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[Lab. of Clinical Pharmaceutics]

Correlation between Oxidized LDL and Granulocyte Elastase in Patients with Diabetes Mellitus.Eisuke MAEHATA, Masao YANO, Motohisa TAIRA, Riichi HAGA, Hiroji SHIMOMURA,
Teruo SHIBA, Minoru YAMAKADO, Taeko SHIMIZU, Minoru INOUE, Seiji SUZUKI,
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We measured oxidized LDL (ox-LDL), which is produced by the action of free radicals and myeloperoxidase, in 108 outpatients with type-2 diabetes mellitus and in 12 healthy volunteers as controls. At the same time, we measured granulocyte elastase (g-Elas), a marker of activated neutrophils, similar to free radicals, and studied the correlation between the two parameters. The ox-LDL levels were significantly higher in the diabetic group than in controls, but the g-Elas levels in the diabetic group were similar to those in control group. Both parameters were significantly high in the group with poor blood glucose control. We conclude that ox-LDL may be a clinically useful parameter. Moreover since g-Elas, which affects the migration of white blood cells, showed a correlation with ox-LDL, it may be a useful marker supplementary to ox-LDL.

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[Lab. of Health and Physical Education]

Two-years Longitudinal Study of Bone Mineral Density among Japanese Women in Thirties.Hiroyuki NISHIDA*, Yasufumi TAKEMOTO, Kaei WASHINO,
Tsuyoshi YOKOYAMA and Masaru NAKAGAMI

The 2-years changes in bone mineral density (BMD) and lifestyle for Japanese women in thirties, 127 in number, were evaluated to investigate the influence of lifestyle on BMD.

The subject women whose bone density was higher tended to have experienced menarche in early ages and physical exercise more frequently. Two thirds of the subject women reduced BMD during 2 years, although the women having lower BMD at the 1st-year measurement showed lower reduction of BMD and increased exercise and intake of Ca-contained medicines. The women who increase BMD during 2 years took more calcium-rich foods, e.g. "milk and dairy product" and "green and yellow vegetables". The health examination and service about BMD was useful to improve lifestyle for women whose BMD was lower.

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[Lab. of Health and Physical Education]

Comparison of the Radius Bone Density between the Right and Left Arms of Female College Badminton and Soft-tennis Players.Hiroyuki NISHIDA*, Yasufumi TAKEMOTO, Nobuharu KUWABARA, Kaei WASHINO
Tsuyoshi YOKOYAMA, Haruo SUGIURA and Masaru NAKAGAMI

This study was carried out to clarify the ideal motion for maintaining and improving bone density. Radius bone density between the right and left arms of badminton and soft-tennis players, whose main operation was asymmetric, was compared.

In badminton and soft-tennis players who showed dominant handedness, there was a contralateral difference in bone density. The contralateral difference rate was 3.3% in soft-tennis players, and 8.1% in the badminton players. These contralateral difference were due to differences in the racket weight and the degree of shock and batting method, and these differences produced the load for the radius. The contralateral differences in radius bone density in soft-tennis players was related to the contralateral differences of grip strength, duration of sports experience and technical abilities. There was a close relationship between the radius bone density, the forearm girth and grip strength, and it appeared that muscle quantity of the forearm was one of the factors which regulated the radius bone density.

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[Lab. of Health and Physical Education]

Immunomodulation by 8-Week Voluntary Exercise in Mice.Haruo SUGIURA *, Hiroko SUGIURA, Hiroyuki NISHIDA, Ryoich INABA,
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This study was designed to evaluate the effects of 8-week voluntary running exercise on macrophage and lymphocyte functions in male A/He mice. Glucose consumption of peritoneal macrophages in the voluntary exercise group during incubation up to 72 h was significantly higher than that in the control group. Lysosomal enzyme activities in the exercise group was significantly increased. Compared with the control group, the exercise group had a significant increase of about twofold in macrophages production of nitric oxide (NO₂⁻) stimulated by lipopolysaccharide. The splenocytes proliferative responses and interleukin-2 stimulated by concanavalin A were significantly higher in the exercise group. These findings suggest that voluntary exercise enhances not only macrophage function but also lymphocyte responsiveness in mice. In the studies of voluntary exercise, evaluation of NO₂⁻ production, as an indicator of macrophage function, is recommended.