diabetic, exercise decreased the oyster glycogen induced-neutrophil migration as compared with no exercised group. No alterations were observed in neutrophil and macrophage necrosis and apoptosis ratio in all groups studied. Serum activities of CK and LDH were not modified in the conditions studied. We conclude that exercise training exerts marked anti-inflammatory effects in diabetic rats, suggesting that this may be an important mechanism for exercise to improve insulin sensitivity and to protect against vascular complication in diabetic patients. Supported by Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP) and Conselho Nacional de Desenvolvimento Cientifico e Tecnológico (CNPq).

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EFFECT OF A 1000M KAYAK SPRINT ON REDOX STATUS, MUSCLE DAMAGE AND INFLAMMATION MARKERS IN ELITE MALE KAYAKERS

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Introduction: Sprint kayaking is a demanding exercise that can generate reactive oxygen species (ROS) to a level that surpasses body's antioxidant capacity causing oxidative stress and damage. This study aimed to determine the response of plasmatic antioxidants and markers of lipid peroxidation, muscle damage, inflammation and physiological stress to a 1000m flatwater kayaking simulated race in elite kayakers.

Methods: Superoxide dismutase (SOD), glutathione reductase (Gr), glutathione peroxidase (GPx) and creatine kinase (CK) activities and levels of uric acid, alpha-tocopherol, alpha-carotene, beta-carotene, lycopene, lutein + zeaxanthin, total antioxidant status (TAS), thiobarbituric acid reactive substances (TBARS), interleukin-6 (IL-6), cortisol, lipoproteins and hematologic parameters were determined in 15 male kayakers before and 15min after the kayak bout. Post-exercise measurements were corrected for hemoconcentration.

Results: Both enzymatic and non-enzymatic antioxidants were unaffected by exercise, with the exception of alpha-carotene which decrease (0.22 to 0.18 mmol/L; P = 0.013). The exercise bout caused a decline in TAS (1.46 to 1.13 mmol/L; P = 0.001) and an augment in CK (256 to 304 IU/L; P = 0.023), uric acid (5.0 to 5.4 mg/dL; P = 0.016), TBARS (5.4 to 9.0 mmol/L; P < 0.001) and IL-6 (1.8 to 2.4 pg/mL; P = 0.028). Post-exercise TBARS and TAS were inversely correlated (r= -0.569, P = 0.027). Cortisol levels were not altered by kayaking (188 and 193 nmol/L; P = 0.824).

Discussion: The stability of alpha-tocopherol after kayaking suggests that it was not consumed or mobilized from adipose tissues, which is consistent with the maintenance of triglycerides levels. Also, the lack of change in carotenoids agrees with the maintenance of their main carrier (LDL). The increased post-exercise uric acid likely resulted from the enhancement of purine metabolism or the inhibition of its renal clearance by lactate. Therefore, the observed decrement in TAS after the kayak bout may reflect a compromised status of other aqueous antioxidants, such as ascorbic acid (not measured). This lowering in antioxidant status was associated with an increase in lipid peroxidation following exercise. The augmented post-exercise TBARS reflect the efflux of peroxides from muscles into plasma. ROS attack of polyunsaturated fatty acids increases the permeability of cell membranes causing the efflux of miocellular CK. However, no correlation between TBARS and CK was detected. The modest rise in CK may be explained by the concentric nature of kayaking and the familiarization with the exercise by athletes. The slight augment in IL-6 after exercise may be due to the type (concentric) and duration (234.0 ± 5.8 sec) of the exercise or to the subjects' training status. Our data indicate that a single 1000m kayak bout impair antioxidant status and induce lipid peroxidation, muscle damage and inflammation even in high-level kayakers.

SPERM AND HORMONAL DIFFERENCES BETWEEN PHYSICALLY ACTIVE AND SEDENTARY SUBJECTS.

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INTRODUCTION: It has been previously shown that high-load training, whether intensity or volume, might be detrimental for sperm parameters [1,2]. However, it seems that a less demanding physical activity does not promote any sperm alterations. Moreover, we hypothesize that a physically active lifestyle might result in a more favorable environment for fertility-related processes and might improve or, at least, prevent degradation of hormonal and sperm parameters. Sperm velocity is one of the key parameters for male fertility, since sperm need to move in order to reach the egg and for conception to be able to occur [3]. Thus, the aim of this study was to compare sperm and hormone values of sedentary and physically active subjects.

METHODS: Sperm and hormonal values of 16 physically active subjects (PA; VO2max=45.2±4.2 ml/min/kg, age=19.0±1.8yr) and 15 sedentary subjects (SE; VO2max =34.6±3.9 ml/min/kg, age=19.2±1.9yr) were assessed. The exclusion criteria were any factors interfering with semen production. The inclusion criteria were: not having any exclusion criteria, a practice of 2-4 hs/w (at least in two different days) for PA, and not practicing any physical activity for SE. Sperm velocity was assessed after 3-6 days of abstinence (type "a" velocity is ≥20 micron/sec; type "b" is ≥ 5 and < 20 micron/sec; type "c" is < 5 micron/sec; type "d" is 0 micron/sec, static sperm). Hormonal assessment was performed after an overnight fast with subjects refraining from any physical activity during 3 days before the testing.

RESULTS: No significant differences were found for either type "a" or type "c" velocities. However, the percentage of sperm with type "b" velocity was significantly greater ($p<0.05$) in PA than in SE (27.4±7.2 vs. 21.8±6.8, respectively); moreover, the percentage of static sperm (type "d" velocity) was significantly lower ($p<0.05$) in PA than SE (30.6±4.9 vs. 34.8±5.7, respectively). Likewise, the T/C ratio showed significant differences ($p<0.05$), being higher in PA than in SE (0.46±0.11 vs. 0.32±0.07, respectively).

DISCUSSION: The main finding is that PA subjects seem to have both better sperm velocity and hormonal values than SE. PA showed higher values of type "b" velocity and lower values for "d" velocity (static); this seems to be supported by the greater T/C observed. Therefore, it can be concluded that PA may have a healthier microenvironment for the sperm production process.

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