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## ***Cryotherapy***

The therapy known as Cryotherapy consists of a medical therapy which uses the effects of low temperatures in the body. This therapy is used to treat a series of, medically called, lesions. Such lesions include a variety of benign and malignant tissue damage. The method however must only be used in offices prepared for such technique and by personal specialized on this area. The cryotherapy has been used as early as the seventeenth century.

The objective of this treatment is to try to calm and help restore the natural state of an irritated nerve, to decrease cell growth (which includes the recess of cellular metabolism), decrease inflammation of certain tissues, pain and spasms. Histologically the cryotherapy treatment causes the basement membrane separation, which may result in a blister formation (small pocket of fluid within the upper layers of the skin, typically caused by forceful friction, burning, freezing, chemical exposure or infection), promote the vasoconstriction, and eventually, at more extreme and lower temperatures, to completely destroy cells by the crystallization of the cytosol.

The most prominent use of the term refers to the cryosurgery (surgical treatment using cryotherapy methods). This is usually used for treating cancers (prostate cancer for instance). Some other forms of therapy use this term just as **Hyperbaric gaseous cryotherapy and ice pack therapy, Cryogenic chamber therapy.**

## **Hyperbaric gaseous cryotherapy**

Methods: Through the direct application of liquid Carbon Dioxide at -78°C with a pressure of 50 bars directly on the skin of the painful area for a small amount of time.

Objective: To serve as a painkiller, create an anti-inflammatory response from the organism and to create muscle relaxation  
Side Effects: The usage of this treatment usually implies ice burns on the skin due to the extremely low temperature. However, it is not very painful and the normality of the tissue can be easily restored.

## **Ice pack therapy**

Method: An ice pack is placed over the injured area, and through the conduction of thermal energy (heat), the closed traumatic or edematous injury absorbs and transmits this heat, helping on the relaxation of muscle and on the reduce on swelling and inflammation of the tissue. This is the most used technic for sportsman since it is a quick and painless treatment.

Objective: It is commonly used to alleviate the pain of smaller injuries, as well as to decrease the armful feeling and soreness of the muscle. The cold decreases the activity of the spindle fibers and slows the nerve conduction velocity, therefore attenuating the pain felt. Side effects: The side effects can be considered to be none to the average person, however, since this treatment focuses mainly patients of sport practice, the fact that the ice reduces the performance of reflex and force production, as well as a reduction in balance immediately following the Ice Pack Therapy, we can say that there are some "side effects".

## **Cryogenic chamber therapy**

Is currently being offered by clinicians as an alternative to cold water immersion or ice packs.

Methods: With this technic the patient is placed on a Cryogenic Chamber for a short duration and if used properly will rarely destroy tissue. The chamber in which the patient is placed is cooled to a temperature of -120°C through the usage of liquid nitrogen. Some protective clothes are worn by the patient like socks, gloves, as well as protections for mouth and ear. These will prevent the acute frostbite that the patient could eventually suffer on its body extremities.

Objective: Patients report that this experience is invigorating and improves a variety of conditions helping in psychological stress, insomnias, muscle and joint pain, itching, and psoriasis.

Side effects: The immediate effect of skin cooling and the analgesic feeling lasts for 5 minutes, however the hormonal release of endorphins can have a lasting effect of even weeks.

## **Cryotherapy for Abnormal Cervical Cell Changes**

Methods: During cryotherapy, liquid carbon dioxide (CO<sub>2</sub>), which is very cold, circulates through a probe placed next to the abnormal tissue. This freezes the tissue for 2 to 3 minutes. It may be allowed to thaw and then be refrozen for another 2 to 3 minutes. A single freeze treatment for 5 minutes may also be used. (Your doctor will insert a lubricated tool called a speculum into your vagina. The speculum gently spreads apart the vaginal walls, allowing the inside of the vagina and the cervix to be examined).

Objective: Cryotherapy destroys abnormal tissue on the cervix by freezing it. Cryotherapy destroys some normal tissue along with the abnormal tissue. Cryotherapy is done when abnormal Pap test results have been confirmed by colposcopy. If the results of endocervical curettage do not show abnormal tissue high inside the cervical canal, then cryotherapy can be used to treat the abnormal tissue seen with colposcopy.

Side effects: Destruction of the abnormal tissue will not be complete if the abnormal cells are too deep in the cervical tissue. Studies have had differing results. They show that cryotherapy destroys all of the abnormal tissue in 77 to 96 out of 100 cases. After cryotherapy

- A watery vaginal discharge will occur for about 2 to 3 weeks.
- Pads should be used instead of tampons for 2 to 3 weeks.
- Sexual intercourse should be avoided for 2 to 3 weeks.

sources:

<http://en.wikipedia.org/wiki/Cryotherapy>

<http://www.nlm.nih.gov/medlineplus/ency/article/007506.htm>

<http://www.medicinenet.com/cryotherapy/article.htm>