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Effect of physical activity on suppression of appetite via metabolic flexibility

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Physical activity (PA), which has a number of components (e.g. intensity, duration, frequency, total amount etc.), plays a role in determining total energy expenditure and food intake, also. A rapid depression of PA is related to weight gain. However, the degree of weight gain has individual variation. A metabolic flexibility (MF) is the sensitivity of regulation of substrate oxidation to fuel availability. Previous studies have reported that MF is improved by knocked-out of appetite receptor in mouse or exercise interventions. However, there is no marked evidence for the mechanisms of effects of PA on food intake and MF. It is possible that high-MF is associated with suppression of desire to fat after high-fat

eating and an exercise. The aim of this study is to determine whether PA effects on suppression of the desire to fat via substrate oxidation. First, we have been investigating what type of PA is associated with suppression of appetite and we have obtained that total amount of PA correlates with suppression of appetite. Next, we are going to examine whether subjects with high-MF are able to suppress of appetite more than subjects with low-MF after high-fat meal and prolonged exercise. Finally, we are going to investigate what type of PA is associated with high-MF. The results of these studies will answer the question, “what do we need to do to control weight easily”.

Effect of electro-acupuncture on skeletal muscle atrophy in mice

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Skeletal Muscle atrophy is induced in response to unloading by Hindlimb Suspension (HS). However, the molecular mechanisms underlying the Electro-acupuncture (EA) on skeletal muscle has not been identified. Therefore, we aimed to determine the effect of the EA and Chishin (where the needles are kept in muscle for thirty minutes) on skeletal muscle atrophy. 35 mice were randomly grouped into 5 groups; A)Normal group, B)HS Group, C)HS + Chishin group, D)HS + EA 1Hz group, E)HS + EA 10 Hz group. Acupuncture interventions were conducted on the gastrocnemius of C, D and E groups. We measured the muscle mass, the cross

sectional area, the percentage of Atrogin-1 and MuRF1 (Atrophy related ubiquitin ligases) expressions of Soleus on each mouse after 2 weeks of acupuncture interventions. The weight of Soleus of D groups is significantly greater than B group [B; 0.19 ± 0.01 g, D; 0.23 ± 0.01 g, $n=7$]. On the contrary, the percentage of Atrogin-1 and MuRF1 expressions of C, D and E groups were tend to be less than B groups [Relative expression value, B; 3.12 ± 1.12 , C; 2.29 ± 0.20 , D; 1.43 ± 0.37 , $n=4$]. Atrogin-1 and MuRF1 appear in the peculiarity when skeletal muscle atrophy occurs. These results suggest that EA and Chishin may influence the activity of Atrogin-1 & MuRF1 expression.

Effects of different intensities of endurance exercise on reactive oxygen species production and leukocyte activation markers

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The purpose of this study was to investigate the effects of three different intensities of exercise based on anaerobic threshold (AT) on reactive oxygen species (ROS) production and leukocyte activation markers. Eight healthy male subjects performed three different intensities of exercise for 20min: (1) 70%AT (low-intensity: LI), (2) 100%AT (moderate-intensity: MI), and (3) 130%AT (high-intensity: HI) on bicycle ergometers. Control (C) trial was under resting condition. Blood samples were taken at pre-exercise, immediately after exercise and 30min after exercise. The changes in derivatives of reactive oxygen metabolites (d-ROMs) and leukocyte activation markers (myeloperoxidase and

calprotectin) were measured. Plasma d-ROMs values were significantly higher than pre-exercise values immediately ($P<0.01$) and 30min after exercise ($P<0.05$) only in the HI trial. Percent change from the pre-exercise to post-exercise d-ROMs values were higher following the HI trial than the C trial ($P<0.05$). Similarly, percent changes from the pre-exercise to post-exercise myeloperoxidase were higher following the HI trial than the C and MI trials ($P<0.01$), but that of calprotectin levels were not statistically significant. These findings suggested that high-intensity of endurance exercise above the AT induces ROS production and leukocyte activation.

From folk dance to healthy exercise: Features of Taiwanese belly dancing

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Traditional Oriental dance was a folk dance form prevailed in the Middle East with long history. However, after being influenced by Orientalism, tourism and globalization, it has changed a lot to become modern belly dance since the end of 19th century. Belly dance was introduced to Taiwan in 2002, and has soon been embraced and spread all over Taiwan within these 8 years. In the meanwhile, the exotic dance rapidly localized in Taiwanese society as well. The purpose of this study was to review the development of belly dance in Taiwan, and highlight features of Taiwanese belly dance. Methods of literature analysis and participant observation were

adopted. Five features were concluded as follows: 1.The fashion to blend Taiwanese cultural elements with belly dance 2.Outstanding belly dancers become the proud of Taiwan 3.Belly dance regarded as a healthful exercise which especially good for body shaping 4. Belly dancing performances frequently displayed in various local activities 5. People of all age take part in belly dancing while elder women are the majority. Owing to the limitation of time, comparison of belly dance development between Taiwan and other areas, and firsthand data gathered from belly dance learners and lectures will be improved in future work.

Oxidised low-density lipoprotein concentrations in older adults in association with physical activity status: The WASEDA Active Life Study

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The purpose of this study was to examine the relationship between the amount of physical activity and oxidised low-density lipoprotein (LDL) in older adults. - Here we report our preliminary findings of comparing oxidised LDL concentrations in active and inactive older adults. A total of 27 older adults (aged 69.9 ± 4.3 years, mean \pm SD; 16 females and 11 males) were analysed in

the cross-sectional design. Prior to the blood collection, participants were asked to wear an uniaxial accelerometer for 4 consecutive weeks for the determination of physical activity levels. Oxidised LDL concentration was measured by enzyme-linked immunosorbent assay. Fasting plasma oxidised LDL concentrations were positively correlated with fasting plasma LDL

concentrations ($r = 0.391$, $P = 0.043$). Fasting plasma oxidised LDL concentrations were negatively correlated with the amount of physical activity ($r = -0.407$, $P =$

0.034). These findings suggest that regular physical activity may provide a protective role for the oxidation of LDL in older adults.

Effect of daily physical activity on executive function in elderly people

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This study investigated the relationship between daily physical activity level and its effect on the interference aspect of executive control in older adults using event-related brain potentials. Twenty-six older adults (70.5±3.9 years) participated in the present study. Physical activity (PA) was measured using an accelerometer/pedometer, including step count and the intensity of physical activity. Participants were divided into two groups: one group walked more than 10,000 steps/day (High PA: n=12), and the other group walked less than 10,000 steps/day (Low PA: n=14). They performed a flanker task. We measured reaction time,

response accuracy, and P3 as indices of cognitive function. The results indicated that participants in the high PA group exhibited faster reaction time both on congruent ($p<.01$) and incongruent trials ($p<.01$), greater response accuracy only during the congruent stimuli ($p<.01$), relative to low PA group. The P3 latency tended to be shorter for the high PA group ($p=.06$). However, the P3 amplitude was not influenced by physical activity. These findings suggest that habitual physical activity may be associated with preservation of age-related declines in cognitive function.

Developing Japanese version of the eHealth Literacy Scale (eHEALS)

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The present study developed the Japanese version of the eHEALS (J-eHEALS), evaluated its validity and reliability, and examined the association of the ehealth literacy with demographic attributes and characteristics

on health information searching among Japanese adults. Data were analyzed for 3,000 Japanese adults (male:50.0%,age:39.6±10.9 years) who responded to Internet-based cross-sectional survey. The J-eHEALS,

demographic attributes, health information resources, ehealth contents were obtained. For construct validity, principal components analysis resulted in a single factor solution and confirmatory factor analysis for the 8-items model demonstrated a good fit (GFI=.988, CFI=.993, RMSEA=.056). For criterion validity, moderate correlation was observed with the communicative and critical health literacy scale. The internal consistency (Cronbach α) and test-retest reliability was $\alpha=0.93$, $r=0.63$. The J-eHEALS score was significantly higher in women, 40-and 50-year age group, high income, high

frequency of internet searching than corresponding group, respectively. Furthermore, the high group in ehealth literacy used many health resources and obtained various ehealth contents compared with the low group. The most frequent resource was internet in the high group, and television/radio in the low group. The J-eHEALS was highly validated and reliable scale. Enhancement of ehealth literacy would be important to utilize effectively and appropriately health information on internet which is further increasing.

Effect of voluntary exercise and energy restriction on bone mineral density in female rat model

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Some athletic women with chronic exercise training and energy defects are at risk for osteoporosis. The aim of the present study was to establish animal model of osteoporosis for female athlete. We have designed to investigate the effect of long-term energy restriction on bone mineral density (BMD), bone mineral content (BMC), and estradiol level in voluntary wheel running female rats. Fourteen female Sprague-Dawley rats (8 wk old) were randomly assigned to two groups, running group or sedentary group. Water and diet were available to all rats initial 10-wk baseline period. Running group were free access to wheels throughout the study. At 18 wk of age, the rats in running group were randomized into two groups: Run-Control-fed (ad lib-fed) group or

Run-Restricted-fed (30 % energy restriction) group. After 14-wk intervention for 14-wk, BMD and BMC of femur and tibia were analyzed by dual-energy X-ray absorptiometry. The Run-Restricted-fed rats were markedly reduced in BMD and BMC of the femur compared to the Run-Control-fed and sedentary rats. Uterus weight was fall in Run-Restricted-fed rats compared with sedentary rats ($p<0.05$) and Run-Control-fed rats ($p=0.0514$). Serum estradiol level is under investigation. These results indicated that long term energy restriction in voluntary wheel running induced bone loss in female rats. This may establish a foundation for osteoporosis for female athlete rat model.

Perceived environmental factors associated with physical activity among normal-weight and overweight Japanese men

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The purpose of the present study was to examine the perceived environmental correlates of physical activity among normal-weight and overweight Japanese men. Data were analyzed for 1420 men (aged 44.4± 8.3 years) who responded to an internet-based cross-sectional survey. They answered the Environmental Module and Short Version of the International Physical Activity Questionnaire (IPAQ). Unadjusted and adjusted binary logistic regression analyses were utilized to examine the environmental factors associated with meeting the recommendations (150 min/week) of moderate-to-vigorous physical activity (MVPA, estimated by IPAQ Short Version) among the normal-weight and overweight men. After adjusted for gender, marital

status, educational level, household income and employment status, seeing people being active (OR=0.44; CI: 0.27—0.73) was significantly associated with whether overweight men met the MVPA recommended levels or not. For the normal-weight men, presence of crossroads (OR=0.69; 95% CI: 0.49—0.96) was positively associated with meeting MVPA recommended levels. The results indicate that the environmental correlates of meeting MVPA recommendations would be different in the normal-weight and overweight Japanese men. For future studies, examining the multiple levels of correlates (psychological, social and environmental) of MVPA among the overweight group would be needed.

Effect of 6 month-rowing training on atherosclerosis index in elderly men

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The purpose of this study was to examine the effect of 6 month-rowing training on atherosclerosis index (AI) calculated by concentrations of lipids and lipoprotein cholesterols in the blood in elderly men. Seventeen untrained elderly men aged 65-79 years participated in this study. The participants were divided into a control

group (n = 9) and a rowing-training group (n = 8). Rowing-training group trained on rowing ergometer for 6 months at three times/wk. Maximal oxygen uptake (VO₂max) was measured, and AI was calculated from concentrations of total cholesterol, triglyceride, and high-density lipoprotein cholesterol at the baseline and

post 6 month-training. There were no differences between the two groups for all the baseline values. AI was significantly decreased by 13% ($p < 0.05$) in response to the 6 month-rowing training. $VO_2\text{max}$ was increased by 26% after the rowing training ($p < 0.01$). On the other hand, no particular effect of the training was observed in

weight or percent body fat in the rowing training group. As for the control group, no change was observed for all values between the baseline and post 6 month. These findings suggested that rowing training is a valuable tool for improving atherosclerosis for elderly men.

Influence of aquatic exercise for elderly people with chronic back low pain

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The purpose of this study was to investigate the influence of aquatic exercise for elderly people with chronic back low pain. A total of 21 elderly people (2 males and 19 females, 66.2 ± 11.9 years, mean \pm SD) were included in this study. Aquatic exercise program consisted of 5 sessions (walk, pelvis exercise, hip joint exercise, kickboard exercise, floatable stick exercise), twice a week for 12 weeks in a swimming pool at 30°C. They were assessed for physical measurement, flexibility, one-leg balance, abdominal muscle, erector spinae, quadriceps femoris and hamstrings measured by MRI and

Visual Analog Scale and Quality of life (QOL) was estimated by JOABPEQ. Evaluations were performed before exercise and after exercise. The body fat decreased ($p < 0.01$), flexibility and one-leg balance increased ($p < 0.05$). The abdominal muscle significantly increased ($p < 0.01$), but other muscles were no differences. The degree of pain showed tendency of reduction, but QOL were no significant differences. The results of this study suggested that aquatic exercise has effects for elderly people with chronic low back pain to increase flexibility, balance and muscle strength.

Alterations in the thickness of the trunk muscles after therapeutic exercises in chronic low back pain patients

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Therapeutic exercises for patients with chronic low back pain is one of the most important conservative treatments. Recently, lumbar stabilization exercises focused on deep trunk muscles has attracted considerable attention. In this study, we investigated the effects of lumbar stabilization exercises for chronic low back pain patients on the thicknesses of the trunk muscles. The subjects were 18 patients with chronic low back pain (age:53.3 years). The therapeutic exercises involved drawing-in and hand-knee. The exercises were performed during the 3-month intervention period. The degree of pain was estimated using VAS, and the thicknesses of the trunk muscles were measured using ultrasonography. All

the scores evaluated after the intervention were compared with those evaluated before the intervention. The VAS score after the intervention was significantly lower than that before the intervention (from 4.75 to 1.15). The thickness of the transversus abdominis (from 3.6 [0.7] to 3.9 [0.9] mm) and of the lumbar multifidus (MF) (L3: from 28.5 [3.8] to 30.1 [3.0] mm; L4: from 29.9 [5.2] to 31.6 [3.8] mm) were significantly increased after the intervention. We concluded that the therapeutic exercises that improve the activity of the deep trunk muscles were effective for increasing the thickness of the transversus abdominis and the lumbar multifidus and improving chronic low back pain.

Exercise training improves nonalcoholic steatohepatitis via suppress of scavenger receptor expression in obese mice

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Nonalcoholic steatohepatitis (NASH) is considered to be the hepatic event of the metabolic syndrome. In fact, it has been reported that high-fat-induced obese mice enhance hepatic inflammation and fibrosis. Also, it has been reported that scavenger receptor (CD36) are associated with hepatic inflammation and fibrosis. On the other hand, although exercise improves NASH, it remains unclear whether exercise training suppress hepatic inflammation and fibrosis. Male C57BL/6 mice were divided into four groups; normal diet (ND) control, ND exercise, high-fat-diet (HFD) control, and HFD exercise groups. Exercised mice ran on a treadmill at 12-20 m/min for 60 min/day for 16 weeks. Mouse macrophages cells

were stimulated with oleic acid and dexamethasone for 6 hours. mRNA expressions in liver tissue and cell were evaluated by real time-RT-PCR. In HFD mice, exercise training decreased mRNA expressions of inflammatory cytokines and fibrosis maker in liver tissue. In addition, exercise training decreased CD36 mRNA expression in liver tissue. Also, stimulation of dexamethasone decreased CD36 mRNA expression in macrophage cell treated with oleic acid. Exercise training improves hepatic inflammation and fibrosis in obese mouse, and suppress of CD36 expression in macrophages might mediate preventive effects of NASH.

Elderly users of community senior center in relation to quality of life

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The purpose of the study was to examine the relationship between the use of senior center and health-related quality of life in Korean older adults. A questionnaire survey was conducted to two type of older adults who lived in Pusan in Korea: 154 older adults who used senior centers (male 19.3%, female 80.7%, age 71.2 ± 3.7 years, mean ± SD) and 150 older adults who did not use the centers (male 39.4%, female 60.6%, age 70.2 ± 4.8 years). The 8-domain scales of physical function (PF) and role function (RP) were significantly higher in the users of the senior center compared with the non-users

($F=4.87$, $P=0.027$ and $F=7.02$, $P=0.009$, respectively).

The 8-domain scales of vitality (VT) was also significantly higher in the users of the senior center compared with the non-users ($F=7.48$, $P=0.007$). The present study showed that the users of the senior center have higher PF, RP and VT compared with the non-users. These findings suggest that although the results are unable to specify causal relationships using the senior center may lead to some improvement in health-related quality of life.

The effect of 10 km run on following night sleep

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Although there have been many researches on the effect of acute exercise on sleep, the relationship between acute exercise and sleep has been unclear. One of the main reasons is that young healthy subjects who have little room for improvement of sleep were used in many studies (Ceiling and Floor effects). The purpose of the present study is to investigate the effect of 10 km run on following night sleep components evaluated by polysomnography (PSG). In order to reduce CF effects,

subject were designed to have a late afternoon nap to deteriorate following night sleep. Nine young healthy men participated in the experiment consisting of three nights (baseline night (Nt0), Nap (Np1) + night after no run (Nt1), and Nap (Np2) + night after 10 km run (Nt2)). Of sleep variables, sleep efficiency, total sleep time, and duration of stage REM for Nt1 condition were significantly less than those of the Nt0 condition by 7.54%, 36.21 min, and 23.07 min, respectively. The total

delta power of Nt2 was significantly higher than that of Nt1. Consequently, afternoon nap successfully deteriorate following night sleep. Futhermore, the total delta power

of Nt2 condition was higher than that of Nt1, suggesting 10 km run improved following night sleep.

Impact of awareness of the Japanese food guide spinning top on eating behavior

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The purpose of the present study was to explore whether awareness of the Japanese Food Guide Spinning Top (JFG) would influence on change in eating behavior among Japanese adults. A longitudinal study was conducted in November 2007 and November 2009, using an Internet-based survey. Participants were 787 Japanese adults (mean: 39.8±9.7 years) recruited from the registrants of the Japanese social research company. The awareness status of the JFG and 14-item scale for calculating eating behavior scores were obtained. The respondents were divided among three groups. Respondents who were aware of the JFG at 2007 were

categorized as Group 1. Group 2 were newly-aware of the JFG from 2007 to 2009, and Group 3 were not aware of the JFG at 2007 and 2009. Eating behavior score of Group 1 was the highest in all groups (p<0.001). In Group 2, eating behavior score significantly increased from 2007 to 2009 (p<0.01). Eating behavior score of Group 3 was the lowest in all group (p<0.01). There was no significant change in eating behavior score of Group 3 from 2007 to 2009. The results indicate that the awareness of the JFG would improve eating behavior among Japanese population.

The influence of menstrual cycle on cytokines and markers of neutrophil activation in response to endurance exercise

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The aim of this study was to investigate exercise-induced changes in cytokines and markers of

neutrophil activation in different phases of the menstrual cycle. Ten healthy sedentary females performed 60 minutes of cycling at 75% of their individual anaerobic threshold (AT) on different phases of the menstrual cycle (menstrual, early follicular and luteal phases). Blood was sampled before exercise, immediately after exercise and 30 min post-exercise. We measured concentrations of plasma cytokines (interleukin (IL)-6 and IL-8) and markers of neutrophil activation (calprotectin and myeloperoxidase). IL-6 increased significantly following

cycling. Calprotectin significantly increased at the end of 60 min exercise session in the menstrual phase. The positive correlation was observed between the changes in IL-6 and calprotectin. No significant effects were found in the concentrations of IL-8 and myeloperoxidase. These findings suggest the possibility that exercise induces neutrophil activation in the menstrual phase. Therefore, it is considered that strenuous endurance exercise at the intensity of higher than 75% AT may induces inflammation in the menstrual phase.

Recommended level of physical activity and health-related quality of life among Chinese adults

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The present study examined whether the recommended physical activity would be associated with HRQOL among Chinese adults. Data were analyzed for 1394 Chinese adults who responded an Internet based cross-sectional survey. The International Physical Activity Questionnaire Chinese Version was used to determine whether the individuals met the recommended physical activity on the ACSM/AHA physical activity guideline (150 minutes per week). Demographic data were also obtained. HRQOL was assessed with the Medical Outcomes Survey Short Form-36 questionnaire (SF-36). Multivariate analyses of covariance were utilized. Overall, 87.3% of respondents met the physical activity

recommendation. In both genders, the recommended group had significantly higher physical functioning ($p = .000$), vitality ($p < .05$), and mental health ($p < .05$) scores than the inactive group. In only males, the recommended group had significantly higher role physical ($p < .05$), general health ($p = .000$), social functioning ($p = .001$) scores than the insufficient groups. Individuals who attained the recommended level of physical activity had better scores on some dimensions of HRQOL than those who did not. Therefore, it is also essential for those who do not meet physical activity recommendation to promote physical activity in order to enhance the health-related QOL among Chinese population.

Strength training behavior and perceived environment among Japanese older adults

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In order to establish an effective strategy for promoting strength training, it is necessary to identify the correlates of strength training behavior. The purpose of the present study was to examine the relationship between strength training behavior and perceived environment among older Japanese adults. An Internet-based cross-sectional questionnaire survey was conducted on 293 older adults (68.2 [SD2.8] years). The dependent variable was regular strength training behavior. The IPAQ Environment Module (11 items) was used to assess environmental factors for general physical activity. In addition, access to facilities for strength training and home equipment for strength training were obtained as environmental factors specific to strength training. Logistic regression analysis

was employed. After adjusting for demographic variables (gender, age, educational background, household income, BMI, self-rated health status, smoking habit, and residential area), home equipment for strength training (OR = 2.14, 95% CI = 1.50 to 3.06), access to facilities for strength training (OR = 2.53, 95% CI = 1.32 to 4.85), and observing active people (OR = 2.20, 95% CI = 1.06 to 4.58) were positively correlated with regular strength training behavior. The result indicates that the environmental factors specific to strength training would be associated with strength training behavior more strongly than environmental factors for general physical activity among older Japanese adults.

Habitual rowing exercise increased physical fitness without deterioration of arterial stiffness in older men

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Aim: Rowing exercise is unique, as it includes components of aerobic endurance and muscular strength.

Arterial stiffness is deteriorated by resistance training, but improved by endurance training. The aims of the

present study were to determine comparisons of arterial stiffness and plasma levels of endothelin-1 (ET-1), vasoconstrictor, and nitric oxide (NO), vasodilator, between rowers and sedentary older men. *Methods:* Eleven rowers (68.0 yrs) and 11 sedentary control older men (64.9 yrs) were studied. The rowers had been rowed on the water and on an ergometer at least 2 times per week for 5 years or more, but not been performed particular resistance or aerobic training. Peak oxygen uptake (VO_{2peak}) and leg press power, carotid β -stiffness and cardio-ankle vascular index (CAVI), as indices of arterial stiffness, and plasma levels of lipids, glucose, ET-1 and NO metabolite (NOx [nitrite+nitrate]) were

measured in all subjects. *Results:* VO_{2peak} (36.0 ± 1.7 vs 27.7 ± 1.9 ml/kg/min), leg press power (1077 ± 68 vs 1346 ± 99 Watts) and HDL-cholesterol (75 ± 5 vs 58 ± 3 mg/ml) were higher and triglyceride (78 ± 9 vs 120 ± 14 mg/ml) was lower in rowers than control subjects (all $P < 0.05$). Arterial stiffness indices and plasma ET-1 and NOx levels did not differ between both groups. *Conclusion:* These results suggest that habitual rowing exercise in older men caused increase in physical fitness, muscle power and aerobic capacity, and favorable blood lipids profile without deterioration of arterial stiffness and plasma levels of ET-1 and NO

High level of cardiorespiratory fitness is associated with reduced age-related carotid artery remodeling

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Cardiorespiratory fitness (CRF) is independently associated with reduced risk of cardiovascular disease. Carotid arterial remodeling, which is derived from the interplay between carotid luminal dilation and wall thickening, is also an independent predictor of cardiovascular events. This cross-sectional study was performed to determine the relationships between CRF and age-related luminal dilation and wall thickening. A total of 771 adults, under age 40 (young), 40–59 (middle-aged), and over age 60 (older) participated in this study. Subjects in each age category were divided into

either high (fit) or low (unfit) CRF groups based on $\dot{V}O_{2peak}$. Carotid artery intima-media thickness (IMT) and lumen diameter were measured on ultrasound images. Carotid wall mass was calculated as $\square L(\pi Re^2 - Ri^2)$. Two-way ANOVA indicated a significant interaction ($P < 0.01$) between age and CRF in determining IMT, lumen diameter, and wall mass. In older subjects, IMT, lumen diameter, and wall mass were significantly lower ($P < 0.05$) in the fit than in the unfit group (IMT, 0.69 ± 0.01 vs. 0.74 ± 0.01 mm; lumen diameter, 5.99 ± 0.06 vs. 6.28 ± 0.06 mm; wall mass, 7.41 ± 0.25 vs. 8.71 ± 0.25 mm³).

Multiple regression analysis indicated that the value of $\dot{V}O_{2peak}$ was independently correlated with carotid IMT, lumen diameter and wall mass. The present study

indicated that a high level of CRF is associated with reduced age-related wall thickening and luminal dilation in the carotid artery.

Reduction in tendon elasticity from unloading is unrelated to its hypertrophy

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Tendinous tissues respond to chronic unloading with adaptive changes in mechanical, elastic, and morphological properties. However, little is known about the changes in the detailed structures of the entire tendinous tissue and whether the change in tendon stiffness is related to morphology. We investigated changes in dimensional (volume, cross-sectional area, segmented lengths) and elastic (Young's modulus) properties of the Achilles tendon and distal aponeurosis in response to chronic unilateral lower limb suspension (ULLS) using velocity encoded phase contrast (VE-PC) and three-dimensional morphometric magnetic resonance imaging (MRI). Five healthy subjects underwent ULLS for 4 weeks. Axial morphometric MRI was acquired along the entire length from the calcaneus to the medial gastrocnemius insertion. An oblique sagittal VE-PC MRI was also acquired. The Young's modulus could be calculated from this cine dynamic sequence of velocity

encoded images from the slope of the stress-strain curve during the submaximal isometric plantar flexion. After 4 weeks of ULLS, we found significant (46.7%) decrease in maximum plantar flexion torque. The total volumes of entire tendinous tissue (determined as the sum of the Achilles tendon and distal aponeurosis) increased significantly by 6.4% (11.9 vs. 12.7 cm³) after ULLS. In contrast, Young's modulus decreased significantly by 10.4% (211.7 vs. 189.6 MPa) for the Achilles tendon and 29.0% for the distal aponeurosis (158.8 vs. 113.0 MPa) following ULLS. There was no significant correlation between relative change in volume and Young's modulus with 4 weeks ULLS. It is suggested that although tendon hypertrophy can be expected to adversely affect tendon stiffness, the absence of any significant correlation between the magnitude of tendon hypertrophy and reduced Young's modulus indicates that dimensional factors were not critical to the elastic properties.

Effects of aerobic exercise training on circulating adiponectin concentration and cardiovascular disease risk factors in obese men

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The purpose of this study was to compare the effects of aerobic exercise training and dietary modification on circulating adiponectin concentration and cardiovascular disease (CVD) risk factors in obese men. Thirty-nine obese men without type 2 diabetes were assigned to 12-week lifestyle interventions of either aerobic exercise training (AE) ($n = 23$; age, 49 ± 10 yr; BMI, 30.2 ± 3.8 kg/m²) or dietary modification (DM) ($n = 16$; age, 44 ± 7 yr; BMI, 29.3 ± 2.0 kg/m²). Before and after the intervention, body composition, CVD risk factors and adiponectin concentration were measured. Absolute maximal oxygen uptake was significantly increased in only group AE ($P < 0.05$). The weight and fat mass loss

were greater in group DM than in group AE ($P < 0.05$). Total cholesterol, low-density lipoprotein cholesterol, triglycerides concentration and insulin resistance were improved similarly in both groups ($P < 0.05$). The degree of the improvement in total adiponectin was greater in group DM than in group AE ($P < 0.05$). High molecular weight adiponectin concentration was also increased in group DM ($P < 0.05$), but remained unchanged in group AE. In conclusion, aerobic exercise training may improve circulating adiponectin concentration, but the improvement seems to be less as compared with dietary modification.

Relationship between awareness of health checkups and health guidance and exercise behavior in middle-aged person

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Health checkups and health guidance (HCHG) have been provided to improve metabolic syndrome (MS) in Japanese middle-aged person. MS can be prevented by taking regular exercise, improved diet. The purpose of this study was to determine the awareness level of HCHG and identify the relationship to exercise behavior. The 816 respondents were above the age of 40 (male: $n=402$, female: $n=414$, 50.4 ± 7.9 years) and obtained from the registrants of a Japanese social research company. The study design was a cross-sectional survey using an

internet questionnaire. Logistic regression analysis was utilized. Awareness of the HCHG was 48.3% and that of MS was 97.2% of the sample. The Higher level awareness of HCHG was significantly correlated with exercise behavior (OR=1.57, 95%CI=1.15-2.14). There was, however, no significant relationship between awareness of MS and exercise behavior (OR=1.59, 95%CI=0.67-3.76). A promotion strategy enhancing awareness of HCHG will be needed.