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Comparison of the effects of acute endurance exercise performed in the morning and evening on High-Molecular-Weight (HMW) adiponectin.Hyeon-Ki Kim¹, Masayuki Konishi², Hiroki Tabata¹, Endo Naoya¹, Karina Ando¹, Mio Nishimaki¹, Mi Xiang¹, Sun-Kyoung Lee³, Young-Hak Kim⁴, Shizuo Sakamoto²¹ Graduate School of Sport Sciences, Waseda University² Faculty of Sport Sciences, Waseda University³ Department of Sports & Physical Arts, Myongji University⁴ Department of Oriental Martial Arts, Yongin University

Objectives. High-Molecular-Weight (HMW) adiponectin is the biologically active form of adiponectin and is related to enhanced insulin sensitivity and metabolic function. However, it is unknown whether acute endurance exercise which is conducted in different timing of the day affects HMW adiponectin. The purpose of this study was to investigate the influence of acute endurance exercise in the morning and evening on HMW adiponectin.

Methods. Eight healthy young men completed two trials in a randomized cross-over design: (1) morning (0900-1000) and (2) evening (1700-1800) trials on 2 days separated at least by a week. In the morning and evening trials, participants walked for 60 minutes at 60% of maximal oxygen uptake on a treadmill. Blood samples were collected to determine hormones (catecholamine and

insulin), metabolites (free fatty acid and glucose), and total and HMW adiponectin at pre-exercise, immediately and 2 hours after exercise.

Results. Plasma adrenaline concentrations were significantly higher in the evening trial than in the morning trial at immediately after exercise ($P < 0.05$). On the other hand, Plasma total adiponectin, HMW adiponectin, and the ratio of HMW to total adiponectin concentration were unchanged between pre and post exercise. Moreover, those changes did not differ between morning and evening trials.

Conclusion. Our data suggest that acute endurance exercise performed in the morning and evening did not affect total and HMW adiponectin concentration.