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Volume 25, 2008
Volume 24, 2007
Volume 23, 2006
Volume 22, 2005
Volume 21, 2004
Volume 20, 2003

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» **Journal Abstract**

Histochemical responses of rats exercised in two weekly frequencies and ingesting standard or hypercaloric diet

FI Freitas, RR Gomes, JPJ Sabino

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This study investigated if overfed rats present morphological and histochemical muscle adaptation similar to normally fed, both submitted to two different weekly frequencies of training. Thirty male Wistar rats were fed either with standard chow (SCØ) or with hypercaloric diet (HCØ). They were subdivided into six subgroups: sedentary (SCØ and HCØ), trained twice/week (SC2 and HC2) and trained five times/week (SC5 and HC5). The trained groups swam 60 min/day, during 10 weeks. Twenty four hours after the last training, samples of Gastrocnemius were excised and stained with HE, NADH-TR and m-ATPase, and the capillary density was calculated. Total heart mass (HM) and the mass of atrium (AM), left (LV) and right (RV) ventricles were excised and weighted. The comparisons were made by ANOVA and by Covariance analysis, adjusting the variables by body weight. The results showed that the HCØ achieved higher BM, however, absolute HM did not differ post training. Irrespective of the diet, rats that were trained twice a week presented significantly greater increase in the AM. In general, the SC5 and HC5 groups showed higher HM, LV, RV, proportion of oxidative fibres and capillary density, compared to the sedentary and twice week trained groups. A higher proportion of injuries (splitting) was noted in the HC2 and HC5 compared to SC2 and SC5. These results indicate that the frequency of training influenced the skeletal and heart adaptation and larger changes were observed in the 5x/week group, which ingested the standard diet. The 5x/week training groups also presented large amount of muscle fibres damage.

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