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## Effects of contrast-water therapy over 48 hours after an intense fitness session in male rugby players

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**Background:** Hydrotherapy is a popular recovery aid in the sporting fraternity; with less emphasis placed on the effect of contrast water therapy (CWT). Results regarding the beneficial effects of CWT over either an acute (0 hours) or longer (48 hours) period remain scarce or unclear.

**Objectives:** To determine the effect of CWT and passive recovery (PAR) on various haematological and physical indicators after an intense fitness session.

**Methods:** Twenty-three rugby players were randomly assigned to either a control (PAR) or an experimental (CWT) group. Following a 15 min long fitness session, the CWT-group alternated between warm water ( $40\pm 2$  °C; for 3 min), and cold water ( $8\pm 1$  °C; for 1 min), within the 20-min recovery period while the PAR-group remained seated. Haematological and physical indicators were evaluated at baseline, 0 h post-fitness and at 0, 24 and 48 hours post-recovery.

**Results:** A significant decrease ( $p\leq 0.05$ ) was seen over time in haemoglobin and BLa- whereas plasma glucose and PO<sub>2</sub> showed a significant increase from 0 to 24 hours in both CWT and PAR groups. For the CWT group, 6 variables (BLa-, haemoglobin, VJT-height, VJT peak-power, VJT peak-speed and grip strength) returned to their baseline values immediately following CWT, whereas the PAR group demonstrated recuperation at 0 hours in 4 variables (BLa-, VJT height, VJT peak-speed and grip strength). Comparing CWT and PAR, a significant variance between groups were observed in BLa- and grip strength ( $F(1, 21) > 4$ ,  $p\leq 0.05$ ) at various time points.

**Conclusions:** Compared to PAR, CWT caused a larger percentage recovery in measurements, which would suggest that CWT is superior to PAR as an acute recovery modality.

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## Color association method in sport

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Some latest research in neuroscience indicate that cognitive self-control is over rated and that sports person might over-estimate conscious capacity to control behavior in sports setting. On the other hand, in psychological assessment, the most often instruction in questionnaires is that subject should choose answer that first comes up to his/her mind and there is always a possibility that association, or 'what first comes up in mind', can then be rationally corrected guided by one's previous experience or expectation of outcomes. In contrast, "uncensored" authentic associations provide a very different, deeper and more comprehensive view. Color Association Method deals with measuring and evaluating these "authentic uncensored associations". Like Lüscher's color test, it is based on palette of eight colors, but combined with words. Association between certain word related to sport setting and color, might provide insight non-conscious subjective psychological state of a sportsperson. In sport psychology, it is possible to use CAM in order to obtain individual sportsman profile, profile of a team and to access resilience and psychological energy for competition. CAM claims to explore mental resilience during the competition by measuring subjective sense of pain, effort, fear, injury, readiness for competition and training, ability to take a risk during the match, relying on habits in sports context. Results on CAM vary from zero to one hundred. CAM is currently in process of validation in area of sports psychology.

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