Thesis Title EFFECT OF RAPID WEIGHT REDUCTION ON PHYSICAL PERFORMANCE, BLOOD CHEMISTRY AND HEMATOLOGY IN JUDO ATHLETES

Name Chaiyaporn Luckum

Degree Master of Science (Physiology)

Thesis Supervisor Committee

Thirayudh Glinsukon, Sc.D.

Thyon Chentanez, Ph.D.

Chaturaporn Na Nakorn, M.D.

Date of Graduation 6 July B.E. 2533 (1990)

ABSTRACT

The effect of rapid weight reduction on physical performance, blood chemistry and hematology was investigated in 13 males Judo athletes with the age of 18-20 years from Samuthsakorn Physical Education College who participated in 14th physical education college's game from December 1st -10th, 1988. The athletes were subjected to no restriction of food and fluid intake. The program of weight reduction with thermal and metabolic dehydration was started in the morning the blood collection and physical fitness tests were performed in the afternoon. The average body weight loss was 1.29$\pm$0.2 kg (2.52% of body weight). It was found that these methods of rapid weight reduction in a total of 2.5% of body weight do not influence physical performance in these Judo athletes. The physical work capacity at heart rate 170 beat/min (PWC-170) and vertical jump just slightly

increase but not significant, there were 871±109 kpm/min and 52.2±12.3 cm before weight reduction and 938±195 kpm/min and 54.6±8.4 cm after weight reduction respectively. The muscle strength between before and after weight reduction was not significant different the same as the other performance parameter. There were 40.89±1.96 kg and 40.79±1.94 kg. in right hand grip dynamometer and 38.33±2.10 kg and 39.00±2.09 kg in the left. Muscle strength test by versatile muscle power measuring. Arm flexion in right hand were 27.06±6.28 kg and 27.08±4.74 kg, leflt hand were 24.4±5.89 kg and 24.83±3.51. Arm extension in right hand were 22.06±4.89 kg and 19.58±3.29 kg left hand were 20.45±4.76 kg and 19.37±4.05 kg. Leg flexion in right leg were 29.70±2.68 kg and 27.6±1.26 kg. in the left were 26.84±2.79 and 24.0±1.19 kg leg extension in the right leg were 53.5±3.79 kg and 53.08±2.83 kg in the left were 54.02±4.16 kg and 52.25±3.47 kg respectively.

Blood chemistry and electrolytes there were significant increase in Ca^{2} from 2.29±0.33 to 5.63±0.14 mEq/L), Cl^{-} from 100±4.45 to 120+3.16 mEq., Na^{+} from 146+3.16 to 161±6.75 mEq/L and K^{+} from 3.72±0.11 to 4.34±0.40 mEq/L, but not significant in Uric Acid (3.71±1.21 and 4.61±0.64 mg%), SGPT (16.71±3.79 and 17.16±5.92 SFU/ml), SGOT (17.75±14.62 and 27.25±8.05), and Creatinine (1.11±0.02 and 1.10±0.03 ml/dl) and significant increase in BUN from 10.92+2.69 to 23.75+2.26 mg% and Hb in plasma from 0.78±0.42 to 1.51±1.03 mg%.

In hematology, significant increase in RBC count from 4.96±0.09 to 5.42±0.13x10^6 cells/mm^3, WBC count from 7.55±0.44 to 9.9±0.53x10^3 cells/mm^3 and Neutrophil from 5.3 5±0.35 to 6.50±0.26x10^9 cells/L and increase lymphocyte from 3.12±0.10 to 4.16±0.30x10^9 cells/L.

Althrough the rapid weight reduction effect some blood chemical and electrolyte parameters, and to the blood characteristic but not effect to the physical performance.