

EFFECTS OF AEROBICS CLASS ON WEIGHT LOSS AND BOW POSTURE FOR VARSITY STUDENTS

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The purpose of this study is to examine the effects of aerobic training class on weight loss for varsity students in comparison with tatami mats in the Judo room and the floor studio. Seventy-seven subjects participated in this study, after being confirmed by informed consent. The results showed that 51 subjects had lost weight, 66.2% of all. In regards %fat, 56 subjects had shown decreases, namely 72.7%. The data of the most weight loss was 5.4kg and the most %fat loss was 9.4%fat in the Judo room. In the focus on %fat loss subjects showed a statistically meaningful difference. It was suggested that an attempt of ukemi wearing a kimono with a tight belt and beautiful bow posture in back straight contributed to the effect of %fat loss in the Judo room and aerobics on tatami mats was the efficient exercise. In addition it was fruitful that each other bowed in respect in physique.

KEYWORDS: weight loss, aerobics, bow posture, kimono, ukemi

INTRODUCTION: The effect of aerobics has been proposed by Cooper et al. It was introduced as weight loss program afterward in Japan. Recently assessment of youth fitness has reported in the epidemic of childhood obesity for health (Cooper et al. 2010). Authors of this work have researched the effect of aerobics on weight loss for varsity students during the regular physical education (PE) from 2006. The subjects that the weight was heavy and percentage of body fat (%fat) was high had down. Namely the programs of compound training and aquabics were effective for weight loss and %fat loss. Moreover abdominal circumference of females had gone down significantly. In this time, one class was aerobics in the Judo room. Utilized on advantage of tatami mats, ukemi wearing a yukata with a tight belt for uniform and zarei were practiced. Adequate intervention programs in PE class have the potential to improve strength as well as postural control (Granacher et al. 2010). On the viewpoint of biomechanics, good posture makes the motion efficiently. Also weight loss by exercise makes the posture beautiful. Therefore bow posture in back straight was attempted (Photo 1). The purpose of this study is to examine effects of weight loss and beautiful bow posture.

METHODS: Seventy seven varsity students participated in this study (age18-20), after being confirmed by informed consent. Teaching places were two, one class was the Judo room (J) and another one was the floor studio (S). The program is composed of a series of PE once a week of 15 weeks from April to July. Measurements were height, weight and %fat (BODY ANALYZER TBF-102, AD-6625A by TANITA). The rest pulse (Rp) before the training and the maximum pulse (Mp) were measured for 15 sec. and calculated for 1 min. The target pulse zone (Tpz) was 60% (ACSM : American College of Sports Medicine) of capacity by Karvonen method. The rating of perceived exertion (RPE) was recorded using Börg scale. Training time was sixty-ish min within 90 min. Data was compared with the first time, the middle time and the last time (T1, 2, 3). The following contents were practiced. J class; PE teacher instructed aerobic dance and how to put on yukata with a tight belt. The movement was the basic aerobic step to move right and left plus low step with the center of gravity, to roll, to clap and tap a rhythm by their hands and legs on tatami



Photo 1 Japanese zarei.

mats. Ukemi moved up and down from the standing position to the lying down backward was practiced. S class; PE teacher instructed aerobic dance and strength and light gymnastics, menus by using ball. Simultaneously zarei and ritsurei in back straight were practiced as bow posture. The greeting of zarei in J and ritsurei in S were exchanged at the start and end in PE. At the first class, the bow technique was conducted in accordance with the text. Subjects checked the straight back line and hands position with buddy by KAI (Keitai Assisted Instruction). These were feedback by shoot a film, respectively. Already authors had reported the efficient method to examine own posture. Finally subjects created their originally aerobic dance as the examination in classes (Photo 2).

RESULTS : The results showed that 51 subjects had lost weight, namely 66.2% of all. Female was 69.4% and the average of weight loss was 1.6 ± 1.14 kg and the data of the most weight loss was 5.4kg in J. Male was 53.3% and 1.6 ± 1.35 kg (Table 2). About %fat 56 subjects had come down, namely 72.7%. Female was 80.6% and the average of %fat loss was 2.5 ± 1.88 %fat and the data of the most %fat loss was 9.4%fat in J. Male was 40.0% and 1.6 ± 0.88 %fat (Table 3). The number of weight loss and %fat loss was in a majority about females in both. Using F-test, the average of weight, %fat and BMI showed significantly difference in the case of female of S. Fig.1 showed the correlation between T3 weight (y) and T1 weight (x), in the case of weight loss;



Photo 2 Aerobics on the tatami mats in Judo room.

	class	height	weight	%fat	BMI
	J female	160.3±4.31	53.8±7.07	26.1±6.35	20.9±2.31
	S female	157.8±4.90	52.6±8.50	25.2±6.30	21.1±2.78
	male	172.1±5.30	67.0±9.39	18.2±4.20	22.6±3.21

$$y = 0.9648x + 0.4375, n = 51, \quad r = 0.9939$$

($p < .05$). Fig.2 showed about %fat likewise, in the case of %fat loss; $y = 0.8579x + 1.3002$, $n = 56$, $r = 0.9565$ ($p < .05$). The data showed that effect of the subject of %fat loss was remarkable. Fig.3 showed the changes for %fat loss between %fat (y) and weight(x) at T1, T2 and T3, in the case of J, T1; $y = 0.6064x - 5.1145$, $r = 0.8525$, T2; $y = 0.6681x - 10.751$, $r = 0.7335$, T3; $y = 0.5787x - 6.2453$, $r = 0.8210$, $n = 27$ ($p < .05$). In the case of S, T1; $y = 0.5361x - 2.4796$, $r = 0.8727$, T2; $y = 0.4969x - 0.8524$, $r = 0.8672$, T3; $y = 0.5263x - 3.0321$, $r = 0.8803$, $n = 23$ ($p < .05$). [Note: S is female, Sm is male] The data showed % fat decreased running along T1, T2 and T3.

class	number	weight loss (kg)				weight gain (kg)				unchange		
		number	%	maximum	mean ± SD	number	%	maximum	mean ± SD	number	%	
J	female	35	21	60.0%	5.4	1.6 ± 1.24	13	37.1%	6.0	2.1 ± 1.60	1	2.9%
S	female	27	22	81.5%	4.7	1.6 ± 1.02	5	18.5%	0.7	0.6 ± 0.36	0	0%
	male	15	8	53.3%	3.5	1.6 ± 1.35	6	40.0%	2.8	1.3 ± 1.00	1	6.7%
	total	42	30	71.4%	—	—	11	26.2%	—	—	1	2.4%
All	female	62	43	69.4%	5.4	1.6 ± 1.14	18	29.0%	6.0	1.6 ± 1.57	1	1.6%
	male	15	8	53.3%	3.5	1.6 ± 1.35	6	40.0%	2.8	1.3 ± 1.00	1	7%
	total	77	51	66.2%	—	—	24	31.2%	—	—	2	2.6%

class	number	%fat loss (%)				%fat gain (%)				unchange	
		number	%	maximum	mean ± SD	number	%	maximum	mean ± SD	number	%
J	female	27	77.1%	9.4	3.1 ± 2.09	7	20.0%	12.6	4.5 ± 3.97	1	2.9%
S	female	23	85.2%	4.7	1.8 ± 1.19	4	14.8%	1.5	1.2 ± 0.189	0	0%
	male	6	40.0%	3.0	1.6 ± 0.88	6	40.0%	3.1	1.4 ± 1.186	3	20.0%
	total	29	69.0%	—	—	10	23.8%	—	—	3	7.1%
All	female	50	80.6%	9.4	2.5 ± 1.88	11	17.7%	12.6	3.3 ± 3.70	1	1.6%
	male	6	40.0%	3.0	1.6 ± 0.88	6	40.0%	3.1	1.4 ± 1.19	3	20.0%
	total	56	72.7%	—	—	17	22.1%	—	—	4	5.2%

Using F-test, the data indicated significantly high difference. Especially the result of J showed a meaningful difference. Fig.4-1 and Fig.4-2 showed the results of exercise strength and %fat about each. In the case of J, the confine of %fat loss was wide and RPE was low with contrast to mpz. The average of RPE was level 「11」, fairly light. [Note: y; mpz and RPE, x; decrease

and increase of %fat] Photo 3 produced posture of zarei in comparison with before and after by KAI. Results showed the back line of bow was straight, right and left forefingers face each other naturally and then at bow hands position was put at 45 degree angles facing inward.

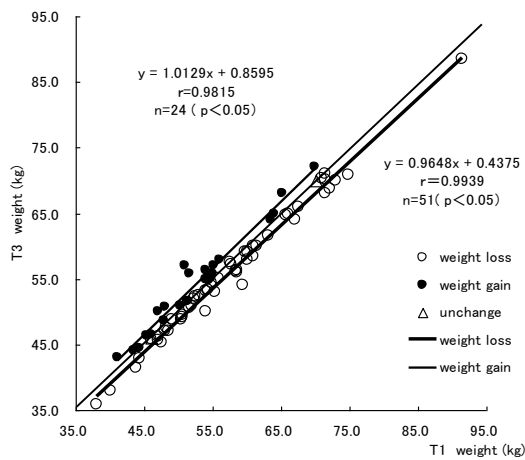


Fig. 1 Change of weight for each subject at T3 and T1.

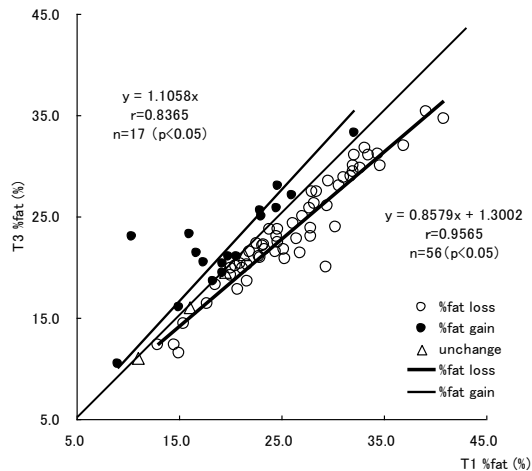


Fig. 2 Change of %fat for each subject at T3 and T1.

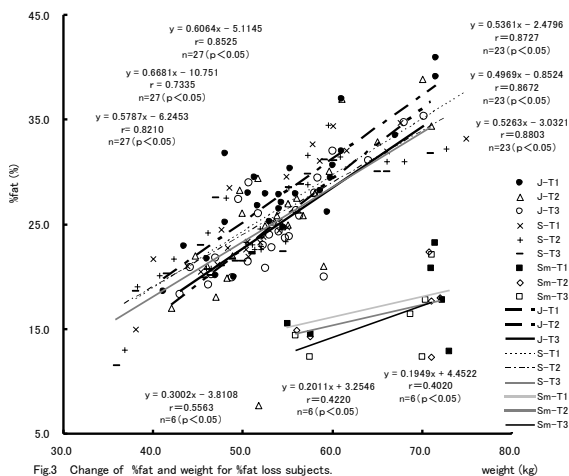


Fig.3 Change of %fat and weight for %fat loss subjects.



Photo 3 Posture of seiza and zarei. Change of hand position and back line.

DISCUSSION: Effect of weight loss and %fat Loss : On evaluation of the average, the data was indicated significant of S. In the focus on the subjects of %fat loss, the average of weight loss and %fat loss of J was significantly difference and remarkable change. Tatami mats in the Judo room where are installed the spring against shock and impact under are covered in the role like bounce on a trampoline or recovery on komen of wadaiko. Therefore effect of spring enabled to exercise fairly light. It was observed aerobic performance on tatami mats achieved a most maximum of efficiency with a minimum effort for hope of weight loss in the circumstance. Secondly it was suggested that the attempt of ukemi influenced %fat loss, safety by keeping the belt tied neatly. Therefore it was suggested that aerobics in the Judo room was efficient exercise of weight loss in according to more active motion. About this result the subjects might show trendy group of little exercise habit in adolescents. Effect of Japanese bow posture : In Japan people bow to each other as the manner at greeting. Also bow is exchanged at start and end with its own special manners in all military arts and also in the tea ceremony. The straight back line and polite beautiful bow posture show courtesy. At the result, the change of the postural consciousness took the posture of zarei and ritsurei (Photo 4). Especially it was considered that wearing yukata to keep the belt tied neatly helped to practice beautiful bow in back straight. The attention of posture contributed to turn out well in dance to the beautiful and flexible motion like rhythm gymnastics. In addition it was suggested that participants mastered how to put on yukata and fix up appropriately to do exercise on tatami mats played a part in consciousness to beautiful posture and going

on a diet. Consequently it was suggested that the programs by adequate intervention in PE caused these results. More than anything else the subjects contributed towards the achievement of these results. Finally all subjects bowed the situation intended a one-on-one greeting. It was fruitful and meaningful that one another bowed in respect.

CONCLUSION : In this study it was obtained that subjects of 66.2% about weight and 72.7% about %fat had come down in aerobics class. Especially, in the focus on the subjects of %fat loss, the effect of weight loss of J was indicated significantly difference and RPE was easy level. It was suggested that an attempt of aerobics on tatami mats, ukemi, wearing yukata kept the belt tied had contributed to the effect of %fat loss. In addition aerobics in the judo room was integrated the feasibility of such a program in the regular curriculum and the practicable experience of beautiful bow posture had influenced on their posture and dance as extensional education.

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