

# Orthopedic Resource Handbook



## Patients' Practical Information Guide

Over the Counter Pain Medicines  
Anti-Inflammatory Medicines (NSAIDs)  
Ointments, Creams and Gels  
Injections

Exercises for:

Knee Strengthening  
Ankle/Calf Strengthening  
Heel Cord Stretching  
Shoulder Mobilization and Strengthening  
Tennis & Golfer's Elbow  
Wrist Injury Recovery

Prepared by

Barry Blum, MD  
Orthopedic Surgeon  
Ali'i Health Clinic  
78-6831 Ali'i Drive  
Kailua-Kona, Hawaii  
(808) 747-8321

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## "OVER-THE-COUNTER" PAIN KILLERS

The most popular pain killers available without prescription ("OTC" or over-the-counter) are aspirin, ibuprofen, naproxen, and acetaminophen. Here's what you need to know about using these medicines in order to have the best results, the fewest side effects or unwanted reactions, and which medicines can or cannot be safely combined.

**ACETAMINOPHEN** (Tylenol, APAP, Paracetamol, Panadol) is a pain-killer and fever reducer. It does not reduce inflammation. It is safe for most people and does not affect the stomach or affect bleeding. It is processed in the liver and should not be taken by people with liver problems (such as alcoholics). The usual dose is one or two 325 mg tablets every 4 hours as needed. The maximum adult dose is 4,000 mg per 24 hours; and for seniors, 3,000 mg per 24 hours. It can be safely combined with just about all the other mentioned painkillers, even with aspirin, NSAIDs and narcotics.

**ASPIRIN** (Bayer, St. Joseph) is a pain killer and fever reducer. It reduces inflammation if taken in a high dose around the clock (not recommended). It can cause bleeding problems. Usual pain-killing dose is one to two tablets (325 mg) up to 3 times a day, best taken with food. Because of the risk of Reyes Syndrome (brain and liver swelling), children and teenagers recovering from chickenpox or flu-like symptoms should never take aspirin.

**NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)**. See next section on NSAIDs specifically) The two most common ones are ibuprofen (Motrin, Advil) and naproxen (Aleve, Naprosyn). Both medicines reduce pain, fever and inflammation. Unfortunately, they may slow down fracture healing. Although generally less irritating than aspirin, they should be taken with food.

**IBUPROFEN:** The usual dose for mild to moderate pain is one to two 200 mg tablets every eight hours. The usual prescription dose for inflammation is 600 mg three times a day.

**NAPROXEN** works similarly. The difference is that naproxen lasts twelve hours and ibuprofen lasts only eight. Over-the-counter naproxen (Aleve) is usually taken one to two 200 mg tablets every twelve hours. The usual prescription dose is one 500 mg tablet twice a day.

**Other NSAIDs** usually require prescriptions. That list includes: celecoxib (Celebrex), diclofenac (Voltaren), indomethacin (Indocin), ketoprofen (Oruvail), meclofenamate (Meclomen), meloxicam (Mobic), nabumetone (Relafen), oxaprozin (Daypro), piroxicam (Feldene), and sulindac (Clinoril). If one does not work for you, another might be better. All the NSAIDs and their potential risks and side effects are discussed in the next section of this booklet, entitled "Anti-Inflammatory Medicines NSAIDs."

**ALCOHOL** has been used as a painkiller for millennia. The problem is that the dose to kill pain is usually the dose that leaves you nearly unconscious. Because it affects judgment, it is not a good medicine for an injured person to use - it causes mistakes. If taken with narcotics, it can have serious consequences such as overdose and death.

**CANNABIS** (marijuana) is a prohibited substance according to federal law. It is not prohibited by Hawaii state law for individuals with certain medical conditions, but with the conflict between federal and state law, anyone using cannabis is still vulnerable to legal action. There are two main components in cannabis, cannabidiol (CBD) and tetrahydrocannabinol (THC), plus as many as 84 other cannabinoids. CBD seems to have some significant pain relieving qualities and does not create the "high" caused by THC. CBD products are mostly not FDA (Food and Drug Administration) approved but they are often helpful for pain relief. The state of Hawaii currently allows physicians to prescribe cannabis to qualified patients, but only physicians who are specifically licensed may do so. None of the Ali'i Health physicians are so licensed.



## Anti-Inflammatory Medicines (NSAIDs)

All NSAIDs are medium strength pain relievers. They are also powerful anti-inflammation drugs if used properly. Inflammation is redness, swelling, pain and local warmth that may be due to injury, to infection, and to certain medical disorders like arthritis, tendonitis, bursitis and all the other "itis" conditions. If that's your problem, using an NSAID can bring you relief and can sometimes actually cure your inflammation.

For inflammation, Dr. Blum generally recommends taking the medicine as prescribed for one week, every day, whether or not you need it that day. Take it with food. If you have a good response to this treatment, stay on this medicine for a full month. If you don't have a good response within a week, you can stop because it probably won't help. Then stop or taper the dosage (your choice). If you have unpleasant side-effects (see below), stop taking the drug. You should feel better within a day after you stop but if your reaction is severe, tell your doctor.

When you start an NSAID to treat an inflammatory condition like bursitis or tendinitis, it is helpful to take the medicine at the full prescription dose every day for a full week, whether you need it or not that day, to see if it will work for that condition. If it does, and if your goal is cure and not just temporary pain relief, you usually need to keep up that full dose for a month or two before tapering or stopping the medicine. Of course, if you have any untoward side effects at any time, you should stop the medicine.

### Risks and Side Effects

All NSAIDs have similar possible risks and side effects. About 9% of patients have some form of upset reaction in their digestive systems (stomach etc.) ranging from minor heartburn to serious ulcers. To reduce that risk it's best to take NSAIDs with food. NSAIDs act somewhat similarly to aspirin as blood thinners and so should not be used if you take warfarin (Coumadin) or other blood thinners. While NSAIDs are generally OK with your liver, they can affect your kidneys, especially if you have high blood pressure. If you use lithium or methotrexate, NSAIDs can raise the concentration of those drugs in your bloodstream and cause problems. A very small percentage of people get depressed or feel "out of sorts" on these medicines. Those feelings go away as soon as you stop taking the medicine. There have been reports that NSAIDs (but not aspirin) may increase the risk of potentially fatal heart attack, stroke and related conditions. The fact is that most individuals have no problems with NSAIDs and derive significant benefit from using them. If you have any specific concerns, please discuss them with us.

Some good news: If you need to take an NSAID in the future, you may be pleased to discover that you will need it only for a few days instead of a full month to get the desired relief. It's as if your body has a memory for the medication.

Some bad news: NSAIDs may slow down the process of healing a fracture. Tylenol is safer.

The most common NSAIDs are listed below, along with their typical prescription doses for otherwise healthy patients. Please follow the instructions on your own prescription:

Generic (Brand) Name	Typical Prescription Dosages	Maximum safe dose per 24h
ibuprofen (Motrin, Advil),	600 mg 3 times daily	1,800 mg / day
naproxen (Aleve, Naprosyn),	400 - 500 mg 2 times daily	1,000 mg / day
celecoxib* (Celebrex),	100 - 200 mg 1-2 times daily	400 mg / day
diclofenac (Voltaren),	50 - 75 mg 2 times daily	150 mg / day
indomethacin (Indocin),	50 - 75 mg 1-2 times daily	200 mg / day
ketoprofen (Oruvail),	50 - 75 mg 3-4 times daily	300 mg / day
meclofenamate (Meclomen),	50 mg every 4-6 hours	400 mg / day



meloxicam (Mobic),	7.5 - 15 mg	once daily	15 mg / day
nabumetone (Relafen),	1,000 mg	once daily	2,000 mg / day
oxaprozin (Daypro),	1,200 mg	once daily	1,800 mg / day
piroxicam (Feldene),	10 - 20 mg	once daily	20 mg / day
sulindac (Clinoril),	150 - 200 mg	2 times daily	400 mg / day

\*Celecoxib (Celebrex) is different. It is called a COX-2 inhibitor. It may have less frequent fewer stomach and bleeding side-effects than the other NSAIDs (COX-1 inhibitors) but it can cause problems.

It is always unwise to combine two or more different NSAIDs. To do so increases the likelihood of effects. Stay with one at a time. (It is OK to take NSAIDs if you're taking low-dose aspirin.)

Besides cortisone, the NSAIDs and aspirin, there are a number of supplements used for inflammation. Most patients find these less potent than the prescription medicine. They probably also have fewer effects. Some of these are: bromelain, chondroitin, fish oil, flax, ginger, MSM (methylsulfonylmethyl quercetin), and turmeric. You may wish to try some of these. There is little scientific evidence against their use.

*Disclaimer: Any and all of the medicines mentioned in this booklet can have unexpected reactions, side-effects and results that can be mild to serious and even to death. Allergies, unanticipated drug combinations, and also non-treatment can lead to problems as well. In providing this information, our office makes the best effort to educate patients about everything relevant. Nevertheless, we all understand that despite best attempts, this information may be incomplete. We invite you to ask us questions and encourage you to do your own research as well*



## Topical Ointments, Creams and Gels for Arthritis and Pain

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For painful conditions in muscles and joints, one form of treatment may be topical, with creams, ointments, gels, rubs, sprays, patches, tapes, etc.

- 1. NON-PRESCRIPTION ANALGESIC BALMS (sometimes called "liniment"):**  
 These usually contain oil of wintergreen, oil of menthol or camphor. Some cause a feeling of warmth, some a feeling of coolness. They are mild counter-irritants that cause the skin to get somewhat reddened and warm, thus bringing heat to the areas. Common balms are: **ASPERCREME, BEN GAY, DEEP HEAT, ICY-HOT, JOINTFLEX ICE, MENTHOLATUM, SALONPAS** and **TIGER BALM**.  
**CAPSAICIN CREAM:** Derived from hot peppers. Available in different strengths (0.025%, 0.075%, and 0.1% creams. Used properly (4 times a day), this drains and stops the nerve endings in the skin from sending out pain signals. Constant usage for days to weeks enables this to become most effective.
- 2. TOPICAL NSAIDS (NON STEROIDAL ANTI-INFLAMMATORY DRUGS):**  
**VOLTAREN** and **ALEVE GELS** both contain 1% diclofenac. This topical gel has recently become available without prescription. The generic versions are the same as the brand names. Diclofenac is an NSAID similar to ibuprofen. It usually provides good pain relief within minutes but does not last long. It may need to be applied 3-4 times daily. It works best on areas of the body where the skin is thin (fingers, hands, elbows and sometimes shoulders and knees). Use with caution if you are taking blood thinners.  
**FLECTOR PATCHES** (with diclofenac 1.3%) come in the form of tape to apply to painful regions.  
**PENNSAID SOLUTION** contains diclofenac 2% with DMSO, a solvent that can increase absorption through the skin. Prescribed for arthritis pain in the knees.
- 3. ANESTHETIC CREAMS:**  
 These creams and ointments contain an anesthetic (usually lidocaine) that penetrates the skin and causes skin numbness, thus reducing pain in the area where applied. Some of them are combined with other substances that may make them more pleasant to use or possibly more effective (aloe vera, other herbs). They usually do not need prescription and they are usually short-acting.
- 4. CBD (cannabidiol) oil is an active ingredient in cannabis that is derived from the hemp plant, but does not cause a high and is not addictive. No prescription needed. Some of the commercially available products also contain counter-irritant balms. CBD is often found to be effective for pain relief..**
- 5. HOT OR COLD PACKS -- or sometimes a combination of the two -- can provide relief for sore muscles and joints. Which is best? Most commonly, ice is used for the first few days -- up to a week after injury. Then heat may be better. Sometimes ice for 10 minutes followed by heat for 15-30 minutes, used twice a day, is even more effective.**

Disclaimer: Any and all of the above described medicines and treatments can have unexpected reactions, side-effects and results that can be mild to serious. Allergies, sensitivities, unanticipated drug combinations and other reactions (and also non-treatment) can lead to problems as well. In providing this information, our office makes the best effort to educate patients about everything relevant. Nevertheless, we all understand that despite best attempts, this information may still be incomplete. We invite you to ask us questions and encourage you to do your own research as well.



## INJECTIONS

A common form of treatment for orthopedic conditions may involve an injection into a joint, a tendon, near a nerve, or elsewhere. The material injected usually includes an anesthetic (to numb any pain) and some form of cortisone (to treat inflammation). Other substances are also used for injections, usually for arthritis including visco-supplementation, stem cells and PRP.

### **Cortisone:**

A form of cortisone is often used for injections into and near different joints to reduce the pain and inflammation of arthritis, tendonitis and bursitis. It is usually mixed with an anesthetic so that the injection is less painful. These injections are often effective for many months or longer. Cortisone injections cannot cure arthritis, but they can cure bursitis and tendonitis, sometimes permanently.

Although usually safe and effective, cortisone can weaken the tissues into which it is injected, especially if used too often. It can weaken the existing cartilage in a joint. A tendon injected with cortisone one too many times may rupture. Skin injected with cortisone can lose its natural pigment. Most orthopedic surgeons will limit the number of cortisone injections into any one area of the body to three times in a year.

Your adrenal glands produce the steroid hormone called cortisol. It's a natural cortisone that helps your body respond to stress or danger, increases your body's metabolism of glucose, controls your blood pressure, reduces inflammation and is also needed for the "fight or flight response" which is a healthy, natural response to perceived threats. It works by stopping the release of molecules that cause inflammation. This also stops your body from having an immune response. This may be desirable when used to prevent your body rejecting an organ transplant, but it can reduce your body's resistance to invasion by germs (bacteria, viruses, etc). If you take cortisone over a period of time, it will suppress your own body's production of natural cortisone. Used in excess or for too long it can cause thinning of the bones (osteoporosis), abnormal fat collections, acne and other serious conditions. Used properly, cortisone can save a patient's life, relieve serious pain and inflammation, relieve itching caused by insect bites or hives, and much more.

### **Visco-Supplementation injections:**

Viscosupplementation injections (Synvisc, Supartz, Euflexxa, Orthovisc) are medicines containing a gel-like fluid called hyaluronic acid which is injected into the knee joint. Hyaluronic acid is a naturally occurring substance found in the synovial fluid inside your joints that acts as an anti-inflammatory and lubricant to enable bones to move smoothly. People with osteoarthritis have a lower-than-normal concentration of hyaluronic acid in their joints. The theory is that adding hyaluronic acid to the arthritic joint will facilitate movement and reduce pain. This procedure is not effective for everyone but when it works, it can last for six months or more.

The scientific evidence for this treatment is not that strong and there is not good research on comparing the different viscosupplementation medicines available, but most of our patients have reported excellent results.

### **Stem Cells and PRP:**

Stem Cell Therapy and Platelet Rich Plasma (PRP) therapy are both regenerative medicine treatments. They encourage your body to use its natural abilities to heal injuries or other types of tissue damage or inflammation. How and whether or not these therapies work is still open to question.

Adult stem cells are found in most tissues in the adult body. In our clinic, stem cells are usually extracted under general anesthesia from your own pelvis bone but can also be extracted from your own fat, and are then concentrated in a centrifuge and injected into one of your joints.

Platelet rich plasma (PRP) therapy is based on a theory, not proven, that since platelets help with healing as well as clotting blood, the liquid portion of blood (plasma) which is centrifuged to contain a higher concentration of platelets, may help to heal damaged tendons or joints.

Stem cell and PRP therapies are considered experimental, they are expensive, and we recommend that you discuss these options with one of our orthopedic surgeons directly.





## KNEE STRENGTHENING EXERCISES

These exercises are designed to strengthen your quadriceps muscles (the muscles in front of your thigh) without irritating your knee joints or straining your back.

Lie down on your back on the bed or floor. When you exercise your knee, keep your opposite knee bent to protect your back. Lift your leg about a foot off the bed/floor, and keep that knee locked as straight as possible. Your toes should be pointing straight up. While holding your leg suspended about a foot above the floor or bed, use it as a pencil and draw the letters of the alphabet in the air. The letters should be about a foot in height. Keep the knee locked straight.

Spell the entire alphabet with one leg. Then switch legs (don't forget to keep the opposite knee bent).

Do the entire routine with both legs three different times a day: perhaps first before you get out of bed, then mid-day, then at night before you fall asleep. Start barefoot. When you get strong enough to do the whole alphabet easily, do it with shoes on. If you also repeat the exercise routine with your foot turned out 45 degrees, that makes it more challenging (and more helpful).

### **IF YOUR BACK IS REALLY SENSITIVE**

Instead of lying down flat on your back, lie down but support yourself on your elbows, or use pillows so that the small of your back is on the bed/floor, but your shoulders, neck and upper back are supported at about 45 degrees.

### **SWIMMING AS AN EXERCISE**

Swimming offers the benefit of exercise without Do it with or without fins. Keep your knees straight as you kick.

### **DO NOT DO THIS EXERCISE:**

Do not do the exercise where you sit on the edge of a bench with your knees bent down, with weights on your ankles, and you then straighten your knees from fully bent to fully straight. This irritates the knee joints. Also avoid deep knee bends. Both exercises might be OK for healthy knees, but not for knees that hurt.

**IF ANY OF THESE EXERCISES CAUSE INCREASED PAIN, OR IF YOUR KNEE DEVELOPS PROBLEMS SUCH AS LOCKING, GIVING WAY OR SWELLING, PLEASE NOTIFY YOUR ORTHOPEDIC SURGEON PROMPTLY.**



## ANKLE/CALF STRENGTHENING EXERCISES

### **"ROCK 'N' ROLL"**

Stand with your feet apart (shoulder width) and hold onto something nearby for balance. You may be barefoot or wearing shoes (on both feet). Carry most of your weight on your uninjured leg.

Then, rock forward and backward on both feet, putting the weight on your toes, then on your heels, then on your toes, etc. Start with both feet on the ground, carrying most if not all of your weight on your uninjured leg at first, while mimicking the same movements with your injured leg but with no weight on it.

Rock forward and backward 20 times in a row. Do this routine 3 times a day.

Each day, shift a little more of your weight onto your injured side as you perform these exercises.

Eventually you'll be able to put all of your weight onto your injured side as you rock back and forth 20 times. When you achieve that goal, you're "cured." In most cases, this will take about a month to achieve.

### **OTHER CALF STRENGTHENING EXERCISES**

Walk around your home on your heels for about 1 minute. Then walk around on your tiptoes for another minute. Do this routine 2-3 times a day or more. You may do this barefoot or wearing shoes.

Walking in soft dry sand also strengthens your ankles and calves. Avoid the pebbles and rocks.





## HEEL CORD STRETCHING EXERCISES

If you have a stiff ankle or foot or if you have been diagnosed by your orthopedic surgeon with one of the following conditions, these stretching exercises may help to relieve that pain:

Heel spurs, Plantar fasciitis, Achilles tendinitis, Metatarsalgia, Morton's Neuroma or Bunions

For ease of explanation, do the right leg first.

Put your hands forward onto a low platform in front of you (table, sink, car door). Put your right leg behind you, knee straight, keeping that foot and heel planted flat on the floor at all times. Place your left foot in front of you, knee slightly bent, for support.

Lean forward onto the table in front of you, like doing a push-up, bending your left knee further. Keep your right knee straight and your right heel on the floor. You will feel stretching in your right calf. Then straighten up.

Move your right foot about an inch backwards. Repeat the same process: lean forward bending your left knee, keeping your right knee straight keeping your right heel planted flat on the floor. You'll feel even more stretch in your right calf.

Move the right foot another inch backwards. Repeat the same process (always keep your right heel flat on the floor). This time, when you've leaned forward and your left knee is bent and your right ankle is really stretched, bend your right knee (keeping your right heel flat on the floor). Now you'll feel stretching lower down in your right calf. Hold it for a moment. Then straighten up.

Take your time and don't forget to breathe. This whole process takes less than 45 seconds to accomplish. Next, switch the positions of your legs and repeat everything to stretch your other leg the same way.

This exercise program should be performed 3 - 5 times a day.

### ANOTHER WAY TO STRETCH YOUR HEEL CORDS

Stand on your toes (the ball of your foot) on the edge of a curb or a step with your feet a little apart. Your heels are unsupported. **Hold on to something secure with a hand for balance.**

Gradually sink down on your heels, stretching your calf muscles. Once you are stretched, hold that position for a few moments. Don't bounce. Do this gradually, and repeat it a few times. Then do it again several more times in the day.

Think in terms of "silly putty" or Turkish Taffy. If you pull too quickly, you'll tear it. If you pull slowly, you'll stretch.



## A FEW SIMPLE SHOULDER EXERCISES

**Pendulums** [the first exercise to begin mobilizing the shoulder]:

- With the hand of your uninjured arm, hold onto a nearby surface for balance and support, like a desk or table.
- Hold a light weight (like a can of beans, or 1-2 lbs) in the hand of your injured arm.
- Bend forward letting the arm of your injured shoulder droop down towards the floor. Bend forward as far as you can.
- Move your body so that as your arm dangles downward, it moves in a circle. (Imagine that your arm is an elephant's trunk and you're swinging it gently in a circle.)
- Bend forward as far as possible. After 30 seconds, reverse the direction of the circle.

**Wand Exercises** [the next exercise to mobilize the shoulder]:

- Lie down flat, face up. OK to use a pillow.
- Hold a stick, like a broom handle, with both arms straight and your hands together over your belly at the center of the stick. Using your hand on your uninjured side for assistance, raise the stick upwards until your arms are pointing straight up (if possible).
- Keep moving the stick further upwards going up over your head and go as far as you can.
- Your goal is to bring the stick all the way up until your arms are above you, flat on the bed or floor, above your head.
- Do these movements slowly, twice.
- Then come down and grasp the stick at shoulder width. Do all of the above again (twice).
- Then come down and grasp the stick with your hands wide apart. Do all of the above again (twice).

**Angel's Wing Exercises** [this is to strengthen your shoulder girdle and help relieve pain]:

A valuable technique to relieve certain kinds of shoulder pain caused by bursitis and tendinitis is to strengthen your wing muscles (your rhomboids and trapezius), the muscles that pull your shoulder blades backward. This is also good for improving posture. Do these while standing:

- Bend forward. Hold onto a weight (1-5 lbs) with one hand. As you bend your elbow, pull the weight upwards ten times, slowly. Then do the other arm.
- While bending forward and holding onto a weight, pull the weight out to the side until the arm is parallel to the floor. Do that with your elbow stiff and straight. Do it 10 times and then do the other arm.
- You may also do these exercises with both arms at the same time.

**Using an elastic band:**

- Do these exercises standing up straight. Hold on to a rubber exercise band tied to something in front of you and pull that arm backwards. Your elbow can be straight or bent. Start with 10 times in a row, then progress to 20 times.
- Also standing up, hold an elastic band between your two hands in front of you. Pull your hands apart against the resistance of the elastic. Elbows straight or bent, also 10 to 20 times.

Don't do these exercises if they cause you more pain in your shoulder.



## TENNIS AND GOLFER'S ELBOW

- **Tennis Elbow** refers to an inflammation of the lateral epicondyle, the bump on the outside of the elbow.  
It hurts to lift something with the hand held palm down.
- **Golfer's Elbow** refers to inflammation of the medial epicondyle, the bump on the inside of the elbow.  
It hurts to lift something with the hand palm up.

These conditions may be caused by a minor injury leaving your muscles too weak to do what you want them to do, but too strong for you to stop trying. The condition can often be cured by doing certain specific exercises:

Rest your forearm along your thigh (or on a table top) with the wrist and hand free, hanging in front of your knee,

**Palm facing down for Tennis Elbow** / **Palm facing up for Golfer's Elbow.**

Hold a weight (1-3 lbs) in the hand and lift it (bending at the wrist) 50 times in a row, twice a day.

Another way to do this, exercising both elbows at the same time, for both Tennis and Golfer's Elbow, is to use an "Exer-Stik\*" (or equivalent device) as follows:



- Hold the Exer-Stik in both hands in front of you. Keep your elbows bent about 90°
- Twist one way, then the other, 50 times in a row, twice a day
- Set the tension (by tightening the screw at the end of the device) so that you can do 50 twists, but more would be too uncomfortable

After a week of exercising, you should expect to feel worse than ever before. After two weeks you should feel cured. Keep doing the exercise for at least a month so that the condition doesn't return.

\*Our office doesn't carry the Exer-Stik but you can search on Google for the device or something similar.

Here are some other things you can do to help heal the condition, or make it hurt less while you're doing these exercises:

- **Ice** is usually helpful, applied to the sore spot at your elbow. Sometimes, 5 minutes of ice followed by 15 minutes of heat is even better.
- **Analgesic balms**, like Ben-Gay, Tiger Balm, Deep Heat, etc., can help.
- **Anti-inflammatory medicines** can help. These are usually needed to be taken regularly for a full month to get the best result.
- **Tennis Elbow straps** (worn just below the elbow) can often help you to feel better – at least temporarily.
- If these measures fail, you might respond favorably to a **cortisone injection**.

## EXERCISES FOR THE WRIST FOR RECOVERY AFTER FRACTURE OR INJURY

### 1. SQUEEZING A BALL

Hold a tennis ball in your hand and squeeze it about 100 times a day. For 50 of the squeezes hold the ball in the palm of your hand; for 50 of the squeezes grip the ball with your finger-tips.

### 2. ROTATIONS

- Do both hands at the same time keeping your elbows tucked to your sides at all times.
- Rotate your hands slowly so that your palms are face down, then face up, then face down, etc. Do this for about 5 repetitions.
- Remember to keep your elbows tucked against your sides.
- As time passes and this becomes more comfortable, force yourself to rotate further.
- Eventually you may begin to use your uninjured hand to assist your injured wrist to rotate further - as follows:.

Grasp your forearm just above (i.e. closer to the elbow) the place on your wrist where you broke the bone. As you also use the internal muscles of the injured wrist to rotate, use the uninjured hand as a helper to force more rotation.

Your goal is to be able to fully rotate the palm until your hand is flat facing upward (supination); and be able to fully rotate it down with the palm facing downward (pronation).

### 3. UP-DOWNS

Do this exercise with your elbows tucked against your sides. Hold your palms facing downward.

First, please notice that when you bend your wrist and hand upward (this is called **extension**), those fingers naturally curl; and when you bend your wrist and hand down (this is called **flexion**), your fingers naturally straighten. Try this first with your uninjured hand.

Now, using both hands at the same time, extend your wrists and hands upwards. Force it, using your own muscles (allowing your fingers to curl). Then flex your wrists and hands downward. Force it (allowing your fingers to straighten). Do this for about 5 repetitions.

Do a set of each of these exercises in the morning; at mid-day; and in the evening. Take about 5 minutes for each session. It should not hurt; just feel like you're overcoming stiffness.

If your doctor tells you that you are mostly healed but you are still wearing a removable splint:

You may usually start exercise #1 (Squeezes) while you are still using your wrist splint and then continue them after you have stopped using the splint.

You may usually start exercise #2 (Rotations) while you are still using your wrist splint but you will be limited until you can remove the splint for exercising.

You won't be able to do exercise #3 (Up-Downs) while you are wearing your wrist splint. Wait until you are permitted to remove the splint for exercise #3.

**Ask your doctor or MA to demonstrate these exercises if these instructions aren't clear for you.**