The application of thermovision for the analysis of superficial temperature changes after Local Cryostimulation treatment

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Abstract - The application of Local Cryostimulation to a ligament strain to the fibular collateral ligament in the right knee. Results were recorded using a thermographic camera to measure and analyse the superficial blood temperature changes in a specific area of the anatomy through Local Cryostimulation using the Cryo-T Med Local Cryostimulation device.

Keywords Thermovision Thermal images evaluation Visible and near infrared irradiation (VIS–NIR) Cryotherapy Local Cryostimulation Superficial blood temperature.

Image 1 Results of the study material

(a)

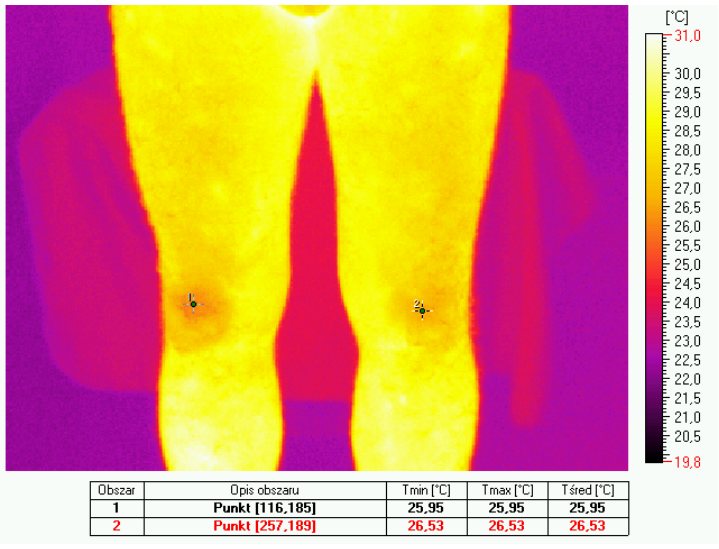
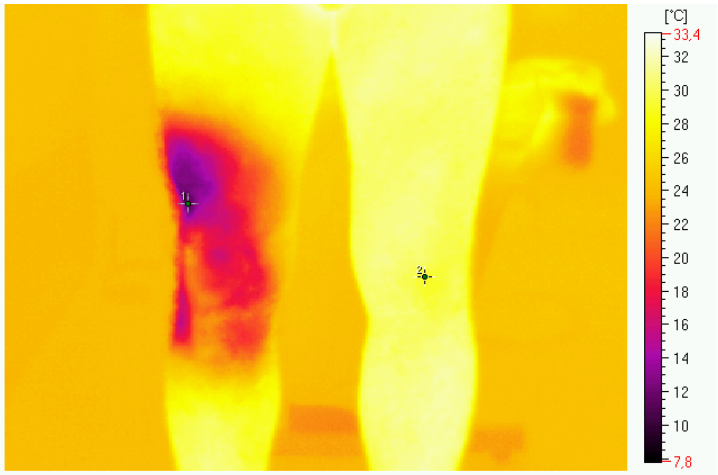


Fig. 1 Exemplary thermal images captured at the time (a) before treatment and (b) directly after treatment; a before Local Cryostimulation, b after Local Cryostimulation, c three hours after Local Cryostimulation. ThermaAnalyzer 1 screen views with calculated data.

Thermal images number the right knee (1) and the left knee (2).

Before treatment the temperature of the right knee was recorded at 25.95°C and the left knee 26.53°C.

(b)

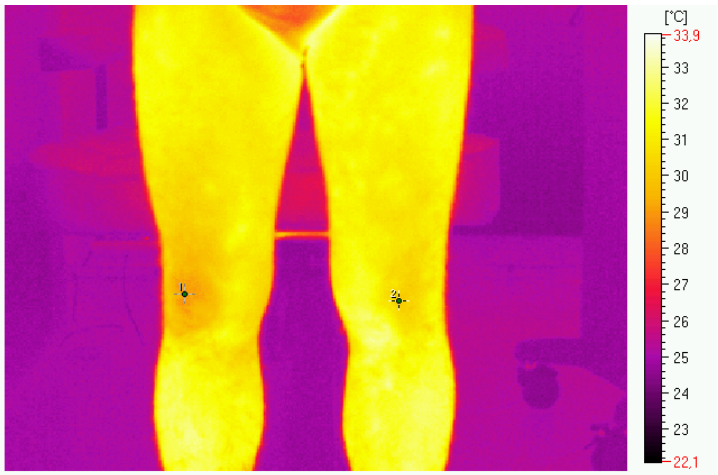


Obszar	Opis obszaru	Tmin [°C]	Tmax [°C]	Tśred [°C]
1	Punkt [113,123]	10,97	10,97	10,97
2	Punkt [259,168]	28,96	28,96	28,96

Fig 2. Directly after the application of Local Cryostimulation to the right knee, temperatures were recorded for a second reading.

Right knee temperature (1) 10.97°C and the left knee temperature (2) 28.96°C.

(c)



Obszar	Opis obszaru	Tmin [°C]	Tmax [°C]	Tśred [°C]
1	Punkt [111,179]	28,97	28,97	28,97
2	Punkt [243,183]	29,97	29,97	29,97

Fig 3. Three hours after the application of Local Cryostimulation to the right knee, temperatures were recorded for final analysis.

Right knee temperature (1) 28.97°C and the left knee temperature (2) 29.97°C.

Conclusions

Our study demonstrated that three hours after the application of Local Cryostimulation to only the right knee, the superficial blood temperature increased by 3.02°C and the left knee superficial blood temperature also increased by 3.44°C.

Thermovision has highlighted the contralateral effect on joints, which is achieved using Local Cryostimulation. This cannot be achieved using heat therapy. The superficial temperature change encourages muscle and joint movement through kinesiotherapy and physical exercises.