

## Performance Characteristics in High Intensity Training Athletes

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### ABSTRACT

**PURPOSE:** The purposes of the study were to: 1) Examine differences in performance characteristics (Functional Movement Screen (FMS) scores, strength, power, and dynamic exercise performance) between male and female high intensity training (HIT) athletes, and 2) Determine if correlations between Functional Movement Screening (FMS) scores and the ability to perform strength, power, and dynamic exercise in a cohort of male and female HIT athletes. **METHODS:** A total of thirty participants (males, n=15; and females, n=15) (mean  $\pm$  S.D, age =  $30.7 \pm 9.9$  years) with minimum two-years of HIT experience were recruited to participate in this study. On the first day of data collection, each subject's height and weight was measured, followed by body composition measurement (7-site skinfold), FMS screening, and 1-Repetition Maximal (1-RM) lifts for deadlift (DL), shoulder press (SP), and power clean (PC). A minimum of 5 days later each performed a standardized test of dynamic exercise (DE) that involved performing as many repetitions as possible of 5 pullups, 10 pushups, and 15 unloaded squats in 20 minutes. Mann-Whitney U tests were performed to compare differences between the males and females for FMS scores and ANOVA was used to determine differences between the males and females for all other variables. Pearson Product-Moment correlation was used to determine relationships between variables. Statistical significance was set at  $p \leq 0.05$  for all analysis. **RESULTS:** FMS score analyses indicated that the females, as compared to males, had higher straight leg raise (SLR) scores (2.9 vs. 2.1,  $p = 0.001$ ) and sum of all scores (FMSSUM) (16.9 vs. 15.4,  $p = 0.045$ ). Males, as compared to females, demonstrated greater muscular strength per kilogram of body weight on the DL (1.99 vs. 1.65 kg/kgBW,  $p = 0.007$ ) and the SP (0.833 vs. 0.513 kg/kgBW,  $p < 0.001$ ) exercises. Males also demonstrated greater muscular power per kilogram of body weight on the PC (1.146 vs. 0.766,  $p < 0.001$ ) exercise as compared to their female counterpart. There was no statistically significant difference between groups for DE. A significant inverse relationship was shown to exist between shoulder mobility (SM) and SP kg/kgBW ( $p = 0.047$  and  $r = -0.365$ ), and SM and PC kg/kgBW ( $p = 0.040$  and  $r = -0.377$ ). There was no significant correlation found between FMS and DE. **CONCLUSION:** A significant difference between males and females was observed in the SLR, indicating that the males had a deficit in dynamic hip mobility and core stability. Considering no other differences were demonstrated between the specific tests of the FMS, it is plausible that the difference in SLR may account for the overall difference observed between FMSSUM scores.