

The 3 Phases of Healing



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3 Phases of Healing

Every muscular-skeletal injury or strain goes through 3 stages of healing. For purposes of clarity, these stages are **INFLAMMATION**, **REPAIR** and **REMODELING**. Each of these stages makes an important contribution to healing. The time frames and the therapeutic activities associated with each stage overlap, with each one blending into the other over a period from days to weeks to months or years. Re-injury often requires going through the three stages again.

The human body miraculously re-creates itself cell-by-cell (depending upon body part) anywhere from every few days (as in the linings of our mouth) up to a year (bones), with most cellular regeneration happening within 12 weeks. This is worth noting when devoting oneself to health restoration — by using herbal remedies, we can almost literally hitch a ride onto new forming cells; we can enrich those new cells with beneficial herbs, micronutrients from an alkaline diet, oxygenating activity, a soaking of the health-regenerating and enzyme-conducting mineral Magnesium.



If you are injured, or dealing with chronic conditions, knowing something about the **3 Phases of Healing** will help you refine a health restorative strategy.

STAGE 1: INFLAMMATION

The **inflammatory stage** is the period immediately following an injury. This period generally lasts from 3 to 5 days, or longer. Pain, swelling, heat, and redness characterize inflammation. The redness and swelling may be concealed beneath other tissues, but the injured area will be tender to the touch and the pain is constant. The constancy of pain and discomfort is the best indicator that the pain is caused by inflammation. With inflammatory pain, no time of the day or night is pain-free. ***If rest or a change of position provides relief of pain, the condition has progressed to the Repair stage.***

Cellular Activity



On a cellular level, inflammation attracts specialized cells called **fibroblasts** to the site of the injury. The chemicals of inflammation cause the fibroblasts to begin spinning webs of connective tissue to bind the wound together and seal off or limit the flow of fluids through the area. This process can be readily observed

in a scratch or puncture wound. The scab that forms after such an injury is like the process that occurs within the body in a musculoskeletal injury. This is a protective measure that begins the process of repair.

The process of inflammation is an important part of the healing process. In some cases, however, the severity of the pain disrupts sleep and other activities of daily living. In other conditions such as auto-immune forms of arthritis, the inflammation continues for such a long period of time that too much scar tissue and immobility is produced.

Anti-inflammatory Inputs

Anti-inflammatory medication (over the counter NSAIDS like aspirin, ibuprofen, etc.) may be needed to reduce the inflammation and pain associated with the injury. Medications should be used with care, as they interrupt the normal process of inflammation and repair, and they also have side effects of their own. ***Many anti-inflammatory medications increase the risk of stomach ulcers, and liver and kidney damage.***

[Nutrient-rich herbal alternatives \(both transdermal and oral\)](#) to medications and NSAIDS are invaluable because they are more benign overall to the body. The difference between laboratory-derived synthetic medication and the phytonutrients in plants/herbs is that the medication interrupts a natural process while the herbal nutrients provide your body with the raw materials to limit inflammation or its effects on normal tissue.



KEY INSIGHT: A plant's phytonutrients do not stop inflammation. They merely give your body the tools to control it — to initiate a natural response that delimits symptoms and cause. Supplying proper nutrition (via topical or oral herbal remedies) gives your body greater control over the inflammatory process.

Nutrients aren't always enough, however. During the initial phases of acute or chronic injury, it may be necessary to engage in other supportive therapeutic strategies. This would include the use of **Moist Heat**, increased water intake, the proper methods of

convalescence, the use of supports, adaptation of movement (not ceasing of activity, however!), and very importantly, an assessment of diet and nutrition that supports a more alkaline body environment for healing.

RICE Protocol Adaptation

The iconic **RICE** protocol (**Rest, Ice, Compress, Elevate**) after an injury is often suggested. However, [newer scientific evidence suggests some modifications](#). Rest prevents further irritation and injury, to be certain, but it is also critical to keep active and moving. This keeps healing blood cells and necessary oxygen constantly replenishing the injured area. Ice and compression reduce swelling, but it is most

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effective during the initial stages of an injury (first few hours or day).

The strategy is to alternate between icing and heat initially, ultimately relying only upon moist heat after swelling has somewhat reduced. Elevating the injured

area above the level of the heart allows swelling to drain. Treatment with RICE is generally only done for 3-5 days after an acute injury, though these methods can be used whenever swelling or tenderness to the touch re-occurs.

Movement Benefits

Putting the affected joint through a gentle range of motion is useful during this stage if it does not aggravate the pain or swelling. Care must be taken not to create additional injury by moving too vigorously. However, most injuries do well with gentle range of motion exercises. For example, patients coming out of knee surgery often wake up to find that their leg is strapped to a machine that is moving their leg in circles as if they were riding a bicycle. Patients coming out of back surgery are generally up and walking the same day.

STAGE 2: REPAIR

In the second healing stage, called **repair** or **proliferation**, the injury begins to be rebuilt with new, healthy granulation tissue. For the granulation tissue to be formed, the blood vessels must receive a sufficient supply of nutrients and oxygen. This new tissue is made up of a mixture of extracellular matrix and collagen, which allows for the development of a new network of blood vessels to replace the damaged ones (a process called angiogenesis). The color of the granulation tissue is an indicator of the health of the wound. For example, a reddish or pinkish color generally means that it is healthy, while a darker tissue is often an indicator of infection or inadequate delivery of blood to the wound bed.

In addition to developing granulation tissues, the body transforms damaged mesenchymal cells into fibroblasts, which serve as bridges that help cells move around the affected area. If your wound is



healthy, these fibroblasts begin to appear within three days of the wound and will secrete liquids and collagen. This secretion helps to strengthen the wound site. During proliferation, the wound continues to grow stronger as the fibroblasts continually reorganize aiding in the development of new tissue and accelerate the healing process.

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The repair stage, in summary, begins within a week or less after injury and continues for 4 to 6 weeks, or longer. This stage is characterized by increased fibroblast activity (specialized blood cells that repair), resulting in increased connective tissue strength and formation of adhesion.

Movement is Critical

During the repair stage, it is essential to begin moving the injured joint through a full range of motion as soon as possible. (Read why [HERE](#)) If pain or the fear of pain prevents movement during this stage, the fibroblasts will lay down scar tissue randomly throughout the affected tissues. These fine threads of adhesion will bind the muscle fibers to one another and also bind connective tissue to muscles and joints. The result will be painfully restricted motion. If, however, you put the affected joint through a full range of motion during this stage, the cross fibers of adhesion-binding muscles and other tissues together will be broken, while the fibers that support the normal range of motion will become stronger.

Movement is critical in injury recovery. It stimulates healing blood cells, restores oxygen, flexes the fascia, lubricates joints, and makes you feel good!



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It is important to know that the mineral Calcium takes advantage of vulnerable tissue and joint areas. The consequence is stiffness, pressure spots, perhaps the development of a bone spur or ganglion cyst, joint clicking, and decreased range of motion.

Therefore, it is very important to engage in a [TRANSDERMAL MAGNESIUM THERAPY](#) protocol, as we often suggest — Magnesium controls the unwarranted influx of Calcium into injured areas



During the repair phase, the pain comes and goes depending on the position or movement of the joint. This is how you know you are out of the inflammatory stage. The muscles and connective tissues are not yet at their full strength and the area remains subject to re-injury. With stretching and strength training, pain gradually subsides, while strength and range of motion increase. Failure to stretch and exercise at this time will result in weak, contracted tissues that are intermittently painful and subject to re-injury.

[HERE](#) is a great article about the importance of exercise to support muscles and nerve regeneration.

In a sense, the **Repair** phase is critical because it sets up the next phase of **Remodeling**. Inadequate **Repair** creates a sort of mutation of the body, perhaps not only in the affected area, but in other areas that are trying to compensate for the injury. The more inadequate the **Repair**, the resulting "mutation" will **Remodel** that way.

STAGE 3: REMODELING

Remodeling, also known as **Maturation**, is the last stage of the **injury healing** process. It occurs after the wound has closed and can take as long as two years. During this phase, the dermal tissues are overhauled to enhance their tensile strength and non-functional fibroblasts are replaced by functional ones. Cellular activity declines with time and the number of blood vessels in the affected area decreases and recede.

While it may appear that the **wound healing** process is finished when maturation begins, it's important to keep up the treatment plan. If the wound is neglected, there's risk of it breaking down dramatically as it is not at its optimal strength. Even after maturation, wound areas tend to remain up to 20 percent weaker than they initially were.



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Beginning about the third or fourth week after an injury, the muscles and body structure should be challenged with exercise. Strength training and movement, including stretching exercise, is essential to the full recovery of the muscles, joints, and connective tissues. If pain, fear of pain or re-injury, or lack of commitment to the process prevent restorative exercise, the tissue that forms is disorganized, weak and at risk of re-injury.

At this time, pain is only felt on certain movements or activities if it is felt at all. It is



normal If pain occurs during the end-range of movement or during the last repetitions of an exercise routine. If pain from exercising occurs the following day, you should back off the intensity of the program.

The remodeling phase lasts at least 6 months after the injury; but can continue for years. For example, shoulder injuries (like a torn rotator cuff) can take several years to regain optimal use (of which science shows is at most perhaps 80% of original function). Failure to put the joint through the full range of motion during this time can still lead to painful, contracted tissues. Stretching at this point should take the joint to the end-range, even to the point of discomfort in the joint. Pushing the limits of motion forces the joint to remodel according to your demand for full mobility.

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If you engage in strength training, begin gently and progressively increase. Stressing the muscles and connective tissues stimulates growth and improved function. Failure to do so results in weakened tissues that are vulnerable to re-injury. In the beginning, strength training consists of gentle resistance exercises that can be performed daily. As you improve, you can work up to doing resistance or weight training that takes the muscle to the point of failure in 3 sets of 10 repetitions. At this intensity, a day or two of rest between sessions allows for the muscles to respond to the increased demand by growing bigger and stronger.

Chronic Pain & Dysfunction

Failure to perform any requirements of the 3 stages of inflammation, repair and remodeling results in weak, contracted tissues that are painful and dysfunctional for months or years. The tissues also probably contain too much Calcium that must be controlled and limited by a purposeful influx of elemental [Magnesium \(as in a topical Magnesium spray\)](#).

The process of rehabilitation, if undo stress is put on the affected area, may require going back and re-doing each of the 3 stages. Deep tissue massage, manual manipulation or other therapies can break up adhesion and re-stimulate inflammation. Stretching and exercise can then begin the process of rehabilitation.

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Most individuals with chronic pain and dysfunction tend to avoid exercise and stretching. This results in generalized muscle de-conditioning, poor circulation, and low metabolism. In this situation, an initial period of aerobic conditioning is needed to prepare for strength training. One half hour per to prepare for strength training. During the aerobic conditioning phase, stretching and gentle exercise to the affected areas may be performed. Drinking plenty of water and avoiding processed sugar will also help to relieve soreness and improve energy levels.

SUMMARY

Every muscular-skeletal injury or strain goes through 3 stages of healing: **INFLAMMATION, REPAIR** and **REMODELING**. Each of these stages makes an important contribution to healing. By understanding the progressive nature of healing over a timeframe, one can adapt lifestyle patterns to support healing.



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In most instances, convalescence from an injury is benefited by adaptation of exercise, movement, diet, and good therapeutic inputs. Depending upon body part and severity of an injury, healing can take place from days to months to years. Re-injury often requires the body to move through the three phases of healing again.

Herbal remedies are very supportive of the body's immune response to disease and injury. Herbs support new forming cells, enriching them with beneficial micronutrients and oxygen. They help the immune system catalyze effective responses.

If you are injured, or dealing with chronic conditions, knowing something about the **3 Phases of Healing** will help you refine a health restorative strategy. It will certainly help you understand and monitor recovery, especially when taking herbal supplements.

For more information, please visit our website: www.cortesiaherbalproducts.com

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