

L-4 Evaluation of HRV under combined conditions of ambient temperature and noise in rest conditions

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The aim of this study was to investigate the combined effects of ambient temperature (21, 28, and 35°C) and noise (background noise plus 0, 10, and 20dB(A) of white noise) in sitting(lower heart rate level) and standing(higher heart rate level) postures on heart rate variability (HRV). The subjects were seven healthy males (21-25 years old). ANOVA showed that thermal and postural variations were both significant. The contribution of HF components to change in heart rate was greater at the lower heart rate level while that of LF/HF components was greater at the higher heart rate level. These results implied that the balance of contribution of sympathetic and parasympathetic nerves was changed with the different level of heart rate.

L-5 The Effect of Different Sites Compression on Foot Skin Blood Flow

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The purpose of the present study was to investigate a difference between the effect of inguinal skin(Is) and another skins(thigh skin: Ts, leg skin: Ls) compression on foot skin blood flow(SBF).Each skins compressed using a cuff (3cm in width) during 5min in eight female subjects at a thermoneutral environment. The cuff pressure was varied from 10 to 75mmHg. SBF and toe local sweat rate (msw) were measured during the compression. The following results were obtained. During compression in Ts or Ls, SBF decreased. During the compression in Is, SBF was all decreased with pressure in more than 30mmHg, however, in low pressure of 10mmHg, a significant increased of SBF and msw was observed. The msw and SBF were significantly correlated in Is, although during compression of Ts or Ls the correlation was not observed. These results suggest that effect of compression in Is on SBF was not identical to that in Ls or Ts.

L-6 STUDY ON EFFECTS OF BODY FAT ON PHYSICAL ACTIVITY (1ST REPORT)

– PROPOSAL OF ‘VIRTUAL BODY FAT’ APPROACH AND ITS APPLICATION TO SPORT TESTS –

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A new method utilizing ‘*virtual body fat*’ is proposed in order to investigate effects of body fat on physical activity, and it is applied to four sport tests, i.e. 50 m run, vertical jump, step test and side step. Some distributed weights are attached to bodies of 21 subjects as the *virtual body fat* in the experiments, and the effects of the total fat including the *virtual body fat* on their records are clarified.

L-7 Variations of Muscle Strength Affected by Combined Modalities of Muscle Contraction

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The purpose of this study is to examine the influence of the preliminary muscle contraction on the maximal muscle force during subsequent muscle contraction. Subjects were 5 healthy adult males. KIN-COM(AP-II) was used, in order to test muscle forces and muscle loading of elbow flexion. Maximal concentric/isokinetic contractions were assigned, followed by various levels of isometric or eccentric/isokinetic contractions. The maximal concentric/isokinetic muscle forces increased after eccentric/isokinetic contractions. The stronger isometric forces were preset, the more concentric/isokinetic forces were increased. These increments may be caused by the muscle elasticity, mono-synapse reflex, and so on.

L-8 Effects of Motivation for Exercise and Actual Daily Activity on Physical and Blood Characteristics

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This study aims to investigate effects of motivation for exercise and actual daily activity on physical (body weight, %fat, and index of obesity) and blood characteristics (total-cholesterol, HDL-cholesterol, and triglyceride) in factory workers (366 males and 248 females). Motivation for "walking" (by the questionnaire) and number of steps (by using the pedometer) as actual daily activity were measured. In the group which answered with "Yes" at question 1 (Do you have a feeling of walking everyday?), number of steps was significantly (male: $p=0.043$, female: $p=0.031$) larger than that in the group which answered with "Sometimes". In the group which answered with "Yes" at question 3 (Do you think you are insufficiency of exercise?), %fat and index of obesity were significantly higher (male: $p=0.049$) than those in the group which answered with "No". The health status of factory workers was confirmed by this study from the relationships between motivation for exercise and actual daily activity.

L-9 Study on Characteristics Difference of Body Region for The Machine Control

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The purpose of the present study was to reveal the biomechanical characteristics of humans for the possibility of machine control using several body parts. Flexion-extension and abduction-adduction of fingers (left^(L) and right^(R) hands), hands (L & R) and leg (R), and radial-ulnar deviation of hands (L & R) were used as movement for tracking task. 8 Subjects pursued the signal (step waves and sine waves) displayed on the CRT screen using the movement of the body parts. As the results, there were no significant differences between handedness and non-handedness for simple movement of fingers and hands. Flexion-extension of fingers and hands showed better pursuit characteristics than that of radial-ulnar deviation of hands. Distal portion of body, that is fingers, hands forearm and lower leg showed faster response than that of proximal portion. Same result was obtained for the control accuracy.