Official Title: Effect of different work-to-rest ratios during simulated taekwondo combat on blood lactate, heart rate and perceptual responses in elite taekwondo athletes

NCT Number: 2022-KAEK-12

Date of the Document: 24th of February 2022

Study Design

This randomized cross-over study measured physiological and perceptual responses of taekwondo athletes following a free combat and combats with different W:R ratios. This study was carried out with 4 visits. The first one included body composition measurements and familiarization to the sessions and measurements. During the rest 3 visit, athletes performed simulated combats free and with 1:2 (10 sec work and 20 sec rest), and 2:1 (20 sec work and 10 sec rest) W:R ratios. During all combat sessions, athletes heart rate (HR), blood lactate (bLA), and counter-movement jump performance (CMJ) were measured at rest and at the end of each combat. HR was also measured following each set. Athletes' rating of perceived exertion (RPE) and perceived muscle soreness (PMS) were measured immediately after each combat.

Statistical Analysis

The data were analysed using SPSS 23 software (SPAA, Inc., Chicago, IL, USA) and JASP software (0.15.0.0 Version, The Netherlands). The Shapiro-Wilk test and descriptive methods using skewness and kurtosis coefficients were used to check for the normality of data. Descriptive statistics and 95% confidence intervals (CI) were used to present subjects' characteristics. Two-way ANOVA with repeated measurements (intervention x time) was used to determine changes in HR (3 x 4), bLA (3 x 2), CMJ (3 x 2) between W:R ratios and measurement times. One-way ANOVA was used to determine changes in PMS. Partial eta squared ($\eta 2$) was calculated to determine the effect size, using the 0.0099, 0.0588, and 0.1379 considered as small, medium, and large effect sizes. In case of significant differences between W:R ratios, paired sample t-test was used, while one-way repeated measures ANOVA was used to determine the difference among measurement times. Cohen's d for paired sample t-test was

automatically provided by JASP software and classified as 0.2 (small), 0.5 (medium) and 0.8 (large). Statistical significance was set at $p < 0.05$.