

Active Bones

Orthopaedic Surgery and Sports Medicine
Teaching and Research Foundation Newsletter



otrfund.org

Spring/Summer 2021

Dear Readers:

When we published our Spring/Summer issue last year, we were just beginning to deal with COVID-19. Terms like pivot, new norm, long haul, positivity rates and N95 were making their way into our vocabularies and concerns. Little did we know then what a very long and trying year was ahead. But, we made it and thanks to the arrival of vaccines, hope and optimism have returned along with some freedoms like dining out, meeting with small groups and sports.

In this issue of **Active Bones**, we look at researchers' and physicians' recommendations for athletes returning to sports after a year of deconditioning and neurological and cardiology issues caused by COVID. From the coach and parent, to the athletic trainer and team physician, everyone needs to help ensure athletes are ready to return in this COVID era.

Shoulder dislocations are a common sports injury. In this issue, we examine recurrent dislocations and the special procedures and instruments I developed to arthroscopically treat a Bony Bankart lesion (fracture) that result from dislocations. The athlete in the injury story sidebar was a rugby player who had several unsuccessful surgeries before one of his teammates told him to see me. As it turned out, he was the first athlete I performed my novel Bankart technique on and you will see his shoulder is fully recovered and he is able to compete in CrossFit challenges—spoiler alert.

Our Research Roundup articles cover new findings on ways to lower blood pressure without medication and the bad news about drinking water with a citrus splash. We also included an article on smoothies and making them a healthful alternative rather than just a sweet treat.

Since COVID kept everyone out of the fitness centers and gyms, we look at the impact that had on the industry and home exercise equipment purchases. Who ever thought kettle bells and bicycles would become the next "toilet paper" hoards during the quarantine. The big question though, will people continue to exercise at home or return to their fitness centers? Also, for those with arthritis or a joint replacement, you'll want to download our new program specifically created to improve joint function and help alleviate pain.

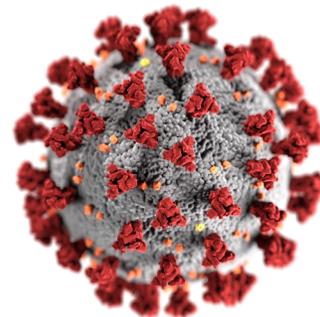
Thank you for reading **Active Bones**.

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



Returning to sports in the COVID era

A little more than a year ago no one had ever heard of COVID-19, the acronym for the name given by the World Health Organization (WHO) to the disease caused by the novel coronavirus SARS-CoV2. Not much was known about COVID at the time, but doctors and researchers continue to learn more about this fierce opponent every day.



One discovery was athletic home workout programs and virtual practices did not achieve the same level of training as in-person training. This reduced training level resulted in a loss of fitness, or “detraining.” Detraining negatively affects neuromuscular, cardiovascular, respiratory and musculoskeletal systems and occurs as early as one week after no training, according to researchers.

With sports resuming in the United States, sports medicine physicians, coaches and athletic trainers are concerned about detrained athletes returning to their sports and overexerting or injuring themselves. Researchers from Case Western Reserve University School of Medicine, University Hospitals Cleveland Medical Center and the school’s Sports Medicine Institute conducted the first sports performance research done during the pandemic. For their study, they compared injury rates of professional German soccer players before and after the quarantine.

Data collected from injury reports revealed during the 82 games played following quarantine, there were 70 injuries on 68 players that prevented game participation. This was 3.12 times higher injury percentage than prior to the pandemic (0.84 injuries per game vs. 0.27 injuries per game). Muscular strain or tear injuries were the most common—23 total. Seventeen percent of the athletes experienced an injury prior to or during their first competitive match post quarantine. Researchers also noted athletes did not experience an increased rate of injury as the season continued suggesting there was “suboptimal sports readiness following home confinement.”

However, the researchers did not consider whether some of the athletes may have had COVID prior to resuming the season. Doctors and researchers continue to learn more about the serious COVID side effects including neurocognitive changes in attention and focus—similar to those who have suffered a concussion—and cardiovascular injury from myocarditis (inflammation of the heart).

University of Kansas Health System cardiologists, neurologists, infectious disease physicians and sports medicine physicians reported their growing concerns about the side effects of COVID-19

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Return to sports

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on athletes and their safety during the return to sport because many recovered COVID-19 patients continue to experience symptoms for several months. Therefore, they noted it is important for doctors, coaches, athletic trainers and parents to vigilantly monitor athletes.

The current recommendation for symptomatic athletes with COVID-19 includes in-home isolation and discontinuation of training. They may take antipyretics such as acetaminophen (Tylenol®), but should avoid NSAIDs (Advil®, Motrin®, Aleve®) and corticosteroids (Prednisone®). The athlete may discontinue isolation when it has been ten days since the beginning of symptoms, he/she has been without a fever for more than 24 hours without the use of medication, and if his/her symptoms have resolved.

An athlete's return to sport and training after recovery depends on the severity of the illness. Athletes with mild to moderate cases should not exercise for 10-14 days to give the body time to recover and get a medical or routine pre-participation evaluation with possible EKG or cardiac screening. If cleared and symptom-free, athletes can start low intensity training as tolerated while being closely monitored. Additionally, athletes should follow a 7-10 day acclimatization period to slowly return to sport.

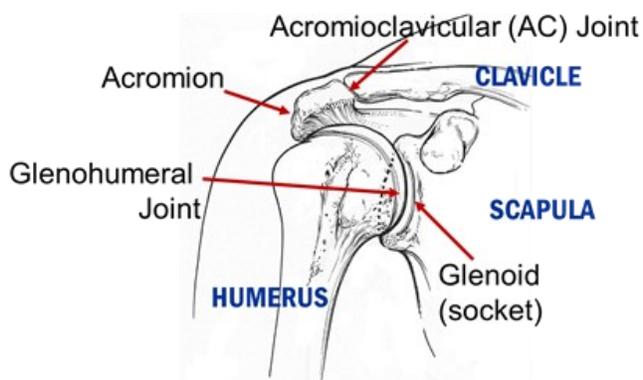
For severe COVID-19 cases, a medical evaluation is necessary with symptom screening, cardiac testing, EKG, cardiac consultation, blood draw and a 48-hour postexercise EKG before returning to any sport. Additional cardiac testing may be needed in certain situations.

A University of Kansas Health System Sports Neurologist concluded, "We still don't know enough about how safe it is for COVID-19-positive athletes to return to their sport and teams must have a good plan for monitoring athletes and have a cautious return plan in place."



When a shoulder dislocation is more than a dislocation

The shoulder possesses a remarkable range of motion, making it one of the most mobile and important joints in the body. It also is the most commonly dislocated joint in the body and the majority of the dislocations occur when the arm is forced upward and outward behind the



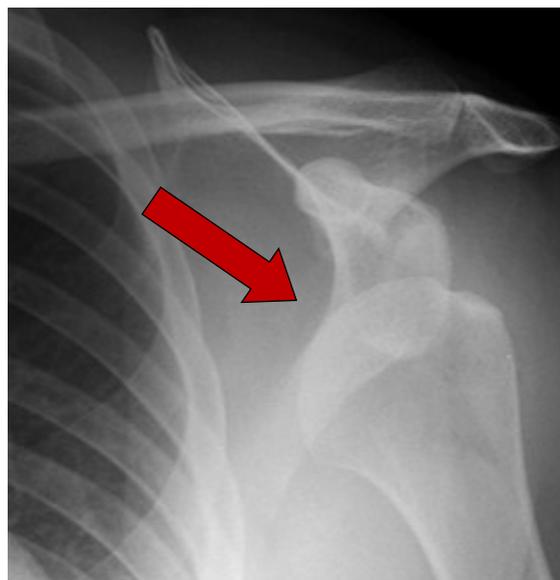
body, dislocating the humeral head (ball of the upper arm bone) out the front of the glenoid (shoulder socket). This injury tears the labrum and ligaments that help hold and stabilize the ball in the socket.

Sometimes during a shoulder dislocation, the edge of the glenoid bone fractures. This is referred to as a Bony Bankart fracture or lesion. When the Bony Bankart fracture fragment is still present and reparable,

surgery is recommended. Dr. Steven Chudik performs the surgery arthroscopically through several small incisions where he inserts special instruments he designed and a small camera to “see” and perform the fracture repair. For large fragments, Dr. Chudik created a special arthroscopic guide and approach that allows him to grasp, realign and repair the fracture back into its native position on the glenoid.

Often, resulting from recurrent dislocations, the glenoid bone can traumatically wear away and create a glenoid bone loss/deficiency problem. Glenohumeral bone loss compromises stability and without restoration of the bone loss, there is a very high re-dislocation rate even with repair of the torn labrum and ligaments.

In the past, glenoid bone loss of 20 to 25 percent was the threshold for surgical reconstruction of the bone deficiency. However, recent research shows young and active patients with glenoid bone loss of only 13.5 percent are at risk for future surgical repair of their failed soft-tissue labrum and ligaments. Therefore, new guidelines recommend glenoid bone reconstruction for even less bone loss.



X-ray of an anterior shoulder dislocation

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Shoulder dislocation

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There are multiple surgical interventions used for the treatment of shoulder instability with significant glenoid bone loss. The most popular technique is the open Latarjet procedure where using an larger open approach, the surgeon transfers the coracoid bone from the patient's shoulder along with the attached biceps muscle through the subscapularis rotator cuff muscle to reattach the prepared coracoid to replace the glenoid bone. The Latarjet procedure is effective in restoring shoulder stability, but it alters the normal anatomy of the shoulder and has a high risk for complications and creating post-traumatic arthritis.

Another option is reconstructing the glenoid bone loss with a free bone graft such as the autologous iliac crest from the patient's hip, autologous distal clavicle (collar bone) from the patient's shoulder or distal tibial allograft from a cadaver ankle. This procedure also is typically performed through a large open incision and approach, and results in injury to the subscapularis rotator cuff. A recent randomized study showed relatively no significant difference in the clinical and radiologic outcomes of the Latarjet procedure compared to the free bone grafting techniques, but the free bone grafting resulted in significantly better range of motion (external rotation) than the Latarjet procedure.



Former ruby player, Shawn Bastic, competes in CrossFit challenge after undergoing shoulder surgery developed by Dr. Steven Chudik to repair glenoid fractures caused by repeated shoulder dislocations.

As a pioneer in arthroscopic surgery, Dr. Chudik has been successfully performing a minimally invasive arthroscopic procedure he created more than ten years ago to reconstruct glenoid bone loss using the instruments he designed. The surgery recreates the anatomy of the glenoid bone and avoids the large, open approach and subscapularis rotator cuff damage in the shoulder that occurs with other repair procedures. As a result, many of Dr. Chudik's patients have benefited from his arthroscopic glenoid reconstruction surgery and returned to their pre-injury shoulder functional level.

For a patient's firsthand account of his suffering from repeated shoulder dislocations and how he ultimately underwent Dr. Chudik's novel surgical procedure, read Shawn Bastic's story on the next page.

Repeated shoulder dislocations, surgeries don't sideline former rugby player

If you've never seen a rugby game, the best way to describe it is football without helmets and pads. As a full-contact sport without protective gear, rugby players are prone to orthopaedic injuries—just ask Shawn Bastic, former University of Illinois—Chicago (UIC) and founding member of the Chicago Riot Rugby Club.

While playing rugby for UIC, Bastic dislocated his left shoulder in the fall of 2002. He completed rehabilitation and the following spring dislocated his shoulder again. "I was told by the physician that dislocations commonly reoccur," explained Bastic. "To help prevent it from possibly happening again, I opted for surgery and went through the entire rehabilitation process, again."

However, his recovery was short lived. During the next three years, Bastic dislocated his left shoulder several more times, each time requiring a trip to the emergency room and ultimately another surgery at the same highly-respected academic Chicago hospital. The repeated dislocations, surgeries and months of rehabilitation didn't dissuade Bastic from playing. "I continued to play," said Bastic. "I just wasn't ready to give up the game."



Eventually, though, the dislocations got to be too much. "My shoulder continued to dislocate frequently and at random, odd times, like reaching overhead, working out, or just doing everyday tasks," Bastic said. "I wanted to remain active, but also knew I had to do something or as I got older I was going to have even worse problems."

Fortunately, a teammate's father was an orthopaedic surgeon and referred Bastic to Dr. Steven Chudik, an orthopaedic surgeon and sports medicine physician with the Steven Chudik Shoulder and Knee Injury Clinic who specializes in shoulder and knee arthroscopic surgery. Upon examining Bastic's shoulder, Dr. Chudik ordered a 3-D CT scan that confirmed what he suspected—a damaged shoulder socket (glenoid) that wasn't repaired during previous surgeries.

"Shawn's prior surgeries failed because the surgeons missed the bony injury to the shoulder socket," Dr. Chudik said. "The socket is like a golf tee and if part of it is missing, it can't hold the golf ball in place," he explained. In the case of a glenoid, the broken portion is naturally re-absorbed so bone has to be taken from another part of the body to rebuild the socket. According to Dr. Chudik, this seldom-performed surgery is done in America through an open incision and requires cutting the rotator cuff and dislocating the shoulder. Fortunately for Bastic, Dr. Chudik developed a procedure and surgical instruments to reconstruct the glenoid arthroscopically and he was the first in the country to undergo the procedure. "Since Shawn's surgery, I've done many more all with great outcomes like his," Dr. Chudik said.

Although no longer playing rugby, Bastic remains active in the sport refereeing games in Chicago and the Midwest. He also competed in a Half Iron Man race and several CrossFit challenges that included weight lifting and rowing. "I'm doing things now I couldn't before my surgery with Dr. Chudik," Bastic explained. "I have my active lifestyle back and I'm looking forward to being able to play with my daughter as she grows up. Maybe even teach her how to play rugby," he joked.

Is home fitness the new norm?

When the COVID-19 quarantine went into effect, hoarding, online shopping and working from home became the new normal. So did exercising at home. That one lifestyle changed the home fitness business to the point many industry executives and market analysts have begun questioning whether the industry will ever return to its pre-pandemic operations. Many aren't sure.



A senior executive with the NPD Group, a national market research company, explained COVID created an instant pivot for individuals who previously exercised at fitness centers and gyms and needed to find a way to continue their workouts. “The home-fitness business took off like wildfire,” he said. “Americans spent heavily across all price points from \$3,000 cardio machines to \$20 yoga mats. They also hit the running and hiking trails in earnest,” he added.

According to NPD Group’s retail data, health and fitness equipment sales revenue more than doubled to \$2.3 billion between March to October in 2020. A prime example of a fitness company benefiting from the pandemic is Peloton. The company reported revenue of \$758 million, a 232 percent increase from the same period the previous year as a result of the increased demand for its internet-connected bikes, according to NDP Group data.

Another interactive exercise device that saw a tremendous growth in sales when fitness centers closed was The Mirror, part mirror and part LCD that streams live and on-demand exercise classes while showing the user’s reflection to help him/her maintain proper form. Its suggested retail price is \$1,495 on top of which there is a \$250 delivery and installation fee, and a monthly \$39 monthly membership—often more expensive than pre-pandemic fitness center membership fees which is raising questions whether this will impact future sales post-pandemic.

Contributing to the spike in fitness equipment revenue according to NPD Group also was a 135 percent increase in treadmill sales; a tripling of stationary bikes that depleted industry inventory; as well as making kettle bells, dumbbells, hand weights, cross-country bikes and seasonal items become the equivalent of toilet paper. There were none to be had.

“If someone was lucky to find one of the highly sought after items, chances are they paid a premium price because of price gouging,” Jesse Nicassio, founder and CEO of Juke Performance, Gyms and JN Development Group lamented. “I did not want to do that to people and still managed

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Home fitness

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to see an increase of nearly 400 percent in sales,” he said. Citing information from the eBay sales department, Nicassio explained it was “simply because the demand for fitness equipment was so high.” For example, “eBay prices for dumbbells increased 1,980 percent. Weight plates were selling at prices more than 1,300 percent above normal retail and kettlebells were 1,000 percent higher.”

Business leaders and industry observers point out COVID didn’t just disrupt businesses, but also raised an overall awareness of the need to maintain health and well-being. During the first 11



months of 2020, approximately 2.5 billion health and fitness apps were downloaded worldwide—a 47 percent jump from the same period in 2019, according to data from Sensor Tower, the leading provider of market intelligence and insights for the global app economy.

Sensor Tower data showed *Home Workout* was the most popular app—downloaded 43.5 million times and more than double its downloads from the previous year, and Strava, the GPS running and cycling app was downloaded more than 20 million times, a 129 percent increase from 2019.

Although the increased interest in staying fit and healthy is notable, one group not often mentioned in the mix is the thousands of fitness instructors who lost their jobs with the closing of private gyms, boutique studios and fitness centers, as well as from the bankruptcy of Gold’s Gym, 24-Hour Fitness and Tower Sports International.

As industry analysts and businesses ponder what’s next and can they survive, Chris Rondequ, chief executive of Planet Fitness reminds everyone that it may never be what it was before COVID-19, but “everyone has a kitchen and yet everyone still goes out to eat because it’s a little bit more enjoyable.”

Deborah Hirsch, owner of Philly Dance Fitness agrees because she believes there is live-stream fatigue, too. “Humans are social animals and need personal contact to stay motivated. I’m not worried about group fitness dying.” she said. Others agree, but think it may end up being a hybrid of fitness methods. “Guess time will tell,” Hirsch added.

Are smoothies really healthy?



Maybe, if you are mindful about the ingredients and portion size.

That’s the answer Dana Angelo White, MS, RD, ATC, a registered dietitian, cookbook author, certified athletic trainer and owner of a company that specializes in culinary and sports nutrition will tell you.

White tells clients its all about the ingredients and breaks them down into three easy to remember categories—green light, yellow light and red light—just like a stop light. Green light ingredients provide the optimum combination for a healthy smoothie. According to White these could be fresh or frozen fruit and vegetables, a protein source and a sugar-free liquid. This could be a smoothie comprised from frozen berries, Greek yogurt and coconut water, or a frozen banana with oats, chia seeds and milk. This green light group is what White refers to as the “trifecta of ingredients” because it offers a fluid, antioxidants, fiber and nutrients in a single beverage.

When using yellow light ingredients White cautions they can be delicious but large portions can send the calorie count soaring. Therefore, when adding sweetness try honey or maple syrup but be sure to measure because White says each tablespoon adds 45 calories to the count. For a liquid the addition of coconut milk instead of coconut water will add nine grams of saturated fat per one-quarter cup serving and nuts or nut butters may be healthy but a little goes a long way. Two tablespoons will add another 210 calories to the final count. And, according to White, the ever popular avocado has 250 to 300 calories so they should be used sparingly.

The last and most loved group, the red light category, White considers indulgence ingredients and limited to special occasions. These include ice cream, frozen yogurt, sherbet/sorbet, fruit juice and juice concentrates. So before selecting anything from this group, stop and think before adding to your smoothie.

For other ideas when you’re looking for a boost, White offers these suggestions:

- Use brewed green tea or espresso powder for a caffeine additive.
- Coconut water and sea salt add electrolytes.
- Prunes and wheat germ make excellent fiber sources.
- Consider adding chia seeds or flaxseed for omega-3 fats.
- For prebiotics it can be as easy as adding lentils or banana flour and for probiotics try kombucha or kefir.

Research Roundup

Research finds exercise can lower blood pressure without medication

New recommendations published in the *European Journal of Preventative Cardiology* by researchers from more than one dozen medical institutions around the world, including the University of Oxford and the University of Connecticut, revealed specific types of workouts could benefit different groups of people based on their blood pressure. This is the first research conducted to help people reduce their blood pressure.



High blood pressure, or hypertension, is defined as anything above 140/90 mmHg and more than one billion people worldwide are affected with it putting them at significant risk for cardiovascular disease and premature death. According to the researchers, people already with high blood pressure can benefit the most from aerobic training or cardio exercise. These are movements that increase heart rate and make you breathe harder while performing them such as running, swimming and cycling.

Dr. Henner Hanssen, head of preventative sports medicine at the University of Basel in Switzerland, told journalists they found these exercises can work as well or better than any one medication for treating high blood pressure.

For other blood pressure ranges, the researchers found dynamic resistance training or strength movements that incorporate multiple large muscle groups at the same time are best for people with blood pressure between 130-139/85-89 mmHg. Examples cited include body weight exercises like push-ups or air squats, as well as weight lifting movements such as front and back squats, deadlifts and presses.

People with normal blood pressure, less than 120/80 mmHg, should do planks, yoga and wall sits and other isometric resistance training that requires you to hold muscle contractions.

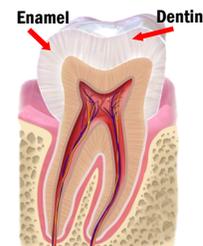
The researchers noted the exercises lowered blood pressure for about 24 hours, similar to medication, so they recommend you exercise or be active every day, if possible. They also cautioned no one should stop taking prescription blood pressure medicine and start exercising without first getting their doctor's approval.

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Research Roundup

Dentists drill down on negative effects of drinking water with citrus

Not again. You've given up soda, caffeine and energy drinks in favor of water as a more healthful choice. But, now a report out of Australia warns about the dangers of drinking water with citrus added for a little flavor—lemon, orange, lime, or grapefruit—because the citrus can erode your tooth enamel. This applies to cold and especially hot flavored water with citrus. Hot water with citrus increases the chemical reaction causing more severe erosion.



Enamel erosion is commonly caused from acid in foods and beverages. When enamel wears away, it exposes the tooth's dentin, the yellow calcified tissue layer beneath the dentin that can be sensitive if it becomes exposed and make your teeth appear indented, yellow and feel coarse against your tongue. Weak tooth enamel also creates a higher risk for cavities and other dental damage.

But don't despair. There are things you can do to limit and damage and still enjoy lemon in your water. Dentists suggest you can:

- Brush your teeth before drinking lemon water.
- Use juice from a fresh lemon rather than concentrated, commercial juices.
- Drink through a straw.
- Rinse your mouth with regular water after drinking.
- Drink cold lemon water instead of hot.

Brushing your teeth before drinking lemon water is helpful, but brushing afterwards could make the situation worse because the enamel needs time to recover. Therefore, dentists suggest waiting at least 30 minutes after drinking or eating acidic food to prevent brushing away your enamel.

OTRF releases strength, conditioning program for arthritis and joint replacements



If you have arthritis or a joint replacement, you need an exercise program specially designed to improve joint function and help alleviate pain. To address the need, Dr. Steven Chudik and his OTRF health performance team created a research-based strength and conditioning program specifically for individuals with shoulder, hip or knee arthritis, or joint replacements. To download a copy, visit <https://www.otrfund.org/programs/>. There you also will see other OTRF sport and activity-specific programs you can download.



Orthopaedic Surgery & Sports Medicine Teaching & Research Foundation

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Margaret Cochran, MS, ACT

Rebecca Pearson, ATC

Dr. Steven C. Chudik

1010 Executive Court, Suite 250

Westmont, IL 60559

Email: contactus@chudikmd.com

www.otrfund.org

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