Active Bones

Winter 2015

Dear Reader:

With the economy coming back and more and more people returning to work, I thought it might be appropriate to look at work place injuries and what influences, if any, healthcare changes and legislation are having on the injured worker, healthcare providers, employers, insurance companies and attorneys. I've seen changes in my practice on all fronts, but I'm not qualified to speak beyond those constraints so I imposed on three individuals immersed in work place injuries on a daily basis. What I quickly learned from Jeff Rogers, Chris Stout and David Ensign, executives with ATI Physical Therapy, is ***Active Bones*** is too small to adequately cover such a huge and convoluted topic. Despite that, they wrote two interesting articles; one on changes in the workers' compensation system, the other on F.I.R.S.T.™, a successful and cost-conscious program ATI developed that returns more injured workers to their jobs than physical therapy alone. My sincerest thanks to these guest authors for their insightful contributions to this issue.

An injury, at work or elsewhere, often requires future medical care. I'm periodically asked to provide estimates for future expenses, especially for workers' compensation coverage. An example of such costs for two common shoulder and knee work injuries is included as a sidebar to our guest authors' article on workers' compensation.

This issue also contains a PDF link to our newest health performance program on golf. With help from Larana Stropus, MS, ATC/L and Keith Tesch, CSCS, CNT, we created an easy warm-up and stretching program to help prevent injuries and maybe even lower your handicap. For more information on the program, or to request a paper copy, please contact me at *contactus@chudikmd.com/*.

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ORTHOPAEDIC SURGERY AND SPORTS MEDICINE
TEACHING AND RESEARCH FOUNDATION

Healthcare Reform & Workers' Comp: *The System is Complicated*

by
Jeff Rogers, Vice President of Product Management, ATI Physical Therapy,
Chris E. Stout, Director, Department of Research and Data Analytics, ATI Physical Therapy,
Dave Ensign, Director of Workers' Compensation Case Management, ATI Physical Therapy

Illinois workers' compensation (WC) is complicated, fraught with problems, in a state of flux, but necessary. Those hopeful for change are anxious to have enacted reform measures actually start. Meanwhile, legislators continue to analyze, debate, argue and defend its merits and shortcomings leaving everyone wondering—"what's next?"

Industry and economic experts point to several influential possibilities. One is whether the Affordable Care Act (ACA) will have any impact on the WC program and how the choice of medical care for conditions other than a work injury could affect a patient's WC injury. Under ACA, every state is required to offer a health insurance exchange (HIX) to its residents—either state based, federally facilitated, or through a partnership with the federal government. It is too early to tell what affect ACA will have on workers' compensation claims and or administration.

According to Joe Paduda, principal of Health Strategy Associates and a nationally recognized expert and author on managed care in group health and workers' compensation, the Affordable Care Act is just one of perhaps many WC changes on the horizon. "Specialty care is growing in impact, popularity, valuation and attention, while case management and referral services are shrinking," Paduda explained.

Other changes Paduda suggests might occur include consolidation within the industry, a growing number of medical generalists squeezing out specialists, medical management layoffs and a reduced ability to monitor legislation. "Work comp medical management will be fundamentally changed within the next two years," Paduda said. "It remains to be seen if that is a good thing."

Steve Schmutz, noted workers' compensation expert and founder and CEO of *Claimwire.com*, an online resource dedicated to WC forms, content, tools and analysis, also believes the Affordable Care Act leaves a lot still unknown—especially its impact on the current workers' compensation system. "Supporters and detractors do agree on one thing–'Obamacare' is a huge step toward the federalization of workers' comp," Schmutz told a ***Forbes*** *reporter.*

The push for WC reform has been driven largely by rising healthcare costs. Some politicians and industry executives suggest the WC system should convert to a traditional "group insurance"

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model as a cost containment solution. However, third party administrators (TPAs) are in business to make a profit which is disregarded with that type of a change. TPAs do not provide clinical care, nor do they ensure outcomes, quality, or value. They are, nevertheless, intimately involved in patient care decisions. TPAs make money by negotiating a lower rate for the healthcare provider's services and reduce the frequency of visits (i.e., limits access to care) or types of services (e.g., diagnostic tests, a limitation of service) provided to the client.

However, in a workers' compensation situation, clinicians' fees are governed (reduced/ limited) by a state fee schedule. Therefore, the only other way to decrease costs is to limit access—not an easy task for TPAs—so their solution is to create a massive operational infrastructure. This infrastructure is expensive to operate so healthcare costs unintentionally go up not because of the healthcare provider, but ironically because of the charges from those managing the costs. For example, in the Canadian healthcare system, costs associated with services such as those noted above, account for one percent of their healthcare costs. In the United States, they account for 11 percent.

To counter this, healthcare providers sometimes receive promises for increased patient referral volume. Those that opt to be part of a network usually find the utilization review too cumbersome or frustrating and drop out leaving lesser quality healthcare providers. Joe Paduda contends, "Low fee schedules deter provider participation in workers' compensation thereby reducing access to care, or the inability of the regulatory process to keep pace with medical innovation, or bill review vendors charging some payers merely to reduce provider bills to an inordinately-low fee schedule."

Greg Krohm, renown workers' compensation consultant and former executive in WC administration believes "Payment rules, like fee schedules, are devoid of financial incentives for good medicine and good treatment outcomes, including early return to work. I can think of no reason for a clinician – other than professional and moral values – to put in the extra time it takes to counsel and manage patients on tricky issues like return to work, pain management, therapeutic programs, and the prevention of re-injury," he explained. "The payment is a flat rate per billing code without regard to quality or care given."

Fee schedules also do not control costs and they do not eliminate cost differential between

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workers' compensation and group health insurances. Workers' compensation patients typically have labor intensive jobs, so the "activities of daily living" also must be adjusted to account for the physically demanding nature of their daily activities. At best, fee schedules provide short-term relief as costs eventually rise due to network abuses.

In response to this, the next evolution was to apply managed care-styled approaches to contain costs. Generally, these have resulted in delaying access to care and degrading the subsequent quality of care. Ironically, such an approach ultimately increases backend costs because of increased indemnity awards. According to Judith Green-McKenzie, MD, MPH, associate professor and program director in occupational environmental medicine at the University of Pennsylvania Perelman School of Medicine, "Containing medical costs is not an end in itself. If the cost of containment adversely affects the quality of medical care, workers will be negatively impacted, and the cost to the employers and insurers will increase as indemnity benefits rise to compensate for the consequences of diminished care."

Managed care techniques were developed within group health plans to lower cost. However in WC cases, managed care must address a different objective—restoring a worker to health and productivity at the lowest cost. This fundamental difference makes the application of managed care techniques to workers' compensation plans contentious and sometimes inappropriate. For WC managed care to succeed, the process must discover through utilization review and outcome evaluation how to change provider practice patterns to deliver better care and healthy, productive workers at the lowest cost. It also will require evaluation of the quality and appropriateness of care, and a timely return to work by injured employees.

Calculating Future Medical Care Costs

Regardless what transpires with workers' compensation reform, healthcare reform, Medicare or Medicaid, it will not change the fact that many injured workers require future medical treatment (FMT). Given the unknowns with both workers' compensation and future medical care costs, determining what those costs might be can be daunting should the injured worker elect to accept a lump sum settlement rather than keep medical compensation open.

Traditionally, calculating future medical care expenses starts by examining available data which may or may not be readily available. Dr. Steven Chudik, board-certified orthopaedic surgeon, sports medicine physician and *US News & World Report* Top Doctor in Orthopaedics with the Steven Chudik MD Shoulder and Knee Injury Clinic provides attorneys with whom he works detailed treatment and care costs for orthopaedic injuries he typically sees. This includes everything from office visits, surgery, physical therapy and even assistive devices and braces.

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"Working the past 12 years as an orthopaedic expert in shoulder and knee work-related injuries, I am frequently asked to help determine future medical care expenses," Dr. Chudik said. "Making certain an award or settlement is sufficient to cover the injured worker's medical costs is an important aspect of any case. Even with minimally-invasive surgery, each injury is different and carries some level of permanence and potential need for future care. An awareness of this need and a knowledge of current fees for medical visits, surgeries and physical therapy can help more accurately determine the amount needed to cover future care expenses," he explained.

The following are typical future knee and shoulder treatment costs for post-traumatic arthritis following common work-related injuries.

Total Knee Replacement			
Fee Source	**Misc.**	**Recommended Treatment**	**Estimated Costs**
Surgeon			$10,485.00
Anesthesia			$1,900.00
Hospital			$60,000.00
Therapy		4 months	$14,662.50
Work conditioning		4 weeks	$5,136.80
Physician visits, pre-op / post-op		6 visits	$900.00
Misc., brace, other, etc.	Knee Immobilizer		$145.00
TOTAL			**$93,229.30**

Total Shoulder Replacement			
Fee Source	**Misc.**	**Recommended Treatment**	**Estimated Costs**
Surgeon			$11,881.00
Anesthesia			$2,800.00
Hospital			$65,000.00
Physical therapy		4 months	$14,662.50
Work conditioning		4 weeks	$5,136.80
Physician visits, pre-op / post-op		6 visits	$900.00
Misc., brace, other, etc.	Ultra Sling		$235.75
TOTAL			**$100,616.05**

ATI's F.I.R.S.T.™ program effectively, safely returns injured workers to their jobs

by
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One of the biggest hurdles within the Illinois Workers' Compensation Program is getting injured workers back to work. Physical therapy rehabilitation is generally effective for workers not performing manual labor—office work, sales, education, etc.—about 80 percent of the injured population. For the remaining 20 percent—manual laborers like carpenters, ironworkers, roofers, etc.—physical therapy rehabilitation often falls short leaving them unable to return to their occupations. That is where the lesser-known rehabilitation option—Work Conditioning/ Work Hardening (WC/WH)—is recommended. The problem is many physicians and even workers' compensation professionals do not know about this option, or understand the difference between it and physical therapy.

Differences between Physical Therapy and Work Conditioning/Work Hardening

Physical Therapy	Work Conditioning/Work Hardening
Emphasis: acute injury	Emphasis: strength/function
Frequency: 2-3 times per week	Frequency: 5 times per week
60 to 90 minute sessions:	4 hours per session:
Warm-up 5-10 minutes	20-25 hours activities/week
Stretching 10-15 minutes	40-60 minutes cardio
Strengthening 20 minutes	30 minutes stretching
Manual physical therapy 20 minutes	30-60 minutes work simulation
Modalities	
2-5 hours activity/week	Return to work specific
Injury specific	

Currently, physicians prescribe physical therapy with the expectation insurance companies will continue to reimburse for those services because the patient has not improved sufficiently to return to work. Yet based on national statistics, injured workers would be better served by a safe and appropriate transition from physical therapy to a WC/WH program because of the program's return to work success rate and end objective. This is particularly important in today's changing healthcare marketplace and the rising cost of workers' compensation insurance

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for employers. Based on national figures, workers' compensation costs have more than doubled in the last 20 years in terms of percentage of payroll. Numerous strategies have been tried to decrease employer costs, but few have provided real cost-relief. One of the major problems is that few people understand the difference in handling patient care and cost structure under workers' compensation cases compared to regular group healthcare. Workers' compensation provides "indemnity benefits" that can include wage replacement and disability benefits, in addition to medical cost coverage associated with treatment. According to the state of Illinois' most recent statistics, indemnity benefits constitute 55.6 percent of workers' compensation costs, while regular medical benefits comprise only 44.4 percent of the costs to employers. Because the two are so integrally related, trying to lower costs in one without the other has not worked and overhauling both has proven too cumbersome for most states resulting in virtually no relief for employers. Consequently, work hardening and work conditioning programs have been developed and used successfully.

ATI, a prominent physical therapy provider headquartered in Illinois, developed an internationally recognized Functional Integration of Rehabilitation and Strength Training program (F.I.R.S.T.™) based on extensive research and input from orthopedic surgeons, physical therapists, athletic trainers, exercise physiologists and bio-mechanists to safely return injured workers back to the workplace. It is a customized program based primarily on the client's current level of function with an identified return-to-work end-goal in mind. The program usually is four- to six-weeks long, with four- to five-hour sessions per day. However, modifications can be made to fit a patients' needs.

The referral path for an injured worker to become a F.I.R.S.T. candidate typically follows physical therapy treatment and if he/she has:

- Reached a plateau in physical therapy,
- Has insufficient strength/tolerance compared to his/her prior functioning level, and
- Cannot meet his/her occupational physical demand level because of remaining deficits.

While F.I.R.S.T. targets all injured individuals, it is particularly helpful for those with permanent partial disability (PPD) because it is customized for each patient's current function level with a return-to-work goal in mind. PPD settlements represent approximately 28 percent of the claims filed in Illinois, but account for nearly 63 percent of the total workers' compensation costs. This means the majority of costs to the workers' compensation system result from a relatively small number of challenging cases.

In a study on the importance of improving injured workers' lifting abilities, 96 percent of F.I.R.S.T. patients achieved the medium physical demand level (able to lift 50 lbs. occasionally,

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Research Roundup

How important is breakfast?

A study published in *the American Journal of Clinical Nutrition* (AJCN) questioned the necessity of eating a nutritional breakfast to lose weight. Prior studies found people who ate breakfast generally weigh less, but did not determined if the lower body weight was due to breakfast consumption or other factors.

The AJCN study spanned 16 weeks and divided the 309 participants, ages 20 to 60, into three randomized groups: control, breakfast and no breakfast. All of the participants were trying to lose weight at the time of the study and living on their own. Of the 283 participants who completed the study, self-reported compliance was 93.6 percent for the breakfast group and 92.4 percent for the non-breakfast group. Researchers compared weight gain/loss between the groups and found breakfast consumption did not influence weight loss. The study did not address the consumption of specific foods for breakfast, quantity of food/ meals, or the timing of breakfast. Therefore, further research is needed to determine if eating a healthy breakfast aids in weight loss.

Another breakfast study published in *Nutrition Journal* compared the intake of oatmeal and cereal for breakfast. Researchers found instant oatmeal suppressed appetite and increased satiety, the feeling of fullness or satisfaction, more than old-fashioned oatmeal or oat-based cereal.

Participants were randomly assigned to eat old-fashioned oatmeal, instant oatmeal, or an oat-based cereal on three separate occasions. They were then asked to report their hunger, satiety, desire to eat and prospective intake at different times after eating breakfast. The study found those who ate instant oatmeal significantly reduced their desire to eat over the next four hours. Consuming either type of oatmeal significantly lowered prospective intake compared to the oat-based cereal. Researchers hypothesize the decreased hunger may be due to the increased viscosity of the oatmeal suggesting a more viscous breakfast, such as oatmeal instead of cereal, will help you feel full longer.

Research Roundup

Prehypertension and the risk of stroke

In the United States, one in three people have hypertension, or high blood pressure. Hypertension is classified as having blood pressure at or higher than 140/90 mm Hg. Normal blood pressure at or below 120/80 mm Hg.

What is hypertension?
Blood pressure is measured in the arteries, which carry blood away from the heart. It measures the force the blood is exerting on the arterial walls. Hypertension can be caused by a narrowing of the arteries, possibly due to a thickening of the arterial walls, or an increased blood volume in the arteries. Other causes include the heart pumping faster than usual, or with increased force.

Why are there two numbers?
Blood pressure is read as "systolic over diastolic." The systolic pressure is the blood pressure when the heart beats and is pumping blood through the arteries. The diastolic pressure is the pressure in the arteries when the heart is at rest between beats.

What are the risk factors?
Being at risk for hypertension is caused by a variety of factors. While some cannot be changed, such as age–older than 45 in men, 65 in women–race, family history and kidney disease, you have control over others. These include being overweight, not being physically active, tobacco use, high sodium intake, low potassium intake, alcohol intake, sleep apnea and stress.

What does it cause?
Hypertension is a serious matter as it can lead to increased risk of heart attack, stroke, aneurysm, heart failure, kidney failure, vision loss, metabolic syndrome and trouble with memory or understanding. Because hypertension contributes to these potentially fatal problems, it is essential to manage your blood pressure within acceptable values.

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Research Roundup

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Prehypertension occurs at a blood pressure above 120/80 mm Hg, but below 140/90 mm Hg. Recent studies found prehypertension also increases the risk for stroke and is a warning sign for hypertension. The risk increases as blood pressure increases which reiterates the importance of maintaining a normal blood pressure. With hypertension, the higher your blood pressure, the higher your risk of stroke. In order to decrease blood pressure and achieve normal blood pressure, lifestyle changes are recommended. For example, a diet with less sodium intake and increased exercise can act to decrease blood pressure. Talk to your doctor to determine your target weight as losing weight also helps decrease blood pressure. One diet to consider is the DASH diet (Dietary Approaches to Stop Hypertension). Research shows the diet lowers blood pressure by focusing on fruits and vegetables, lowfat dairy products, whole grains, fish, poultry, beans, seeds, nuts and vegetable oils while limiting sodium, sweets and red meats.

It is recommended to get your blood pressure checked once every one to two years if you are over 18, but most doctors recommend getting it checked at every visit. If you've already been diagnosed with high blood pressure, or are at risk for high blood pressure, it is important to keep a close eye on your blood pressure. Be aware of the risks of hypertension and start preventing it now.

Physical fitness' effects on children's academic performance

A study published in the *Journal of Pediatrics* showed a correlation between physical fitness and academic performance in youth. More specifically, the research team found cardiorespiratory capacity and motor ability positively correlate with academic performance.

They measured different aspects of physical fitness using a variety of tests. For example, muscular strength was measured using a maximum handgrip strength test and the standing long jump. Researchers assessed motor ability using a 4x10 m shuttle run. Cardiorespiratory capacity was calculated using the 20 m shuttle run. Finally, academic performance was measured using the children's individual grades, average grades and GPA. The letter grades were converted into numeric values for the study.

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Research Roundup

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After adjusting for different factors, researchers discovered cardiorespiratory capacity and motor ability were associated with positive academic performance. Muscular strength showed no relationship with performance in school. The participants were divided into four groups: those with no risk factors for poor academic performance, those with motor ability risk factor, those with cardiorespiratory risk factor and those with both risk factors. Children were considered part of a risk factor group if they fell below the FitnessGram standard 75th percentile.

The students who were considered a part of the no risk factor group had the highest academic scores out of the groups. There was a significant difference in academic scores between children with no risk factors and children with one risk factor, as well as between children with no risk factors and children with two risk factors.

The researchers discuss the benefits of implementing physical activity programs that include motor training. It is possible these programs would improve motor ability and also increase academic performance. One hypothesis for this is the extent of mental processing that occurs during motor tasks. Therefore, when children complete motor training tasks, they are exercising and improving their mental processing.

Additionally, muscle strength and motor ability are thought to be related to synaptogenesis. Synaptogenesis is the formation of synapses between neurons. Neurons communicate with each other via synapses, so the creation of new synapses increases neuron communication and possibly learning. Specifically, researchers propose these effects of physical activity improve children's cognitive control, cognitive flexibility and working memory.

Furthermore, cardiorespiratory capacity is said to have a positive relationship with angiogenesis. Angiogenesis is the formation of new blood vessels from old blood vessels. Researchers suggest that with increased cardiorespiratory capacity comes angiogenesis, which allows for more oxygen to be carried to the brain. This increase in oxygen could increase classroom performance by affecting learning, cognitive control and working memory.

Researchers acknowledge this study does not prove enrolling your child in physical activities will increase his/her academic performance. There may be confounding factors in the study. For example, it is possible those children who are more motivated to do well academically also are more motivated to do well on physical fitness tests. Regardless of whether physical fitness influences academic performance or not, it is still important children are active and involved. Don't forget physical activity has many other health benefits that will help keep your child healthy and ready to learn.

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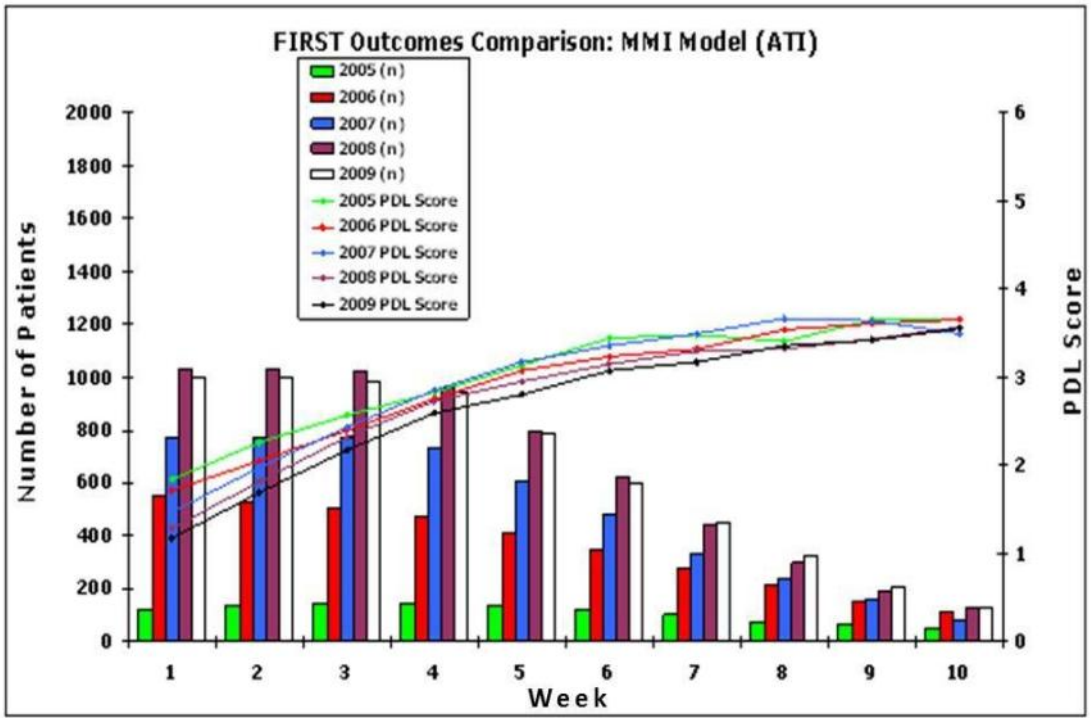
or better) and 45 percent met the heavy physical demand level (able to lift 100 lbs. occasionally) in order to return to work. Patients also were assessed one- and two-years post-program completion to determine if their improved physical abilities increased their return-to-work rates. The results showed 97 percent of those in the program returned to work and half returned to their former occupation. Re-injury rates were rare and occurred less frequently with greater physical abilities.

The following chart reflects five years of F.I.R.S.T. outcomes comparing maximum medical improvements (MMI) over ten weeks. The PDL score (Physical Demand Level) is the Department of Labor's score for the amount of work and lifting required:

0 = Sedentary work (requires the occasional lifting of 10 lbs. or less)
1 = Light work (requires lifting a maximum of 20 lbs.)
2 = Light/Medium work
3 = Medium work (Requires lifting a maximum of 50 lbs. with frequent lifting of up to 25 lbs.)
4 = Medium/Heavy work
5 = Heavy work (requires lifting a maximum of 100 lbs.)
6 = Very Heavy work (requires lifting in excess of 100 lbs. with frequent lifting of 50 lbs. or more)



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Most patients participated in a WC/WH program for six weeks or less. Those in the program more than six weeks tend to have extenuating circumstances such as multiple surgeries, occupations with very heavy requirements, multiple co-morbid conditions, etc. Additionally, at about six weeks, PDL levels tend to plateau. Beyond six weeks, there does not seem to be a significant improvement in function. This finding is consistent with what is seen in the F.I.R.S.T. clinics and the outlier population that would be prescribed more than six weeks in the F.I.R.S.T. program. People may improve occasionally past six-weeks, but generally, that occurs less frequently.

Re-injury rates also were evaluated for two years following program completion. Re-injuries were rare and occurred less frequently with greater physical abilities. Together these studies validate the F.I.R.S.T. program approach that improves outcomes by increasing physical capabilities, which then improves return-to-work rates and decreases re-injury rates. During thepast 18 years, the F.I.R.S.T. program has successfully returned more than 8,000 patients to work.

With the proven success of the F.I.R.S.T. program and the continued malaise within Illinois' workers' compensation program, incorporating a work conditioning/work hardening element into the system not only makes sense, but ultimately will help the state save money, return more workers to their jobs and help ensure those that return to their jobs are physically able and less likely to be reinjured.

F.I.R.S.T.™ is a registered trademark of ATI Physical Therapy for a work conditioning/hardening program that utilizes sports performance based methodology to return injured workers safely back to their workplace. For more information on the F.I.R.S.T. program, visit *atipt.com/services/work-conditioning/.*

Dynamic Stretching Program Improves Golf Mechanics

When you are on the golf course, have you ever noticed your swing feels better on the fifth hole than it does on the first? Or, is the first hole where you are most likely to take your Mulligan? That is because your body usually is not properly warmed up on the first hole, even if you took your time with practice swings, building to maximal effort.

One way to prevent this, and play at the top of your game even on the first hole, is to implement a dynamic stretching program before playing. Studies show using a dynamic stretching program before your round can improve your golf swing performance with regards to multiple aspects of the swing. Additionally, implementing a warm-up stretching routine helps prevent injury on the golf course.

ORTHOPAEDIC SURGERY AND SPORTS MEDICINE
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Summer 2014

Golf Warm-Up Stretching Program

Golf continues to be an increasingly popular pastime with over 29 million people playing in the United States alone. Many athletes and spectators consider golf to be a low-risk sport for injury. However, golf can cause many injuries due to both overuse and traumatic impact. Most golf injuries are due to the repetitive motion of the golf swing and include injuries to the low back, shoulder, knee, elbow and wrist. Injuries also stem from reduced flexibility and conditioning, along with poor swing mechanics. An appropriate warm-up, accompanied by proper swing mechanics can play a crucial role in preventing injury.

Dr. Steven Chadik, orthopaedic surgeon and sports medicine physician with the Steven Chudik Shoulder and Knee Injury Clinic and founder of the Sports Medicine Teaching/Research Foundation (OTRF), recommends performing a dynamic stretching warm-up before playing golf to help prevent injury. Previous studies have shown stretching and maintaining flexibility can decrease injury. Recent studies, however, suggest passive static stretching can actually be detrimental to immediate golf performance, while active dynamic stretching can increase club head speed and ball speed, result in a straighter swing path and produce more central impact points. Stretching is considered dynamic when the athlete is moving through the stretch instead of holding the stretch for an extended period of time.

Additionally, a separate study suggests a dynamic stretching routine paired with ten minutes of resistance training, such as band exercises, can give golfers even greater performance benefits such as increasing maximum driving distance, smash factor (the ratio between ball speed and club speed), and the number of consistent ball strikes.

Our warm-up golf program demonstrates nine dynamic stretches for golfers to perform before hitting the first tee. These stretches should be followed by a gradual progression from gentle swings with lower irons to full swings with the driver. For more significant performance improvements, we recommend strength and conditioning programs, along with a flexibility program, after golfing or on off days.

Precautions

As with any exercise program, it is essential to maintain proper technique during the warm-ups to receive maximum benefits and prevent injury. Seek professional help on swing mechanics to learn pointers and stay injury free.

Common Golf Injuries

- Golfer's Elbow (Medial Epicondylitis): Tendinosis (wear and tear) of the wrist flexor and forearm pronator tendons where they connect the muscles to the bone on the inner side of the elbow
- Tennis Elbow (Lateral Epicondylitis): Tendinosis (wear and tear) of the wrist and finger extensor tendons where they connect the muscles to the bone on the outer side of the elbow
- Impingement Syndrome (Rotator Cuff Tendinitis, Bursitis): Irritation or inflammation of the tendons of the rotator cuff and the bursa between the rotator cuff and the bony-ligamentous roof of the shoulder

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A study published in the *International Journal of Sports Medicine* looked at the effects of static and dynamic stretching on golf swing performance. When compared to no stretching, static stretching showed no significant effect on golf swing performance. Other studies have shown static stretching can even have a negative effect on swing performance. Dynamic stretching, however, has been shown to improve golf swing performance.

In the stretching study, participants were tested on four separate occasions. Each time the golfers were tested, they walked on the treadmill for five minutes, took practice swings for three minutes–building up to 80 percent effort for the third minute–and completed one of the stretching conditions: no stretching, static stretching, or dynamic stretching. When golfers performed a dynamic stretching program, they produced significantly greater club head speeds and ball speeds, straighter swing paths and more central impact points when striking the ball.

Dr. Steven Chudik, orthopaedic surgeon and sports medicine physician with the Steven Chudik Sports Medicine Injury Clinic and founder of the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF), along with Larana Stropus, MS, ATC/L and Keith Tesch, CSCS, CNT, created a warm-up and stretching program for golfers of any level to use before hitting the course. The research-based program provides players with nine dynamic stretches easily performed before the first hole. The program should be followed by a gradual progression of swings, starting with lower irons and working up to a full swing with a driver.

For more information or to receive either a PDF copy of OTRF's Golf Warm-Up Stretching Program email *contactus@chudikmd.com/*.

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.

Steven C. Chudik, MD
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Sports Medicine Injury Clinic

Monday Evenings

Call 630-920-2350 for an appointment

Sign Up Today!

Don't miss another issue of ***Active Bones***, an email newsletter from OTRF. Each issue contains information to help you stay healthy and live an active life with tips on injury prevention, nutrition, sports conditioning, research and newsmakers.

Simply email us at: ***contactus@chudikmd.com*** to receive the next issue of ***Active Bones***.

Please call 630-794-8668 or email us at:
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