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Thermographic study of upper extremities in patients with cerebral palsy

Lampe, R.; Kawelke, S.; Mitternacht, J.; Turova, V.; Blumenstein, T.; Alves-Pinto, A.

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Abstract:

Trophic disorders like reduced skin blood circulation are well-known epiphenomenon of cerebral palsy (CP). They can influence quality of life and can lead to skin damages and, as a consequence, to decubitus. Therefore, it is important to analyse temperature regulation in patients with CP. Thermal imaging camera FLIR BCAM SD was used to study the dependency of skin blood circulation in upper extremities of patients with CP on hand dominance, hand force and hand volume. The hand force was evaluated using a conventional dynamometer. The hand volume was measured with a volumeter. A cold stress test for hands was applied in 22 patients with CP and 6 healthy subjects. The warming up process after the test was recorded with the thermal camera. It was confirmed that the hands of patients warm up slower comparing to healthy persons. The patients' working hands warm up faster than non-working ones. A slight correlation was established between the hand grip force of the working hands and their warm up time. No correlation was found between the warming up time and the volume of the hand. The results confirm our assumption that there is a connection of peripheral blood circulation to upper limb motor functions.