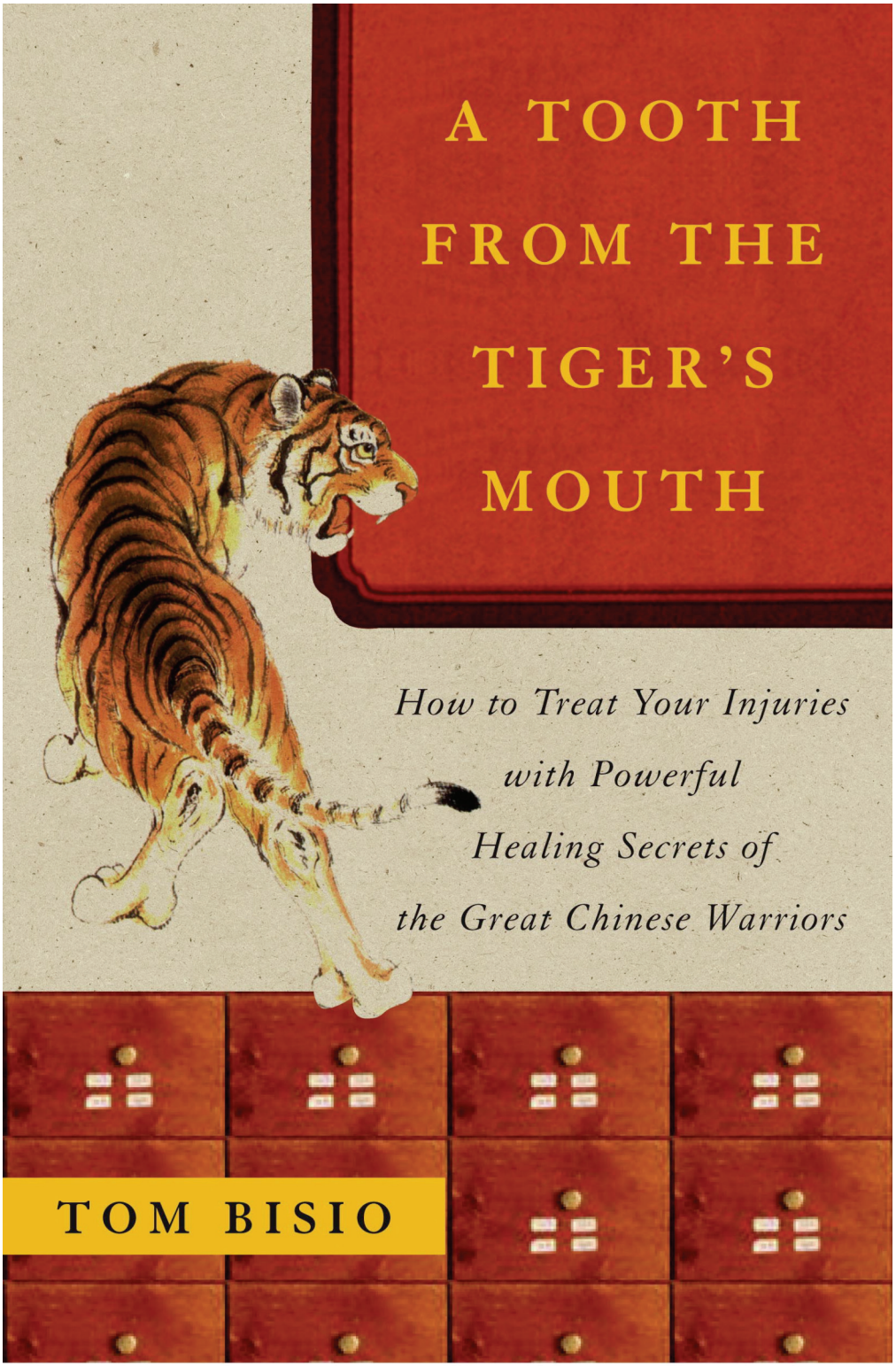
Sports Injuries and Ice
Excerpt from *A Tooth From the Tiger's Mouth*



Anatomy of an Injury - East & West

An ankle sprain serves as the perfect model to begin this comparison and to examine injuries and how they heal. Not only is an ankle sprain one of the most common sports injuries, it can happen just crossing the street. Anyone who has had a badly sprained ankle knows how painful they can be. Ankle sprains can be slow to heal and often prevent or interfere with athletic activities, for a long time afterward. Many of the principles used to treat sprained ankles apply to other joint, tendon and muscle injuries.

When you sprain an ankle there is usually a tearing, wrenching sensation, followed almost immediately by pain and weakness. Ankle sprains most often occur because the foot is tipped inward so that the body weight falls on the outside edge of the foot, straining or spraining the ligaments on the outside of the ankle. Sometimes the pain dissipates in a minute or two and the ankle seems okay, only to swell and become more painful over the next 20-30 minutes. Sprains are usually considered ligament injuries. Ligaments are made up of fibrous connective tissue connecting bone to bone. Ligaments help to maintain the integrity of the joint. However in most sprains muscles and tendons are injured as well.

Ligaments: Fibrous connective tissue connecting bone to bone. Ligaments are instrumental in maintaining joint integrity.

Tendons: Fibrous connective tissue found at the ends of muscle, Connecting muscle to bone.

Muscles: Contractile connective tissue that has the ability to contract or shorten, pulling on tendons to create movement.

Sprains and most muscle and tendon injuries are usually classified by their degree of severity.

Grade 1 Sprain:

Stretching of a few fibers with minimal tearing of those fibers

Grade 2 Sprain:

Partial tearing of fibers. Often a hole or a slight dent can be felt in the fibers.

Grade 3 Sprain:

Extensive or complete rupture. Grade 3 sprains also include tearing a tendon or ligament off the bone.

Inflammation and Swelling

When a sprain occurs there is usually inflammation. Blood flows into the injured area and it swells with blood and tissue fluids. The result is the injured area feels hot to the touch, and there is local redness, swelling and pain. The redness and sensation of heat are caused by the dilation of arterioles and other small blood vessels as well as greater vascular permeability which serve to increase the amount of blood brought to the local area. Blood and fluids back up in the tissues causing swelling. The blood brings with it white blood cells in order to clean up dead tissue and fight possible infection. Nutrient building blocks are also brought to the local area, where they attempt to initiate the healing process and rebuild damaged tissue. Most of the initial swelling is actually blood from broken blood vessels that lace the soft tissue around the joint. As ligaments and tendons stretch and tear, blood from ruptured blood vessels becomes trapped in the local tissues.. Inflammation is an important part of the healing process. It is also the body's attempt to "splint" the injury thereby protecting it from further trauma. The problem is that this splinting with blood and fluids blocks normal circulation and prevents movement. It also causes tissues that were not normally in contact with one another to rub together. This can lead to further inflammation and irritation.

One other complication common to sprains is that bones can be slightly displaced. In ankle sprains the talus bone will often move out of its normal alignment as tendons and ligaments are stretched. Sometimes it will not seat evenly again, when it snaps back. It will then remain slightly out of alignment often undetected by x-rays and MRI, causing continued pain and weakness in the ankle even after the inflammation is gone.

With sprains, strains, and even with fractures it is important to reduce swelling as quickly as possible so that further irritation and inflammation can be prevented and rehabilitation can begin. Most people are familiar with how thin a broken arm or leg looks when the cast comes off after 6 weeks. What they don't realize is that muscle atrophy begins after only a few days of restricted movement. The less atrophy that occurs the less weakness there will be later. It is often this weakness that prevents the athlete from returning to their sport and sets them up for re-injury. This can become a vicious cycle of chronic inflammation, atrophy, pain and weakness and repeated injury.

By moving the body, and therefore the muscles, tendons and ligaments, joint stiffness and weakness are significantly reduced. Movement also increases blood circulation through injured tissue and back to the heart clearing away dead cells and reducing swelling, thereby allowing healing to occur. Additionally movement, stretching and strength training correct muscle imbalances that may have made the area more vulnerable to injury.

RICE: Treatment of Choice in the West

The western treatment for reducing this kind of inflammation is known as **RICE: Rest; Ice; Compression; Elevation.** It is usually recommended to begin RICE in the first 24 hours after the injury.

Rest is obvious. Continued activity may further inflame and irritate the injury.

Ice contracts the blood vessels in the local area, reducing swelling. It reduces pain and cools the heat of the inflammation. In Western medicine ice is universally recommended for all kind of inflammation including the inflammation present in chronic injuries. In Chinese medicine it is almost never used and is considered a culprit in joint injuries that don't heal properly, because cold causes contraction of the muscles and tends to freeze and congeal the fluids that cause swelling, ultimately preventing their complete re-absorption.

Compression limits swelling. Usually an elastic bandage is wrapped around the injured area in order to compressing the tissues, thereby limiting blood flow into the area. This is contrary to Chinese medicine, where such constriction is felt to cause blood to stagnate and congeal above and below the injury. This slows the re-absorption into the blood vessels.

Elevation involves simply raising the injured part above the level of the heart to let the force of gravity aid in draining excess fluid. This method is also employed in Chinese sports medicine.

Once inflammation and swelling are reduced treatment is directed at restoring movement and circulation to the injured area through gentle movement and exercise. Sometimes after the first 24-48 hours of RICE, when the swelling has stabilized, contrast baths (alternating hot and cold baths) are recommended. Contrast baths cause an alternating contraction and dilation of blood vessels in the local area which serves to pump blood and fluids through the injured tissue. This helps restore normal circulation to the local area.

The Chinese Sports Medicine View: ICE IS FOR DEAD PEOPLE

In 1984 I trained in Taiwan with Hsu Hong Chi, my teacher's teacher in Xing-Yi kung fu. Known locally as "Magic Hands", due to his skill in setting bones, Master Hsu was one of those rare teachers whose incredible skills are enhanced by his wisdom and humor. One day after training I watched as he treated a fellow student with an ankle sprain. When I mentioned the idea of using ice to reduce the swelling, he responded with the simple statement, **"ice is for dead people."** I remember being taken aback by this blunt off-hand remark, and yet it reflects the common sense approach of Chinese medicine.

Ice is very useful for preserving things in a static state. It slows or halts the decay of food and dead bodies, but does not help damaged tissue repair itself. Ice does reduce the initial swelling and inflammation of a fresh injury, and it does reduce pain but at a cost. Contracting local blood vessels and tissues by freezing them inhibits the restoration of normal circulation. The static blood and fluids congeal, contract and harden with icing, making them harder or impossible to disperse later. It is not uncommon to see a sprained ankle that was iced still slightly swollen more than a year after the original injury.

Cold causes contraction of the muscles. When you go out on a cold day the muscles automatically contract to produce warmth. You can feel how the body literally draws into itself when exposed to the cold.. Every athlete knows that it is harder to stretch and easier to pull a muscle in cold weather. Icing an injured area causes further contraction in muscles, ligaments and tendons that are already contracted in reaction to being over stretched. This further slows the natural healing process and prevents the return of normal movement.

In Chinese medicine there is an idea that cold and damp can penetrate into areas of the body where the vital energy has been compromised. This can lead to an arthritic type of pain which often increases with

weather changes and is difficult to treat. I still rue the day I iced my fractured patella. It has taken years of treatment to prevent it hurting with cold and rainy weather.

The Many Alternatives to Ice in Traditional Chinese Medicine

So why is ice used so extensively? It is a mystery to me especially when you consider that Chinese sports medicine offers 5 alternatives which, when used together, reduce swelling and inflammation, and restore normal circulation quickly, without any of the unwanted effects produced by icing.

1. Emergency acu-points to move energy, kill pain and stimulate circulation. (Chapter 13)
2. Cupping and Bleeding the local area to actually draw out and disperse blood and fluid that is coagulating and blocking normal circulation. Often this immediately reduces pain. (Chapter 9)
3. Self massage with liniments such as Trauma Liniment that move the blood, reduce inflammation and kill pain. This helps to remove static fluids and blood from the area, reducing swelling. (Chapter 10)
4. Energetically cooling herbal poultices and plasters that reduce inflammation , but also stimulate circulation and help torn muscles and tendons to heal. (Chapter. 11)
5. Herbal pills or powders that are taken orally to promote blood circulation and prevent blood from stagnating further. (Chapter 15)

****If you must use ice, or if nothing else is available, try and apply it for only 10 minutes out of every hour. This will help reduce the swelling, but minimize the negative side effects.**

The Chinese Sports Medicine Approach To Injury

This mechanical approach that Western medicine uses to diagnosis and treat ankle sprains is useful and in many ways similar to Chinese medicine, but beyond RICE, it does not give the athlete many tools to work with in rehabilitating their injury and it leaves many questions unanswered:

- Why do some sprains heal while others do not?
- Why does one athlete quickly shake off an injury and return to their sport while another athlete with the same injury is caught in a cycle of chronic pain and re-injury.
- Why do some fractures and sprains hurt more in damp or cold weather?
- Why do some injuries become arthritic in later life while others do not?

Fortunately, Chinese medicine provides clear and concise answers to these kinds of questions and offers a host of treatments for different injuries

At first glance it appears that Chinese medicine's approach to examining a sports injury such as an ankle sprain is not all that different from that of Western medicine. An impact or force acts on the body disrupting the flow of Qi (vital energy) and blood in the local area. This force can take many forms. It can be the twisting, wrenching force common to a sprain, a compressive force as in a fall or impact, or the whiplash force of tissues stretching and snapping back. If the force is great enough it may effect distant areas of the body as well.

Blood and Qi stagnate in the local area, blocking circulation and causing swelling and pain. The profound consequences of this simple idea become apparent if the relationship of Qi and blood is understood. Qi is the vital force, or for lack of a better word in English, the energy responsible for all movement in the body. The circulation of blood in the blood vessels and of fluid through the tissues, respiration, the complex processes of digestion, the release and production of hormones, cellular activity, all are

dependent on the body's internal energy or Qi. Qi flows in a capillary-like network through the skin and the flesh, the muscles and the tendons. It brings blood and fluids to these tissues, nourishing and moistening them so that the skin and the flesh shine with vitality and the muscles and tendons contract and move in a smooth coordinated fashion. Qi also warms the body's exterior controls the opening and closing of the pores, aiding the body in adapting to temperature changes.

The relationship of Qi and blood is summed up as follows**: "Qi is the commander of the blood and blood is the mother of Qi."** This means that blood cannot move without the driving action of the Qi and it turn, the organs that produce and nurture the Qi are dependent on the nourishment of the blood in order to function. This is not as esoteric as it sounds. The lungs and the heart oxygenate the blood so that oxygen is carried to the organ and every cell in the body. There is a direct relationship between oxygen consumption and energy and heat production in the body. The organs of digestion such as the spleen, and pancreas, stomach and intestines break down food and liquids and transform food into sugars like glucose that provide the fuel that for skeletal muscle. These unconscious metabolic activities are visible manifestations of the unseen vital force. The implications of this arrangement go further, Qi is constantly coalescing and transforming into blood and in turn blood transforms into Qi. They are like two sides of the same coin.

Although in the more superficial layers of the body Qi travels in a network of tiny vessels, deeper in the body it travels in more discrete pathways called meridians that connect with the internal organs, sensory organs and the brain. In an injury such as a sprain or strain Qi is blocked, but sometimes only at the superficial level of the skin, flesh and muscles. This results in pain and stiffness. There may be little or no bruising meaning that few blood vessels were ruptured and blood circulation is not significantly impaired. There is often slight swelling or palpable lumps under the skin and a sensation of heat (inflammation).

Swelling is the result of the Qi stagnating (and therefore the blood and fluids it moves also stagnate), its normal movement disrupted by the impact or force. The stagnation of Qi acts like a dam. Blood and fluids back up behind the dam, causing swelling or lumps. The sensation of heat is due to the warming action of the Qi overheating the local area as Qi backs up and accumulates.

The impulse to rub an injured area is a natural, unconscious attempt to push the circulation through the area, breaking the dam and therefore restoring a free-flow of energy, blood and fluid. and reducing the pain. Pain is considered to be a result of stagnation - a lack of free-flow of Qi and blood - in the inured area. The concept of pain in Chinese sports medicine is succinctly explained in the following equation:

Pain = lack of free flow of Qi (stagnation)

If an injury is more severe, more blood vessels are broken and there may be structural damage, such as torn muscles and ligaments or broken bones. The disruption of normal circulation is greater and more Qi and blood, stagnate behind this larger dam. There is more swelling because there is greater stagnation of blood and fluids. The injured area is hotter to the touch as more Qi accumulates, bringing with it more blood and fluids. In a bad sprain there is usually visible bruising, that appears fairly soon after the injury.

Stagnant blood tends to lodge in the spaces between layers of tissue. As it congeals it glues these tissues together creating adhesions. Layers of tissue that formerly slid smoothly across each other, now stick and catch so that they interfere with normal functioning. This restricts movement and causes pain.

If stagnant blood and fluids are not cleared and normal circulation restored, the injured area has less vital energy than before. It becomes a kind of "dead zone" that never feels quite right. Even after the swelling and inflammation are gone it takes more of the body's energy than normal to push circulation through or around the area. Over time the area becomes sensitive to cold or damp weather, in part due to the diminished circulation. It may occasionally swell or feel numb. The pain can return or increase when the body's energy is depleted, when you are over tired, under stress or have the flu.

When an injury develops to this point it is called *Bi* syndrome. Bi refers to a chronic obstruction of energy in a joint, or muscle. This chronic obstruction can be due to the exposure of an already weakened area to a cold and damp climate or to repeated exposures to cold and damp, which overcomes the body's attempts to warm and protect itself. With modern technology, cold and damp can be artificially induced. I have treated several people who worked in refrigerators or freezers who developed arthritic problems in a relatively short period of time.

It is very easy to try and dismiss these ideas as unscientific, yet millions of people who take pain killers suffer from discomfort that returns or worsens with weather changes. Many of the fur trappers of the our American West, suffered from arthritis in their legs that they attributed to wading in icy mountain streams to set beaver traps. In Europe today there is still an awareness of the deleterious effects of cold drafts.

Bi syndrome often occurs in joints, where the thick fibrous tissue that makes up the joint capsule can prevent circulation to the interior part of the capsule. This inner layer of the joint capsule is composed of cartilage, which has no direct blood supply. This is why a torn meniscus (the cartilage of the knee) takes so long to heal. However, Bi syndrome can also occur in the muscles. I remember a woman who ran the New York City Marathon inappropriately dressed for a day that turned unexpectedly cold and wet. By

the end of the race her legs become heavy, painful and numb. This condition persisted for weeks afterward. Her muscles felt cold to he touch and were quite tight and painful. Cold and damp weather changes made the condition worse. The use of warming liniments, moxabustion (heating the injured area by burning herbs over acu-points)and herbal formulas that helped to move the blood and warm the legs restored normal circulation and drove out the cold. She is still running today.

To heal properly, damaged tissue must regenerate. That is, it must be replaced with healthy functional tissue. If normal circulation is not restored and the body does not have the energy and the nutrients to do this, the tissue cannot repair itself. Adhesions form, limiting movement and causing low-level inflammation. In cases where there is repeated re-injury and chronic inflammation, normal tissue can be replaced with thick fibrous tissue or scar tissue. Continued inflammation can cause calcium to be deposited in the muscles, tendons and joints creating more inflammation, thereby perpetuating the cycle. This is not uncommon with bursitis of the shoulder or Achilles tendonitis.

In looking at this progression from acute to chronic injury it is easy to understand the importance of treating minor injuries as soon as possible to prevent them from developing into chronic obstructions. It is all too easy to dismiss a bruise or sprain as "nothing" (a mistake I have made many times). If treated the right away, it really will be nothing and you can simply focus on playing your sport.