



IMAGE AWARENESS HEALTHLETTER PHYSICAL FITNESS

Nutrition for the Athlete II (The Cutting Edge)



VOLUME 103 NO. 2

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IMAGE AWARENESS CORP.
1271 HIGH ST.
AUBURN, CA. 95603
PH: (916) 823-7092

Notice

This newsletter is designed for educational purposes only. Any individual suffering from health problems which are mentioned or discussed should consult a physician for proper diagnosis and treatment. Consult with a physician or trained professional before undertaking any rigorous athletic program.

Overview

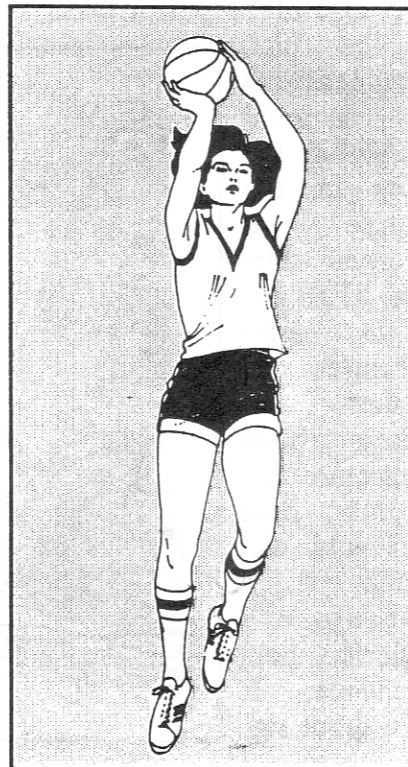
In the last issue an introduction to the relationship between exercise and nutrition was begun. This issue continues the treatment of that subject.

As mentioned in the previous issue, exercise increases activity of muscle as much as fifty-fold and overall metabolic rate as much as tenfold. It should not be surprising that evidence exists that nutrient requirements increase under these kinds of stresses.

Exercise and nutrition fit together like hand and glove. Both stimulate the immune system and help it work better. There is even evidence that vitamin supplementation is more effective in individuals with a high level of fitness than in those who are not fit.

Reference:

Ismail, A.H., Petro, T.M., Watson, R.R., "Diet Supplementation With Vitamin C and E in Fit and Non-Fit Adults: Biochemical and Immunological Changes," *Federation Proceeding*, March 1, 1983, Vol. 42, No. 3, p. 155-161.



B Complex

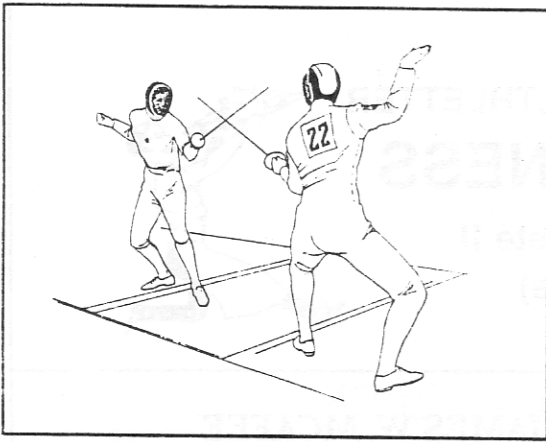
The B complex vitamins are involved in the energy production of the body. In one study of high performance fencers, 70% were demonstrated to be manifesting deficiencies of vitamins B1, B2 and B6.

Addition of these nutrients improved performance 3%. While this was a small increase, it could easily give an athlete the "cutting edge" in a hard fought competition. This was a carefully controlled double blind study.

B. Van Dam, the researcher, concludes: "The results are explained by the role of the vitamins in the

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human organism and by special conditions under which endurance athletes have to perform: high turn-over rate of the energy metabolism, an increase of the body core temperature and thus increased sweat loss, factors leading to deficiencies of the water soluble B-vitamins."

Lack of vitamin B1 can result in a deterioration in performance in only a few days. A study of Australian Olympic athletes showed that those with higher intake of thiamin did better than those with a lower intake.

Reference:

Bogert, L. Jean, Briggs, George and Calloway, Doris, *Nutrition and Physical Fitness*, Philadelphia: W. B. Saunders Co., 1973, p. 489.

Dam, B. Van, "Vitamins and Sport," *British Journal of Sports Medicine*, Vol. 12, No. 2, June 1978, p. 74.

Steel, J. E., "A Nutritional Study of Australian Olympic Athletes," *Med. J. Australia*, 2:119, 1970.

Vitamin C:

Heat and Cold

During World War II Rommel, the great German general known as the Desert Fox, rolled his tanks over the surface of North Africa with scant opposition.

An American contingent was within striking distance of Rommel, but the men were suffering from heat exhaustion and were not considered combat ready.

A young captain learned that another contingent exposed to the same tempera-

tures was not experiencing the problems with heat exhaustion. The only major difference between the two groups was that the healthier contingent of men were closer to the coast and had a generous supply of citrus fruits.

The young captain requisitioned vitamin C tablets for his men and sick calls from heat exhaustion promptly ceased. The contingent was restored to combat readiness.

One often overlooked aspect of athletic performance is the high temperatures that can build up within the body in the course of rigorous exercise. High external temperatures can further increase body temperature.

Both heat and cold can rapidly deteriorate athletic performance. It is of great sig-

nificance, therefore, that vitamin C has been shown to improve tolerance to both heat and cold.

The ability of the body to respond to heat is dependent upon hormone secretions produced by the adrenal gland. These secretions govern the ability of blood vessels to dilate and the ability of the sweat glands to operate normally.

The adrenal gland contains more vitamin C than anywhere else in the human body. When this supply becomes exhausted energy ebbs and heat exhaustion or stroke can occur.

Vitamin C may also help prevent sweat gland fatigue by supporting one of the key enzymes involved in the activity of these glands. Sweat gland fatigue can cause prickly heat, the abrupt appearance of tiny pimples at the site of the pores. In extreme cases the pores can



close and rapidly increase body temperature.

References:

Cheraskin, Emanuel, Ringsdorf, Marshall, and Sisley, Emily, The Vitamin C Connection, New York: Harper and Row, 1983, p. 67-73.

Poda, G. A., "Vitamin C for Heat Symptoms", Annals of Internal Medicine 91:4, 657, October 1979.

Ringsdorf, W.M., Jr., and Cheraskin, E. "Vitamin C and Tolerance of Heat and Cold: Human Evidence", Journal of Orthomolecular Psychiatry 11:2, 128-131, Second Quarter 1982.

Vitamin E

Vitamin E dilates blood vessels, especially the smaller ones, improving oxygenation of the body. It also prevents the red blood cells that carry oxygen from losing their hemoglobin (an oxygen carrying compound).

Vitamin E also enables cells to function with less oxygen. The oxygen requirement of muscle has been decreased by as much as 43% with the use of vitamin E in one study. It should not be surprising then that vitamin E improves athletic performance.

Bailey writes the following:

"The foregoing attributes of Vitamin E help to explain why rats, guinea pigs, race horses, and humans develop much more endurance than the "normal" when given large amounts of vitamin E in the diet. For instance, Vitamin E-treated rats can swim nearly twice as long as non-treated animals and can withstand high altitudes which quickly kill their own litter mates."

"Humans tested on a 'treadmill' and elsewhere show the same increased endurance when their diets are

supplemented heavily with vitamin E."

References:

Houchin, D. B., Mattill, H. A. (U.S.A.), J. Biol. Chem., 146:301, 1942.

Bailey, Herbert, Vitamin E: Your Key to a Healthy Heart, New York: Arc Books, Inc., 1971, p. 10, 35. (Quoted)

Telford, I. R., Wiswell, O. B., Smith, E. L. (U.S.A.), Proc. Soc. Exp. Biol. and Med., 87:162, 1954.

Grain Oils

Early research with specialized grain and soybean oil concentrates demonstrated that these oils can influence hormone chemistry as they are incorporated into hormones.

In *For Complete Metabolism*, Meynell wrote, "A distinction due to age was apparent almost from the start. Within two months of beginning supplementation the boys and younger men showed definite results both in the biochemical tests as to metabolic function and on the playing field. They not only felt more vigorous and eager to go, they could go...and keep it up. They had both ambition and fighting heart, endurance. This seemed to mean that protein was being renewed and replaced--in skeletal and heart muscles, for instance--and that a high and steady flow of energy from completely metabolized fuel food was being maintained. Vitamins and minerals were being optimally used for enzyme synthesis and for tissue renewal."

In addition to the value of grain oils in providing raw materials for the body's hormone production, they also

contain a number of "contingent" or "accessory" nutrients which are of value for athletic competition.

Wheat germ oil contains several complex alcohols (octacosanol, triacontanol, tetraacosanol, and hexacosanol), plant sterols, and vitamin E which have been noted to contribute to stamina and endurance.

Wheat germ oil reduces oxygen stress and quickens reaction time. It also improves the swimming performance of guinea pigs. When vitamin E is separated from the wheat germ oil, the remaining wheat germ oil fraction has shown superior ability to improve endurance when compared to the vitamin E.

References:

Bland, Jeffrey, Octacosanol, Carnitine and Other "Accessory" Nutrients. New Canaan, Conn.: Keats Publishing, 1982, pp. 2-3.

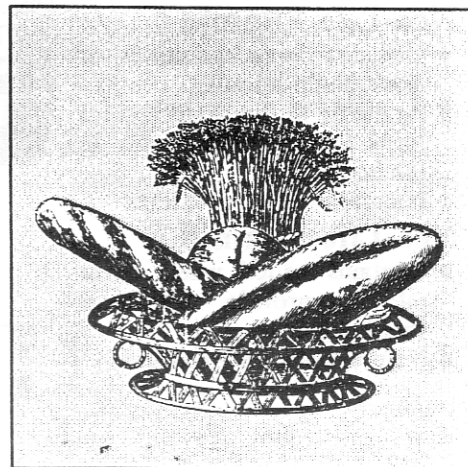
Smiley, W. A. 1951. Variations on a bicycle ergometer test with altitude, training, and a dietary supplement. M.S. thesis. University of Illinois.

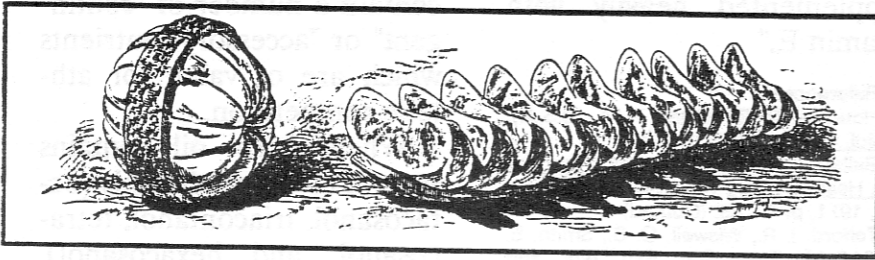
Ershoff, B. A., and Levin, E., Federation Proceedings 14:431, 1955.

Dukelow, W. R., Acta Endocrinologica, 1963, pp. 5-15.

Cureton, T.K., Med. Sportiva 12:259, 1958.

Meynell, Paul, "For Complete Metabolism" and "For Improved Metabolism," Herald of Health, precise dates unavailable.





Vitamin C and the Bioflavonoids

Vitamin C with the associated bioflavonoids appears to be able to decrease the numbers and intensity of such professional hazards of the athletic profession as bruises, muscle cramps, sprains, strains and knee injuries. Bruises among football players dropped from 90% to 5% in one study. In another study among prize fighters, recovery from unusually severe bruises

changed from two weeks to about three days.

Citrus bioflavonoids and vitamin C appear to be able to increase resistance to rupture of blood vessels and capillaries as a result of forceful blows. In one study of 242 athletes involved in a variety of sports the following observations were made regarding the value of bioflavonoids as compared to vitamin C or a placebo:

1. Athletes receiving bioflavonoids had significantly fewer muscle injuries than

those receiving vitamin C or placebos.

2. Recovery rate was twice as fast in the bioflavonoid group as in the other two groups.

3. Muscle cramps were reduced in the bioflavonoid group.

4. Swelling from injury was reduced in the bioflavonoid group and subsided rapidly.

References:

Dowd, T.F., "Prophylactic and Therapeutic Measures Found Useful in Some Aspects of Sports Medicine," Symposium on Stress and Circulation, Wayne Co. Chapt., Mich. Acad. G.P., p. 57 (1939).

Lichtman, A.L., "Traumatic Injury in Athletes," Int. Rec. Med., 170:322, 1957.

Harrison, R.R., et al., "Athletic Contact Injuries," Clin. Med., 3:787 (1936).

Miller, M.J., "Injuries to Athletes," Med. Times 68:313 (1960).

Cragin, R.B., "The Use of Bioflavonoids in the Prevention and Treatment of Athletic Injuries," Med. Times 90:329 (1962).

Advertisement

Neo-Life Sports 30

- Contains threshold control B complex and vitamin C for energy production.
- Contains tre-en-en grain oils to nourish endocrine glands which control use of nutrients in the diet and improve endurance and stamina.
- Contains anti-oxidants like selenium and vitamin E to decrease oxygen requirements.

Neo-Life Vitamin C

- Contains large quantities of citrus bioflavonoids.
- Available in threshold control form for gradual release in the body.
- Natural source ingredients.

Neo-Life Vitamin E

- Contains added wheat germ oil to provide additional stamina factors.
- Natural source ingredients.

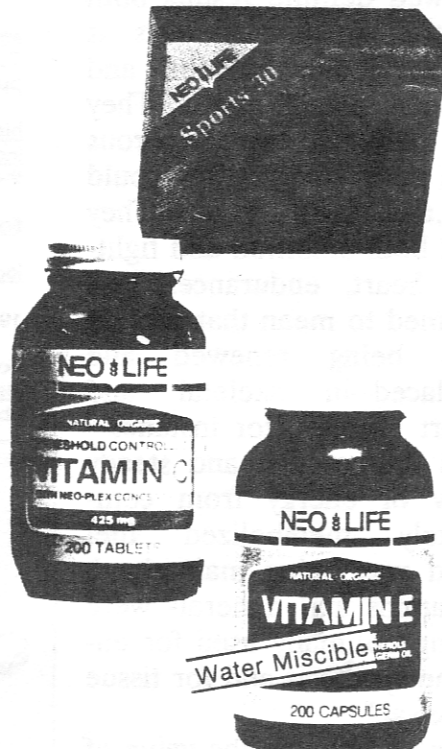


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1271 High St.
Auburn, Calif. 95603
Phone: (916) 823-7092

NEXT ISSUE:

- Exercise and weight control.
- Nutrients that aid in tissue toning.
- Tips on reducing appetite.
- How hormone balance influences weight control.

Healthletter is written by James W. McAfee, Director of Nutritional Research for Image Awareness Corporation. To subscribe, enclose \$39.95 and include:

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