ABSTRACT

EFFECTS OF ORAL ESTROGEN THERAPY AND AEROBIC TRAINING ON INSULIN SENSITIVITY AND HEMODYNAMIC AND AUTONOMIC RESPONSES TO ACUTE HIPERINSULINEMIA IN POSTMENOPAUSAL WOMEN

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This thesis evaluated the physiological responses to acute hyperinsulinemia in post-menopausal women, analyzing the isolated and combines effects of hormone therapy (HT) and aerobic training (AT) on these responses. Thus, 31 healthy, hysterectomized postmenopausal women were randomly divided (in a double-blinded manner) into groups: PLA-CO(n=7), HT-CO(n=6), PLA-AT(n=10), HT-AT(n=8). HT groups received valerato estradiol (1 mg/day) while PLA groups received placebo. AT groups trained on cycle ergometer, 3x/week at moderate intensity, while CO groups stayed sedentary. Before and after 6 months, an euglycemic hyperinsulinemic clamp were performed. Hyperinsulinemia increased plasma catecholamines, sympathetic cardiac modulation, systolic blood pressure, heart rate, and blood flow. After 6 months, AT increased insulin sensitivity and reduced insulin induced increase in norepinephrine. AT and HT, applied alone or together, abolished the decline in insulin induced increase in blood flow that was observed in PLA-CO. Besides, the association of both interventions decreased insulin induced increase in epinephrine. In conclusion: in healthy postmenopausal women, acute hyperinsulinemia increased sympathetic activity but produced vasodilation, which resulted in an increase in systolic blood pressure and heart rate, with no change in diastolic blood pressure, respectively. AT increased insulin sensitivity, decreasing sympathetic activation and maintaining vasodilatory response during

hyperinsulinemia, while HT had the same effect on vasodilation without changing insulin sensitivity. The association of both interventions had minor addictive effects.