Kanapot Jairuen, Acting SubLt. 2009: Effects of Water-base and Land-base Circuit Training upon Body Composition and Fat Metabolism in Obese Women. Master of Science (Sports Science), Major Field: Sports Science, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Ratree Reungthai, Ed.D. 184 pages.

The purposes of this research have two experimental designs, first experimental design were to study fat oxidation and carbohydrate rate over a range of exercise different intensity in overweight women, second experimental design were to study and compare the effects of Water-base and Land-base circuit training upon body composition and fat metabolism of the Obese Women . The subjects consisted of 30 female volunteers, ages 40-49 years old, who work at Kasetsart University, Kamphaengsaen Campus. They were randomly assigned into three groups, one control group and two experimental groups. The control group was done one's daily tasks. The first experimental group was Water-base circuit training 5 stations. The second experimental group was Land-base circuit training 5 stations. Each training program was performed 3 times per week for 12 weeks. Subject performed 6-min workloads at 20% 30% 40% 50% and 60% of HRR. Fat and carbohydrate oxidation rates were calculated from the measured VO_2 ($L.min^{-1}$) and VCO_2 ($L.min^{-1}$). The data of body composition, fat and carbohydrate oxidation rate before training, after training for six, twelve weeks were analyzed by using ANOVA; one-way and two-way ANOVA with repeated measure; ANOVA and multiple comparison were performed by Tukey at .05 level of significance.

The results of first experimental design revealed that substrate oxidation both fat and carbohydrate were significantly different between exercise intensity, except 20% HRR and 30%HRR, and 50 %HRR and 60%HRR were not significantly different. Maximal fat oxidation rate occurred at low intensity of 20%HRR and fat oxidation rate decreased at intensity of 60 %HRR. The second experimental showed that body composition such as percent body fat, biceps flexed, waist circumference range of the three groups were significantly different ($p<.05$), except body weight , body mass index, hip, thigh, calf circumference, and waist to hip ratio of the three groups were not significant different. The first experimental group and second experimental group had body composition and fat metabolism significantly different from control group. However, first experimental group was not significant difference with second experimental group. These research findings will be applied Water-base and Land-base circuit training for modification of body composition and increase fat metabolism in obese women

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