

Rapid Palm Cooling On Sports Performance: A Study In Taekwondo

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Purpose: To investigate the effects of rapid palm cooling during 1-min rest period between 3 simulated consecutive bouts on physiological responses and anaerobic performance of Taekwondo athletes. **Methods:** Ten male Taekwondo subjects performed 3 sets, separated by a week, of 3 repeated-2 min anaerobic bouts with 1-min rest using modified Wingate Anaerobic test, loaded at $0.06/5 \times$ body weight (kg). Random interventions were done using a rapid thermal exchange unit (RTX) during the 1-min rest period between bouts. Thus, subjects were divided into 3 groups: group 1 (control, had no intervention but sat quietly during the rest period); group 2 (palm cooling without vacuum); and group 3 (palm cooling with vacuum). Cardiovascular and thermoregulatory indicators were collected during exercise bouts, 1-min during rest period in each bout, and at 5 and 30 min after the 3rd bout. **Results:** All three groups showed significant reductions in peak anaerobic power following the 2nd bout whereas the RTX with vacuum group had significantly recovered in peak anaerobic power during the 3rd bout ($p < 0.05$). Control group had significantly higher tympanic temperature (T_{tump}) and thermal sensation scale during the 3rd round ($p < 0.05$), 5 min ($p < 0.05$) but lower T_{tump} than in the RTX with no vacuum group at 30 min post exercise ($p < 0.05$). The RTX with vacuum group incurred lower forearm, hand and mean skin temperatures than control group for 30 min recovery period ($p < 0.05$). Furthermore, no changes in blood flow, heart rate and mean body temperature were detected between 3 groups ($p > 0.05$). **Conclusion:** Rapid palm cooling method, applied during the 1-min rest period, improved peak anaerobic power in Taekwondo athletes, particularly on the 3rd round. This technique offers better thermoregulatory changes during repeated exercise bouts.