

## **Abstract**

**Title :** The effect of local pre-exercise cooling on climbing performance in a hyperthermic environment.

**Objective:** The aim of this work was to assess the effect of forearm precooling on climbing performance to exhaustion in a hyperthermic environment.

**Methods:** The sample consisted of nineteen male participants aged  $25 \pm 6$  years. The participants were selected from among the students of the University of Warsaw University of Technology according to a criterion selection ( $RP \geq 6$ ). Each participant underwent 3 laboratory visits. At each visit, he was put to the two graded tests on a climbing ergometer to local exhaustion, always using different procedures before the first and second tests (CWI15/PAS). The measured time to exhaustion (s) was used for performance evaluation. The effect of individual procedures on performance was evaluated using a paired T-test.

**Results:** A significantly positive ( $P < 0.05$ ) effect on climbing performance until exhaustion was found when using the CWI15 procedure before exercise. There was an average performance improvement ( $\uparrow 10.4\%$ ) compared to performance without precooling (PAS). When the CWI15 procedure was used between performances, a smaller natural decline in the second performance was found, and in most participants the CWI15 application even caused a significant improvement ( $P < 0.05$ ) in the second performance ( $\uparrow 3.7\%$ ). Each of the study participants responded differently to the CWI15 procedure.

**Conclusion:** CWI 15 has a positive effect on climbing performance to exhaustion in a hyperthermic environment compared to PAS. The application of CWI 15 must be approached with caution, as the effect of CWI 15 can be individual.

**Keywords:** cold water immersion, sport climbing, climbing ergometer, performance to exhaustion, hyperthermic environment