



IMPACT OF USMC RECRUIT TRAINING ON THE STRESS RESPONSE IN MALE RECRUITS

Karen R. Kelly¹, Lauren M. Visconti^{1,2,3}, Andrea C. Givens^{1,2}, Laura J. Palombo^{1,2}, Brenda A. Niederberger^{1,2}, Emily B. Kloss^{1,2}, Daniel W. Bennett^{1,2}, and Lorraine P. Turcotte³,
¹Warfighter Performance Department, Naval Health Research Center, San Diego, CA; ²Leidos, Inc., ³Human and Evolutionary Biology, University of Southern California, Los Angeles, CA



Background

The physiological impacts of initial military training have not been fully characterized during modern United States Marine Corps Recruit Training (USMC RT). This study quantified biomarkers of stress (i.e., sAA, cortisol, testosterone-to-cortisol ratio) and Hypothalamic Pituitary Gonadal Axis activity (i.e., HPGA; testosterone), as well as sex drive among male recruits during USMC RT.

Methods

Male recruits from the Marine Corps Recruit Depot in San Diego, CA volunteered for the study (n = 60; age 19.0 ± 1.0 years, height 174.6 ± 7.2 cm, weight 71.5 ± 10.4 kg, body fat 12.5 ± 4.9%). Sex drive surveys (LEAM-Q) were administered to recruits pre- and post-RT to assess prevalence of self-reported endocrine dysfunction. Saliva samples were collected between 0500 and 0600 at pre-RT, weeks 1, 4, 7, and 10, and post-RT. Saliva was assayed for alpha-amylase (sAA), cortisol, and testosterone. Linear mixed effect models were employed to assess differences in salivary biomarkers and the testosterone-to-cortisol (T:C) ratio across all time points. The Stuart-Maxwell test for marginal homogeneity was used to assess changes in the distribution of sex-drive categories between pre- and post-RT. Statistical significance was set to p-value of <.05.

Results

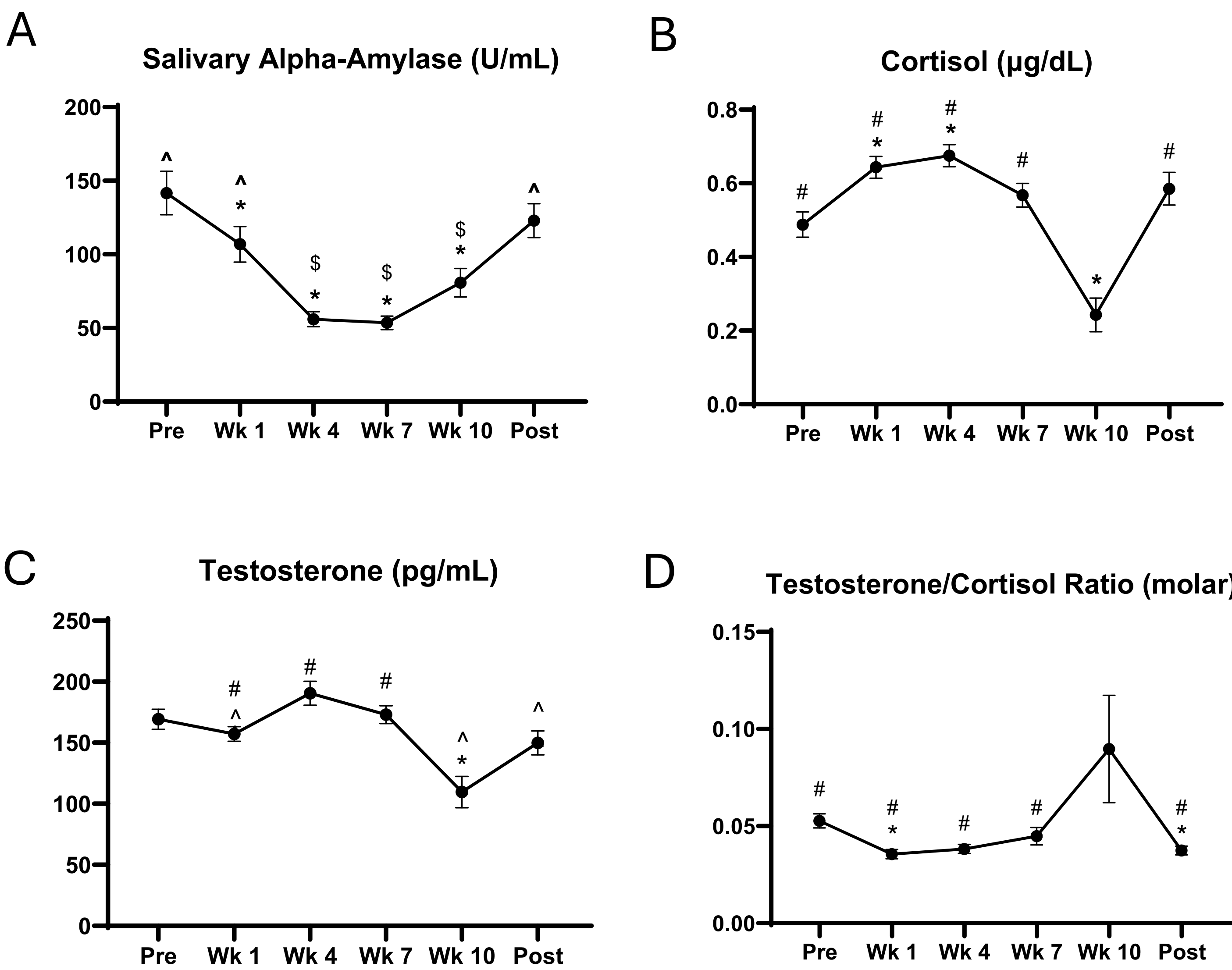


Figure 1. (A) Salivary Alpha-Amylase (U/mL), (B) Cortisol (µg/dL), (C) Testosterone (pg/mL), and (D) Testosterone/Cortisol Ratio (molar) at Pre, Wks. 1, 4, 7, 10 and post-RT. (*) Significantly different from Pre (p<.05). (^) Significantly different from Wk 4 (p<.05). (#) Significantly different from Wk 10 (p<.05). (\$) Significantly different from Post (p<.05). Data are represented as mean ± SEM.

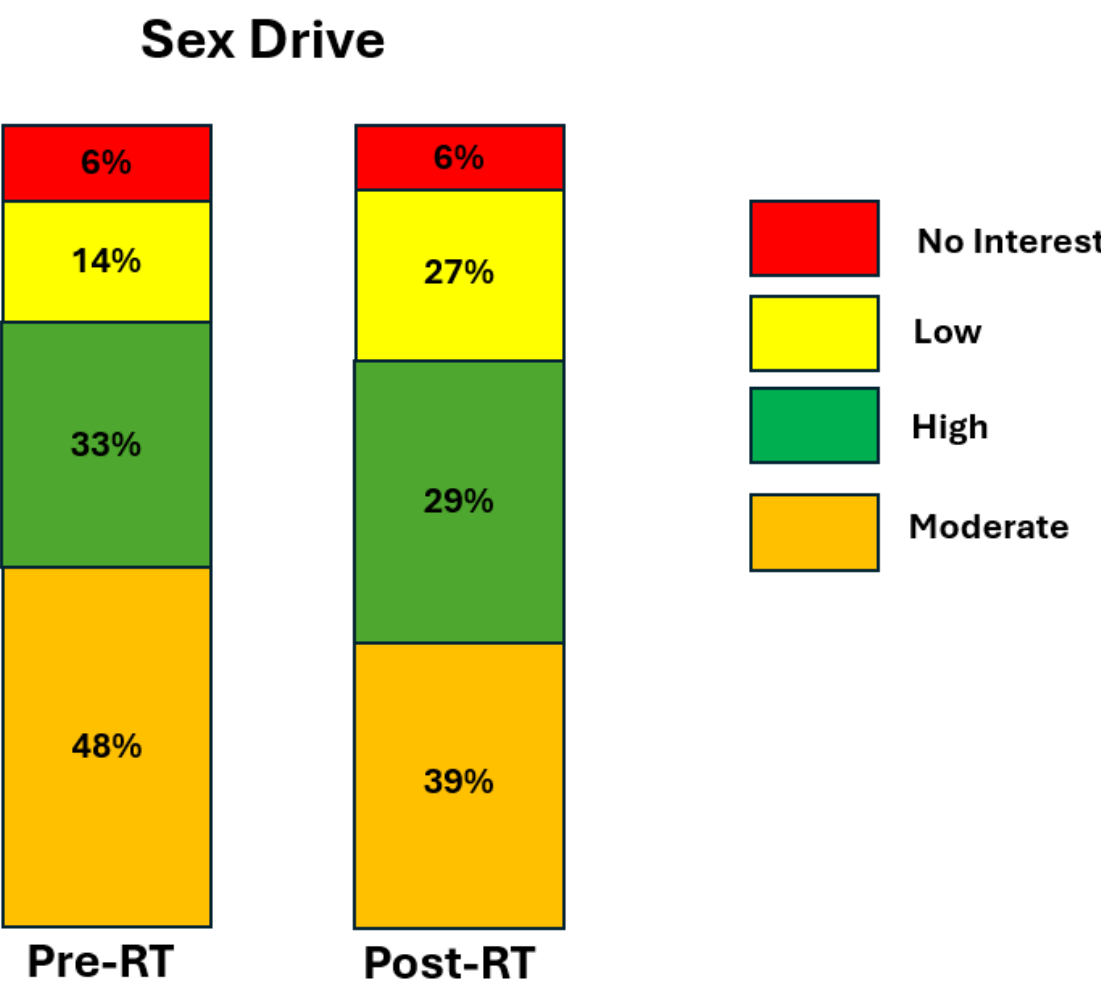


Figure 2. Sex Drive in male Marine Recruits Pre- and Post-RT. “No Interest” = no interest in sex (n=3); “Low” = low sex drive (n=7), “Moderate” = moderate sex drive (n=25), “High” = high sex drive (n=17). Chi-squared (χ^2) = 3.02, degrees of freedom (df) = 3, p=0.388

Conclusion

Collectively, the data suggest that Marine Corps recruits experienced heightened physiological strain during the initial phases of USMC RT, but adapt as training progresses, as reflected by alterations in stress biomarkers of HPGA activity. Additionally, male sex drive was not different between pre- and post-RT. Future studies may consider assessing sex drive during periods of heightened physiological stress as a rapid and cost-effective means to evaluate HPGA stress/suppression/activity.



Photo courtesy Karen Kelly/NHRC

Partners/Collaborators

