However, a cryogenic chamber needs a lot of room for the chamber itself and its equipment, as well as for the surveillance for users in the chamber. Like ice baths, using and maintaining the cryogenic equipment require training and personnel.

Summary of the invention

~~The purpose~~Embodiments of the present invention ~~is~~ seek to avoid or, at least, reduce disadvantages of the prior art solutions described above.

~~The object of the invention is achieved with~~Embodiments of the present invention provide a solution, wherein the cold is directed to desired skin areas as a form of a cooling mist.

~~A device for cold therapy according to the present invention is characterized by the features of claim 1.~~

According to one ~~embodiment, the device for cold therapy in accordance with~~ aspect of the present invention ~~comprises~~ there is provided a device for cold therapy comprising means, such as a nozzle, for producing mist from liquid provided for the device, which mist stream is sprayed to a surface area of a treated object in order to cool said treated object, wherein Sauter mean diameter of the mist is at most 150 μm.

According to ~~another~~ an embodiment, the temperature of said liquid is below the normal human body temperature.

Yet, according to another embodiment, air stream is provided in connection with mist stream for improving the cooling effect in said surface area.

According to one embodiment, the device comprises at least one arm comprising at least one nozzle, which nozzle is connected to the liquid supply and configured to spray mist in a desired direction.

In one embodiment, the number of the nozzles in the arm is configurable. Yet, in another embodiment, the direction of the mist stream from a nozzle is adjustable. These embodiments enable using of the same device to various objects and in a different manner.

In another embodiment, the device comprises at least two arms, which arms are disposed relative to each other so that mist streams from the nozzles in the arms are

arranged to collide. The collision of the mist streams provides a combined mist stream, which directs downwards.

Yet, in another embodiment, the distance between the arms in the device is adjustable. The adjustable distance between arms in the device may enable the using of the device to various purposes and/or in different circumstances. When the distance between the arms is adjustable, the same device can be used for treating a human, a dog and a horse, for example. Furthermore, the same device can be modified for treating a part of a body, such as a thigh, bag or a whole body.

Yet, in another embodiment, the mist stream is adjustable by adjusting the pressure of liquid. In another embodiment, the droplet size of mist is adjustable by adjusting the settings of a nozzle.

In one embodiment, the used liquid is water. This feature ~~is~~may be advantageous, because water is known to be absolutely safe for human and is usually available, which makes the using of the device easy. In many cases, the device just needs to be connected to a local water distribution system in a bathroom, for example.

~~Some preferable embodiments of the invention are described in the dependent claims.~~

Significant advantages can be achieved with embodiments of the present invention when compared to the prior known solutions. The device according to embodiments of present invention ~~is~~ may be lightweight, easy to assemble and to use. Comparing to an ice bath, it does not need any water changing or may not require other maintenance procedures. Unlike a cryogenic chamber and an ice bath, the device for cold therapy according to embodiments of the present invention may be implemented without heavy, solid structures and it may be configured to be collapsible, so it can be carried with and use wherever a water supply is available. In addition, it can also comprise its own water reservoir for providing liquid for the device. Furthermore, the device may diminish water consumption, because the cooling mist can be produced by using only a fraction of the water amount used for ice bathing, for example.

Because the ~~present invention~~ device is hygienic and may be implemented without chemicals, the cold therapy according to embodiments of the present invention may not cause any problems with health or allergies. This feature may also spare money and time, because chemicals can be expensive and using them requires time and training.

The adjustment and modification possibilities according to embodiments of the present invention may enable the ~~invention~~ solution to be applied for several objects and skin areas, such as a human body, animals, e.g. greyhounds and other dogs, race horses, etc., to a whole body usually the head excluded, single muscle or muscle group, such as thigh muscles, back muscles, arm muscles, etc. just to name a few.

To list some advantages of the cold therapy according to embodiments of the present invention, the cold therapy may facilitate a healing process in an injured muscle or joint, and overall enhance the recovery process. In addition, the cold therapy may alleviate a pain and reduce inflammation and swelling in a body. The device according to embodiments of the present invention may be used for pain treatment, which pain can be caused by an illness or an accident, for example.

Using of the device is easy and a person as well as an animal user may experience that cooling mist is more pleasant than a traditional ice bath. Moreover, cooling mist may not be painful for users and harmful for their healthy and cooling mist may not cause hypothermia or any frostbite to the user.

The cold therapy performed by using embodiments of the present invention may also have another objective, such as a treatment for rheumatism, especially atrophic arthritis, fibromyalgia, osteoarthritis and depression to name a few.

Furthermore, the benefits of the cold therapy according to embodiments of the present invention may comprise mental calming of the treated object, altogether, and hormonal effects, such as secretion of corticotropin, beta-endorphins, cortisol, endogenous opioids, norepinephrine, and other agonists of alpha adrenergic receptors. These hormonal effects are known to have positive benefits in many ways.

The other known benefits of the cold therapy may be, for example, the formation of brown fat cells in a treated body, which may be advantageous in many ways; brown fat cells may, for example, ease weight loss, improve the adjustment to cold weather and enhance stress tolerance. Recently researched hormone irisin may have a role, when a body converts white fat cells to brown fat cells, and, thus, replicating positive effects of exercise and diet. Additional advantage of the cold therapy according to embodiments of the present invention may be the production of hormone irisin in the body.

In addition to the above mentioned solutions for using the device according to embodiments of the present invention for healing and preventing injuries, treatment and alleviation for various illnesses and symptoms, hormonal therapy as well as producing brown fat cells, the device may be used as a first aid in burn injuries or for cooling down a