
NEXT GENERATION REGENERATION

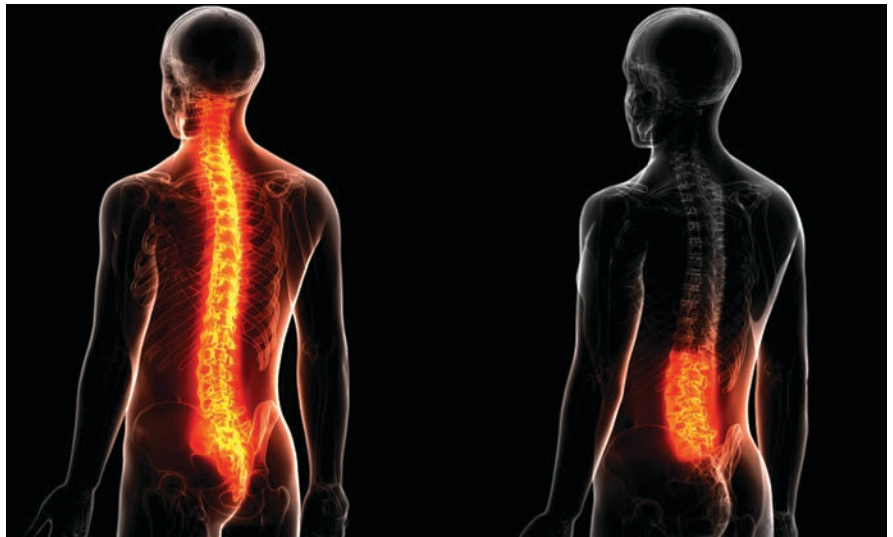


GOLDIC®

ORTHOPEDICS
SPINE



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GOLDIC®

STAY IN MOTION

Orthopedics is the field of medicine concerned with the study and treatment of the musculoskeletal system, particularly the spine, joints and muscles. Therefore orthopedics has a central meaning for the treatment of back pain.

Back problems are one of the most common reasons for visits to doctors' offices and it is a major cause of missed work.

The lumbar spine, or low back, is a remarkably well-engineered structure of interconnecting bones, joints, nerves, ligaments, and muscles all working together to provide support, strength, and flexibility. However, this complex structure also leaves the low back susceptible to injury and pain.

While neck pain in the cervical spine is less common than lower back pain, millions of people experience neck pain and / or related arm pain at some point in their life.

Intervertebral discs take on the function of a shock absorber between two vertebral bodies. A herniated disc is a condition in which the inner portion (nucleus) herniate through the "outer" fibers. The herniated material can compress the nerves around the disc creating pain that can radiate

through the back and sometimes down the arms (in the cervical spine) and legs (in the lumbar spine). These discs can degenerate with aging and are therefore prone to injury.

Back pain can be a chronic and debilitating condition. Small, daily actions can help your discomfort and by taking steps to strengthen, stretch and protect your back, you can ideally stop or slow pain. However, severe cases of back pain can't be fixed by lifestyle changes. If the back pain interferes with the ability to perform everyday activities, you should consult a doctor.

The list of treatment options for these problems is long and complex. No treatment should ever be dismissed, as everyone's pain and condition is different. Therefore, patients should carefully consult their medical professional about those options before starting a treatment. Patients deserve to know how likely it is that the treatment will be effective for their condition.

In the search for optimal, speedy recovery and quick return to everyday life, work and sports, **GOLDIC®** medical devices can help the treating physician achieve these goals.

LOWER BACK PAIN

The low back supports the weight of the upper body and provides mobility for everyday motions such as bending and twisting. Muscles in the low back are responsible for flexing and rotating the hips while walking, as well as supporting the spinal column. Nerves in the low back supply sensation and power to the muscles in the pelvis, legs, and feet. The sciatic nerve directs sensations of the leg to the spinal cord and passes commands of the brain to the leg muscles.

Most acute low back pain results from injury to the muscles, ligaments, joints or discs. The body also reacts to injury by mobilizing an inflammatory healing response. While inflammation sounds minor, it can cause severe pain. These injuries can include damage to the intervertebral discs, compression of nerve roots and improper movement of the spinal joints.

The diagnosis of low back pain involves a review of the history of the illness and underlying medical conditions as well as a physical examination. Further tests for diagnosis of low back pain can be required including blood and urine tests, X-ray tests, CT scanning, MRI scanning, bone scanning and tests of the nerves.

Millions of people undergo lumbar spine surgeries yearly and these procedures can make a huge difference to individuals who have lost their independence because of chronic pain. It is, however, a major surgery and therefore subject to corresponding risks. Additionally, low back surgeries and fusions require lengthy recoveries.

Treating low back pain with **GOLDIC®** gives patients another avenue to explore as they try to return to health. For both acute and chronic conditions (persistence of symptoms over an extended period of time), **GOLDIC®** can provide a successful treatment alternative. This procedure was developed to enhance the therapeutic effects of gold on the cellular level in combination with the advantages of an autologous blood therapy.

This new approach is based on the upregulation of several important proteins that can directly influence the body's own regenerative processes. **GOLDIC®** medical products help the treating physician in the enrichment of anti-inflammatory and regenerative proteins, as well as the activation and differentiation of the body's own stem cells.

Usually, a total of four (4) injections of the prepared serum at a distance of 3-7 days are made by the attending physician to treat lower back pain.

The epidural **GOLDIC®** injection procedure takes place in a surgery center, hospital or a physician's clinic. Many types of physicians are qualified to perform an epidural injection. Imaging guidance may be used to place the needle in the right location for maximum benefit.

With **GOLDIC®** injections, there is no scarring, no cutting of the spinal musculature (which can cause muscle injury and residual low back pain after surgery) and limits complication rates. The healing process is accelerated, the patient is faster pain-free and earlier physically fit.



SPINAL DISC HERNIATION

The spinal column spans from the cervical spine in the neck through the thoracic spine in the middle back and into the lumbar spine in the lower back. Made up of 24 individual vertebral bodies the spinal column is flexible enough to allow for the full range of motion in the neck and back that's required for daily activity and also strong enough to support the weight of the upper body.

Serving as shock-absorbing cushions for the spine, discs are positioned between adjacent vertebrae to facilitate movement and reduce friction. Parts of the disc can emerge due to damage and press on nerves. This can cause discomfort such as numbness and paralysis, as well as pain. This condition is referred to as a herniated disc.

Disc herniation symptoms usually start for no apparent reason. Or they may occur when a person lifts something heavy and / or twists the lower back, motions that put added stress on the discs. Pain and other uncomfortable symptoms can develop if displaced inner disc material — which contains inflammatory proteins — irritates or pressures the disc wall, the spinal cord or a nearby nerve root.

A herniated disc can cause a variety of symptoms in the neck, arm, hand, and fingers, as well as parts of the shoulder. The pain patterns and neurological deficits are largely determined by the location of the herniated disc.

A lumbar herniated disc is the most common cause of sciatica, leg pain along the sciatic nerve down the back of the leg.

An acute cervical disc herniation may arise from a type of trauma or neck injury. Often elderly patients have pronounced wear and tear of the cervical spine which can lead to a disc herniation.

The primary goal of treatment for each patient is to help relieve pain and other symptoms resulting from the herniated disc.

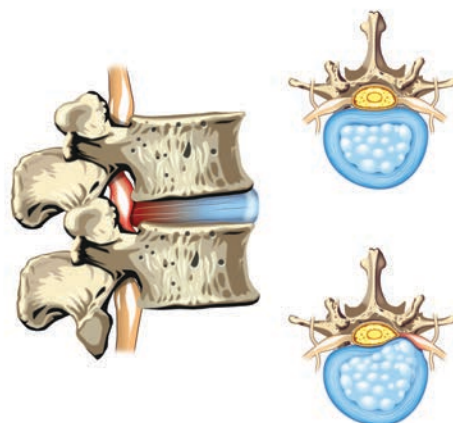
To achieve this goal, each patient's treatment plan should be individualized based on the source of the pain, the severity of pain and the specific symptoms that the patient exhibits. **GOLDIC®** could be an option.

„An essential goal of the treatment of a herniated disc is to relieve the pain and restore the familiar quality of life...”

Terminology about a herniated disc can be confusing.

There are many different terms to describe a herniated disc, such as a pinched nerve, bulging disc, ruptured disc or slipped disc.

These terms tend to be used somewhat differently among health professionals because there are no generally agreed upon definitions for many disc problems.



DISORDERS OF THE SPINE

With the current demographic changes (population ageing) and lifestyle-related factors increasing the potential for back problems, the demand for a wide range of medical services to treat disorders of the spine and their symptoms may be expected to increase substantially over the coming years.



DEGENERATIVE DISC DISEASE

Degenerative disc disease is one of the most common reasons for low back and neck pain, caused by wear-and-tear on a spinal disc.

Degenerative disc disease typically consists of a low-level chronic pain with intermittent episodes of more severe pain. A degenerating spinal disc does not always lead to pain or other symptoms, because the disc itself has very little innervation. Most of the pain is coming from the joints in the back of the spine (facets), the spinal nerve that's being irritated, and the fact that the ligaments and muscles are incapable of stabilizing the segment.

The disc itself is only part of the problem. Inflammatory proteins from within the disc space may leak as the disc degenerates. This leads to swelling of the surrounding spinal structures. The inflammation of the nerve root can trigger muscle tension, muscle cramps and local sensitivity in the back or neck. In cervical disc degeneration, pain and numbness can radiate into the arm and shoulder, with lumbar disc degeneration into the hip or leg.

Using **GOLDIC®**, physicians focus on treating these inflamed regions by injecting protein-enriched serum around the affected nerves, ligaments and muscles. An important goal of the treatment is to preserve the original disc height for the patient.

In each healing phase, different cell types play various decisive roles. All processes involved are closely interlinked. The healing phases are not simple linear processes, rather they interlock. They cannot be separated chronologically or spatially. **GOLDIC®** medical devices support these natural healing processes.

INDIVIDUALIZED MEDICINE

TECHNOLOGY OF THE FUTURE ?

Individualized medicine is considered the megatrend that will change the current health care sector completely, and at a rapid pace. The idea here is: the treatment of the patient should be carried out taking into account his individual circumstances. Of central importance in spinal medicine is to understand the discomfort and challenges of living with a spine disorder or condition. Your physician is dedicated to providing you with the skilled and compassionate care you need for recovery, by bringing all aspects of diagnosis, treatment, surgery, rehabilitation and wellness together in a single system. Personalized medicine is redefining spine care and achieving exceptional outcomes for the patients.



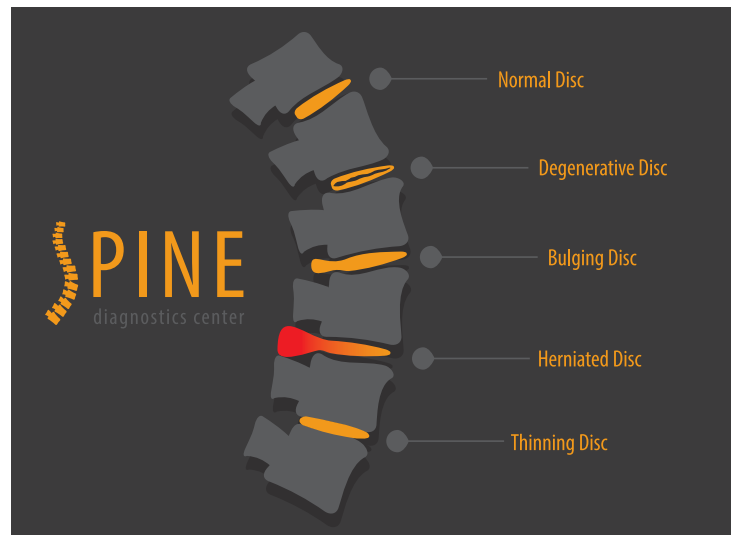
GOLDIC® medical devices assist the physician in their individual therapy of the patient with the body's own important cytokines and growth factors of the enriched serum.

The self-healing powers of the body are used, thereby enabling a largely side effect-free treatment.

The healing process is accelerated, the patient is faster pain-free and more resilient.

The applications of autologous blood therapies have become increasingly popular in recent years due to positive results. Possible applications for **GOLDIC®** in spine are:

- **Lumbar Disc Herniation**
- **Cervical Disc Herniation**
- **Sciatica Pain**
- **Degenerative Disc Disease**
- **Lumbar Epidural Injections for Low Back Pain**
- **Facet Joint Pain Management**



INTELLIGENT TISSUE REGENERATION

The GOLDIC® - SET 4 SPINE includes the following parts:

4 pieces Blood-Collection-System - BTS - (incl. designed gold particles)

4 pieces Serum-Application-System – SAS - (incl. special filter)

1 piece Butterfly needle for blood collection

1 piece 3-way-tap to connect the BTS-tubes

Labels

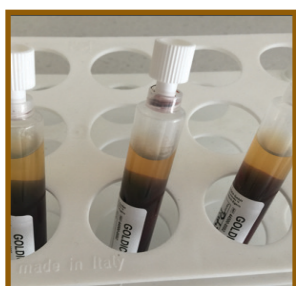
Treatment with **GOLDIC®** consists of taking blood and four additional appointments for each administration of the processed, body-own serum. For detailed medical advice, please consult your doctor. The doctor of your choice will advise you on the possibilities, risks, benefits and costs in the context of a personal discussion and on the basis of an individual assessment.

Treatment



Blood Collection

The blood is taken in the usual way, takes only a few minutes and is performed while sitting or lying down. In a first step, the blood in the vein is stowed with a contractile strap. Subsequently, the planned puncture site is cleaned with a disinfectant to prevent infections. With a fine, hollow needle (cannula), the puncture is made in the vein. The individual **GOLDIC® tubes** are placed on the needle and then filled with blood. After filling the 4 tubes, the stasis is released again, the needle pulled out of the skin and glued the puncture site with a pressure plaster.



Serum Preparation

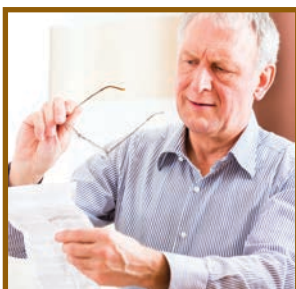
After slowly and carefully aspirating the blood into the **GOLDIC® BTS-tubes**, these tubes will be stored in an incubator for 24 hours. They are then centrifuged to separate the serum enriched by the designed gold particles from the other blood cells. This conditioned serum is then provided for injection into the patient.

No anticoagulants (coagulation medicines) are used.



Epidural Injection

An epidural injection is an injection into the space around the spinal cord, also known as the epidural space, to provide relief from pain or inflammation. The first injection of the body 's own serum usually takes place the day after the blood collection. A special filter prevents the serum from getting the gold particles into the body of the patient. In general, a total of 4 injections of the prepared serum at a distance of 3-7 days are made by the attending physician. The prepared serum is stored in the tube at -18 ° C in a freezer until the next treatment. Imaging guidance may be used to place the needle in exactly the right location to target the specific area.



Possible Side Effects

Locally, it can come at the treated site, to short-term side effects such as warming, redness and swelling. In rare cases, hypersensitivity reactions have been observed. Symptoms after epidural injections like headache and nausea can occur.

The doctor of your choice will advise you on the possibilities, risks, benefits and costs in the context of a personal discussion and on the basis of an individual assessment.

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This brochure serves as information material on the application possibilities of specific Arthrophen products and technologies. The contents of this booklet are not a recommendation for a particular treatment. Healthcare professionals should act according to their education and experience, and may seek medical literature or instructions for use. Within the freedom of medical treatment and based on a risk-benefit analysis, the attending physician is solely responsible for the fact that the use of Arthrophen GOLDIC® products is indicated for the respective patient.

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