

# MARTIAL ARTS TRAUMA

A Free booklet to  
Help with the

## PREVENTION AND TREATMENT

of common  
**Martial Arts related  
Injuries**

BY: BRUCE EVERETT MILLER PA-C

**The purpose of this booklet** is to teach you about the whys of the more common martial arts and exercise related injuries. This book will not replace competent medical help if serious injuries do occur but if you read this book your knowledge of how to prevent the more common injuries will be greatly improved. Furthermore, you will understand why injuries sometimes don't heal the way we would like and what to do about it.

This book will also cover what medicines you should and should not take after an injury and more importantly why! It also covers how not to make an injury worse!

This book is a down to earth explanation of how to make yourself feel better without having to drastically change the exercise you are already doing. It will outline simple stretching exercises that will make everyday movement easier and improve your quality of life.

If you enjoy an active martial arts program then the time reading this booklet may be **the best investment you ever made.**

## WARNING

This book is not a substitute for qualified instruction, merely an addition to such. It is the USERS responsibility to use this book in conjunction with trained qualified instruction.

THE AUTHOR, EDITOR AND PUBLISHERS ACCEPT NO RESPONSIBILITY FOR USE OR MISUSE OF THE INFORMATION IN THIS BOOK!

The USER assumes ALL risks; legal, financial, physical and otherwise when they buy this book. By buying or using this book YOU agree not to hold the author, publishers or sellers in any way responsible for any damages associated in any way with this book or information contained in it.

**IF YOU CAN'T LIVE WITH THAT THEN  
DON'T accept or read THIS BOOKLET!**

**NOTHING IN THIS BOOKLET is designed to make a diagnosis, nor to provide definitive treatment, only ideas .... to enhance what a qualified clinician will tell you!**

**NOTE: I am a PA not an MD ... listen to your clinician as they are on site and can better see what is going on and ALSO maybe better trained than I am.**

**Do not let something you read here overcome you own good judgment or common sense!**

Ignorance can be cured with hard work - Only death cures  
stupidity

# **STRETCHING**

## **THE MOST IMPORTANT TOOL**

The issue of health to the martial artist is one that carries a lot of emotional impact. Whether it is because of illness or because of injuries, when we are not in full health we cannot, in most cases, enjoy the martial arts we love best.

With as much at stake as all that, there obviously arise a great number of different opinions on how to both care for our health and restore it once we are sick or disabled. This booklet will deal with the subject of injuries. Mostly, trying to help you in the understanding of injuries and how they relate to the martial artist. Along the way you will find that the more you know about the way your body works, the better you can take care of it and also how you can use someone else's body against them.

There are many different approaches to preventing injuries. Beside the issue of safety, the most commonly agreed upon way to prevent injuries is to stretch before working out. Almost everyone agrees on this point of fact but unfortunately most people have never really been taught how to stretch. For those of you who scoff at the idea of having to be taught how to stretch, then I ask you a simple question. How many times have you pulled a muscle during a work out when you thought you were already stretched out? If the answer is never you are either a master at stretching or lying. Either way you don't need this booklet.

For the rest of us, I want to state that the most common fault in stretching is not that we don't stretch, or even stretch the major muscles adequately. What we fail to do is stretch the minor muscles.

The most common non-impact injuries that I see (and/or treat) in martial arts are bone bruises after sparring and those relatively small but very painful muscle pulls or tear. (We will talk about bone bruises in a minute). The main reason for the muscle pulls is that we tend to stretch out joints in the directions that we are used to moving them in. Makes sense so far.

What most people don't realize is that almost every joint in the body is built to withstand and compensate for some rolling motion as the joint goes through its full range of motion. The major muscles that we are used to stretching are those, which are responsible for the major movement of the joint, but the minor muscles are responsible in a large part for keeping the joint aligned. When we don't stretch these minor muscles, we run the risk of pulling or tearing them if we move the joint suddenly in any angle oblique from the normal direction that it was primarily designed to go. This is also what we do to our opponents when we force their joints in ways that they were not designed to go.

Therefore, we need to loosen up these small muscles surrounding each and every joint. The method I recommend is: First, develop a set pattern in your stretching. For example, start with the feet and

work upward or vise versa. Secondly, not only stretch each and every joint in its major directions of travel, but also roll each joint in as much of a circular motion that it can be moved in. This loosens up the minor muscles we talked about above. Thirdly, make sure that any tension you place on muscles and ligaments during your stretches is done with slowly increasing pressure. Jerky movements should be avoided, because even small jerks, can tear the small muscle fibrils which make up each muscle. While this won't cause dramatic pain or limitation of motion, such injuries can add up.

If you work as hard at developing good stretching habits as you do learning a new form, then soon you will have developed a way to dramatically decrease injuries. Even more importantly, correct stretching in itself, can make you feel better even after the effects of the rest of the work out have worn off.

The most annoying are those people in exceptionally good shape at the gym. I'm like 'What are you doing here? You're done.'" - Jim Gaffigan



## **THE POST EXERCISE**

### **STRETCH**

Another part of stretching which seems to be almost universally ignored is the stretch that should be done during the cooling off period.

When the body exercises for any significant amount of time there are waste products, which build up in the muscles. There are also small amounts of muscle damage that occurs to small muscle fibers. The third thing that happens is a re-contraction of the body's muscular system.

When we are done stretching (correctly) most of our muscles are loose and flexible. As we work, however, we exert force on the joints of our body. As we have said earlier each one of these joints are surrounded by small muscle fibers to prevent joint movement in unwanted directions. In order to do this, these muscles tense up (contract), and soon non-moving joint muscles can be even tighter than before we began our initial stretch.

Note, however, that it does take a small period of time for this to happen and those muscles which are in motion may tighten up but will not be as tight as they were before you stretched out.

This tightening of small motion joints is particularly important in our back. When ever we do any significant exercise like running or weight lifting or even kicking and hitting a bag in martial arts our body's joints adjust to compensate for the force load. Vertebrae shift to take up the shock of our feet striking the floor as we run or the impact of striking a bag or lifting weights. While this may be desirable while we are under these stress loads, the vertebrae are also supposed to resume their normal alignment once the force load has been removed. However, because the muscles surrounding the vertebrae (vertebrae are joints) have contracted, it may be hard for the body to regain it's correct alignment.

Since the real reason we stretch should not only be to prevent injury but to enable us to move smoother and easier throughout our entire active life styles, we need to restore the looseness of the muscles we have caused to tighten. The post exercise stretch can do this.

The proper method is to gradually decrease the amount of work you are doing. You should continue to do enough work to generate small amounts of heat in the main muscles you had been using, as you stretch back out again. This gives you the advantage of allowing those muscles that are already loose to contract slowly while you loosen up the contracted muscles.

# THE AM/PM STRETCH

The fact is that most people who are on their feet a lot have pain in their back, usually their lower back. In many cases, the cause of the pain has nothing to do with any muscle, bone, tendon or ligament damage. The real cause of the damage is improper alignment of the spine.

In the picture below you will see the spines of the vertebrae sticking out from each side of the vertebrae and from the back. When these spines are in proper alignment, they fit into the parts of the body that are designed, space wise, for their presence. When they move out of this natural position, they press on the tissue in the areas which occupies this new space.

Now the body's vertebrae are supposed to be able to twist and turn. If this were not true there would be no reason for these joints. The body would be comprised of solid bone in the back that would be stronger and less susceptible to being damaged. By being able to twist, the vertebrae can accommodate the way we turn our bodies and also help take up some of the shock when we walk or do some other shock generating actions. What keeps these vertebrae from moving too far is the ligaments and muscles which surround each vertebral joint. These tendons, ligaments and muscles are supposed to let the vertebral joints rotate in the correct angles but also keep them from moving out of position with each other.

Unfortunately, our body works on a use or lose principle. When we do not stretch out these muscles and ligaments, they naturally tend to shorten with time and age. Soon we are left with ligaments and muscles that give us the range of motion we need for most of our daily activities, but just barely.

When we make that sudden movement, we can force the spines of our vertebrae over the top of muscles, tendons and ligaments which were supposed to stretch out of the way when the vertebrae rotated, but couldn't because they weren't long enough any more. Compound that fact with the changes in posture and stress loads caused by wearing shoes with heels and you quickly begin to understand why our backs can hurt, even when we have never had a noticeable back injury.

Many people mistakenly believe that their problem is only related to lack of exercise and start a workout program. Luckily in most cases, their exercise program generates some added stretching and thus does in fact help decrease the pain they feel. Assuming they don't produce an injury by not stretching those overly tight muscles before they exercise them. The advantage built into martial arts is that it causes you, at least in most styles, to have that regular stretching program.

What the back really needs is to be stretched out several times each day. It also doesn't hurt to involve yourself in a general toning program designed to improve muscle tone and maintain proper body posture.

What I recommend to friends and patients is that they stretch out a minimum of twice a day. I usually recommend that they stretch the first thing in the morning and the last thing just before they go to bed at night. These are excellent times because it is easy to get into a routine.

Important thing to remember is that you should never bounce. Try to put the palms of your hands on the floor as you keep your knees locked. Initially most people find that they can't stretch this far.



They find that the backs of their knees and thighs are too tight. After several weeks they find that they range of motion has significantly improved, and even if they can't reach the floor yet, their pain has significantly decreased.

\*\*\*\* WARNING \*\*\*\*

DO NOT DO THESE PROCEDURES IF YOU HAVE  
HAD BACK SURGERY OR A BACK INJURY, UNTIL  
CLEARED BY YOUR PHYSICIAN!

The proper position for this stretch is to stand with your feet at shoulder width. Lock your knees and slowly bend over as far as you can. Hold this position for at least 20 seconds.

**DON'T BOUNCE!!!**

The second part of the stretch is to cross your legs by putting one foot just in front of the other. Again bend over as far as you can. Do not bounce! Hold it for 20 seconds. Lastly reverse your feet and bend over again.

You should be doing this at least TWICE A DAY ... Morning and Night [and after working out]

The whole procedure takes only slightly more than 1 minute, but within a month you will notice an improvement in how far you can stretch and how you feel.

"My doctor recently told me that jogging could add years to my life. I think he was right. I feel ten years older already." - Milton Berle

## **BONE BRUISES**

One of the more frequent encounters we have all had when we were sparring is striking our opponent and instead of finding the nice soft place we had intended to strike, we hit bone. Sometimes we try for a kick, never even intending to strike our opponent, but get blocked part way there with a bony surface.

Now if we get struck on muscle or soft tissues during these unexpected encounters, we understand the bruising, discoloration and swelling which occurs and treat our self accordingly. However, when we are struck on a bony surface, there doesn't seem to be any discoloration or swelling and it is hard to understand why the area hurts and continues to hurt for so long. In fact, it is not uncommon for such injuries to hurt for 8 to 12 weeks.

To understand the why of it all is this: when we strike our bones against another hard surface, we cause small fractures in the outer layers of the bone that are called the cortex. The layman's term for this condition is a bone bruise.

The cortex of bone is comprised of small fibers which the body lays down in a kind of cross hatch pattern. It is this crosshatch pattern of fibers, which then fills in with calcium to produce the strength inherent in a bone. When we strike the bone hard enough, we actually break some of these fibers. If we break enough of these fibers, the bone can separate and is then called a fracture. Such a separation can be seen on x-ray, but when only a few fibers are broken, it is impossible to see the damage on an x-ray film (the sensitivity just isn't good enough).

Even though the injury can't be seen on x-ray, the body has to treat the injured area like any other fracture. First it must remove the calcium and damaged fibers from the area, called remodeling, and then it can begin to rebuild new fibers and lay down new calcium to the area. This whole process takes up to 8 to 12 weeks, depending on the size of the injury.

One thing is important, though, and that is: if you strike the area again after it is partially healed, you will be damaging new, poorly protected fibers that the body has just lain down. Thus, the body will have to stop its rebuilding process in the re-damaged area and remove these fibers and the associated calcium before it can resume rebuilding. Now let me state for clarity that the body can tear down the fibers on one spot at the same time it is building up a spot just next to it, but in general re-injuries will significantly increase the healing time to an area beyond the normal uncomplicated healing time.

Some helpful hints to use to improve healing time is to use heat (as described later in this booklet) and to use anti-inflammatory medication to keep down swelling, as swelling delays the healing process.

"Albert Einstein discovered that a tiny amount of mass is equal to a huge amount of energy, which explains why, as Einstein himself so eloquently put it in a famous 1939 speech to the Physics Department at Princeton, 'You have to exercise for a week to work off the thigh fat from a single Snickers.'" - Dave Barry

## AFTER THE INJURY

What to do after you have had an injury is a hard question to answer. Mostly, because there is such a varied response, depending on the type of injury and the severity.

I will not try to diagnose nor teach you how to diagnose your injuries. Obviously I cannot. I can only (morally and legally) tell you that you must decide but that you should seek competent medical opinions whenever there is a doubt. You should remember, however, that many injuries, which could be minor - **can turn into chronic problems if not treated correctly.**

### Danger signs:

If ANY of these signs are present then I recommend you seek a competent medical opinion.

NOTE: The absence of any of these signs does not rule out a significant injury!

The injury doesn't not improve in a reasonable time.

There is excessive motion of the joint.

There is excessive swelling of the injured area.

The level of pain is dramatically above what should be present for the swelling and discoloration seen. (This may indicate a broken bone, which frequently does not cause that much swelling.)

There is deformity of the joint.

There is a limitation of range of motion (especially if the decrease in range of motion is not being caused by pain)

If you have determined through your own means or competent professional advice that you do not have a serious injury, then here is some general advise you might consider.

Muscle injuries are the most common cause of minor to mild pain. When you tear a muscle several things happen. First of all there is bleeding into the injured area. This bleeding is what causes the discoloration you see, although that may not show up on the skin's surface for several days.

Secondly there is swelling which occurs in the immediate area of the injury. This swelling is due to the fact that damaged cell tissue (torn muscle or other cells) release a substance called prostaglandin. Now there are different types of prostaglandins but the types that are released at an injury site cause both swelling of the area around injury and a increase in pain in the same area. The purpose of the pain is to tell you something is wrong and to keep you from causing further damage to the area. That understanding, however, does not make it any more fun to bear.

If you are treating a minor injury, the best thing you can do for it is, of course, rest the area. The second thing to do is treat it to decrease the amount of swelling. The reason for this is that swelling seems to increase the amount of time it takes for an injury to heal.

The best way to decrease swelling of an area is to elevate the area. DO NOT put an Ace wrap or other constrictive bandages over an injury to prevent the area from swelling. The area probably will swell anyway. It just won't expand outward and will thus compress the injured area including the blood vessels. When that happens you risk cutting off the blood supply to the areas that could result in the entire area needing to be amputated.

The second thing you can do is to apply ice. Because ice causes your body to contract the blood vessels in a cooled off area (but not close them off completely), ice is a valuable tool. The important things to know about ice: First, make sure the ice is wrapped in something. NEVER put ice directly against the skin surface for any length of time. You may cause frostbite. Secondly, ice will initially make the pain of an injured area slightly worse because of shivering. This effect last only for about 1 to 3 minutes . Then the area will lose sensation and the pain feeling (of both the ice caused sensation and the original pain) will dramatically lessen. Ice and elevation should be used exclusively for the first 24 to 36 hours after an injury.

After the initial period of the first 24 to 36 hours after the injury, heat can be used. There are, however, some dramatically important rules about the use of heat which most people and even some medical professionals are not aware of. If you do not pay attention to these rules then heat will cause you more harm then it does good. The important thing to remember is that heat does not always help an injury even if it makes the area feel good. When you apply heat to an area, you cause the body to dilate the blood vessels in the area that is being heated. This is both good and bad. Dilation is good because when the blood vessels are dilated they can bring in more oxygen and healing materials to rebuilt the damaged area and remove more of the waste products which have built up. However, blood vessels are like pipes made out of a porous material. When they are small there are very small holes in the walls of the blood vessels. When you expand the pipes the holes also get larger. The longer that you apply heat to an area, the larger the blood vessels become, up to the point where they can't expand any more. When they are fully expanded blood vessels leak like a sieve (forgive the pun). They let small amounts of red blood cells and a significant amount of protein leak into the tissue surrounding the blood vessels. These red blood cells and the proteins break down within a short period of time into substances which cause irritation and thus release more prostaglandins, causing swelling and more pain.

What we have is a situation where a little heat can help but heat for prolonged periods can actually harm. Perfect examples of this are patients I have treated for acute muscular back pain. A significant number of these patients have used a hot water bottle at night for their back injuries. It makes their back feel good they all tell me. But when I ask them what their back feels like in the morning they always admit they feel worse but usually blame it on the fact that the water got cold during the night.

The real problem is not that the water got cold, it's that it stayed hot for too long. If you look at the chart below you will see that the optimal period for applying heat is for about 15 to 20 minutes.

During this period the amount of benefits from the increased oxygen and removal of waste products from the area outweigh the small amount of swelling which is produced. After this period the amount of swelling outweighs the benefits.

Don't misunderstand me, I do prescribe heat treatments for my patients when that is indicated. I just make sure that they know how to use heat correctly!

Once you have used a heat treatment you must wait for the blood vessels to return back to their normal size before applying heat again. The present belief is that the body takes approximately 2 hours to return to the base line. If you wait for a period of time which is at least this long, then you can and probably will benefit for the next application of heat.

The proper way to apply heat is to use as hot as you can bear it, but only for a 15 to 20 minute time limit. Moist heat is better than dry heat. A hot water shower with a massage is probably the best possible way that you can accomplish that at home. The next best way is to soak the area. Medical facilities may use ultrasound to ally heat to an area because it penetrates the tissue much better and actually causes less swelling than surface applied heat, but these machines are expensive and thus not likely to be found at home.

## MEDICATIONS ?

A comment on medications is in order here. There are on the market a wide variety of "pain relieving" medications that you can get without a prescription. A lot of people use them. Almost nobody of the lay public really understands which of these drugs is better nor how these medications work.

The varied glorious claims and confusion cause by advertisers only makes this situation worse. Since I believe you should know how to use these medications to your best advantage, and should understand the effects and side effects of any medication before taking it, I will give a short synopsis of the 3 most commonly used drugs.

Before I do I want to make it VERY clear that there IS in fact a significant difference between Over the Counter drugs and Prescription Drugs. That difference is that Prescription drugs have to conform to what is called a BIO-AVAILABILITY study...meaning the producers had to determine how fast this drug was broken down in your stomach and or intestines – WHERE exactly in your stomach or intestines it was dissolved and absorbed and How much of it is absorbed.

Generic Drugs do NOT HAVE TO DO THIS ... thus they can break down completely and suddenly in your stomach – causing irritation and even possibly ulcers [very common for some OTC NSAIDs like Ibuprofen] or Not break down at all – like many vitamins and supplements that come from places like Mexico [so literally they have no effect because you just shit them out]

THESE ARE JUST SOME OF THE POSSIBLE MEDICATIONS you can get but again if your clinician offers you a PRESCRIPTION version they are doing so because they KNOW that they prescription version works better – yes it cost more! But it MAY be very well worth it ... I just want you to know what you are dealing with not being a shill for the Drug companies

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ACETAMINOPHEN: This is the generic for a great number of medications, the best-known trade name being Tylenol. Acetaminophen is purely a minor [to moderate] pain reliever. It has no other major actions in normal dosages. It has no effects on swelling. However I am personally impressed with Acetaminophen's ability to help with minor to moderate pain. JUST make sure that you take less than 2000 mg a day or you risk hurting your liver.

ASPIRIN: Also called ACETYLSALICYLIC ACID and ASA. This drug comes in a varied number of forms and trade names. In it's pure form, aspirin blocks pain mostly by blocking the creation of prostaglandins. Because of this it also is useful as an anti-inflammatory drug. In short, aspirin reduces the amount of swelling which occurs. ONLY take this drug with food in your stomach!

## **YOU MAY NOT GET WHAT YOU PAY FOR BUT YOU HAVE TO PAY FOR WHAT YOU GET.**

Like everything else, you have to pay for what you get. This is definitely true for many medications including aspirin. Some people are sensitive to the irritation that aspirin products can cause in the stomach and intestinal tract. Also aspirin has also been implicated in prolonging (slightly!) in the time it takes for bleeding to clot. This is because aspirin also affects the body's platelets, causing them not to work as well (or at all). Platelets are but one step in many that are involved in the stopping of bleeding once it occurs. In a normal person the amount of increase in clotting time caused by aspirin does not account for an significant amount of increased bleeding but if taken in too large of doses, aspirin can cause you problems.

NOTE: If you are one of those people who always bruises easily, then I suggest that you see your physician before taking any aspirin containing substance. A very small percentage of people are hypersensitive to aspirin products and thus do have significantly increased bleeding when they take aspirin or aspirin-like products.

ASPIRIN CREAM: Known under various trade names, aspirin creams offer all the advantages of taking aspirin by mouth without the stomach irritation. Because it is applied to the skin you can actually get higher dosage of medication to an injured area than you would be able to without producing gastric irritation. There are the same effects on the bodies clotting mechanism, plus the fact that being a cream it is more expensive and messier to apply than taking a tablet.

IBUPROFEN: Known under various trade names like **ADVIL, MEDIPREN, NUPRIN**, ibuprofen is a relatively newly developed class of anti-inflammatory drugs. A short simplification of their effects and side effects is that the average over the counter 200-mg. tablet is equivalent to approximately 2 to 2 1/2 aspirins tablets, with all the side effects of aspirin multiplied to the same degree as the increase in strength.

Prednisone or other steroids: Steroids are very potent anti-inflammatory drugs. In **TRAINED** hands **IMPROVE** healing it can **DECREASE** Healing time! In untrained hands steroids have a whole collection of other [bad] effects on the body. These effects include changing your body's electrolyte (blood salt) balance, changing your ability to make muscles and the locations where you produce muscle mass and store fat. You can also make your body dependent on an external supply (rather than it's own internal supply) of steroids if you take them improperly. Moderate to large doses of steroids can also delay or stop the healing process, thus significantly delaying the injury you were trying to help in the first place.

These drugs should **ONLY** be used under the direct supervision of a physician! The risks are such that this drug is not worth experimenting with! Only competent medical personnel can tell at what levels steroids can be useful to your body and at what level they will be harmful.

Deep heating rubs or creams: This is a grouping of medications that contain the drug methyl salicylate. Don't confuse the methyl salicylate with **ACETYL SALICYLIC ACID**. The two drugs are completely different. In fact, methylsalicylate works by causing dilation of the blood vessels. The drug produces the warming effect by causing dilation of the blood vessels and thus increasing blood flow to an area. If these drugs only dilated blood vessels for a short period of time then the effects would be fantastic. Unfortunately while they only produce the maximum dilation of blood vessels (the period during which you feel the warmth) for relatively short periods of time, they produce a

moderate dilation of blood vessels that lasts for hours. The problem with this, based on our previous discussion, is that such dilation causes increased swelling to the area to which it is applied.

Because the swelling lasts far longer than the therapeutic effects of this group of medication, I personally do not recommend their usage. Some patients in fairness do use these drugs and get relief. However, I have treated a significant number of patients who have made their injuries worse by using these medications. An area hurts so they apply a heating rub (methylsalicylate). The pain feels better so then they can do what they want to. This allows the person to over ride the messages their body is trying to tell them to protect the area. Consequently they are prone to increase the damage to an already injured area. The rub also produces increased swelling, as explained above, which delays the healing of the injury. Frequently patients who have used these types of rubs come to me because their injuries have not healed. Many have put the rubs on at night "to help them relax and sleep" only to find themselves helped at night, but feeling much worse in the morning. Many have even added hot water bottles or heating pads to the deep heating rubs. After being educated, most are amazed at what they have been doing to themselves.

I am not totally against methylsalicylate medications no matter what it may seem from the above paragraphs. I tell patients who are determined to work out despite minor injuries that they can and probably should use these drugs. I occasionally use them on myself. I inform them that because these drugs do cause increased warmth to muscles which leads to the benefit of improved stretching of muscles with previous minor muscle pulls. The improved stretching thus decreases the added injury from a workout. The trick is to use them only before working out to decrease further injury, and then to wash the skin off extremely well AS SOON AS they are done working out. That way they can receive the most benefit from these medications and minimize the bad effects. Thus these medications can be useful if used properly, the key word being properly!

I will finalize the points of this chapter:

The best thing you can do for an injury is to rest it. Use ice and elevation for the indicated periods of time, then use heat in short periods of time with sufficient intervals of time between treatments for your body to return to its vascular baseline. Use medications sparingly. Use only medications that you know the effects and side effects of. Follow medication directions! More is not always better!



"Doctor to patient: What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?" - Randy Glasbergen

## Reconditioning

The major factors, which can turn the acute injuries into the chronic ones, are re-injuries and improper rebuilding after an injury.

Many times I have seen amateur athletes turn a simple injury into a chronic problem because they re-injured themselves. The principle reason for the re-injury in most of these cases was because they were not ready to resume their sport.

To understand why such re-injuries occur we must examine the healing process. As we have already explained in the preceding chapter, there is initially swelling after an injury. After the majority of swelling has resolved the body has the task of rebuilding the damaged area.

In most injuries the body does this by breaking down and removing damaged tissue at the same time that it is rebuilding the area with new healthy tissue. There is a difference in how the body will rebuild based on the type of injury. In bone injuries, the body will pretty much replace all the damaged bone, or at least enough to make the fracture site functionally strong. Then over the years, the body will slowly keep working to remodel the repaired bone back to its original pre-fractured condition. In muscle injuries, however, that may not be the case. Minor tears in muscles fibrils, tendons or ligaments will usually be repaired but complete breaks (separations) will generally not be able to be regrown unless they are surgically sewn back together.

Generally as soon as the injury has stabilized, the body will begun to grow new tissue to repair as much damaged tissue as it can. The problem is that as the body heals the first thing to resolve is the swelling, followed a short time later by the constant reminder of the damage: pain.

Despite the fact that the pain has disappeared, what has happened is that the injury has stabilized, and rebuilt enough fibers that normal movements are not traumatizing the injured area. Thus you will not feel pain with normal movements. However those new fibers are still very weak and very vulnerable to damage. In fact, during this time period the damaged area is still very much weakened by the absence of the damaged fibers and is not capable of generating as much strength as it had been able to do before it was injured.

It is at this time when the amateur athlete is at the greatest danger. Usually 2 to 4 weeks have elapsed on any significant injury and they are anxious to return to their favorite sport. Sure the muscle hurts if you twist it wrong, but in general it feels pretty good and the over anxious athlete rationalizes that they will be just fine because they will be extra careful.

Reality plays a different tune. As soon as the over-anxious athlete does even a limited version their famous pre-injury maneuver they suddenly find that they have re-injured themselves, this time even worse.

In short, I am appealing to those with injuries to give themselves enough time to adequately heal. Most muscle injuries take a minimum of 6 to 8 weeks to heal. Even more time will be required for

severe injuries. Tendon and ligaments may take even longer. The only safe way to know for sure is to consult a practitioner who is experienced in sports medicine and ask their advice based on an examination of your particular injury.

Then when you are ready to resume exercise, start back at levels significantly below where you had been at before the injury. The idea is to start slowly and gradually build back up to the pre-injured level. Treat the recovering muscle as if it was a new uneducated muscle, which you are training for the very first time because in fact this is not far from the truth.

"I have to exercise in the morning before my brain figures out what I'm doing." - Marsha Doble

## **BALANCE**

Earlier I mentioned that muscles, ligaments and tendons that are completely separated / torn will not reattach themselves unless surgically sown back together. [In fact the muscle that was attached will wither and become worthless]

In the case of tendon or ligament injuries the limitations of not being able to move a finger, foot or part of your body in a certain direction usually brings the person quickly to the attention of competent medical personnel. Unfortunately this is not true for the partially torn muscle.

Because a muscle is made up of numerous collections of muscle fibers it is possible to tear part of the muscle in a complete separation and yet still leave the rest of the muscle intact, even if damaged. When this happens many athletes tend to treat the injury as if it was nothing more than a bad muscle sprain. They wait their required minimum of time and then attempt to return to their sport. This time, however, there is a serious defect in the strength that the muscle can generate and they are set up for the inevitable re-injury.

Most frequently this occurs in the back and especially the lower back. I have treated numerous patients who have had chronic back pain despite never having any evidence of a herniated disc or skeletal abnormalities. The actual defect in these individuals is a muscle injury which has turned chronic. A high percentage of these people had minor injuries to start with but their condition turned chronic because they were re-injured during the healing phase.

Besides giving injuries adequate time to heal, the injured person must also work at getting well after a significant muscle tendon or ligament injury. In practice I have seen a number of individuals who, after their body has healed, find that they cannot do things without causing pain because their injured area is weaker and more susceptible to injury. This is understandable based on the above explanations, but what is not acceptable to most people is the fact that even after their injury has healed they continue to experience pain, especially in lower back injuries.

The reason for this is usually because there is excessive movement or movement in an unnatural angle in the joints. Earlier we stated that there are a whole series of muscles that are designed to keep joints, including vertebrae, moving only in the correct angles. These small muscles have been designed by nature to offset the pulling effects of the major muscles that affect the joints, but only if the major muscles are balanced against each other.

You can quickly see that if the muscles on one side of the joint are damaged, then the joint can be pulled into an angle that it was not designed to go, causing pain. The good news is that many of these limiting injuries are totally correctable if the person knows what to do and is willing to do the work of getting well. Please note I said, "do the WORK of getting well" because in this the rehabilitation phase you must actively work at getting well. Passively waiting for your injury to improve itself will not do the trick. Ask those who have had back injuries and tried to protect their back from further trauma by abandoning all unnecessary activity. In almost all cases the person gets worse not better.

Now compare that scenario with the case of the person who has suffered a serious injury but has rebuilt himself or herself and now can do almost anything they want to.

The reason for this is because when you are recovering from a significant injury that has had muscle damage, that muscle will probably never have the same number of intact muscle fibers as it did before the injury. The muscle can however have the same overall strength. By causing the remaining muscle fibers to strengthen even more, you can take up the workload of the damaged muscle fibers and balance out the muscles on the undamaged side of the joint. The principle here is to do specific exercises to strengthen one side of the body, the weak side, more than the strong side until both sides are equal. Thus restoring balance and decreasing stress on related joints and significantly decreasing the pain.

While this sounds easy in principle, it takes a lot of hard work. It is also very important for you to do the correct exercises. General strengthening of one whole side of your body probably will not work. Your body will find a way to shift the workload to the intact muscles, causing these non-injured muscles to get stronger. This will make the non-injured muscles capable of pulling even harder than their opposing muscles. Therefore, while the total strength on each side of your body may be equal, when you take a look at each section you will have even more areas of imbalance.

Unfortunately I am not going to be able to give you the specific exercises to do to re-strengthen and re-balance a joint in this book. That takes an examination of the person and the injury to properly evaluate your muscle balance and recommend which exercises would be right for your specific condition. Traditional persons who are trained in this field are physiatrists or sports medicine physicians. Some exercise specialists [Physical Therapists] and kinesiologists have also been trained in balance techniques. It is best to inquire specifically about the training of the person you seek advice from before you take their advice.

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