

# Arthritis & Joint Insight

*A publication by Dr. Robert L. Lock, II*

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## Corticosteroid Injection

*The discovery that changed Arthritis*

In 1948, American biochemist Edward Kendall and American Doctor Phillip Hench set a medical landmark when they injected cortisone (substance 'E') into a rheumatoid arthritic patient. Kendall had been working since the 1930's isolating different hormones from the adrenal glands when Dr. Hench approached him about "Substance X." Dr. Hench noted that patients with severe rheumatism appeared to improve during pregnancy, periods of jaundice or following surgery. Dr. Hench hypothesized that the body released a chemical that was 'nature's dramatic antidote.' Substance X, it turns out, was a corticosteroid or more commonly known as cortisone.

Merck pharmaceutical company accepted the expensive and daunting challenge of synthesizing corticosteroid. The company, after a couple of years, was able to successfully produce corticosteroid from plant material, Mexican Yam and bile from livestock. It was at this time that Hench petitioned for a supply of the steroid to test his theory in 1948. For one week, physicians and researchers reported that patients who were injected would dance around their room after long periods of being bedridden. The discovery led to the award of the Nobel Prize in Physiology and Medicine in 1950 which was shared by Kendall, Hench, and Tadeus Reichstein, a researcher from Sweden. This historic discovery changed the face of chemistry and arthritis forever.

Cortisone, as discovered by Kendall and Reichstein is naturally produced in the body in the adrenal glands. It is released when the body is under stress. Corticosteroid injections work by decreasing the body's inflammatory response by reducing local infiltration of inflammatory cells and mediators. Corticosteroid is not an analgesic

medication, however, by decreasing inflammation, pain is also alleviated.

Areas where cortisone is commonly injected include the knee, hip, elbow, and shoulder joint. It is commonly injected into arthritic patients as well as those who suffer from bursitis, trigger finger and wrist pain. The most common site of injection is the knee joint.



Corticosteroid intra-articular injections provide a high concentration of corticosteroid hormone directly into an inflamed joint space.

The knee joint can be injected during an office visit, however, a corticosteroid injection into the hip joint must be done under fluoroscopy. Fluoroscopy (live x-ray) is used in hip joint injections for guidance in properly targeting placement of the needle. Care must be taken to avoid nerves and blood vessels. The procedure is typically performed by a radiologist or orthopedist.

As with all treatments some side effects may occur, however side effects from intra-articular injections are minimal. The most common side effect, occurring in approximately 2 percent of patients is the 'cortisone flare.' This occurs when the injection crystallizes and causes pain that may last from 12 to 48 hours. Icing the area will help to greatly reduce the pain.

Diabetic patients can experience an elevation in blood sugars and should closely monitor blood sugar levels for 24 to 48 hours after injection. Additional side effects are facial flushing and discoloration at the injection site for

## A Message from Dr. Lock



Welcome to another edition of *Arthritis & Joint Insight*. In this edition we highlight cortisone injections which are a successful treatment for arthritis.

I'd like to thank Pastor Robert Jones for sharing his passion of cycling and would encourage anyone looking for a way to exercise to consider hopping on a stationary or outdoor bike if possible.

A special thanks to Joylene & Jack Hurely and Physiotherapy Associates in Kingman for allowing us to follow Jack's progress after Shoulder Replacement.

Highlighted on the back cover is a recent surgeon training video that was shot for OrthoSoft & Zimmer at HMMC, in Kingman, Arizona. Special thanks to Chris Miller, Catherine Leveille, Gordon Goodchild, Zimmer Southwest and the Surgical Crew at Hualapai Mountain Medical Center who for months prepared for the on site video shoot.

We have recently relaunched the website. The address has remained the same, however, we have added some additional features to make navigation around the site easier.

I hope that you enjoy this edition of *Arthritis & Joint Insight*.

Robert L Lock, II, DO, FAOAO

[www.arizonajointreplacement.com](http://www.arizonajointreplacement.com)

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**Inquiries:** Please send correspondence to our Bullhead City office location or call 928-758-1175 to speak with a representative from Tri-State Orthopedics. Patients interested in appearing in "Tell your Story" should email [drrobertlock@yahoo.com](mailto:drrobertlock@yahoo.com) or call 928-234-5773 for more details.

darker skinned individuals. This discoloration is harmless and usually reversible.

To prevent infection at the injection site, practitioners clean and prep the site with alcohol and or an iodine skin preparation. Corticosteroids are injected with a needle directly into the joint space. Most practitioners will also inject a local anesthetic or numbing agent for immediate pain relief. Currently, our practice includes the use of Ethyl Chloride, often called 'freeze spray,' to dramatically reduce the pain associated with injections.

Injections are limited in our practice to no more than three per year and most practitioners limit the time between injections to decrease any deleterious effects to the cartilage or tendons in or near the joint. As can be observed in many situations, too much of a good thing is bad for you. Corticosteroids given repeatedly into a joint may cause softening of the cartilage and weaken the tendons.

Injectable corticosteroid should not be confused with illegal anabolic steroids that are often used with body builders and sports players to build muscle and bulk. Patients worry about the relationship that injectable corticosteroid has with Prednisone, which in high doses causes noticeable side effects in weight gain, fluid retention and buffalo hump. Injectable corticosteroids in our practice are limited to the joint space and unlike oral steroids, like Prednisone, do not cause the chronic tissue changes and side effects. Patients also worry that once they receive a cortisone injection, they will need to continue receiving these injections. This is not true. If successful they can be administered repeatedly. If unsuccessful this treatment is simply discontinued.

The injection may take effect immediately, however, if the arthritis is advanced or the cause of the pain is not from inflammation, the treatment may not produce any noticeable effects.

The use of corticosteroid injections can be a useful addition to the treatments for joint pain. An injection regimen is most effective when combined with other pharmacologic and rehabilitation measures, such as the administration of a non-steroidal anti-inflammatory drug, pain medication, bracing, therapy and ice. The injection of corticosteroids is a safe, inexpensive treatment for arthritic pain that has been successfully used for more than 60 years.

References: Nobel Prize Organization, AAOS, NIH & Glyn J. (1998) *Journal of the Royal Society of Medicine*, 91 (10)

# Decrease your risk for *Falls*

Research recently published in May, in the *British Medical Journal*, by the Prince of Wales Medical Research Institute in Sydney, Australia found a simple and effective way to cut the risk for falls in the elderly.

The study involved 606 individuals eighty years old, who wore multifocal glasses and were at a high risk for falling. Multifocal glasses, also called bifocal correct both close and distant vision. Studies have shown that individuals who wear multifocal glasses have a high risk of falls when outside and while stair climbing. Although the glasses are convenient, they impair depth perception which affects a person's sense of balance and make falls more likely.

Of the 606 research study participants, there was a 40 percent reduction in falls in individuals who wore a single lens compared to the multifocal glasses. The researchers divided the participants into two groups. The control group continued to wear their multifocal glasses and received no education in fall risk prevention. The study group was prescribed a single lens distance glasses and was educated in fall risk prevention. The study group was encouraged to wear their single lens outdoors and in unfamiliar situations.

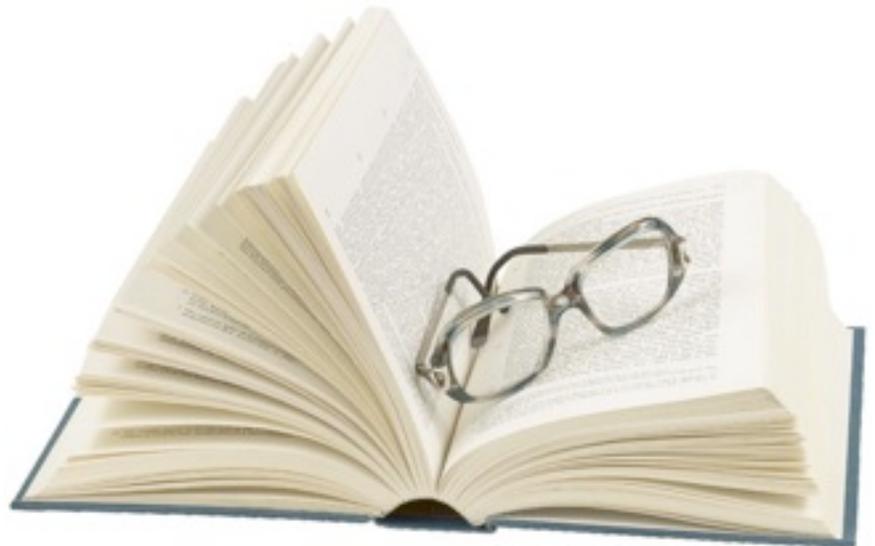
The study was conducted over 13 months. During the study nearly 350 people fell about 950 times. Of the individuals who spent more time inside and were considered to be frail and greater than the age of 80, outside falls increased with and without use of single or multifocal lenses. Researchers attributed the increase in falls to the frailty and seclusion of individuals who spend a great deal of time in their home. They also determined that those individuals do not benefit from increased teaching on fall risk prevention in outdoor situations but would benefit from a program based on in home fall risks.

An upcoming paper from the group will

detail additional findings from their study that included more non-fall related injuries in individuals who switched from multifocal to a single lens. The paper will highlight the unintended consequences of altering eyewear in the elderly which resulted in lacerations, collision and burns.

The authors encouraged the study participants to have transition lenses. Transition lenses become darker when in bright sunlight. The lenses decrease glare and are important for individuals who are active and spend a great deal of time outdoors. Research cautions users of transition lenses to be aware that it may take up to a full two minutes for the lenses tint to lighten up after being outside. Wearers are encouraged to allow for the lenses to adjust prior to walking around indoors as the reduced visual acuity increases the risks of falls and injury.

Check with your eye doctor to see if single lenses may be an option for you to help prevent falls. To learn more about fall risks log on to the Center for Disease Control to listen to a podcast: <http://www2c.cdc.gov/podcasts/player.asp?f=5812>



# For the love of *Cycling*



*Growing up in Sierra Vista, Arizona, Robert Jones, began faithfully riding his bike for his paper route around the age of 7. During his college years, at the University of Arizona studying linguistics, his bike was more for navigating around the expansive campus in the bike friendly city of Tucson. Now, at the age of 53, Robert takes to the open road, trails, and busy city streets all over the world for the love of cycling.*

Robert Jones moved to Bullhead City, Arizona in April 2009 to become the new Pastor for Community Lutheran Church. Prior to accepting this new position, Robert had served as a minister for 16 years in South Dakota. It was during this time that he began to cycle, however, due to the harsh winters his adventures were limited by the weather. "South Dakota is a beautiful part of the country and I took up cycling and canoeing as a means for dealing with stress," recalls Robert. He didn't keep his love of cycling to himself, but planned day ride trips with the children from the church. "We would pick easy rides; mostly downhill. We would bike about 15 miles and then have lunch. Then we'd load up our bikes in the van and ride back home."

When he accepted a position in a church in Cottonwood, Arizona in 1999, his love of cycling was taken to a new level. "Cycling was not limited due to the climate, so I was able to bike year round." Robert also credits the strong biking community in the area for helping him to get involved in cycling. "I became heavily involved in

assisting the city and county in planning for biking and walking trails around Hwy. 179 and the Bell Rock Pathway. It's really essential to have safe areas where families and bikers can walk or ride."

Robert has biked in Israel, Canada and 9 countries in Europe. He has biked thousands of miles around the United States in Minnesota, South Dakota, Nebraska, Arizona, Utah, New Mexico, Washington and California. During his recent summer vacation he spent part of his trip in the magnificent French Alps. He biked the legendary 21 hairpin turns of Alpe de' Huez, most notably known as the final mountain stage for the Tour de France in years past. During the second leg of his trip he traveled to England where he spent time cycling and exploring the vibrant city of London.

Cycling for individuals suffering from arthritis is an excellent option for exercise. "Cycling is a great cardiovascular workout as well as a low impact option for the lower body," explains Robert. Avoiding high impact exercises like running and skiing helps to protect the cartilage that cushions the joints. Cycling helps to define and tone leg muscles, improve range of motion, aid in weight loss and improve an overall sense of well being.

"Cycling is something you can keep up your whole life. I have an Uncle in his 70's who still bikes all across the U.S.," explains Robert. For those interested in taking up cycling Robert recommends getting the appropriate equipment. Oftentimes beginners will purchase a bike

that's too small for their frame. "There are several types of bikes available for different types of riding. Riders who have back pain or arthritis would benefit from some of the more common 'comfort' bikes, likes cruisers, recumbents and trikes." These bikes allow the rider to sit more upright, taking stress off the back and shoulders and provides better stability for those who have difficulty with balance. "Spend some time in a bike shop. Ask questions and decide which option is best suited for your needs. It's also possible to find great deals on bikes and equipment online at e-Bay or Craig's List. Often cyclists will trade up on equipment and this can allow you to get a really nice bike at a reasonable cost."

The next step after purchasing your equipment is to find a good bike shop. "Fortunately we have some good local bike shops that do a nice job with bike maintenance and repairs. I have used the shops in Kingman quite a bit and they always do a nice job."

Robert lets out a chuckle when asked how many bikes he owns. He answers honestly. "Too many. I have 6. I have a really hard time getting rid of them once I get them." His bike of choice is his Trek Madone. "The bike is lightweight and built for speed. I average about 16 to 17 mph." If his speed isn't impressive enough, Robert bikes between 5 to 8 thousand miles per year. "It sounds like a lot but it averages out to roughly 23 miles per day which is like a normal commute to work."

Robert recommends that beginning cyclist start riding in their neighborhoods or at Rotary Park. "You really need to feel comfortable with your bike before you try busy streets and riding alongside traffic." Other areas suggested for good riding in the area are Boundary Cone Rd., Colorado Blvd., Needles Highway, and Oatman Rd..

Robert hopes to start a formal cycling club in the area in the future and has already begun to advocate at the city level for safer walking and biking paths. He combines his passion for cycling and contributes to the greater good by participating in the ELCA's Tour de Rev's World Hunger Relief Program where sponsorships from church members and friends are taken for mileage logged.

He is currently gearing up for the Viva Bike Vegas on October 9th. The ride will start at the new Hoover Dam bypass bridge allowing cyclists to ride across the new bridge into Boulder City, Las Vegas and to Red Rock Canyon. The ride is 115 miles and proceeds from the event will benefit the Nevada Cancer Institute and Vegas area school's All Stars program.

## BIKE SAFETY

**ABC Safety Check your Bike each time prior to riding.**

**A:** Check the air in your tires.

Under inflated tires are dangerous.

**B:** Check your brakes

**C:** Check your chain. Make sure it is oiled, clean and in good condition.

**Protect your head and wear a Helmet!**

85% of head injuries could be prevented by simply wearing a helmet. Make sure the helmet is properly fitted and replaced every two years.

**See and Be Seen.**

Wear bright colored clothing. Have reflectors and lights installed and working properly. Avoid riding at night.

**Obey the Rules of the Road.**

Always ride WITH traffic. Stay in the shoulder or in marked bicycle lanes when possible. Stop at all stop signs. Yield to Pedestrians. Use proper hand signals. Remember 3 Rights make a Left.

*Be Predictable- Don't surprise motorists!*

**For additional information on bicycle safety visit:**

[www.bikegaba.org](http://www.bikegaba.org)



Photo Above: Robert Jones from his 2010 trip to the French Alps. Photo on opposite page: Outside the Cave Tavern in Liverpool, England, made famous by the Beatles, as part of a two thousand mile bike ride in 2008.



## Twenty years too long

Jack Hurley retired from General Motors and the hectic lifestyle of Southern California by moving to the historic, small town of Kingman, Arizona. “We really enjoyed the Bullhead City area but knew there was no way we could stand the heat. We decided to look within a 50 mile radius of the river. Somewhere with good weather. Kingman was just that place.”

He has enjoyed his retirement with his bride of 46 years, Joylene (pictured above in August 2010). The couple have been blessed with 5 children, 10 grandchildren, and 11 great-grandchildren.

The couple are very involved in their church, Kingman Assembly of God. They participate in various groups and activities throughout the year. Jack is the adult Sunday School teacher and helps out with yard work around the church. He and Joylene do the bread ministry each week. “Bread ministry is where Joylene and I go every Wednesday and pick up day old bread, pies, or cake from the store and then bring it to the church. People and families who are going through difficult times or are on a limited income are able to stop by and pick up a free loaf of bread,” explains Jack.

Jack started seeing Dr. Lock about six years ago for a painful right knee. In October 2004, Jack underwent a successful total knee replacement. His wife Joylene, in 2009 underwent left and right total knee replacements 10 weeks apart by Dr. Lock. Jack assisted his wife in rehabilitation after her recent surgeries, but soon will rely on her for support during his recovery from shoulder surgery.

Jack, at the vibrant age of 74, has decided that he’d like to get his “quality of life back” and has opted for shoulder

arthroplasty, more commonly known as joint replacement.

### *The Pain began*

Twenty years ago, while in Oklahoma, Jack slipped on ice and hit his shoulder. Since that time, he has had progressive pain and decreased range of motion. “I love the water, swimming, fishing, and rowing a boat. It has been increasingly difficult as the years go on. I am unable to do a forward stroke or cast a fishing line. I’ve had difficulty even playing card games with friends because I can’t grab cards from the stack. My arm just won’t extend. It’s so painful. I really don’t want to get to a point where I can’t use it at all.”

### *Surgery Day & Inpatient Hospital Stay*

On February 16th, 2010, a Tuesday afternoon, Jack was resting and waiting for his surgery to begin. Soon he was rolled back to one of the spacious operative suites at the new Hualapai Mountain Medical Center (HMMC).

He received a shoulder replacement. The case proved to be quite difficult due to years of profound arthritic changes and rotator cuff damage.

Jack stayed overnight at HMMC for pain control and monitoring. “Those first couple of days he was really tired and rested a lot, but he only took pain medicine for two nights and then was able to use just Ibuprofen as needed,” states Joylene.

### *Shoulder Arthroplasty*

Shoulder replacement surgery has been available in the United States since the 1950’s. The surgery is used most commonly as a treatment for severe arthritis, trauma, Rheumatoid arthritis, rotator cuff tear arthropathy and avascular necrosis.

Patients with arthritis typically describe a deep ache within the shoulder joint. Initially, the pain feels worse with movement and activity, and eases with rest. The patient's shoulder may make grinding or grating noises when moved, or the shoulder may catch, grab, clunk or lock up. Over time, the patient may notice loss of motion and weakness in the affected shoulder. Simple daily activities like reaching into a cupboard, dressing, and bathing may become increasingly difficult.

According to statistics, approximately 25,000 shoulder replacements are performed annually. This number is quite low when compared to knee and hip replacement which collectively total more than 700,000 per year.

Although not as prevalent as hip or knee replacement, shoulder replacement is a good option for individuals suffering from loss of motion and debilitating pain in the shoulder joint.

### Rehabilitation

Jack wasted little time lying around and quickly got back to getting around town. Only days after his surgery he was back at church at a special event. Although he does confess to “babying his arm,” it only took one friend giving him a good pat on the back to remind him that he had recently had a major surgery.

“At first I had to make some adjustments. I slept on my back, protected my arm, and relied on Joylene to help me a good bit.”

Three weeks after surgery the stitches were removed and Jack was able to stop using his sling. “It was nice to get out of that sling. I was ready to start using my arm again.” Several weeks later after being given the green light for increased activity, Jack started his therapy at Physiotherapy Associates, located on Airway Avenue in Kingman.

His therapist, Stacy Biddle, a Nebraska transplant, has been at Physiotherapy for almost four years. “Mr. Hurley has been making good progress. We focus on motion first and strength later. For two decades he’s had decreased range of motion and pain, so this is going to take some persistence to build up the muscle tone,” said Stacy.

Jack began his sessions under a heating pad. For 15 minutes, he sat and let the warmth of the pad relax his shoulder muscles. Once relaxed, his therapist wasted no time getting his session started. Jack began rotations of exercises aimed at increasing his motion with names like the wall walk, flexion stretch and passive pulleys.

During his session, his therapist Stacy reminded him that pain is his guide. On just his sixth visit, Jack is already at 90 degrees active and 110 degrees passive flexion.

### Six Months out

Jack, who recently underwent cataract surgery, can’t stop gushing about how much better he feels. Joylene compares his recent surgeries as going for a ‘complete overhaul.’ “I can see. I mean I couldn’t see but just a few feet ahead of me a few weeks back and after 20 years of shoulder pain, I have none,” explains Jack, “I feel like a new man. I’m so glad I had the surgery. There is no more noise. There is no more pain.”

Jack is now able to wash his hair, bathe, reach his hip pocket and pull out his wallet, button up his shirt and put on his shoes and socks. All independently and all with his left arm which for years has made all of those activities impossible. “For so many years I have had to use my right arm and right hand for everything. It’s nice to be able to use my left arm again.”

Jack still continues with aggressive therapy although he is no longer under the formal supervision of a therapist. “I am able to pay a small fee to use the therapy equipment at Physiotherapy Associates. I go three times a week. I know it will take hard work to build up my muscle strength after years of not using my arm.” Currently Jack is progressing well with active range of motion although full recovery is not expected for at least a year.

“Even if I never get great motion having the surgery was the best thing. My shoulder was so painful- lots of noise and cracking. I really had worn it out. Now, I have no pain and good motion. I’m going to keep working at it. I see improvements everyday. I’m just so glad I got it done.”

References: AAOS, AOA



*“I’m so glad I had the surgery.*

*There is no more noise.*

*There is no more pain.”*

*-Jack Hurley*

*Pictured above at Physiotherapy Associates*

# Lights, Camera, Action!



On August 12th, 2010, Dr. Lock and Edmund, P.A., filmed a surgeon training video on the Anterior Supine Total Hip Replacement featuring Computer Assistance for OrthoSoft & Zimmer Orthopedics. The filming was shot at Hualapai Mountain Medical Center, an optimal site for the production due to its bright, well lit, uncluttered, and spacious operating suites. The film crew from Indiana, as well as industry representatives, from Canada & the U.S. were on hand the day before filming for testing and biomedical inspections. After post-production the videos will be used to train orthopedic surgeons in Non-muscle cutting hip replacement with the aid of computer assistance.



Tri-State Orthopedics  
2000 Hwy. 95, Suite 200  
Bullhead City, AZ  
86442