA. Based on their findings, they could not recommend supplementation to patients because of insufficient clinical studies. "There remains a need for significant, well-designed clinical trials to evaluate the efficacy, safety and clinical parameters of omega-3 fatty acids in a standardized form before they can be in good faith recommended to patients with OA," he wrote.

Based on their research, they also noted that "a lack of federal regulation of the supplement industry hinders conducting generalizable studies regarding medical benefit in a regulated and verified dose and form. This is important because omega-3 fatty acids have been found to increase the risk of bleeding, especially if a person is taking blood thinners such as clopidogrel (Plavix), warfarin (Coumadin), or aspirin.



Teens' elevated BP linked to Internet use

Teens spending at least 14 hours a week online are more likely to have elevated blood pressure according to a study published in *The Journal of School Nursing*. The study analyzed 335 teens ages 14 to 17 on their Internet use as well as other information, including a blood pressure taken during a physical exam. Of the 134 teens described as "heavy Internet users," 26 had unusually high blood pressure.

The researchers found that the heavy users were on the Internet an average of 25 hours per week of which 43 percent were boys compared to 39 percent of girls. Also 43 percent of the heavy Internet users were considered overweight compared to 26 percent of light Internet users.

The findings add to the growing list of other research results showing an association between heavy Internet use and other health risks such as addiction, attention issues, anxiety, depression and obesity.

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Research Roundup

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Peanut butter now satisfies more than hunger

If you thought you closely monitored your child's daily consumption of caffeine, you better check that peanut butter and jelly sandwich in their lunchbox. According to a report on the Food Network, a new caffeinated peanut butter called Steem is available and promises a "smoother, more sustained release of energy than coffee" because it takes longer to digest peanut butter. The manufacturer also claims you can get your buzz "without the jittery feeling that other food items produce making it perfect not only for athletes and active people, but also everyday life."

Dr. Steven Chudik, board certified orthopaedic surgeon, sports medicine specialist and founder of OTRF, cautions anyone using caffeine as an energy boost. "Research continues to show the negative and even adverse side effects of consuming caffeine, especially when you do not regularly drink coffee or other caffeinated beverages," said Dr. Chudik. "This is particularly important because peanut butter is more often consumed by children and they could easily and unknowingly consume it if it is in their home." Also of concern is the warning from the peanut butter's manufacturer to keep it away from dogs, cats and birds because they cannot digest caffeine properly and if eaten it can lead to serious health issues.



30 minutes of exercise a day not sufficient to lower heart disease risks



A new study from the University of Texas Southwestern Medical Center discovered 30 minutes of moderate intensity exercise may not be enough to ward off heart disease. According to lead researcher, Dr. Jarette Berry, cardiologist, researcher and medical school professor, they studied how much physical activity is needed to effectively lower the risk of heart disease. "We didn't start seeing 30 to 40 percent reduction in risk until people were out at three to four times the recommended amount of exercise (450 to 600 minutes)," Dr. Berry explained.

To arrive at their conclusion and recommendation to exercise longer than 30 minutes a day, the research team analyzed 12 studies involving more than 370,000 individuals who tracked their exercise habits for 13 years. So don't be surprised if during your next doctor's appointment that you are told to increase your daily 30-minute regiment to an hour, or until you reach 10,000 steps.

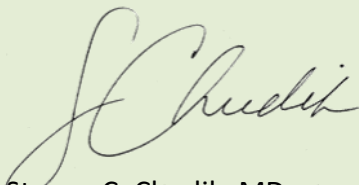
Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation helps people stay fit and healthy

Steven Chudik, orthopaedic surgeon and sports medicine physician with the Steven Chudik Shoulder and Knee Injury Clinic, founded the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF) in 2007. OTRF is a nonprofit, 501 (c)(3) organization dedicated to funding research and education for the purpose of keeping people active and healthy.

Dr. Chudik has seen a growing demand by patients, athletic trainers and clinicians for up-to-date medical information and unbiased research on injury prevention—especially for children—as well as facts on arthritis and wear and tear on joints, cartilage, tendons, ligaments, etc. To fulfill these requests, OTRF produces and distributes this newsletter, shares information about health performance-related issues like nutrition and fitness, hosts athletic training educational programs, conducts seminars for healthcare providers and the community and most important, funds unbiased research and development particularly in emerging areas such as arthroscopic and minimally invasive surgery for injuries to the meniscus, labrum, rotator cuff, ACL and cartilage.

However, none of this is possible without ongoing financial support. We are extremely grateful to all those who have contributed in the past. Many of the donations came from patients or their family members who benefited from Dr. Chudik's orthopaedic and sports medicine expertise. If you might be interested in helping us continue our research, please visit our website, otrfund.org and click on the donation link. Or, if you prefer, email me at contactus@chudikmd.com. Also, many companies sponsor programs that match charitable contributions made by their employees. Some even match donations made by retirees and/or spouses. Matching gift programs are a great way to double your generosity. Regardless of the amount, every contribution helps make a difference.

Thank you for your interest in our newsletter, **Active Bones**, and the ongoing work of OTRF.



Steven C. Chudik, MD
OTRF Founder and President
Orthopaedic Surgeon and Sports Medicine Physician



Orthopaedic Surgery & Sports Medicine Teaching & Research Foundation

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Sports Medicine Injury Clinic

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