FEATURES OF BODY COMPOSITION, CARDIOPULMONARY FUNCTION AND LIPID METABOLISM REGARDING SUMO WRESTLERS IN UNIVERSITY – INCLUDING THE COMPARISON OF RESULTS WITH UNIVERSITY SPORTS PLAYERS IN OTHER FIELDS, YOUNG ORDINARY PEOPLE AND YOUNG OUTPATIENTS -

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Purpose:
In order to examine how body composition, cardiopulmonary function and lipid metabolism of young people are affected by exercise and lifestyle-related diseases, we compared the results with those of other sport players in the same age group, ordinary people with good health conditions and of patients with lifestyle-related diseases with the measurements of body composition, cardiopulmonary function and lipid metabolism regarding sumo wrestlers in university.

Subjects and method:
Subjects are all males. Their details are; university sumo wrestlers: 19 people (19.7±0.9y.o.), university long-distance runners: 12 (20.8±0.8y.o.), soccer players from the similar age group: 14 (20.0±4.0y.o.), ordinary people: 13 (22.5±1.5y.o.), outpatients: 11 (27.1±3.3y.o.). Fasting blood tests were conducted in early morning for the purpose to determine levels of serum lipid, enzymes related to serum lipid. We also implemented 946;3-adrenoreceptor gene polymorphism on some of the subjects. To measure peak oxygen uptake and maximum lipid combustion rate, exercise tolerance tests were carried out including respiratory gas analysis. With all these results, we conducted a comparative study of the five groups surveyed.

Results and conclusion:
The results of the sumo wrestlers’ body composition tests are as follows: body height 176.3±7.4cm; body weight 120.1±19.2kg; BMI 38.8±7.0kg/m²; %FAT 29.3±5.7%; waist circumference 116.1±14.1cm; waist/height ratio 0.66±0.09. These revealed that they are obese due to visceral fat. Many of them have low LPL level (42.5±10.9ng/ml) and high leptin level (10.7±5.8ng/ml). Approximately 30% of them have low level of HDL cholesterol (47.3±12.2mg/dl) and none of the wrestlers had high HDL2-cholesterol levels (30.8±9.8mg/dl). These facts imply that the sumo wrestlers surveyed may have an abnormality in their lipid metabolism. The results of respiratory gas analysis were as follows. Firstly adjusted peakVO2 of body weight were sumo wrestlers 35.1±5.8ml/min/kg; long distance runners 70.8±4.6ml/min/kg; soccer players 57.3±3.5ml/min/kg; ordinary people 58.7±6.4ml/min/kg; patients with lifestyle-related diseases 30.0±5.0ml/min/kg each. Secondly Adjusted MLCR of body weight were sumo wrestlers 6.1±0.8mg/min/kg; long distance runners 11.0±1.4mg/min/kg; soccer players 10.9±3.1mg/min/kg; ordinary people 8.6±2.4mg/min/kg; patients with lifestyle-related diseases 4.8±1.8mg/min/kg each. These revealed that the cardiorespiratory endurance and the function of lipid metabolism of the wrestlers are less efficient than those of other sports players and of ordinary people. Abnormality in lipid metabolism is suspected due to genetic factors because one third of them are Trp/Arg heterozygote, which was determined by 946;3 adrenoreceptor gene polymorphism. The result of the study also suggests the abnormality in lipid metabolism and cardiopulmonary function can be affected by the difference in the subjects of sports and lifestyle-related diseases.

Keywords: Sport Career / Sport Athletes, Lipid Metabolism, Obesity