



Active Bones

June 2012

Dear Reader:

Summer is here and so are record-setting temperatures. With our increased activity, I want to remind everyone to make sure you, your family and especially athletes stay hydrated. We covered this topic in our February *Active Bones* issue, so you might want to review it to ensure a safe summer. To get copies of a past issues, you can email me at: stevenchudikmd@gmail.com/.

Another topic we previously covered, but bears repeating this time of year, is to make time for healthful meals and snacks. Active bodies need fuel so even though the family taxi may never seem to run out of gas, your body can. A quick review of the March *Active Bones* issue devoted to healthful eating—especially the article on easy snacks--will help keep your engines running at peak performance.

Moreover, it would not be summer without America's favorite pastime—baseball. It is estimated that more than six million adolescents participate in organized baseball in the United States. Unfortunately as the sport participation increases, so does the number of sports-related injuries. Dr. Geoffrey Kuhlman and I want you to know about a preventable injury we're seeing a lot in our practices—Little Leaguer's Shoulder. Although it has a baseball name, the injury can occur in any sport where repetitive shoulder stress injures the growth plate—usually in athletes age 11 to 15—who are still developing. Perhaps after reading our article you'll agree more emphasis needs to be placed on pitch counts, the pitch types and providing ample rest between pitching outings

While Little Leaguer's Shoulder is preventable, many other injuries are not. That is why I am conducting research with the American Orthopaedic Society for Sports Medicine (AOSSM) in collecting information for a national survey of pitchers age 9 to 18 who pitched in organized games within the past 12 months. With the help of research students and my foundation, the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF), we are trying to get pitchers from Illinois to complete a simple, online survey available on the OTRF website, www.otrfund.org/. This month's *Active Bones* contains a summary of early

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research findings from the survey so you can see the type of information being collected and why it is important for Illinois pitchers to participate. Illinois has fallen behind other states and I'd like to see if we can change that so final AOSSM recommendations are relevant and valid for throwers in Illinois. While on the topic of baseball, many of you may not be old enough to have watched Dodgers' ace Tommy John pitch, but you have probably heard his name associated with reconstructive elbow surgery. Our *Research Roundup* looks at the misperceptions players, coaches and parents have about the surgery and clearly we need to do more to spread the word.

Last, while you enjoy that bag of popcorn, peanuts or pretzels at the ballpark this summer, you might want to consider how much salt you are consuming—regardless if it is sea salt or iodized. A reader's question about sea salt and our dietitians' answer may surprise you. Also, if you have a nutrition question for the dietitians, email it to me at stevenchudikmd@gmail.com/.

As always, thank you for your interest in OTRF.

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Little Leaguer's Shoulder can be prevented

By Geoffrey S. Kuhlman, MD, and Steven Chudik, MD



Shoulder injuries are common in throwing athletes. One injury unique to the shoulder of early adolescents is termed Little Leaguer's Shoulder. It is important to recognize this condition early to allow proper healing and safe return to play. Little Leaguer's 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's Shoulder primarily develops in baseball players age 11 to 15, 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 an inability to throw.

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

Little Leaguer's Shoulder usually is diagnosed by a physician taking an injury history and performing a physical examination of the shoulder and arm. Typically, the growth plate is tender to palpation and pain occurs with cocking the arm as if to throw a ball. Sometimes, a simple X-ray can confirm the diagnosis (see Figure 1). Initial X-rays are often normal so magnetic resonance imaging (MRI) may be ordered. It is more sensitive in detecting the condition, but it is not always necessary (see Figure 2).

Treatment for Little Leaguer's 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** (an additional six weeks or longer). To prevent re-injury or permanent damage, the athlete's throwing mechanics should be carefully evaluated and modified, if necessary. Areas of muscle weakness or tightness also should be addressed.

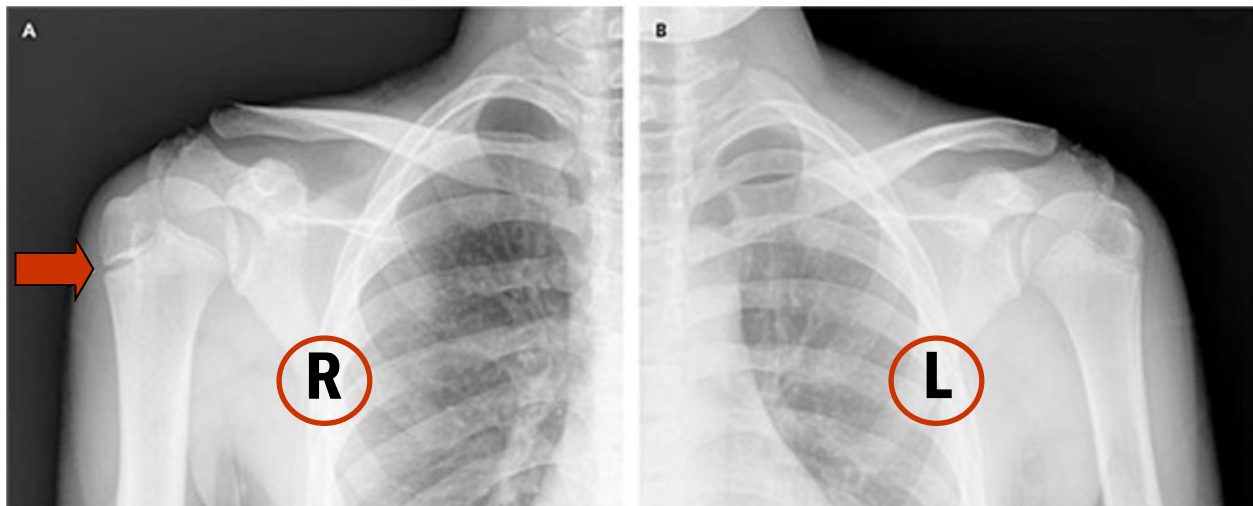
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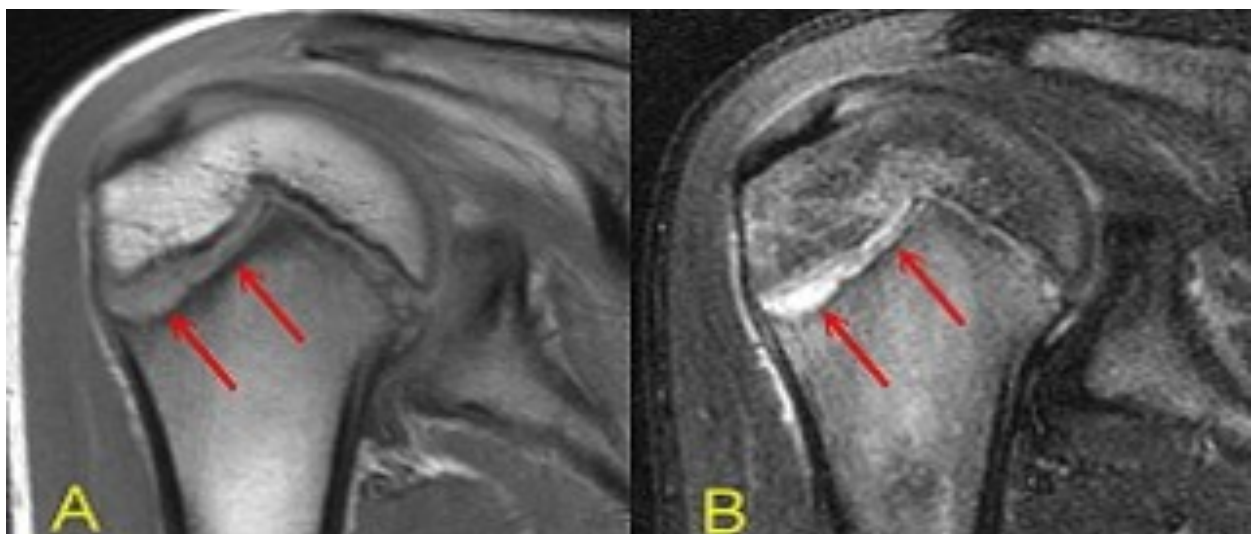
Your physician should guide this rehabilitation process and the **gradual return to throwing**. With complete athlete compliance to the throwing restrictions and gradual progressive return to throwing, the condition should not recur or cause permanent problems.

Figure 1



X-rays show the right humeral physis (shown on the left) reveals a widening consistent with Little Leaguer's Shoulder as compared to the left humerus physis (shown on the right).

Figure 2



MRI (A) above shows widening of the humeral physis. MRI B shows inflammation. Both are indicators of Little Leaguer's Shoulder.



Ask the Dietitians

By Carol Burtnack, RD, LDN, and Deborah Ward, MBA, RD, LDN

The following question was submitted last month by a reader and it might be one you've wondered about but never asked. If you have a question you would like the dietitians to answer, please email it to stevenchudikmd@gmail.com/.

Q. *Is sea salt any better for you than table salt, and is it a healthier option if you are trying to cut down on sodium?*

A. No, sea salt is not a healthier option for people who are trying to cut back on sodium. The reason is because by weight, both table and sea salt contain the same amount of sodium. The difference between sea salt and table salt is in the processing, not the chemical composition. Both sea salt and table salt are made of a combination of sodium and chloride. Sea salt comes from the evaporation of seawater, while table salt is mined from salt deposits. In addition, table salt usually contains iodine, as well as additives to prevent it from clumping, which sea salt does not.

The human body requires a very small amount of salt, so it is likely you are meeting your needs. In fact, most people usually exceed the recommended guideline of 2300 mg/day (1500 mg/day for those who are age 51 or older, black, or have a history of high blood pressure, diabetes, or chronic kidney disease.) Reading the Nutrition Facts on food labels are a good way to find out how much sodium is in the foods you eat. Make sure to look at the serving size of the foods you are eating and multiply the amount of sodium by the number of servings you eat.

Although sea salt has gotten a lot of media attention lately, table salt is a good source of iodine. If you have been told to cut back on sodium, then you should make sure to eat foods high in iodine. The Food and Nutrition Board at the Institute of Medicine recommends the following dietary intake for iodine:

Children

- 1—3 years: 90 mcg/day
- 4—8 years: 90 mcg/day
- 9—13 years: 120 mcg/day



Sea salt harvest

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Adolescents and Adults

- Males and females age 14 and older: 150 mcg/day
- Women who are pregnant or breast feeding need higher amounts. The World Health Organization (WHO) recommends 250 mcg/day during pregnancy and lactation. However, always consult your health care provider about the amount that is best for you.

A 1/4 teaspoon of iodized table salt provides 95 micrograms (mcg) of iodine. Most people are able to meet the daily recommendations by eating seafood, iodized salt and plants grown in iodine-rich soil. When buying salt, make sure it is labeled "iodized."

Here are some foods that provide a good source of iodine.

Food	Approximate Microgram per Serving	Percent Daily Value
Cod, baked, 3 ounces	99	66%
Yogurt, plain, low-fat, 1 cup	75	50%
Iodized salt, 1.5 g (approximately 1/4 teaspoon)	71	47%
Milk, reduced fat, 1 cup	56	37%
Fish sticks, 3 ounces	54	36%
Bread, white, enriched, 2 slices	45	30%
Fruit cocktail in heavy syrup, canned, 1/2 cup	42	28%
Shrimp, 3 ounces	35	23%
Ice cream, chocolate, 1/2 cup	30	20%
Macaroni, enriched, boiled, 1 cup	27	18%
Egg, 1 large	24	16%



National youth baseball pitching injury survey update

In 2009, Steven Chudik, board certified orthopaedic surgeon and sports medicine physician with the Steven Chudik MD Shoulder and Knee Injury Clinic and founder of the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF) entered into a two-part research study sponsored nationally by the American Orthopaedic Society for Sports Medicine (AOSSM). Dr. Chudik and OTRF, along with other orthopaedic surgeons across the country, are gathering information on elbow and shoulder problems in baseball players age 9 to 18 who pitched in an organized game within the past 12 months. The impetus behind the study is the growing number of overuse injuries in young pitchers and the desire to determine underlying causes and formulate preventative recommendations.

One part of the study is community-based and relies on pitchers to complete an online survey. It is completely confidential except for gender, age, weight, shoe size, state and Zip code. No personal data is collected. To date, 745 pitchers have completed the survey.

The second part of the research is clinic-based. This portion relies on Dr. Chudik and other participating physicians to conduct physical exams of their baseball-pitching patients and report their diagnostic findings. Only the patient's pertinent assessment and diagnostic information necessary for the study is reported to ensure complete confidentiality. To date, information on 201 patients has been submitted nationally.

Initial findings support the need to limit the number of pitches thrown, rest the arm and most important, not play or practice if the pitching arm is painful.

"This early data supports what I've been telling baseball pitchers for a long time—pitch counts count and resting the arm is a must," said Dr. Chudik "With an estimated 6 million American adolescents participating in organized baseball, it is important we collectively look for ways to prevent overuse injuries and possible lifelong permanent damage. Participating in the short online survey is a great first start," he suggested.

Dr. Chudik urges coaches, athletic trainers and parents to have their baseball pitchers take a few minutes to complete the survey located on his foundation website, www.otrfund.org/. "We really need more pitchers from Illinois represented in the survey," Dr. Chudik said. "Our playing season and weather are vastly different from the Southern and Western parts of the country. Without an accurate representation from all regions—especially ours—the validity of the research could be compromised," Dr. Chudik explained. "It is important for us to understand the issues involved for pitcher here in Illinois" he added.

The survey is open to pitchers 9 to 18 years of age who have not completed the survey and pitched in an organized game within the past 12 months. Parental permission is required to participate in the survey.

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Preliminary Research Findings Revealed

Community-based information from pitchers

- Average respondent's age: 14.2 years
- State responses: Florida 21.45% (the most), Illinois 5%.
- 71% throw curveballs with 12% beginning at 9-10 years of age
- 43% throw sliders or sinkers with the youngest starting at 9-10 years of age
- 5.1 average number of months pitched in one year, 10% pitched more than 9 months
- 3.8 days average rest between games pitched
- 52% pitched on travel teams
- 18% pitched two games on the same day, 41% pitched on back-to-back days
- 59% sometimes pitched when the arm was not 100%
- 33% sometimes pitched with arm was painful, 4% often pitched in pain
- 46% practiced pitching 1-2 times per week
- 45% reported 6 or fewer weeks of rest in the off season /not throwing at all
- 31% of the total sample missed at least one game or practice from a shoulder/elbow injury
- 18% of the total sample missed more than two weeks pitching from a severe arm injury

Clinic-based information from physician's exams of pitchers

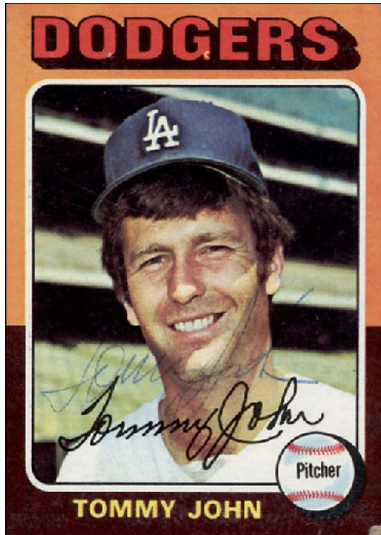
- Average participant's age: 14.3 years
- External rotation (ER) throwing arm-Internal rotation (IR) throwing arm average: 57 degrees
- IR throwing arm-IR non-throwing arm: more than 25 degrees, glenohumeral internal rotational deficit (GIRD): 26%
- 48% had no shoulder injury; 39% had no elbow injury
- 12% diagnosed with Little Leaguer's Shoulder, 13% with Little Leaguer's Elbow
- 10% diagnosed with shoulder tendonitis, 7% with elbow tendonitis
- 8% diagnosed with unspecified shoulder overuse, 8% with unspecified elbow overuse
- 5% diagnosed with shoulder labral tear
- 16% diagnosed with ulnar collateral ligament (UCL) elbow injury
- 3% diagnosed with elbow medial epicondyl growth plate fracture
- 2% diagnosed with elbow olecranon stress fracture
- 64% prescribed rest for an average of 5 weeks
- 51% prescribed physical therapy for an average of 5 weeks
- 22% prescribed pitching instruction to improve/change poor mechanics
- 17% prescribed anti-inflammatory medications
- 12% underwent surgery; 7 pitchers had UCL reconstruction, 2 pitchers had shoulder repair to attach the labrum back to the bone (SLAP repair)
- 8% prescribed magnetic resonance imaging (MRI) for further study
- 3% prescribed a corticosteroid injection
- 3% prescribed a sling for use an average of 2 weeks



Research Roundup

Tommy John Surgery Misconceptions

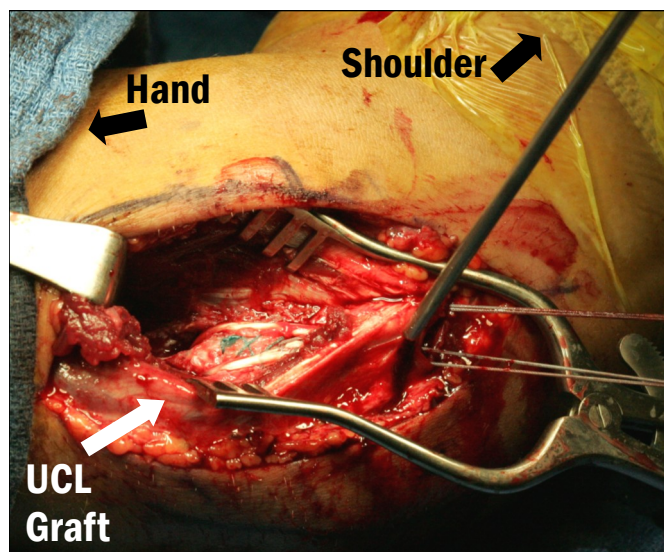
Before 1974, no one had ever heard of Tommy John surgery, the ulnar collateral ligament (UCL) reconstructive surgery named after the Los Angeles Dodgers' ace pitcher. Since then, though, the surgery has become a well known orthopaedic procedure and a potential career-saver for a limited number of individuals who may benefit from its ability to restore stability to the elbow. Even with more than three decades of surgery results, research reported to the American Orthopaedic Society for Sports Medicine (AOSSM) found a common misperception remains that Tommy John surgery improves athletic performance.



"Even though the number of pitches thrown has long been recognized to contribute to overuse injuries, nearly one-third of those surveyed did not believe that the number of pitches thrown is an injury risk," explained Steven Chudik, board certified orthopaedic surgeon, sports medicine physician with the Steven Chudik MD

Shoulder and Knee Injury Clinic and founder of the Orthopaedic Surgery and Sports Medicine T Teaching and Research Foundation (OTRF). "Even more disturbing was the fact that one-quarter of the players and coaches surveyed actually thought a pitcher's performance could be enhanced by having Tommy John surgery," Dr. Chudik added.

During the spring of 2010, researchers surveyed 189 players, 15 coaches and 31 parents either through one-on-one interviews or by mailed questionnaires. Fifty-one percent of the high school athletes responding believed Tommy John surgery should be performed to improve performance even if there was no injury to the UCL. Thirty-one percent of coaches, 28 percent of players and 25 percent of parents did not relate pitch type with injury risk. Furthermore, 31 percent of coaches did not believe the number of pitches thrown was a risk factor for injury to the UCL. Additionally, many believed control and pitch velocity improve with surgery. Interestingly, respondents from all groups underestimated the extended rehabilitation time—as much as nine months to one year and sometimes longer—and they knew little about the surgical details of the procedure.



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According to Dr. Chudik, this research is important because of the growing number of shoulder and elbow injuries in young players from increased throwing, fatigue and overuse associated with starting at a younger age and single-sport specialization. "Countless research since the 70s studied pitch counts, pitch types, rest and their relationship to player injury. However, this is the first research that shows the necessity to address misconceptions about Tommy John surgery and how these throwing injuries can be prevented," explained Dr. Chudik.

Preliminary findings in our research (see page 6) also supports the need to educate players, families and coaches about the importance of pitch counts and resting the arm sufficiently between outings. "If pitchers can adhere to a strict schedule and pitch count, most of the overuse injuries would be eliminated," said Dr. Chudik. "Tommy John surgery isn't a means to an end for most athletes because of the recovery time and missed play, especially for amateur competitors. It can make sense is for a professional athlete, like Tommy John, who was able to extend his professional career; but even then, with every success story many of these career come backs are often limited," he added.

Superfoods or super caution?

Since 2005, the term superfood has been applied to any number of foods believed to be rich in antioxidants. Foods like berries, beans, nuts, vegetables, green tea and even dark chocolate have been dubbed good for you. However, are the titles deserved?



Researchers at Kansas State University (KSU) say additional studies need to be done before people are encouraged to increase their consumption of antioxidants because their research shows antioxidants may actually do more harm than good. "I think what a lot of people don't realize is that the antioxidant and pro-oxidant balance is really delicate," said Steven Copp, a Kansas State doctoral student and researcher on the KSU antioxidant study. "One of the things we've seen in our research is that you can't just give a larger dose of antioxidants and presume that there will be some sort of beneficial effect. In fact, you can actually make a problem worse," he added.

The research attempted to study ways to improve oxygen delivery to muscles during physical activity by using antioxidants. However, the KSU study found antioxidants actually can impair muscle function.

According to Copp, this discovery may be very important for those individuals with abnormalities in their circulatory systems as a result of aging or a disease such as chronic heart failure where

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antioxidants can impair oxygen delivery to skeletal muscles and increase fatigue during physical activity. The key is finding a balance because Copp adds, "some oxidants in our body such as hydrogen peroxide help increase blood flow."

Steven Chudik, board certified orthopaedic surgeon, sports medicine physician with the Steven Chudik MD Shoulder and Knee Injury Clinic and founder of the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF) does not want athletes to stop eating nor drinking foods rich in antioxidants, nor overload on antioxidants with supplements. "Until more research is done, athletes and consumers alike should eat sensibly and in moderation following the Dietary Guidelines of the United States Department of Agriculture (USDA) and United States Department of Health and Human Services (HHS) presented in our March *Active Bones* issue.

Preschoolers lack outdoor play time with parents

In a study published in the April 2012 *Archives of Pediatrics & Adolescent Medicine*, researchers reported half of the 8,950 preschool population they surveyed do not spend time playing outside

every day with a parent or guardian. This sample size is representative of approximately 4 million children. Guidelines from the National Association of Sport and Physical Education recommend children should get at least one hour of physical activity per day for long-term health benefits, like helping to ward off childhood obesity—a problem that has more than tripled in the past 30 years.



In interviews with the parents/guardians, less than 50 percent of moms and 25 percent of dads reported taking their child for a walk or playing outside with them at least once a day. According to Dr. Pooja Tandon, pediatrician at the University of Washington-Seattle and researcher on the study, the data makes sense because of the number of parents working outside the home. "It's not so easy to have

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outdoor playtime with your children every day even though outdoor play has been tied to a host of benefits for young kids who may not always be getting outdoor time in childcare or at preschool as some parents assume," Dr. Pooja explained.

Other findings in the study revealed 58 percent of children not in child care went outside daily and a child's odds of going outside daily were associated with the child's sex. Girls and non-Caucasian children were less likely to go outside with a parent, as were kids whose moms spent more time working outside the home. Also, children with regular playmates were more likely to go outside every day.

A major consideration not covered in the study was the type of activity the children got when they went outside. According to the Centers for Disease Control (CDC), children need at least 60 minutes of age-appropriate physical activity each day that includes aerobic activity and muscle and bone strengthening. To help meet this recommendation, with busy schedules and commitments, the CDC suggests parents/guardians consider the following:

- Set a positive example by leading an active lifestyle yourself.
- Make physical activity part of your family's daily routine by taking family walks or playing active games together.
- Give your children toys and games that encourage physical activity.
- Be positive about the physical activities in which your child participates and encourage them to be interested in new activities.
- Make physical activity fun. Fun activities can be anything your child enjoys, either structured or non-structured.
- Instead of watching television, encourage your child to find fun activities to do on their own or with friends and family, such as walking, playing chase or riding bikes.



"As parents we shape our children's attitudes and behaviors toward physical activity. Being a good role model and understanding these

physical activity guidelines and the research findings is a good start, but as the parent we need to encourage our children to be more active. Their path to a healthy lifestyle begins with us," said Dr. Steven Chudik.



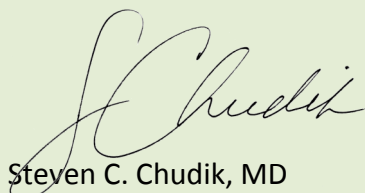
Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation helps people stay fit and healthy

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 contact me. 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.



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OTRF Founder and President

