

ORTHOPEDISC

ORTHOPEDISC CARPAL TUNNEL SYNDROME

Carpal tunnel syndrome is a condition resulting from the compression of the median nerve that is due to rheumatoid arthritis or environmental factors (e.g. long-lasting work with a computer mouse). It can be also caused by edema of the median nerve, constriction of wrist tunnel resulting from degenerative or post-traumatic changes. The main symptoms of carpal tunnel syndrome include numbness of wrist area, gradual atrophy of the thenar muscles, index and middle finger tingling, loss of grip strength, difficulty in fist clenching, incremental stiffness of hand. These symptoms are especially severe at night and exacerbate with a raised arm, after lowering they slowly disappear. Tingling is usually observed in the morning and gradually disappears after moving a hand. Frequently, carpal tunnel syndrome is accompanied with an ulnar nerve blocking i.e. namely the nerve groove and the Guyon's canal in the wrist. It is so-called the Guyon's Canal Syndrome. People who experience compression of one nerve are also prone to the compression of the other one, however, it does not need to happen simultaneously. Diagnosis is possible after EMG testing that helps to determine which nerve is damaged, on what level and to what extent. The treatment of carpal tunnel syndrome can be conservative or surgical. Conservative therapy includes B6 vitamin administration and physiotherapy. Surgical treatment involves cutting flexor retinaculum and releasing the nerve.

Stem cell therapy provided by Pulsmed Hospital is an innovative method that brings spectacular effects. It is a chance for the regeneration of an afflicted joint and the improvement of its functioning. ADSC stem cells derived from a patient's own adipose tissue and subsequently administered into an afflicted area bring about joint regeneration and nourishing. Pain decreases significantly and joint mobility and functioning improve.



ORTHOPEDISC

DEGENERATIVE DISEASES OF OSTEOARTICULAR SYSTEM

OSTEOARTHRITIS /DEGENERATIVE JOINT DISEASE/, BONE AND JOINT INFLAMMATION, TENDON AND LIGAMENT INJURIES.

The method of deriving stem cells from a patient's own adipose tissue is a breakthrough in cell therapy and regenerative medicine. It can significantly support the treatment of numerous diseases. Primal and stem cells tend to be applied more and more often in the treatment of degenerative joint diseases in orthopedics, tendon and ligament injuries in sports medicine, reconstructive and plastic surgery as well as aesthetic medicine.

Stem cells can be found in every human body but their amount decreases with age. They play a reconstructive role in our body. They circulate throughout the body with blood and get activated in damaged tissues and cells. Unfortunately, our joints, tendons and meniscuses are parts of the body with a poor blood supply and they cannot repair themselves.

OSTEOARTHRITIS /OA/ is a process of degradation of articular cartilage and subchondral bone, the symptoms of which include joint pain and stiffness. It is often a consequence of various inflammatory conditions - connected with rheumatoid origin, injuries, minor injuries, as well as the aging process of the body. It results in a significant physical impairment, limitation of activities and quality of life, which inevitably result in obesity and cardiovascular diseases. Treatment generally involves a combination of exercise, viscosupplementation, anti-inflammatory and analgesic drugs, however, it provides only limited relief.

The latest research shows that adult stem cells derived from adipose tissue /ADSCs/ can differentiate into cartilages and bones, which offers a possibility of osteoarthritis treatment (Diekman et al. 2010; Kern et al. 2006). Cartilage repair has been proved on animal models (Dragoo et al. 2007; Cui et al. 2009). The research conducted on human bodies also showed its safety and effectiveness in phase I and II of clinical trial in two-year observation (Garcia-Olmo et al. 2005; Garcia-Olmo et al. 2008 and 2009). Adipose-derived stem cells combined with PRP that are transferred additionally induce articular cartilage and tissue regeneration and repair and significantly diminish inflammatory condition and joint pain. Repair process takes a few months but some patients observe an improvement even within a few weeks. In tendon and ligament treatment /e.g. tennis elbow/ stem and regenerative cells are transferred locally into the area of damage.

ADI STEM METHOD used in Pulsmed Hospital in the treatment of degenerative joint diseases and tendon and ligament injuries involves harvesting about 50cc of adipose tissue from waist area, separating stem and regenerative cells, their activation with platelet-rich-plasma PRP and monochromatic LED light /Adi Light 2/, finally transfer directly into a damaged joint or ligament area. Sometimes, additional transfer of ADRC through intravenous infusion is recommended. The procedure is performed within one-day hospitalization. Harvesting of adipose tissue /liposuction/ is carried out under local and intravenous anesthesia (tumescent technique).

1. harvesting of adipose tissue
2. separation of stem cells /ADSC/

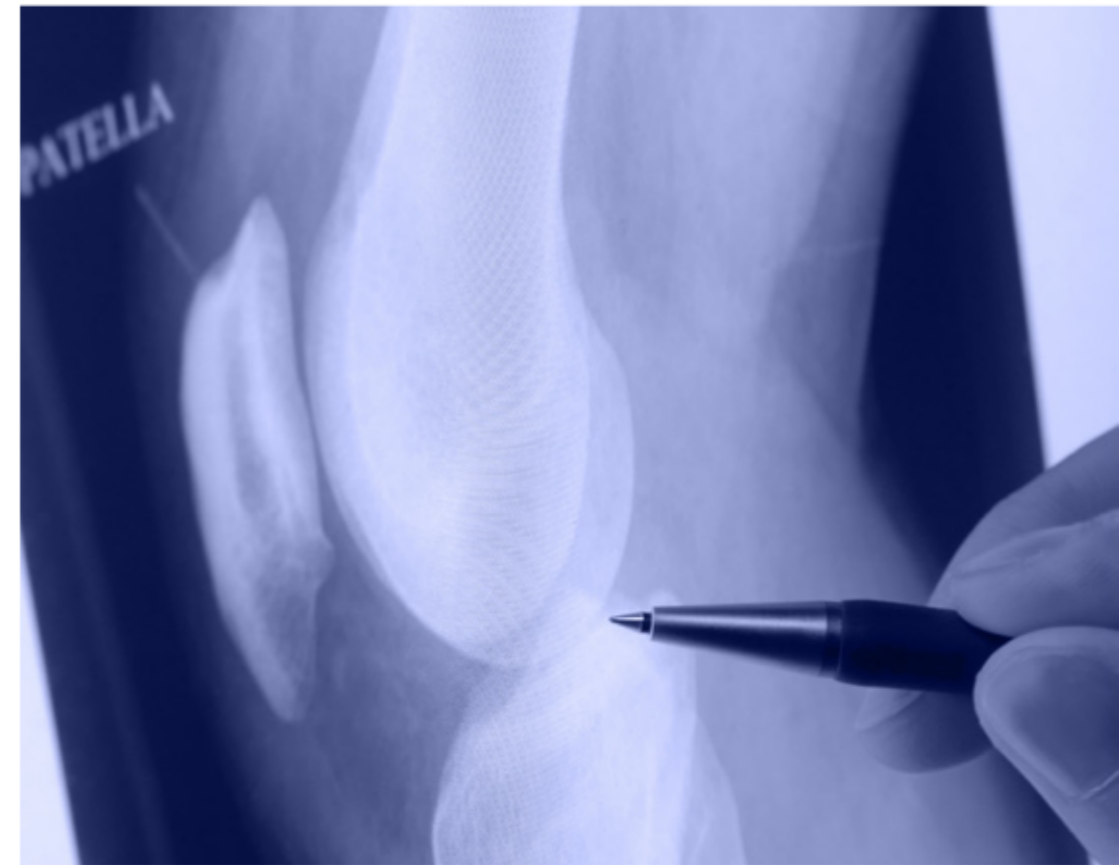
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3. Adi Light photo-activation

4. injection into joints

All procedures are performed by experienced specialist doctors who possess international certification licensing them to apply Adi Stem technology. Dr Zbigniew Kowalczyk belongs to the international group of researchers, doctors and biotechnologists who deal with the studies and implementation of standards of stem and regenerative cells therapies - Global Stem Cells Network /GSCN/

Pulsmed Hospital is the first centre in Poland that belongs to the international Network of Hospitals and Clinics which deal with the research and application of ADSC cells - Global Stem Cells Network /GSCN/.



ORTHOPEDISC ELBOW JOINT

ELBOW JOINT IS ONE OF THE MOST COMPLEX JOINTS. ITS STRUCTURE IS VERY COMPLICATED AND IT IS ACTUALLY THREE JOINTS:

- humeroulnar joint
- humeroradial joint
- superior radioulnar joint

It is covered by joint capsule that protects it against dislocation.

Elbow joint degenerative disease, similar to other joints, is characterized by structural changes in the joint surface as well as within the area of soft tissues. Its most common cause are post-traumatic injuries of articular cartilage and joint resulting from elbow tip fracture of distal humeral epiphysis or rheumatoid diseases.

In the course of disease some spurs appear (osteophytes) that squeeze ulnar nerve, which may lead to muscle paresis of hand and finger flexors.

The treatment of elbow joint degenerative changes comprises procedures similar to the cases of other joints. When they are not very extended and bring slight pain, less invasive methods can be applied, such as physiotherapy. The treatment can be also aided with pharmacology and it is recommended to keep an afflicted joint at rest.

Stem cells therapy offered by Pulsmed Hospital is an innovative method of treatment of degenerative joint diseases. Cells harvested from a patient's own adipose tissue and administered directly into the joint facilitate the regeneration of damaged areas, reduce pain and increase a joint mobility.

ORTHOPEDISC GOLFER'S ELBOW

Golfer's elbow i.e. an inflammatory condition of the medial epicondyle of the elbow that results from damage of round pronator muscle insertion or radial flexor muscle of wrist. Golfer's elbow can be developed in patients of all ages, but it is mostly observed in patients between 40-60 years old. This is the result of elbow strain which leads to inflammation evoking pain. People prone to the condition include golf players, tennis players as well as people working a lot at the computer, mechanics and dentists.

The first symptoms of golfer's elbow include pain at certain movements but subsequently it can appear also while resting. It is accompanied by general muscle weakness in the whole limb, numbness and stiffness. Pharmacological treatment includes anti-inflammatory and analgesic medication. Physiotherapy, cryotherapy, immobilization in plaster cast or orthosis are often recommended. Exercises are also of crucial importance as they improve joint mobility.

Therapies with ADSC stem cells offered by Pulsmed Hospital provide vast opportunities for quick recovery. Stem cells derived from a patient's own adipose tissue and subsequently administered into an afflicted area bring about its regeneration, nourishing and improve mobility. Pain disappears and comfort of life significantly improves.



ORTHOPEDISC KNEE JOINT

Degenerative changes in a knee joint appear due to the fact that its tissues too early wear out. These changes embrace both joint cartilage, joint soft structures, ligaments, tendons and joint capsules. First degeneration appears in the area of back part of knee-cap as a result of squeezing while bending a knee. The structure of joint cartilage is damaged, it loses elasticity and even breaks, which results in the loss of joint structure. In the course of time some spurs may appear and they bring about damage in knee-cap structure and pain.

The main cause of knee joint degenerative diseases is the process of organism aging. What also contributes to this problem are various injuries occurring during our life as well as inborn joint deformations; supination, knock-knee or inborn knee dysplasia.

The first symptoms of degenerative joint diseases are often misleading and do not worry patients. Fatigue that we feel in legs as a result of weakness is usually not associated with this condition. Articular cartilage that is the first to undergo changes is not innervated and thus pain appears quite late. It can occur while walking and disappear while resting. This pain comes from joint soft structures i.e. overstretched ligaments, muscles or damaged joint capsule. In the course of knee joint degenerative disease inflammatory conditions appear frequently as a result of effusions, which evokes changes in the joint surface.

Preventive treatment or treatment of knee joint degenerative disorders often includes changing a way of life and taking up physical activity. If these do not bring expected effects, physiotherapy procedures, pharmacological treatment and even surgical treatment can be applied.

Treatment with ADSC stem cells used in Pulsmed Hospital offers a wide range of opportunities for regeneration of knee joint damaged by the disease. It facilitates joint functioning, reduces pain and improves a comfort and quality of life.

ORTHOPEDISC MUSCLE AND TENDON INJURIES

Muscle, tendon or ligament injuries most frequently occur while practicing different kinds of sport disciplines. However, it is not the only case. Similar injuries can happen in the course of everyday life e.g. an unfortunate fall, stumble or tread. It must be noted that soft tissue injuries also include ligament or joint capsule injuries, not only muscle and tendon injuries. In colloquial speech we often talk about muscle strain, tear, sprain or bruising.

Definitely more serious injuries are those in which we observe the tear in the continuity of tissues as they often require a surgical intervention, and what follows a longer recovery period. All damaged soft tissues react in a very similar way and give similar symptoms.

The first common symptoms include acute inflammation and subsequent swelling, a rise in temperature in the injured area and the whole body. They are often accompanied by a severe pain in the damaged area that increases while moving an injured limb. This phase takes about 7 days after the injury.

The second phase of soft tissue regeneration is the proliferation phase which takes about 3 weeks after the injury. It involves the generation of cells that are responsible for reconstruction of damaged tissues.

The last phase is a so-called remodeling phase and it involves regeneration and nutrition of damaged tissues.

The procedure that must be implemented immediately after the injury involves quite simple steps. The injured part of the body

should be protected, e.g. immobilized with an elastic band or a plaster cast. It is also recommended to put ice on injured area in order to reduce swelling and ache. The limb must be also properly placed i.e. higher than normal in order to prevent swelling and reduce the risk of hematomas.

After removing an immobilizing bandage patients must undergo a series of procedures aiming at improvement of their physical condition.

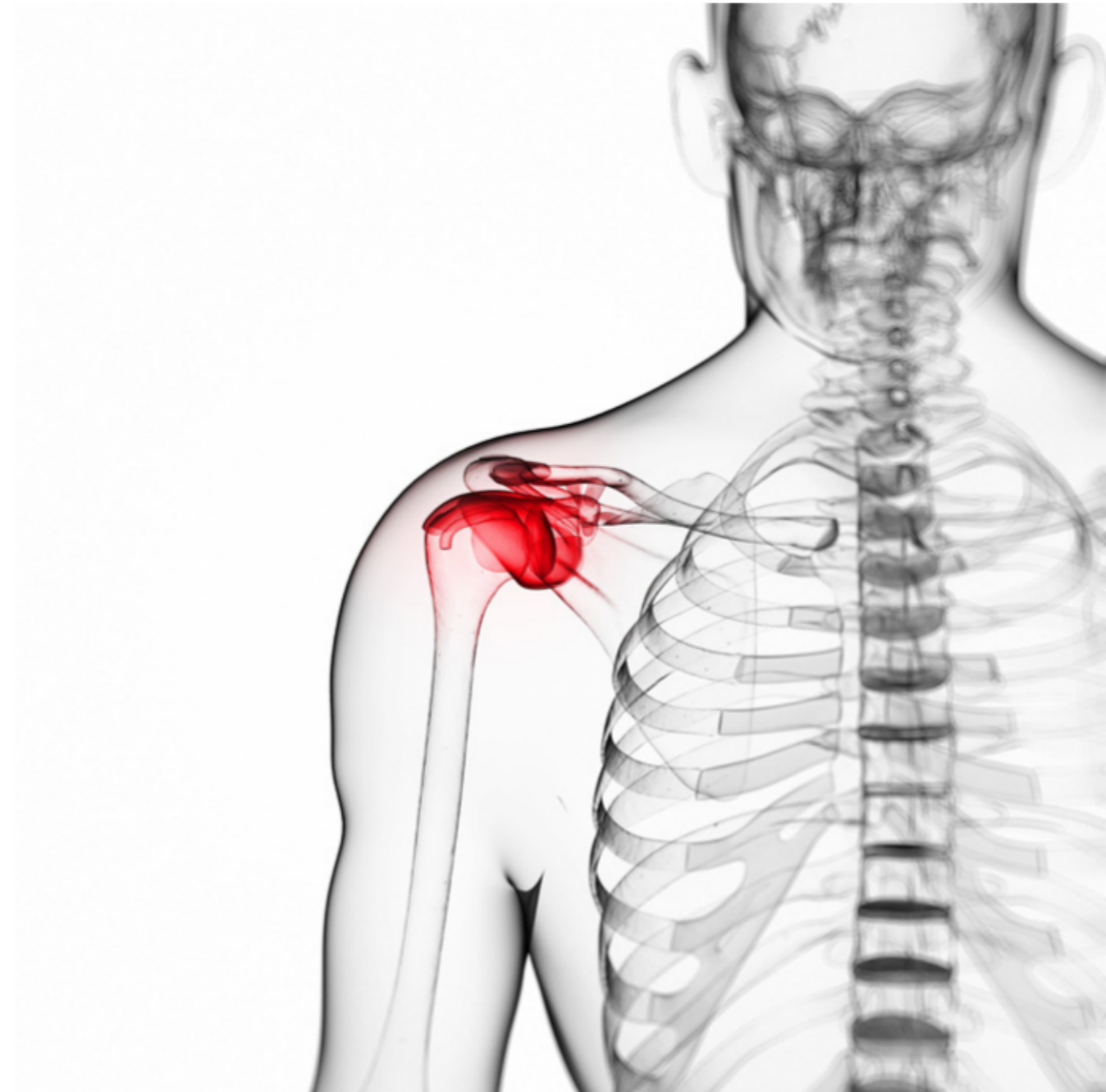
Pulsmed Hospital offers an innovative method of treatment of such injuries using ADSC stem cells that are harvested from a patient's own adipose tissue. Direct administration of stem cells into an injured area facilitates its fast regeneration. This type of treatment is comfortable for a patient who quickly recovers and returns to a normal life.

ORTHOPEDISC SHOULDER JOINT

Degenerative changes of shoulder joint are the most common cause of shoulder pain. They appear in the course of organism aging, which leads to gradual damage of articular cartilage and rubbing out of joint surface. Its consequence is pain that appears with motion. Degenerative changes of shoulder joint are mostly observed in blue-collar workers who permanently use a lot of strength. Pain that appears at the moment of movement limits joint mobility and as a result it causes joint stiffness. The biggest problem are shoulder rotation movements and abduction movements. Pain can radiate into the whole upper limb and induce its general weakness.

There are a lot of causes that bring about degenerative changes in shoulder joint. The most common include injuries that happened during our life e.g. shoulder dislocation, fractures, damage within soft structures of shoulder girdle. There are two ways of treating degenerative changes of shoulder joint. In minor cases physiotherapy and pharmacology are applied. In the case of extended changes less invasive methods do not bring desired effects and arthroscopy of shoulder joint, which is currently one of the most popular methods, is performed.

Pulsmed Hospital, which wishes to meet patients' demands, offers therapies using ADSC - stem cells derived from a patient's adipose tissue to regenerate a damaged shoulder. This is a minimally invasive procedure that brings spectacular effects. Stem cells applied directly into a joint bring about its regeneration, smooth joint structure and significantly improve its mobility. This leads to pain reduction and enhancement of a patient's comfort of life.



ORTHOPEDISC

SPINE AND JOINT PAIN SYNDROMES

Spine pain syndrome or joint pain syndrome can be also called overuse syndrome. This is one of the most frequent causes of pain. Its characteristic feature is that pain lasts for a long time, what only changes is its intensity. These pains most often affect cervical vertebral column and lumbar spine. It is a disease classification that is strictly connected with pathology of zygapophyseal joints.

Pain that accompanies these disorders is usually changeable and occurs a few times a month. What is also observed then is excessive prevertebral muscle spasm. The characteristic feature of this kind of pain is that its intensity depends on our position. It is definitely more severe when we lie on the back and it diminishes when we lie on the abdomen or on our side with bent legs. Another characteristic is that these pains radiate very often to the buttock or a back part of thigh. As it comes to cervical vertebral column, these pains occur in the neck and shoulder girdle area. There are numerous causes of spine pain and overuse syndromes. They include osteoarthritis, non-physiological curvatures of the spine (loss of physiological lordosis or increased lordosis or kyphosis), long-lasting pressure on certain segments of the spine as well as post-traumatic and post-inflammatory disorders. Another very frequent cause of pain and overuse syndromes are, so-called osteophytes (sclerotisation of edges). Spine and joint pain syndromes are also caused by many factors which we can refer to as "natural" ones. They include age, type of work, bad diet, lack of physical activities. All these issues make up a picture of pain and overuse syndromes.

The basis of diagnosis of this syndrome is the medical history that a doctor makes while talking to a patient as well as tests from the scope of diagnostic imaging such as X-ray examination. When it is

not sufficient for a doctor to make a diagnosis, more advanced tests such as spine CT scan or MRI scan are recommended.

The treatment generally involves conservative, not very invasive measures. The most common are rehabilitation procedures in the field of physiotherapy and kinesiotherapy. If they do not bring desired effects, intra-articular blocks with anti-inflammatory or painkillers are used.

Administration of stem cells directly into an affected joint causes its regeneration and a significant mobility improvement. ADSC stem cells that have been harvested from a patient's adipose tissue facilitate recovery processes and bring satisfaction to a patient. Return to a good physical condition is fast and a patient's comfort of life markedly increases.

ORTHOPEDISC TENNIS ELBOW

Tennis elbow i.e. lateral epicondylitis is a painful elbow condition that is caused by an inflammation of the tendons that attach to the lateral epicondyle of the humerus. While the common name suggests a link to sport, the percentage of tennis players among the afflicted is very low and amounts only to 10%. It is much more often observed in people working long at the computer keyboard e.g. IT specialists and people whose daily activities involve intensive repetitive wrist motion e.g. screwing in. The other factors that contribute to the condition include e.g. carrying heavy objects with fully extended elbows. The method of treatment depends on a type and advancement of the condition. Anti-inflammatory and analgesic medication as well as keeping an arm at rest very often bring desired effects. Sometimes physiotherapy, mainly massages prove to be useful. Good results are also achieved after applying ice or cryotherapy. Sometimes an arm requires a temporary immobilization in plaster cast or orthosis. Therapies with ADSC stem cells offered by Pulsmed Private Hospital provide vast opportunities for quick recovery. Stem cells derived from a patient's own adipose tissue and subsequently administered into an afflicted area bring about its regeneration, nourishing and improve mobility. Pain disappears and comfort of life significantly improves.



ORTHOPEDISC TREATMENT OF SYNOSTOSIS DISORDERS

Deficiency of synostosis observed after a fracture poses a serious problem, both for a patient and a doctor. It can result in permanent damage of mobility system.

While talking about synostosis disorders, one must mention the most important issue i.e. the causes for its occurrence.

Local causes that may impair synostosis include: circulatory problems in an injured area and improper reduction of fracture in the case of comminuted fracture in which dislocation occurred. Another cause may involve improper immobilization, insufficient time of immobilization (early removal of plaster cast), too rapid activation of a broken limb, or improper rehabilitation.

What also plays a role in the process is a patient's age because reconstruction of bone tissue proceeds differently in a child and an elder person.

The standard procedure includes immobilization of a broken limb in a plaster cast or orthosis. It is usually removed when X-ray examination confirms the lack of elasticity and resilience in the area of fracture and lack of ache, as it confirms a so-called clinical union. Sometimes an orthopedist has to perform an operational osteosynthesis of a fractured limb or its fragments when there are no prospects of healing in a plaster cast. In such a procedure special screws or plates are used, which is to facilitate proper healing of a broken bone. They are usually removed after some time, however, in the case of elderly patients they may be left for their safety. A limb that has been broken still requires special care and treatment, even after completing recovery procedures. It applies mainly to elderly patients

in whom reconstruction processes take longer than in young people and they usually suffer from a number of other diseases resulting from age, such as osteoporosis or circulatory problems.

The process of bone tissue reconstruction can be aided by physical procedures, both while wearing a plaster cast e.g. magnetic field and after removing it. The next phase involves exercises that are to bring back muscular strength and mobility in an injured joint. It must be noted that muscular atrophy in plaster proceeds very fast and thus, it is recommended to exercise in a plaster cast if a doctor allows.

Stem cells therapies offered by Pulsmed Hospital are a great opportunity for quick recovery. Stem cells harvested from a patient's adipose tissue and administered directly into the area of fracture facilitate healing, as a result a bone gets stronger, and regeneration and recovery processes are definitely faster.