

COLD VASCULAR HUNTING REACTIONS OF THE TOE IN COLD AIR IN NON-ATHLETES AND JUDO PLAYERS

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Twenty three male non-athletes university students and 15 male university judo players were selected as subjects. The subjects, clad only in shorts and under shirts, sat resting in a climatic chamber at 17-18°C for 30 min. Then, they inserted their both legs up to the knees into a cold air box at 5°C for 60 min. Skin temperature on the center of dorsal surface of the distal phalax of the left second toe was recorded continuously during periods of 10 min before cold exposure, cold exposure and recovery for 20 min. In estimating the cold digital hunting reaction, following characteristics of changes in skin temperature during cold exposure; the temperature of the first rise (TFR), the time for the first temperature rise (TTR) and the mean skin temperature (MST) were used. The mean values of the skin temperature for 50 to 60 min after cold exposure was used as the MST. Anthropometric measurements including measurements of the second left toe girth (STG) were performed. Cold vascular hunting reactions were observed in 14 judo players (93%) and 11 non-athletes (48%). Judo players showed higher mean values of skin temperature before cold exposure and TFR while those of TTR and MST were smaller in judo players than in non-athletes. These characteristics of cold vascular hunting reactions of the toe in judo players might be induced by physical training as well as cold acclimation. Positive correlation was found between MST and STG. Skin temperatures of short and thick toe are higher because amount of heat dissipation from skin surface is proportional to skin surface and amount heat production in toe is proportional to mass of toe. Positive correlation was found between percentage of the body fat and temperature before exposure to cold (TB) or MST. Negative correlation was found between TTR and TFR or MST. These characteristics of the toe in cold air are essentially the same as those of finger observed during exposure of finger to cold water or cold air.

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