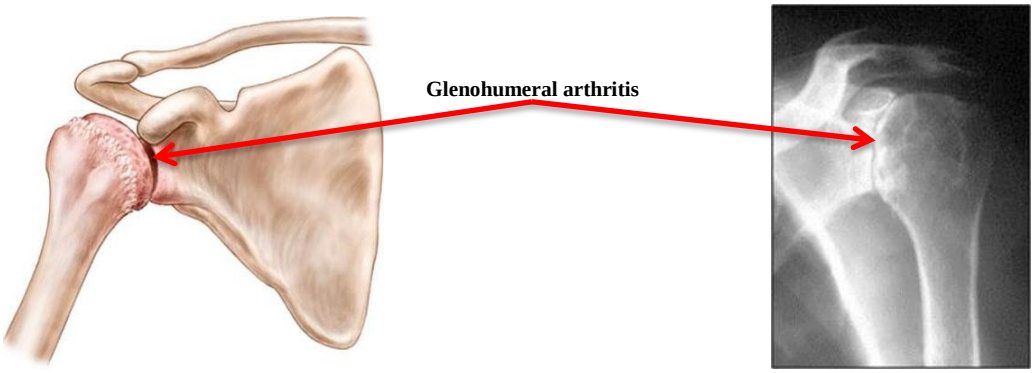
DENVER SHOULDER
www.denvershoulder.com

WESTERN ORTHOPAEDICS
1830 Franklin Street, Suite 450
Denver, Colorado 80218
www.western-ortho.com

Your diagnosis is **shoulder (glenohumeral) arthritis**.

What is shoulder arthritis?
Shoulder arthritis may be from osteoarthritis which is the inflammation and swelling that develops from normal "wear and tear" of the shoulder. Rheumatoid arthritis can also affect the shoulders and it is a chronic, autoimmune disease where multiple joints are "attacked" by the body's own immune system resulting in breakdown of the joint.

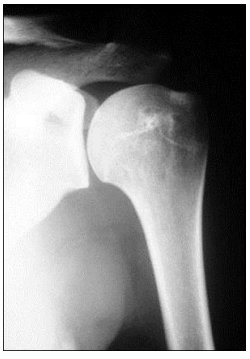


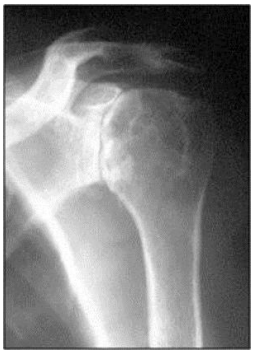
X-ray of an arthritic shoulder

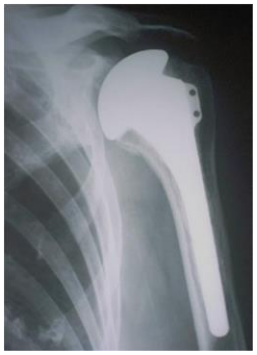
The most common symptoms of shoulder arthritis are:

- Pain – progressively worsens and is aggravated by movement
- Decreased motion
- Audible cracking and snapping sounds (crepitus)
- Night pain and difficulty sleeping

How does shoulder replacement surgery help?
In shoulder replacement surgery, the painful surfaces of the damaged shoulder are resurfaced with artificial shoulder parts. The part that replaces the ball consists of a stem with a rounded metal head (usually titanium or cobalt chromium) or a metal cap that covers the ball. The part that replaces the socket consists of a smooth plastic (polyethylene) concave shell that matches the round head of the ball. In some cases the socket is resurfaced with cadaver tissue instead of a plastic shell.


X-ray of a normal shoulder


X-ray of an arthritic shoulder


X-ray of a total shoulder replacement

Types of total shoulder replacement implants –

Standard shoulder replacement

Humeral stem and humeral head

Glenoid component

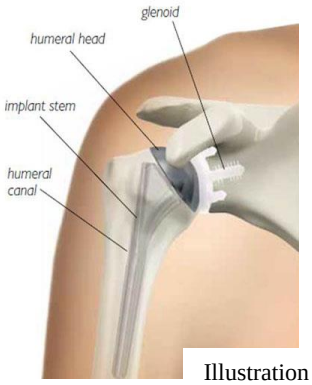
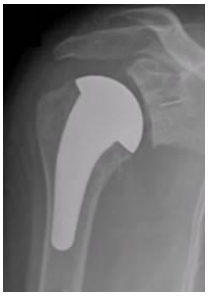


Illustration showing a standard total shoulder replacement in the body

Short stem total shoulder replacement

Short humeral stem with humeral head



X-ray of a short stem total shoulder replacement

Canal sparing total shoulder replacement

Canal sparing humeral components

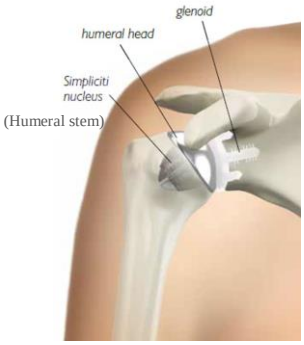


Illustration showing a canal sparing total shoulder replacement

What needs to be done before a total shoulder surgery?

The following is a general description of the pre-surgical preparation for a total shoulder replacement. **When the surgical date is determined, the surgery scheduler will provide exact details about these requirements.**

We want you to have the best surgical experience possible so knowing about your medical history, the medications you are taking, and previous surgeries helps us plan your pre-operative needs.

Surgical Clearance

A complete physical by a primary care doctor is necessary in order to be cleared for surgery. The doctor will take your medical history and order various tests that must be performed before surgery, such as blood tests, urinalysis, a chest X-ray and an electrocardiogram (EKG or ECG). The physical is usually done within 8 to 14 days before surgery in order to address any medical clearance concerns and be the most accurate assessment of a person's current state of health. The surgery scheduler will give you details as to when the pre-operative physical should be completed. Some patients may require additional clearance from cardiology or hematology.

Medications

There are medications that we may need you to stop taking before your surgery. Medications like nonsteroidal anti-inflammatories and blood thinners can lead to post-operative problem. By informing us of the medications you are taking we can better control the post-operative concerns.

Potential infection issues

It is important that you don't have any underlying issues that might place you at an increased risk for an infection. Dental procedures can be a source of bacteria entering the bloodstream and causing an infection. Managing these problems before surgery, rather than after, decreases the risk infection in the new total shoulder. For this reason, we ask any patient who will undergo a total shoulder to see a dentist for clearance prior to surgery. After a total shoulder replacement you will need one dose of oral antibiotics prior to dental cleanings.

In addition, if you develop any kind of infection prior to surgery, such as a cold or the flu, notify your surgeon immediately.

Other recommendations -

You should be in the best possible health before your surgery. If you are overweight, your doctor may suggest that you lose weight. If you smoke, it is very important that you stop prior to your surgery because smoking can change blood flow patterns and delay healing and recovery.

It is recommended that you plan for your return home prior to your admission to the hospital so that you are as comfortable as possible. Because your arm will be in a sling for the first six weeks following surgery, you should place everything in your house that you use on a regular basis at elbow level. This way you will not have to raise your arm. We encourage you to have a family member or friend with you 24 hours a day for the first week following your surgery. In addition,

make sure that you have someone to drive you home from the hospital and to your first follow-up visit, which will be one week after surgery. You will not be able to drive for six weeks while you are recovering.

Pack a small suitcase for your hospital stay that includes personal hygiene items, and loose comfortable clothing. Please leave all of your valuables, including jewelry, wallet and watches, at home. It is not necessary to bring your actual medications as the hospital will provide you with your medications; however *do bring a list of your medications and their dosages because this is important for the hospital staff to know.*

Please take a shower or bath and wash your body thoroughly preferably the morning of surgery. **Do not eat or drink anything after midnight the night before your surgery.**

After you have spoken with the surgery scheduler to establish a surgery date, you will be sent a packet of information describing timeline for all appointments. It is extremely important that you read through the information and keep the packet until after your procedure. If you have an appointment with the surgeon or his team prior to surgery, please bring the surgery packet to the appointment.

The surgery and hospital stay:

After you arrive at the hospital you will meet a pre-operative nurse who will review your medical history and start an I.V. in the opposite arm. You will meet the anesthesiologist and he or she will discuss the options for your anesthesia with you. You may get a nerve block for the surgery, known as an interscalene plexus block (ISB). The anesthesiologist will discuss this in detail with you before the surgery.

An *interscalene brachial plexus block* delivers numbing medication to the nerves in the shoulder and arm. The nerve block is temporary, lasting up to several hours. Following the operation, the medication wears off and the sense of feeling returns. It is essential you take painkillers **before** the nerve block has worn off.

You will also be getting a general anesthetic (to go fully asleep). The anesthesiologist will also discuss this with you.

Surgery:

The circulating surgical nurse will transport you to the surgical suite, where heart and blood pressure monitors will be placed on you prior the administration of the general anesthetic. Once the monitors are in place the anesthetic will be administered.

The procedure is performed through an incision over the shoulder that will expose the joint. Another incision is made through one of the rotator cuff tendons, the subscapularis tendon. Normally this is a strong tendon that can hold 5,000 pounds of pressure. This will be repaired back to the bone (humerus) at the end of the procedure. This tendon takes a long time to heal, at three months it is about 50% healed, at six months about 80% healed. This is why there is such a slow and conservative rehabilitation.

Special, precision guides and instruments will be used to cut the humeral head (ball) and prepare the bone to accept the implant. The new metal ball and stem or metal cap are then inserted. If the socket is to be resurfaced, its damaged surface is smoothed and the new plastic surface is inserted, or cadaver tissue is placed over the socket and sutured into the soft tissue around the bone. The ball and socket are then joined.

When we are satisfied with the fit and function, the incision will be closed with plastic surgery techniques (no staples) and then covered with waterproof dressings. A special drain may be inserted into the wound to drain the fluids that naturally develop at the surgical site. The surgery usually takes two to three hours.

After the incisions are closed you will be moved to the recovery room where you will be carefully monitored. As the anesthesia wears off you will slowly regain consciousness. A nurse will be with you, and may encourage you to cough or breathe deeply to help clear your lungs. Your arm will be in a sling or brace, and it may be wrapped in an ice pack or pad that circulates cold water to help control pain and swelling. You will also be given pain medication. When you are fully conscious, you will be taken to your hospital room.

Post-operative:
After the operation the shoulder and arm may feel numb. This should last for about 12-48 hours. After this the shoulder may be sore and you will be given painkillers to help this while in hospital. Another side effect of the anesthesia is that you may not be able to move the fingers or hand on the operated arm.

While in the hospital an internist physician, physical therapist, occupational therapist, and the nurses will help care for you and teach you about the rehabilitation. Dr. Hatzidakis and/or his P.A. will see you each day to oversee your care. Be sure to discuss any of your needs during your stay with the nurses.

Typically, you will stay in the hospital for two to three days, but this depends on each individual and how quickly he or she progresses. After surgery, you may feel some pain that will be managed with medication to make you feel as comfortable and should be used as needed. To avoid lung congestion after surgery, you should breathe deeply and cough frequently to clear your lungs. There is a small chance that you might need a blood transfusion after surgery therefore we will be monitoring your blood levels closely for a couple days.

Pain management:

The use of the ice machine and cooling pad can help you manage your pain, and decrease the swelling as well as the need for pain medication. We recommend using the ice or cooling pad consistently the first few days after the surgery, then intermittently for comfort.

You may have a PCA (patient-controlled analgesia) machine immediately after surgery. PCA is a method by which the patient controls the amount of pain medicine (analgesia) they receive. It is a drug-delivery system that dispenses a preset intravascular dose of a narcotic analgesic when the patient pushes a switch on an electric cord. You will also be receiving oral

narcotic medications or Tylenol to help control the post-surgical pain. (See pain medication handout).

Caring for your incision:

The incision site will be covered with a waterproof dressing so you can shower without having to cover the area. Leave this dressing in place. You will have stitches running along your wound on the front of your shoulder. These will be removed one week after your surgery, at your first follow-up appointment.

Physical Therapy:

While in the hospital a physical therapist will be working with you and your family members or friends teaching you how to do “Passive range of motion” (PROM) exercises. You will be doing these stretching exercises with someone for the first three weeks after your surgery.

Occupational Therapy:

You will be in a sling following surgery which limits what you can do to accomplish daily activities. The occupational therapist will show you how to get in and out of the sling, as well as how to accomplish many of your daily activities without using your operated arm.

At Home After Surgery:

Call Western Orthopaedics (303)321-1333 immediately if your incision swells, drains, becomes red or painful, or if you develop a temperature over 102 degrees Fahrenheit.

Your arm will still be in a sling after you leave the hospital and it is recommended that you wear it when you are in public or moving around/active and when sleeping. (Refer to the instructions at the end of this education packet for details regarding how to put the sling on.) If you are reading, watching television or working at a desk, you may loosen or remove it. You may use your arm to perform normal daily activities, such as eating, writing or shaving as long as your elbow is kept at your side, but you may not lift any items or reach out suddenly until you are instructed that it is OK to do so.

You may experience swelling and bruising of the hand and arm or you might get a small to large “lump” on the inside of your arm. This is a normal result of having your arm in a sling, and the fluid moving down the arm and into the hand. There is no treatment for this but bending and straightening your elbow frequently and making a fist to help keep your circulation flowing will help minimize this. Having someone help place your arm in an elevated position can also help decrease the swelling.

You can experience some difficulty sleeping for a while. Most people sleep in a recliner chair or propped up on a few pillows or foam rubber wedge. You will not do any damage if you sleep on your back or even on your side, but most people find this uncomfortable shortly after surgery. This should slowly resolve.

Continue using ice or the cooling pad for pain management. (Refer to the instructions at the end of this document regarding how to use the cooling pad.)

Medications:

Unless you have an allergy or other contraindications, you are instructed to take one full strength (325mg) aspirin once a day for 21 days for prevention of blood clots. **You should not use other NSAIDs for two weeks after surgery**.

Unless otherwise directed, you can return to using your previous medications and supplements when you return home. We suggest that you make an appointment with your primary care provider after surgery for evaluation and treatment of other medical problems.

You will be given a prescription for pain medication when you are discharged from the hospital. Continue to use the pain medications according to the instructions are provided. Your narcotic pain medications will not be refilled on weekends, please make arrangements prior to weekends should you need refills. Our medication refill line number is listed on the last page of this document. If you were already seeing a pain management physician prior, please follow up with that provider for continued treatment.

Physical Therapy:

Over the six weeks after your surgery you need to protect the shoulder so that the muscles can heal. Continue the passive range of motion (PROM) exercises the physical therapist taught you in the hospital for 3 weeks after surgery. Your therapy will slowly advance to “Active assisted”(AAROM) at 3-4 weeks post op and then at 6-8 weeks post op you will start “Active range of motion” (AROM) exercises. (See physical therapy protocol hand out.) You will be given a prescription for physical therapy when you are seen in the clinic 5-7 days after you are released from the hospital. We suggest that if you do not already have a therapist, to find one close to your house. They will be following the protocols prescribed post operatively.

Being physically active is an essential part of recovery. Walking with the sling on is encouraged, you may want to have someone with you as you are getting used to the change in balance while walking with your arm in a sling.

Follow-up appointments:

You should make an appointment at Western Orthopedics 1 week after surgery. It is recommended that you make this appointment before leaving the hospital. During the visit the stitches are removed and steri-strips applied. Once the stitches are out you can take a shower and let the water run over the wound. Do not go into a tub or Jacuzzi to soak the wound. Pat the wound dry after you finish showering.

During the first year following your surgery, routine follow-up visits will be scheduled with your orthopedic surgeon at one week, six weeks, three months, six months and 12 months after your surgery. You will be asked to return for annual visits thereafter to assess the status and function of your implant.

Web links:

Western Orthopaedics: www.western-ortho.com

Denver Shoulder: www.denvershoulder.com

Orthopedic Academy: www.OrthoInfo.org

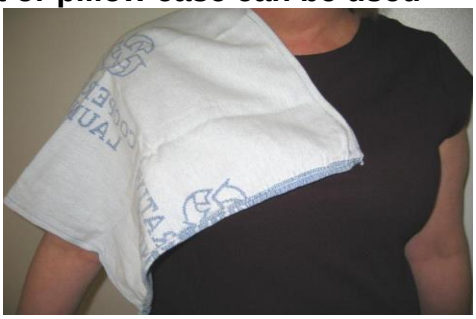
Phone numbers:
Western Orthopaedics: 303-321-1333
Medication refill line: 303-253-7313 or toll free 1-888-900-1333
Narcotic medications will not be refilled on the weekends, please arrange for your refills during normal business hours. Mon-Fri 8:30 a.m. – 5:00 p.m.

EBIce Shoulder Pad Instructions

You will be discharged from facility where your surgery took place with an EBIce Shoulder Pad cooling machine. You will be given specific instructions on when to use the machine and for how long. Generally, you should wear the shoulder pad as much as possible for the first few days after your surgery to decease the swelling, and then "on and off" as much as you want for comfort. It may be useful to wear after physical therapy to decrease pain and swelling that may occur after the activity the therapist has you perform.

Instructions on how to put the EBIce Shoulder Pad on:

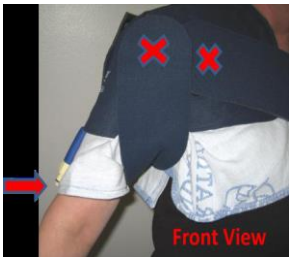
1. Apply a layer of protective covering over the affected area
*__A thin sheet or pillow case can be used__



2. Adjust the outside flaps on the pad so the pad fits comfortably and flat to the shoulder.
__*Do not allow pad to touch skin.__

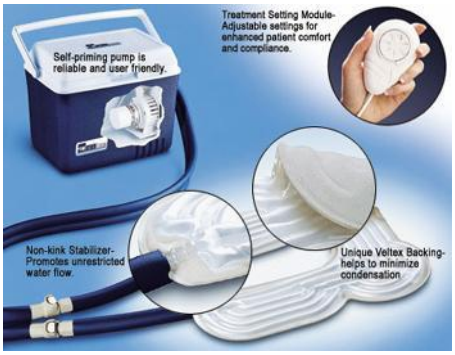
3. Connect one end of the torso strap to the back of the pad. Place the pad on the shoulder and bring the other end of the strap around the body and affix to the front of the pad. You may trim the strap if it's too long.

4) Take the shorter strap and attach one end to front overlap crease of the cooling pad. Extend the strap under the arm pit and attach the opposite end to the rear overlap crease of the cooling pad.
***It is OK to trim the straps if they are too long.**
***Please use caution when cutting the straps to avoid cutting the cooling pad.**



5) Attach pad hose connectors to the cooling unit. An audible click indicates that the connectors are secure.

6) Fill the cooler with ice and water to the fill lines. Plug the cooler into a safe power source and set the temperature to a comfortable level. See chart below for water cycles.



Water Cycles	
Cold	On for 9 seconds. Off for 91 seconds
Mid Point	On for 30 seconds. Off for 70 seconds
Coldest	On for 52 seconds. Off for 48 seconds.

Check your skin every 1-2 hours for discoloration, increased pain, or numbness. If you are experiencing any of these symptoms, discontinue using the EBIce Shoulder Pad and please notify the surgeon's staff for further instructions.

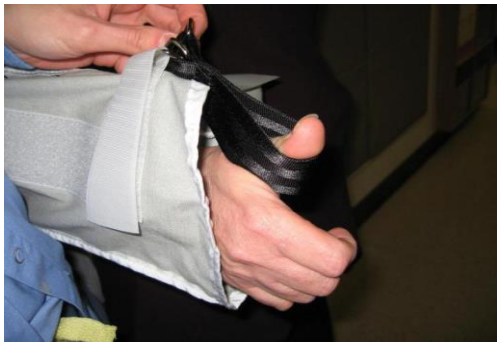
Ultrasling

You have been discharged with an Ultrasling. Follow your surgeon's specific instructions on when you need use the sling and for how long. Generally, the sling should be used when active and sleeping. If you are inactive, awake and sitting you may remove the sling. You are encouraged to remove the sling at least two times a day perform ROM (range of motion) exercises. Elbow, wrist and finger movements are also encouraged to avoid stiffness, swelling, numbness and tingling.

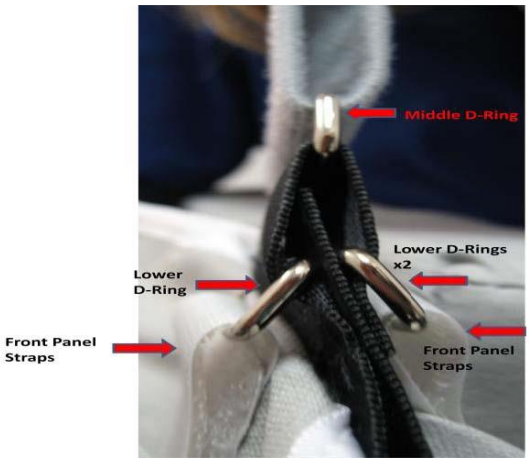
1. Detach the shoulder strap and open front panel. Place the arm in the sling with the elbow as far back into the sling as possible. Secure the front panel straps through the lower D-ring.

2. Affix the snaps along the top of the sling to secure the arm in its cradle.

3. Place the thumb through the loop inside the sling for additional support. The thumb straps should be used for comfort only. Do not use the thumb straps if it is uncomfortable.



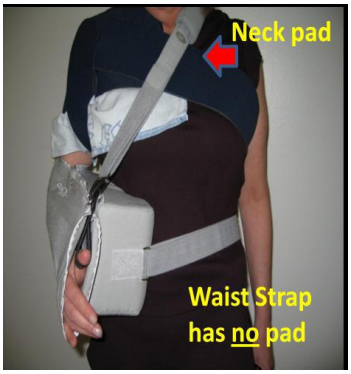
4. Bring the shoulder strap across the back and over the unaffected shoulder and fasten through the middle D-ring of the sling.



5. Make sure the pillow is at the waistline with the large end facing forward. Line up the hook and the loop strip so they adhere. Secure the waist strap through the D-ring on the front end of the pillow.

*Maintain the “gunslinger” positioning – see picture below (far right)

Back View



Front View

Gunslinger Position

If you have any questions about your sling, please call your surgeon’s staff for further instruction.

"Universal" Denver Shoulder Post-Operative Rehab Protocol

Goal: Start to regain passive fluidity in the shoulder initially without putting stress on the rotator cuff.

Biology: Multiple studies on rotator cuff healing after surgery have shown that tensile strength of the healed tendon remains weak during the initial 3-6 months post-operative. As a guideline, one can probably assume that the strength of the repair is only 30% of normal at 6 weeks postop, 50% of normal at 3 months postop, and improves to 80% of normal only at 6 months post op. Based on this scientific evidence we do not recommend significant strengthening of the shoulder until six months post-operative. Empirically, we feel that this has improved our overall long term results for patients who have had a rotator cuff repair. In addition, because the early healing phase is fragile, we recommend that the patient uses their sling on a regular basis for 6-8 weeks post-operative.

Protocol

Early Passive Phase: First 3 - 4 weeks post op.

- Patient is allowed to perform gentle PROM exercises with the help of another individual (PT or patient's family member), WITHOUT helping.
- No aggressive stretching is allowed. If the patient feels that the stretch is at the end of their comfortable ROM, then the motion is halted at that position, and held for approximately 5-10 seconds. Absolute limits include 90 degrees of FF/AB/EL, 30 degrees of external rotation, and internal rotation to the abdomen, unless otherwise specified by the treating surgeon.

In general we recommend 3 sessions per day, alternating different planes of motion, "holding" the (very light) stretch for approximately 5-10 seconds, with a maximum of 5 sets per motion.

Pool therapy: Allowed as soon as incisions are completely healed, **no earlier than 2 weeks post-operative**. The pool is the patients "assist", taking away gravity. Patient is allowed to let the shoulder "float" in the directions specified above, slowly and gradually. This can be considered "passive" ROM. If a patient has access to pool therapy, this can supplant some of their early visits to the therapist, saving more visits for later once the active phase and strengthening phase are initiated.

Active Assistive Phase: Can be initiated at 3-4 weeks post-operative, according to the instruction/discretion of the surgeon.

Our definition of AAROM is that the PROM exercises are continued, with the allowance for some light muscle contraction/"help" from the patient. As an estimate, patient should not be allowed to perform more than 50% of the effort to lift their own arm. **"Stick" exercises are NOT allowed during this phase**, as it is often difficult for the patient to control the motion without putting excessive force on the repair. Light pulley work is allowed. When in the pool the patient may start to lift their arm more actively but without any force against the water. ROM limits can be increased as tolerated GENTLY in FF/AB/elevation, but remain the same for rotation.

Active Phase: Initiated at 6-8 weeks post op, and sling may be discontinued.

- Patient can now lift and use their arm against gravity. Nothing over 2 pounds is allowed in the hand during activities. This is NOT a strengthening phase. The goal of this phase is to help the patient gradually achieve near full range of motion in elevation actively for ADL's.
- Light rotational stretching may be initiated, as a rule to a maximum of 45 degrees of ER, and IR to L5. Still, NO AGGRESSIVE STRETCHING is allowed. Pool therapy may continue, if felt to be helpful.
- Stick AAROM/AROM may be initiated.
- Scapular retraction/control exercises are allowed without weight.

The healing tissue is still relatively weak at this point, so we emphasize the importance of no significant one time load to the shoulder and no repetitive cyclical stress. This means limiting the number of repetitions of any exercise. NO ARM BIKE. Closed chain activities, such as light "wall walking and washing" are allowed, as long as the patient is not putting undue force on the shoulder.

Isometric phase: Initiated at 3 months post op.

LIGHT isometrics only. Scapular control emphasized. At this point it is important for the therapist to assess the patients AROM and fine tune it in terms of proper glenohumeral and scapulothoracic kinematics. If the patient is "shrugging" excessively then this implies either glenohumeral stiffness or rotator cuff weakness. If stiffness seems to be a problem, then more aggressive stretching exercises, in the direction of the stiffness, are allowed. If felt to be related to rotator cuff weakness, light isometric exercises, in addition to closed chain and AROM exercises, should be the focus to help the patient regain near full AROM. This is not a "go-ahead" for more aggressive band or weight strengthening exercises.

Strengthening Phase: Initiated at 4.5 months post-operative.

- Starting with band exercises and very light weights (no more than 5 pounds in the operative arm until 6 months post-operative).
- Sports specific training.

May progress gradually as tolerated without restriction after 6 months post-operative.

A NOTE ON SLING USE: The sling is meant to protect, not strictly "immobilize" the arm. The patient should always have their arm in the sling when in public places, going on walks, and at night while resting/sleeping. However, it is encouraged that the sling be removed at least 3 times per day to allow the elbow to gently extend and prevent stiffness. Hand and wrist ROM is encouraged throughout and a light "squeeze ball" may be used. When the arm is let out of the sling, we encourage that it is allowed to rest on the same sided leg/thigh, and not in the position of "protection" against the abdomen, as this can promote stiffness.