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Effect of different physical activity training on metabolic markers, vascular and cardiac function in rats fed with high-fat high-carbohydrate diet

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Cardiometabolic disorder (CMD) has progressively become a global public health concern because of its association with increased risk of developing cardiovascular disease and diabetes. Recent studies suggest that high-intensity interval training (HIIT) can induce physiological adaptations that may reduce CMD risk. There is however, limited evidence showing HIIT can improve cardiometabolic markers in obese individuals. This study investigated the effects of light intensity training and HIIT on biometric indices, glucose and lipid metabolism, inflammatory and oxidative stress markers, vascular and cardiac function on high-fat high-carbohydrate (HFHC) fed adult rats. Three groups (n=12 per group) were used in this study: control (no exercise), light-intensity trained (four 30 min exercise at 8 m/min separated by 2-hr rest period, 5 days/wk) and high-intensity interval trained (four 2.5 min work bouts at 10% grade, 50 m/min, separated by 3-min rest period, 5 days/wk). HFHC feeding and physical activity interventions were started on 12-week old Wistar rats for a period of 12 weeks. Compared to the control group, the light-intensity trained group showed no significant change in all experimental parameters. High-intensity interval trained group showed no change in biometric indices, glucose, insulin, lipid profile, inflammatory and oxidative stress markers, and cardiac function but enhanced mesenteric vessel contractile response to noradrenaline and improved relaxation response to acetylcholine. In this study, light intensity training did not alter any of the measured outcomes and HIIT only altered vessel contractility. The lack of changes induced may be due to a lack of training stimulus produced by the intervals used.

Biography

Romeo Batacan Jr. completed his degree in Medicine at the University of the Philippines Manila in 2001. He is currently awarded a three-year Doctorate scholarship grant under the Biomedical Science program at CQ University Australia working on the mechanisms linking sitting activity to cardiometabolic risks.

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