VITAMIN B6 STATUS OF ELITE AUSTRALIAN CROSS COUNTRY SKIERS

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Vitamin B6 is concemed with many enzyme systems particularly amino acid metabolism and as a cofactor for glycogen phosphorylase which is necesary for glycogen breakdown. As exercise stresses metabolic pathways that use vitamin B6 it has been suggested that the requirement for vitamin B6 may be increased in athletes (Keith 1989). There is limited data on Australian athletes regarding either vitamin B6 intakes (Telford et al. 1987) or blood measures of vitamin B6 status (Telford et al. 1992). There is no information on any group of Australian endurance athletes or female athletes. Few studies into the vitamin B6 status of athletes have incorporated assessment of dietary vitamin B6 intake.

The vitamin B6 intakes of a sample of 23 elite adult Australian cross country skiers (17 males, six females) were evaluated by a four-day weighed diet record. The blood status of vitamin B6 was determined in the same sample by measuring the activity coefficient for the enzyme erythrocyte aspartate aminotransferase, which requires pyridoxal-5-phosphate as a cofactor, according to the method of Leinert et al. (1981). The mean daily vitamin B6 intake of male cross country skiers was 3.1 mg (0.026 mg/g protein) and of female cross country skiers 1.9 mg (0.024 mg/g protein). Using the RDI as a comparison standard, none of the sample had low dietary intakes of vitamin B6. The mean blood level activity coefficient in male cross country skiers was 1.89 and in female cross country skiers was 1.75. Using a reference standard of <1.99 (Sauberlich et al. 1974) 36% of male cross country skiers were found to have lowered vitamin B6 status.

The finding of a substantial number of elite male athletes with low vitamin B6 status on the basis of activation coefficients agrees with the one previous Australian report (Telford et al. 1992) and the limited overseas data (Fogelholm et al. 1993). It may be that activity coefficient tests do not adequately reflect vitamin B6 status in athletes. Activation coeffients depend as much upon the measured enzyme level in the blood as on the vitamin level and the enzyme level may be an independent variable in athletes. Conversely it may be that activation coefficient tests do in fact demonstrate inadequate vitamin B6 status in athletes and that a review of athlete requirements for vitamin B6 may be warranted. Further investigation of athletes, in particular the correlation of activation coefficients with other measures of vitamin B6 status such as urinary 4-pyridoxic acid are needed.

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