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CRYOTHERAPY OF THE KNEE JOINT

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Cold treatment is a method of lowering the tissue temperature with the use of: water, ice, air, ethyl chloride, nitrous oxide, liquid nitrogen. Treatment with low temperature may be local or general. General cooling is intended to cool the whole body, and local cooling to lower the temperature of the skin and tissues. In the latter method, the cooling area should not be too large. This cooling method was used in the project.

The aim of the project "Thermal stabilizer of the knee joint", implemented by a team of scientist, was to develop and then create a cooling system using a Peltier cell and attach it to the knee stabilizer. The developed device will be used in the local cold treatment of the knee joint, which is commonly used in early post-traumatic conditions with soft tissue damage (joint sprains and dislocations, muscle contusions), chronic inflammatory-degenerative and overload disorders (degenerative diseases of the knee joints, rheumatoid arthritis), states of increased muscle tone and limited joint mobility, chronic edema and joint effusions.

The first stage of the work was to review the existing orthosis solutions and methods of cooling the knee joint. Subsequently two device concepts were developed and visualized in Inventor. The third stage was the preparation of the executive and technological documentation for the CAD software and analysis of the developed project in terms of meeting the requirements of functional characteristics. The necessary elements were also printed on a 3D printer. The last step was to make a functional prototype of the device.

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