



Sports Injuries

1 What are Sports Injuries

Exercising within your limits is good for your health and wellbeing, but injuries can occur when you play sports or exercise. *Sports Injuries* are injuries that occur while playing sport.

Sports Injuries can occur as a result of a very wide range of factors, such as:

- Accidents,
- Collisions,
- Exercising in an unsuitable location,
- Improper footwear, safety equipment, or other gear,
- Inadequate training practices,
- Poor preparation,
- Pushing yourself beyond your limits,

Some people suffer sports injuries because they are not in shape and push themselves beyond their limits. Not warming up or stretching properly, before and after exercise, is also a common cause of Sports Injuries.

If you play contact sports, high speed sports, high impact sports, regularly work out at a gym, or do any physical activity that places stress on your

joints, then it is likely that you will develop at least one Sports Injury at some point in your life.

Such injuries result in strains or damage to the bones, muscles, joints, and organs of the body, or to the tendons and ligaments which are the connective tissues that support the bones, muscles, and joints and hold in place. Such injuries can potentially cause a great deal of pain and discomfort, prevent the sufferer from playing the sport that caused the injury for a period of time, restrict the activities that the sufferer can perform, and in extreme cases, cause debilitation and even death.

The most common Sports Injuries include:

- Ankle and Achilles tendon injuries,
- Back Injuries,
- Dislocations,
- Foot injuries,
- Fractures,
- Head injuries,
- Knee injuries,
- Neck injuries,
- Shin bone pain,
- Sprains and strains,
- Swollen muscles,

For most Sports Injuries, the cause of the injury can be determined, suitable treatments undertaken to enable a full recovery, and suitable preventative measures taken to reduce or even eliminate the risk of recurrence.

It is important not to ignore even mild Sports Injuries or take them too lightly and simply 'soldier on', because this can exacerbate injuries and cause them to become far worse, much longer lasting, and harder to treat.

There are two main classes of Sports Injuries:

- Acute Traumatic Injuries
- Overuse Or Chronic Injuries

Each of these are discussed in the sections below.

Overuse Or Chronic Injuries often seem less important than *Acute Traumatic Injuries*, because they may only involve mild symptoms, such as an persistently aching wrist or foot, or soreness in the knees. However, if left untreated and unmanaged, a chronic injury will probably become significantly worse and more painful over time.

1.1 Acute Traumatic Injuries

Acute Traumatic Injuries occur suddenly when exercising and usually involve a single impact or blow. Acute Traumatic Injuries include all of these injuries:

- **Abrasions:** are scrapes of the skin, that may cause redness and bleeding.
- **Bruises (*Contusions*):** are a discoloring of the skin at the site of a blow or impact, caused by internal bleeding and swelling in the muscles and/or other tissues of the body.
- **Fractures:** are cracks, breaks, or shattering of a bone.
- **Lacerations:** are cuts to the skin that are often deep enough to require stitches.
- **Sprains:** are an overstretching or tearing of a ligament. A *ligament* is the tissue that connects cartilage and bone to support and strengthen joints.
- **Strains:** are an overstretching or tearing of muscle or tendon tissue. *Tendons* are the tough, narrow ends of muscles that connect the muscle to the bone.

For the signs and symptoms of Acute Traumatic Injuries, see section **4 *Signs and Symptoms of Sports Injuries***.

1.2 Overuse Or Chronic Injuries

Chronic Injuries occur and worsen over time, and are often caused by repetitive exercise activities, such as running, exercising on treadmills, cycling, serving in tennis, and throwing.

Overuse Or Chronic Injuries include the following injuries:

- **Stress Fractures:** are minute cracks in the surface of the bone which usually occur as a result of repeated overloading. For example, they often occur in basketball player's feet because of their repetitive jumping on a hard court.
- **Tendinitis:** inflammation of the tendon caused by repetitive stretching or overstretching.

For the signs and symptoms of Overuse Or Chronic Injuries, see section **4 *Signs and Symptoms of Sports Injuries***.

2 Regions of the Body Affected by Sports Injury

Just about any region of your body can be affected by sports injuries, including:

- **Arm and Leg** injuries include contusions, fractures, strains, and sprains, especially as a result of playing high speed, high impact, and/or contact sports.
- **Back** injuries include sprains, strains, fractures, contusions, and stress fractures that are caused by impacts or overexertion of back muscles during bending or lifting movements. Back injuries are fairly common in contact sports like football, hockey, as well as non-contact sports like weight lifting, figure skating, gymnastics, dancing, baseball, and basketball.

- **Foot** injuries can include strains, stress fractures, heel bruises, and swollen growth plates. Feet support all of our weight and during high energy sports, such as basketball, they must absorb enormous amounts of force over prolonged periods. Because of this, feet can be particularly susceptible to sports injuries. Differences in feet, foot issues (such as flat feet and high arches), lack of suitable footwear, and other factors also make feet susceptible to injury.
- **Hand, Finger, and Wrist** injuries include fractures, dislocations, and sprains and often occur in contact sports, such as football and hockey, but they may also result from a fall or impact that forces the hand or fingers backward beyond their normal limits.
- **Head** injuries include concussions, bruises, fractures, and hematomas that may be caused by falls, collisions, violent head shaking, blows to the head, or whiplash. A *concussion* occurs following a violent impact or shake of the head which causes temporary brain damage, or, if serious enough or if the person has suffered numerous prior concussions, even permanent and serious brain damage. Symptoms may include temporary or permanent memory loss, and even loss of brain function in severe cases. A *hematoma* occurs when a head injury causes blood to pool inside the brain or between layers of membrane surrounding the brain.
- **Neck** injuries can be extremely serious injuries and may include strains, fractures, contusions, and sprains. Your neck can be injured as a result of sudden traumatic impact, blow, or changes in direction which may occur in any number of sports including sports like diving, gymnastics mountain climbing, horse riding, rugby, skydiving, judo, and boxing. Whiplash is an injury to the neck that is caused by an abrupt jerking motion of the head. For serious injuries, it is essential to keep the person quiet and still, with their head held straight, otherwise damage to the spinal cord can result.
- **Sex Organ** injuries are fairly common in males because males play more high speed / high impact sports, and because the male genitals (penis and testicles) are relatively unprotected because they are external to the body and also in an area where impacts and collisions are likely. In women, injuries to the sex organs are rare because they

are inside the body, however breast soreness and injuries occur often in women who play contact or semi-contact sports, such as basketball.

3 Causes and Risk Factors for Sports Injuries

Sports Injuries can be caused by a wide range of factors including:

- **Trauma:** is one common cause of injury, especially in contact or high speed or high impact sports. Trauma includes everything from sprained ankles up to broken bones. Traumatic injuries are usually the result of impact or collisions with the other people playing the sport, or with the ground or other hard objects. Such injuries usually occur very suddenly, so there may not be much you can do to avoid them, especially if you have not taken suitable precautions against sustaining the trauma.
- **Failing to Manage the Risk Factors:** The risk factors that lead to injury or allow injury to occur are classified as being either outside the body (*extrinsic*) or personal to your body (*intrinsic*).

Extrinsic risk factors include:

- **Excessive stress or load on the body:** the body's tissues are capable of sustaining considerable stress, however if the forces of stress or load are too great, then this can push the tissues beyond the level that they can sustain, causing injury. When deciding how often, how hard, and/or how long to exercise, it is important to consider the impact on your muscles and joints. The key to avoiding injury is to build up gradually and don't push yourself beyond your limits..
- **Failure to Warm Up and Down:** Many of the body's tissues, such as muscle, are better able to deal with stress, strain, and load when they are warm. The warm-up process should exercise the entire body, to increase flow to muscles and makes them more responsive, and also include stretching exercises that move joints and limbs through their full range of motion. A proper warm-up regime ensures that muscles, joints, and body tissues are as prepared as possible to deal with the stresses and strains of exercise. At the end of each training session, it is also essential to warm down, bringing the body back down to

normal, usually through low intensity activity, such as walking and gentle flexibility exercises.

- **Poor Exercise Technique:** can cause stresses and strains on the body's tissues that result in injury. In many cases, the excessive repetition of a particular action, particularly when using a faulty or non-optimal technique, can cause excessive loads on tissues and cause subsequent injury. Some "excessive repetition with poor technique" injuries are even named after the sport involved, for example, *Tennis Elbow*.
- **Poor, Missing, or Inappropriate Equipment:** such footwear, headgear, and other protective and supportive devices can cause a range of injuries. For example, if you are involved in running or jumping, then proper footwear is essential to support the feet and cushion the feet, legs, and joints to reduce stress, strain, and shock.

Intrinsic risk factors include the following:

- **Being Overweight:** increases the stresses, strains, and loads on muscles, tendons, ligaments, joints, and bones during physical activity, and can increase the risk of developing sports injuries as well as other health complications.
- **Body Defects:** such as the shape and structure of the major joints, which can cause or increase the risk of developing sports injuries. For example, feet that 'pronate' (roll inwards), flat feet, feet with high arches, feet that have a weak arch, leg length discrepancies, "knock knees", and/or "bow legs" often contribute to lower leg, shin, and knee conditions, especially in runners.
- **Joint Laxity:** not being able to control or stabilize the joints throughout their full range of motion.
- **Lack of Flexibility:** can prevent the tendons, ligaments, and joints from being able to move through the required ranges of motions, placing excessive stress and strain on these tissues, and increasing the risk of developing sports injuries.

- **Muscle Weakness or Imbalance:** can place increased stresses and strains on tendons, ligaments, joints, and bones during physical exercise, increasing the risk of developing sports injuries.

4 Signs and Symptoms of Sports Injuries

The typical symptoms of a sports injury include:

- Pain
- Raised temperature,
- Redness,
- Swelling,
- Tenderness,

These symptoms are caused by the body's inflammatory response, which occurs when the body attempts to begin healing itself by disposing of cells and blood from the damaged and torn tissue.

For more serious sports injuries, excessive swelling and pain can occur.

In addition to the above symptoms, the following symptoms of Acute Traumatic Injuries (see section *1.1*) include:

- A bone or joint that is visibly out of place,
- Being unable to place weight on a leg, knee, ankle, or foot,
- Excessive swelling (*oedema*),
- Extreme leg or arm weakness,
- Not being able to normally move a joint,
- Sudden, severe pain,

The symptoms of Overuse Or Chronic Injuries (see section *1.2*) are far more subtle and include:

- A dull ache when resting,
- Pain when you play or exercise,

Excessive swelling (called *oedema*) can interfere with the body's healing process, so treatments that limit the swelling should be swiftly implemented to allow the body's healing process to continue. See section **5.1 Swelling Reduction Treatments**.

5 Treatment for Sports Injuries

The most important thing to do when you suspect that you have suffered a sports injury is to immediately stop doing whatever sport has caused the injury.

It is important that you never try to "work through" or ignore the pain of a sports injury. Even when the injury is very mild, it is important to stop playing or exercising when you feel pain. Continuing to play or exercise may cause more damage. Sports injuries that cause excessive pain, swelling, or movement problems are serious and should be examined by a doctor immediately. For example, broken bones, torn ligaments, and other serious sports injuries require immediate professional medical treatment.

However, the vast majority of sports injuries are far less serious, requiring only simple treatments and rest to promote recovery. For example, a minor sports injury may consist of nothing more serious than a little stiffness or tenderness, and all that may be required is a few days of rest and simple home treatments (see below).

Various treatment options are available for sports injuries including:

- Swelling Reduction Treatments
- Professional Treatment
- Rehabilitation
- Other Treatments
- Emerging Treatments

Each of these are discussed in the sections below.

5.1 Swelling Reduction Treatments

Excessive swelling (called *oedema*) can interfere with the body's healing process, so treatments that limit the swelling should be swiftly implemented to allow the body's healing process to continue.

There are several acronyms for memory aids for treating swelling caused by sports injuries, and all are very similar. For example, **RICE** stands for Rest, Ice, Compression, and Elevation. The acronym **NICER** provides another useful memory aid to effective swelling treatments, and this includes all of the treatments recommended by RICE plus an additional treatment:

- **Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)** are pain relieving medications that are available over the counter at your pharmacist. NSAIDs medications include:
 - Acetaminophen (Tylenol),
 - Aspirin,
 - Ibuprofen (Advil, Motrin),
 - Ketoprofen,
 - Naproxen sodium,
 - which are effective at controlling and relieving pain. In addition, all of these medications, except for Acetaminophen (Tylenol), will help reduce stiffness, inflammation, and swelling. Your doctor will be able to advise you on whether to take the medications on an "as needed basis" when the pain becomes intense, or on a regular schedule each day.
- **Ice**, and other cold therapies, are useful because they reduce pain and help to limit swelling. Ice should never be placed directly against the skin. Instead, wrap the ice in a cloth or towel and apply this to the skin. The amount of time for which cold therapies should be applied depends upon the location and severity of the injury. To avoid ice

related injuries, it is normally recommended that ice is applied for 20 minutes at a time, and 4-8 times per day.

- **C**ompression is the technique of mechanically limiting the amount of swelling by restricting the amount of space in and around an injury. This is commonly achieved with compression bandages, elastic wraps, special boots, air casts, or splints.
- **E**levation of the injured limb or location can help control swelling because gravity helps fluid drain more effectively from the injury. It is recommended that you put the injured area on a pillow, at a level above your heart.
- **R**est and restricted activity allow the healing process to proceed, while also reducing the risks of aggravating the injury that further movement and motion may cause. If you have injured your foot, ankle, or knee, then you can take weight off of it by using a crutch.

If the signs and symptoms of your injury don't get better after a few days of the above treatments, or if they get worse, then you should seek Professional Treatment (see section 5.2).

5.2 Professional Treatment

If you are experiencing lingering pain, tenderness, or other symptoms, then there may be an underlying reason that deserves being discussed you're your doctor.

It is not safe to ignore lingering symptoms. Instead of being tempted to do this, it is always best to seek professional medical advice. If there is some underlying cause, then the sooner treatment is begun, the better the chances are of a full recovery. Even if a full recovery is not possible, then treatment can still help relieve the symptoms and reduce the impact of the condition.

Serious sports injury symptoms include:

- Being unable to place weight on a leg, knee, ankle, or foot,
- Excessive swelling (*oedema*),

- Limping,
- Loss of range of motion,
- Movement issues,
- Numbness,
- Severe pain,
- Severe tenderness,
- Stiffness,
- The injury is an old injury that aches, swelling, or is causing pain,
- The joint doesn't feel normal or feels unstable,
- Upward Crescendo, which occurs when the pain progressively increases with activity,

If your sports injury causes any of the above symptoms, then you should seek immediate medical advice from doctors in one or more of the following medical fields:

- **Chiropractic:** treatments use physical manipulation to various treat muscle, joint, and bone problems and injuries, and the effects such problems have on the nervous system. Chiropractors place special emphasis on the spine, and this explains why they are associated with treating bad backs.
- **Osteopathy:** is a complementary therapy that employs a range of physical and manual techniques to treat muscle, joint, and nerve problems and injuries.
- **Physiotherapy:** is group of well-established treatments and techniques which often involve physical manipulation of the affected areas. Physiotherapy treatments are commonly offered in doctors' surgeries, gymnasiums, sports centers, and hospitals. A broad range of physiotherapy treatments are available, and most physiotherapists specialize in treating specific parts of the body. As a result, some guidance may be required to help you choose the right therapist for

you. Sports Physiotherapist are specially trained to treat sports related injuries.

- **Podiatry:** is the diagnosis and treatment of disorders which affect the lower leg and foot. Podiatry can relieve painful symptoms and provide preventive care for conditions that affect the feet. For example, *orthoses* are special insoles that can address a range of problems including *pronation* by holding the foot in stable positions and preventing it from rolling inwards.

Depending on the nature and severity of the Sports Injury, your doctor may recommend one or more of the following treatments:

- **Immobilization** is a common treatment for sports injuries, and involves preventing movement in injured areas to prevent more damage. Slings, splints, casts, and leg immobilizers are used to immobilize sports injuries.
- **Rehabilitation** (physical therapy) – see section 5.3.
- **Surgery** may be needed for particularly serious injuries, such as to repair torn tendons and ligaments, put broken bones back into place, and so on.

In addition, your doctor will recommend, or even insist, that you do the following:

- Stop playing / exercising until the injury is fully healed,
- Take precautions against further injuries and aggravating the old injury. See section 7 *Preventing Sports Injuries*.

5.3 **Rehabilitation**

Rehabilitation, also known as *rehab*, is an essential treatment for many sports injuries that are mild or worse.

Rehabilitation is a treatment that serves two main purposes:

- It helps your body recover from prior injuries by using gentle flexibility and strength exercises to help restore function.
- It will also help you stay fit as you recover.

Rehabilitation is a treatment that allows you to get back in shape and ready for action again. Rehab may be only part of your treatment program, however, it can be an essential part of the treatment program.

Rehabilitation can include the following:

- Exercise,
- Manual therapy from a physical therapist (a specialist who is trained to help you recover from a sports injury),

And also involve various other treatments, see section **5.4**.

5.4 Other Treatments

Depending on the nature and severity of the injury, various other treatments may be useful for treating sports injuries.

- **Electro-Stimulation:** which involves applying mild electrical currents to affected regions of the body.
- **Cryotherapy:** which involves applying cold packs to affected regions of the body.
- **Thermotherapy:** which involves applying heat packs to affected regions of the body. The heat delivered by the heat packs relieves pain, promotes healing, and increases your range of motion.
- **Ultrasound:** equipment is used to heat the injured area by using sound waves. This heat relieves pain, promotes healing, and increases your range of motion.
- **Massage:** can relieve stress and pain, and also promote healing in people with certain health conditions, such as muscle strains and sprains. During a massage, a therapist manipulates your body's soft tissues, such as your muscles, skin, and tendons, using their hands and

fingers. Massage can be performed by several types of health care professionals, such as a massage therapist, physical therapist, or even an occupational therapist.

5.5 *Emerging Treatments*

Many new ways are being developed and researched to treat Sports Injuries. Some of these include:

- **Arthroscopy:** where fiber optic scopes are inserted into small incisions to see what is going on inside joints.
- **Targeted Pain Relief:** are techniques for delivering pain-reducing drugs directly to the injured area, such as via patches put directly on the injured area and capsules inserted into or near the injured area.
- **Tissue Engineering:** using a person's own tissues or cells to help heal injuries. There is a great deal of research in this area.

6 **Staying Fit During Treatment**

There are things you can do to stay fit while injured, without making your injury worse or causing other injuries. However, it is important that you check with your doctor before performing any fitness activities and follow all of their advice for any activities they approve of.

The activities that help you staying fit during treatment are known as ***Cross Training***. Cross Training activities are low impact, low stress, and low danger activities that include:

- Rowing machines,
- Stationary cycles,
- Swimming,
- Water therapy and water aerobics,

These activities can help you maintain fitness while recovering from other sports injuries. However, always seek your doctor's advice before undertaking any of these activities.

7 Preventing Sports Injuries

The best way to avoid Sports Injuries is to avoid getting hurt and managing the risk factors that make you more likely to suffer injuries. (See section 3 *Causes and Risk Factors for Sports Injuries*).

If you want to continue to enjoy the sports they play and reduce their risk of injury, and for those who want to avoid aggravating old injuries, then consider and apply the following:

- **Avoid Injury:** You can avoid injury by playing sports that have the lower levels of contact and lower chance of causing injuries. Or, if you simply must play the sport because you enjoy it so much, then perhaps you can play it in less serious forms. For example, if you play full contact football, and this has caused you a number of injuries, then perhaps you could play less serious versions of the game, such as social football, mixed-sex football, and so on.
- **Know Your Limits:** is very important for avoiding injuries as well as preventing slight injuries from becoming more serious. If you have previously injured part of your body, and that begins to hurt again in the future, then stop immediately and rest. If pain or symptoms persist, then seek medical advice. (See section 5 *Treatment for Sports Injuries*).
- **Look After Yourself and Apply Common Sense:**
 - Be in proper physical condition to play the sport. Be realistic. If you haven't done any exercise for 10 years, or are 40 pounds overweight, then you simply are not ready to begin playing high speed contact sports.
 - Don't be a "weekend warrior", in other words if you only exercise once or twice per week, then don't try and squeeze a week's worth of exercise into these sessions. Exercise sensibly.

In the 1970's, Squash became known as the "Widow Maker" because so many men were dying on the court from heart attack – they were pushing themselves way too hard once or twice a week without building up their fitness levels or doing additional exercise in between playing squash.

- Don't overdo it.
 - Don't play when you are very tired or in pain.
 - Follow the rules of the game and play in the spirit of the game – they are there to protect players.
 - Get a physical exam before you start playing sport, to make sure there are no lurking health or body defects.
 - If you are jumping around, land with your knees bent.
 - If you have a prior knee injury, then don't bend your knees more than half way when doing knee bends and don't twist your knees when you stretch.
 - Know how to use your athletic and protective gear.
 - Learn to do your sport right – learn the proper techniques, get the proper protective gear, and stay within your limits.
 - Run on flat surfaces and use the softest exercise surface you can find. In particular, do not run on asphalt or concrete.
 - Wear proper shoes for your sports that are stable, fit properly, and absorb shock.
- **Lose Weight:** if you are overweight and doing exercises or activities that are placing enormous strain on your muscles, bones, or joints, then you should consider stopping this activity for a while, and concentrate on losing weight by using gentler exercises (walking, jogging, weight training, etc) and when you reach your proper weight, return to your prior sport.
 - **Play It Safe:** learn from your experience and your prior injuries and do the things that can help you avoid getting hurt again.

- **Protective Devices:** Wearing the proper protective gear for your sport can greatly reduce the chance of suffering further injuries. For example, helmets, shoulder pads, mouth guards, knee pads, elbow pads, gloves, proper shoes, and so on could be worn for potentially dangerous, high speed, high impact activities, such as contact sports, like football and ice hockey, and skateboarding, cycling, snow skiing, and so on to help protect yourself from injury. In addition:
 - **Males** should wear an athletic supporter or a sports cup to protect the genitals from serious injury.
 - **Females** should wear supportive sports bras while playing sports or exercising.

- **Support Devices:** are essential if you play or return to playing a sport that may not be ideally suited to you. For example, Support Devices are essential if you have any body defects, joint laxity issues, lack flexibility, or have any muscle weakness or imbalance issues. (See section *3 Causes and Risk Factors for Sports Injuries*). Support Devices include:
 - **Specialised Protective Gear:** may be useful for protecting and supporting specific areas of the body that need the additional protection and support.
 - **Modified Equipment:** for example modified shoes with special inserts or arch supports can help support your feet.
 - **Taping and Strapping:** can be used to provide extra support and protection to many areas of the body, such as the knees, elbows, shoulders, and fingers, and reduce the risk of strains, and aggravating prior injuries.
 - **Braces:** on the knee and elbow braces for example can help provide extra support and protection, also reducing the risks of strains, and aggravating prior injuries.

- **Take It Slow:** If you are returning to the game after being injured, then it is especially important that you take it slow and gradually build up (over several weeks) to your pre-injury levels of activity and motion.

- **Warm Up and Down Properly:** Many of the body's tissues, such as muscle, are better able to deal with stress, strain, and load when they are warm. The warm-up process should exercise the entire body, to increase flow to muscles and makes them more responsive, and also include stretching exercises that move joints and limbs through their full range of motion. A proper warm-up regime ensures that muscles, joints, and body tissues are as prepared as possible to deal with the stresses and strains of exercise. At the end of each training session, it is also essential to warm down, bringing the body back down to normal, usually through low intensity activity, such as walking and gentle flexibility exercises. If you are returning to the game after being injured, then it is especially important that you warm up and down properly.

8 Returning to the Game After An Injury

If your doctor has asked you to stop playing or exercising, then a fair question is "When can I play sports again ?".

The answer to this question depends on how serious your prior injuries were, and how your recover is proceeding.

Before attempting to return to the game, seek your doctor's advice and approval to make that they agree that your body is ready.

9 Diagnosis of Sports Injuries

For the more serious sports injuries, a doctor will examine your injury and using one or more of the following diagnostic techniques:

- **Computed Tomography Scan (CAT or CT scan):** A CAT scan is performed by a computer linked to an x-ray machine which takes a series of pictures of the areas of interest inside the body from a variety of angles. The pictures are then combined using a computer to give a detailed three dimensional (3D) image of the area. CT scans generate pictures that may indicate problems with bones, herniated discs, or issues with muscles, blood vessels, tendons, nerves, and ligaments. In

addition, CAT scans are very useful in the diagnosis and monitoring of cancer. CAT scans are capable of detecting extremely small tumours and enable doctors to determine if a tumour has spread.

- **Electromyography (EMG):** is a medical technique for measuring, recording, and evaluating the electrical impulses generated by nerves and how muscles respond to these impulses, either at rest or while contracting. EMG uses an instrument called an *electromyograph* to produce a record called an *electromyogram*. The electromyograph detects the electrical potential generated by muscle cells when the muscles contract, and also when the muscles are at rest. This information can be useful for studying nerve and muscle function. Studying the pathways of nerve-conduction can indicate whether nerve compression or pinching is occurring. Such compression or pinching may be caused by the spinal canal becoming narrower (a condition known as *Spinal Stenosis*) or a *Herniated Disc*.
- **Magnetic Resonance Imaging (MRI):** also known as *Magnetic Resonance Tomography (MRT)* and *Nuclear Magnetic Resonance (NMR)*. An MRI scan is performed by a computer linked to a powerful magnet, and utilising radio frequency waves, to create clear images of the internal structures of the body, including the muscles, nerves, brain, spinal cord, and bones. The images produced show the presence of tumours, fractures, and other abnormalities. An MRI can provide important and highly useful information about tissues and organs, particularly the nervous system, that is not available by using other imaging techniques. MRI scans have also found a range of novel applications outside of the medical and biological fields, such as rock permeability studies, hydrocarbons studies, and produce studies, and timber quality characterization studies.
- **X-Rays:** use specially focused and aimed bursts of radiation to take pictures of areas inside the body. The amount of radiation used in most X-Rays and other diagnostic tests are so small that it poses little risk to the patient under normal usage levels. X-ray images allow a doctor to see if any bones are out of alignment and also see whether you have any broken bones or other bone abnormalities. However, X-ray images have their limitations. For example, they cannot directly show problems with the spinal cord, muscles, fibrous tissues (called *Fascia*), nerves, or discs.

Once a doctor knows the full extent of your injury or injuries, they will usually start with conservative treatment techniques (see section **5.1 Swelling Reduction Treatments**).

10 Future Trends

An ever increasing number of sports are being played by an ever increasing number of people every day. As a result of this, more people are sustaining sports injuries.

However, the situation is made a lot worse by the following factors:

- **Extreme Sports:** are becoming increasingly popular, and these sports involve people put their lives, bodies, and health at risk to perform spectacular but death defying activities.
- **Obesity:** rates are increasing to alarming levels, especially in Western countries, such as the USA, UK, Europe, and Australia. If an obese person decides to try a sport for which they have not prepared, then they are far more likely to become injured because of the extra stress and strain placed on their muscles, joints, and bones by the extra weight they are carrying around.
- **Jackass The Movie and Related Videos:** such as on *YouTube* and other web sites, have spawned many thousands of copycats around the world who think that they can perform similarly dangerous, spectacular, and idiotic stunts. Sadly, many of these people only see common sense after they have injured themselves.
- **I Can Do Anything / I Want Everything Now:** the attitude of young people may always have been that they feel invincible, that they can do anything, and that they want everything now.

However, in today's society, all of these factors are coming together. The **I Can Do Anything** attitude on top of the rise of *extreme sports*, the *obesity* epidemic, and videos like *Jackass* promoting idiotic behavior, can only have one result. The number of sports injuries are bound to increase in the future, especially amongst young people.

11 Further Information on Sports Injuries

To find the Sports Injuries in your area using the internet, go the to **Google** web site :

<http://www.google.com>

and type in "Sports Injuries".

In the sections below, you can find some useful web links that can provide a wealth of information about Sports Injuries related clinical trials and research programs.

11.1 Web Links

The following are some useful web links that can provide a wealth of information about Sports Injuries.

- **Sports Injuries - National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)**
 - <http://www.nlm.nih.gov/medlineplus/sportsinjuries.html>
 - http://www.niams.nih.gov/Health_Info/Sports_Injuries/sports_injuries_ff.asp

- **Sports Injuries - Kids Health**
http://kidshealth.org/teen/food_fitness/sports/sports_injuries.html

- **Sports Injuries Q & A - Better Health**
[http://www.betterhealth.vic.gov.au/bhcv2/bhcArticles.nsf/pages/Sports_injuries_questions_and_answers?
OpenDocument](http://www.betterhealth.vic.gov.au/bhcv2/bhcArticles.nsf/pages/Sports_injuries_questions_and_answers?OpenDocument)

- **Sports Injuries and Treatment - BBC Health**

http://www.bbc.co.uk/health/healthy_living/fitness/injuries_treatment.shtml

➤ **John Orchard's Sports Injury Site**

<http://www.users.bigpond.com/msn/johnorchard/>

➤ **Sports Injuries - Smartplay**

http://www.smartplay.net/ouch/ouch_info.html

➤ **Sports Injuries - Medline Plus**

<http://www.nlm.nih.gov/medlineplus/sportsinjuries.html>

➤ **Sports Injuries - HealthInsite**

http://www.healthinsite.gov.au/topics/Sports_Injuries

➤ **Sports Injuries - Sports Injury Clinic**

<http://www.sportsinjuryclinic.net/>

12 Acronyms and Abbreviations

The following acronyms and abbreviations are used in this eBook:

- CAT - Computed Tomography Scan
- CT - Computed Tomography Scan
- EMG - Electromyography
- MRI - Magnetic Resonance Imaging
- MRT - Magnetic Resonance Tomography
- NMR - Nuclear Magnetic Resonance
- NSAIDs - Non-Steroidal Anti-Inflammatory Drugs



Natural Help for Pain Management

Joint Pain, Arthritis and Gout, Headaches & Migraines, Sciatica, and Fibromyalgia

Joint Pain, Arthritis and Gout

An herbal pain remedy can be a safe, effective way of treating pain in your back, joints, legs, etc. without the potential side effects of prescription medications.

With all of the recent controversy surrounding pharmaceutical drugs, including the recall of Vioxx, more and more **people are looking towards herbal remedies** for joint pain.

From treating the symptoms of arthritis to easing your back from overactivity, herbal pain remedies may just be the answer for you.

What is the best herb for treating joint pain?

Although there are a variety of herbal remedies for joint pain and other afflictions, **one of the most researched herbs is Harpagophytum Procumbens**, also known as Devil's Claw because of the shape of its fruit.

Harpagophytum is native to the Kalahari Desert in South Africa, and **natives have used it for centuries to treat aches and pains** throughout the body.

In addition to being a **powerful herbal pain remedy**, Devil's Claw has been shown to have a number of other health benefits, including lowering cholesterol levels and reducing uric acid.

It is used worldwide as an herbal remedy for joint pain, hypertension, diabetes and gout, and has **strong anti-inflammatory properties**.

As such it can **significantly reduce back pain** and symptoms of rheumatoid arthritis and osteoarthritis, among other health problems.

We have discovered a natural treatment for joint and arthritis pain that we have had tremendous

success with.

This herbal supplement is called [Joint Ease](#) and it contains **pure Harpagophytum Procumbens (Devil's Claw)** which can help relieve joint and back pain, treat the symptoms of arthritis, as well as provide general health benefits.

This breakthrough [herbal arthritis pain remedy](#) can provide **safe, effective pain relief** without the potential side effects and complications of prescription drugs.

For gout pain, Gout-Gone is a safe, non-addictive, FDA-registered natural remedy containing *100% homeopathic ingredients* to **relieve gout symptoms, including swelling, inflammation and burning pain** in small joints, especially the big toe.

Gout-Gone helps to **support joint health** and keep uric acid levels in the healthy range, without harmful side effects. This remedy contains a selection of homeopathic ingredients known to **address discomfort associated with gout**.

Gout-Gone is taken internally and presented in a convenient, concentrated tincture formula. It is easy to ingest and hassle-free with **no artificial colors or preservatives**. It is *safe for all ages, including pregnant women or those who may be breastfeeding*.

Headaches & Migraines

Headache natural treatments can help alleviate the symptoms associated with mild headaches as well as migraines and tension headaches.

Many people look to **natural alternatives for headache relief** to avoid the potential side effects of prescription medications such as Fiorcet, Imitrex and Relpax.

Natural Headache Cure

There are many different types of headaches, the most common of which is the tension headache. This is characterized by **muscle contractions which pinch nerves or blood vessels** in the head, and can be brought on by stress, eyestrain or teeth grinding.

Vascular headaches, such as migraines, are **caused by the constriction and dilation of the blood vessels** in your head.

Migraines can be triggered by a variety of factors, including **excessive caffeine, certain foods, emotional swings, sexual activity, exercise and hormonal imbalances**, among others.

Natural treatments can help ease the pain by tempering muscle and blood vessel constriction as well as **treating the causes and symptoms** of the various types of headaches.

Following are the best natural headache herbs:

Chamomile - one of the best natural sedatives, chamomile can relieve migraine and tension headaches, and can alleviate symptoms such as irritability and nervousness.

Dandelion Root - an important liver tonic, dandelion can cleanse the liver and help remove toxins which may be the root of headaches and other health conditions.

Ginkgo Biloba - one of the oldest herbal remedies, ginkgo has been shown to increase oxygen and blood flow to the brain. It can help dilate blood vessels therefore easing migraine and tension headache pain.

Gotu Kola - similar in action to ginkgo, gotu kola can help improve circulation in the brain and increase blood vessel strength.

Rosemary - used in many culinary dishes, rosemary has antioxidant capabilities and can increase your sense of wellness.

Yucca Root - also a treatment for arthritis pain, yucca can relieve high blood pressure and can relieve migraines and other types of headaches.

Other Headache Natural Treatments

5-HTP - derived from the seeds of an African plant, 5-HTP is helpful with all types of headaches and can ease anxiety, depression and sleep disorders.

SAMe - a naturally occurring substance in the body, SAMe is used for improving intellectual performance and can help relieve headache symptoms.

We have found a nutritional supplement that contains all of the [headache natural treatments](#) in one comprehensive formula.

The product is called [Neuro Natural Formula](#) and it is made up of **all natural herbal extracts, as well as important vitamins, minerals and nutrients** that can offer headache relief as well as provide many other therapeutic benefits.

We researched the company that makes [this natural product](#) and have found that they adhere to **strict GMP compliance**, which are the highest manufacturing standards in the world. This ensures the **quality and effectiveness** of the ingredients.

Sciatica Pain

The sciatic nerve is **the longest peripheral nerve in the body**, and runs from the lower back through the pelvis and buttock area, right down to the back of the lower leg. It is an extension of the lower end of the spinal cord and is made up of the lumbar and sacral nerve roots from the

spine.

The sciatic nerve runs out of the lower spine, behind the hip joint and down the back of the thigh. Its **function is to send signals from the brain to the muscles of your leg** and from the leg back to the brain – therefore **helping to regulate movement in the limbs**. Movement and feeling in the legs and feet are largely dependent on the sciatic nerve, which is very important to quality of life and maintaining normal mobility. Because it originates in the spinal cord, the health of the spinal cord and its vertebra plays a large role in the healthy functioning of the sciatic nerve.

SciatiGon is a 100% safe and effective natural remedy for supporting the health of the sciatic nerve, spine, and nervous system.

The formula remains true to the **Full Spectrum Approach™** (FSA) of herbal extraction, ensuring the bio-availability and balance of all the active ingredients contained in the remedy. This method of manufacture also significantly reduces the likelihood of side effects and maintains all active ingredients in perfect balance – exactly as nature intended!

By supporting the spine and the nervous system, including the sciatic nerve, **SciatiGon** can make all the difference.

Fibromyalgia

Fibromyalgia (FM) is a collection of signs and symptoms that can change from day to day. Fibromyalgia herbs may help treat the many symptoms associated with this mysterious and debilitating syndrome. Fibromyalgia affects millions of people, with a larger percentage of women being affected than men.

Fibromyalgia is a systemic condition which is characterized by a number of symptoms. The **cause of fibromyalgia is unknown**, and unfortunately it cannot be diagnosed until all other conditions are ruled out. Fibromyalgia symptoms include **severe muscle pain and soreness, fatigue and unrestful sleep and morning stiffness**.

Some other fibromyalgia symptoms are depression and anxiety, which could result from the pain and sleep deprivation associated with the condition.

Fibromyalgia can be severe, and it can take its toll anywhere on the body. It can also be an underlying cause of neck and **back pain**.

There are no known cures for **Fibromyalgia**, due to the fact that the cause is unknown. Theories suggest the condition **may be due to chemical or hormone imbalances**. However there are treatments that can help alleviate the various fibromyalgia symptoms. Besides pharmaceutical drugs, there are natural alternatives such as fibromyalgia herbs that may be safer

than prescription medications.

Learn more about natural ways to help heal your [Fibromyalgia](#) and end your cycle of pain.