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The Effect of Dry Carbon Dioxide Bathing on Peripheral Blood Circulation Measured by Thermal Imaging among Patients with Risk Factors of PAD

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Abstract

Peripheral artery disease (PAD) is becoming a serious health problem of present times. It appears crucial to explore therapies that might help to restore blood flow or increase tissue oxygenation. The most effective methods of detecting early-stage changes in blood circulation in the extremities need to be identified. The aim of this study was to identify the effect of carbon dioxide (CO₂) bathing on peripheral blood circulation measured by thermal imaging among patients with risk factors of PAD and ankle-brachial index (ABI) in the normal range or ABI indicating some or moderate arterial disease (ABI > 0.5). The correlation between surface temperature change and PAD-relevant characteristics was also examined. Forty-six patients who were over 65 years old who had a minimum of two additional PAD risk factors were recruited. A series of ten dry CO₂ baths was performed. Thermal images were taken before and after the intervention. The CO₂ therapy caused a significant change in the body surface temperature of many body areas. Numerous moderate correlations between temperature change and health-related characteristics were identified. Therefore, patients with PAD risk factors could benefit from CO₂ therapy. Improvements in blood flow change the body surface temperature, and these changes could be successfully detected by thermal imaging.

Keywords: carbon dioxide; cardiovascular disease; peripheral artery disease; therapy; thermography.

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Figures



Figure 1 Study design.

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