GB
„Iron deficiency and anemia in female athletes--causes and risks“

DE
Eisenmangel und Anämie bei Athletinnen - Ursachen und Risiken

GR
„Έλλειψη σιδήρου και αναιμία σε αθλήτριες --αιτίες και κίνδυνοι„

FR
Déficience en fer et anémie chez les femmes athlètes - causes et risques

CZ
Nedostatek železa a chudokrevnost u atletek -- příčiny a rizika

Harefuah. 2003 Oct;142(10):698-703, 717.

Iron deficiency and anemia in female athletes--causes and risks

Portal S, Epstein M, Dubnov G.

Source Ribstein Center for Sport Medicine Sciences and Research, Wingate Institute, Jerusalem, Israel.

Abstract

Iron deficiency is probably the most common nutrient deficiency in the western world. Low levels of iron in the body are caused by several mechanisms, and become symptomatic with the onset of iron deficiency anemia**. Athletes are a special group with additional reasons for iron or blood loss,** such as plasma expansion, increase perspiration, 'foot strike hemolysis, and occasionally--malnutrition. Female athletes have yet another source of blood loss--menstruation. However, the most common cause for low hemoglobin levels in an athlete is dilutional pseudoanemia, which is caused by exercise-induced fluid retention. Athletes are more sensitive to the effects of anemia and iron deficiency, as exercise performance depends on maximal oxygen carrying capacity to the active muscle, and efficient oxygen utilization. Iron deficiency without anemia can also reduce athletic performance. Diagnosis is ultimately made by a blood count and red blood cell parameters, with ferritin serving as an index of body iron stores. **Treatment requires iron supplements, as it is nearly impossible to refill the iron stores through diet alone.**

PMID:14565071

GB
Iron status and exercise.

DE
Eisenstatus und Sport.

GR
Επίπεδα σιδήρου και άσκηση.

FR
Statut du fer et exercice

CZ
Hladina železa a cvičení.

Am J Clin Nutr. 2000 Aug;72(2 Suppl):594S-7S.

Iron status and exercise.

Beard J, Tobin B.

Source Nutrition Department, Pennsylvania State University, University Park, PA 16802, USA. its.psu.edu

Abstract

The prevalence of iron deficiency anemia is likely to be higher in athletic populations and groups, especially in younger female athletes, than in healthy sedentary individuals. In anemic individuals, **iron deficiency often not only decreases athletic performance but also impairs immune function and leads to other physiologic dysfunction.** Although it is likely that dietary choices explain much of a negative iron balance, evidence also exists for increased rates of red cell iron and whole-body iron turnover. Other explanations of decreased absorption and increased sweat or urine losses are unlikely. **The young female athlete may want to consider use of low-dose iron supplements** under medical and dietary supervision to prevent a decline in iron status during training.

PMID:10919965
Free full text

GB
Iron and the athlete.

DE
Eisen und der Athlet.

GR
Σίδηρος και αθλητές.

FR
Le fer et l‘athlète.

CZ
Železo a atlet.

Curr Sports Med Rep. 2005 Aug;4(4):199-202.

Iron and the athlete.

Suedekum NA, Dimeff RJ.

Source Orthopedic Department, Sports Health, Cleveland Clinic Foundation, 9500 Euclid Avenue, A-41, Cleveland, OH 44195, USA. suedekn@ccf.org

Abstract

Iron is an important mineral necessary for many biologic pathways. Different levels of deficiency can occur in the athlete, resulting in symptoms that range from none to severe fatigue. Iron deficiency without anemia may adversely affect athletic performance. **Causes of iron deficiency include poor intake, menstrual losses, gastrointestinal and genitourinary losses due to exercise-induced ischemia or organ movement, foot strike hemolysis, thermohemolysis, and sweat losses. A higher incidence of deficiency occurs in female athletes compared with males.**

PMID: 16004828

GB

„Effect of iron supplementation on mental and motor development in children: systematic review of randomised controlled trials.“

DE

Wirkung der Eisen-Supplementierung auf die mentale und motorische Entwicklung von Kindern: systematischer Review randomisierter, kontrollierter Studien.

GR

„Αποτελέσματα από την πρόσληψη σιδήρου στην νοητική και κινητική ανάπτυξη των παιδιών: συστηματική επιθεώρηση τυχαιοποιημένων ελεγχόμενων δοκιμών.“

FR

Effet de la supplémentation en fer sur le développement mental et moteur des enfants : passage en revue systématique des études contrôlées randomisées.

CZ

„Účinek suplementace železem na mentální a motorický vývoj dětí: systematické vyhodnocování randomizovaných kontrolovaných studií.„

Public Health Nutr. 2005 Apr;8(2):117-32.

Effect of iron supplementation on mental and motor development in children: systematic review of randomised controlled trials.

Sachdev H, Gera T, Nestel P.

Source SL Jain Hospital, New Delhi 110 052, India. hpssachdev@hotmail.com

To evaluate the effect of iron supplementation on mental and motor development in children through a systematic review of randomised controlled trials (RCTs).

Electronic databases, personal files, hand search of reviews, bibliographies of books, abstracts and proceedings of international conferences.

REVIEW METHODS: RCTs with interventions that included oral or parenteral iron supplementation, fortified formula milk or cereals were evaluated. The outcomes studied were mental and motor development scores and various individual development tests employed, including Bayley mental and psychomotor development indices and intelligence quotient.

RESULTS: The pooled estimate (random effects model) of mental development score standardised mean difference (SMD) was 0.30 (95% confidence interval (CI) 0.15 to 0.46, P<0.001; P<0.001 for heterogeneity). Initial anaemia and iron-deficiency anaemia were significant explanatory variables for heterogeneity. The pooled estimate of Bayley Mental Development Index (weighted mean difference) in younger children (<27 months old) was 0.95 (95% CI -0.56 to 2.46, P=0.22; P=0.016 for heterogeneity). For intelligence quotient scores (> or =8 years age), the pooled SMD was 0.41 (95% CI 0.20 to 0.62, P<0.001; P=0.07 for heterogeneity). There was no effect of iron supplementation on motor development score (SMD 0.09, 95% CI -0.08 to 0.26, P=0.28; P=0.028 for heterogeneity).

CONCLUSIONS:

Iron supplementation improves mental development score modestly. This effect is particularly apparent for intelligence tests above 7 years of age and in initially anaemic or iron-deficient anaemic subjects. There is no convincing evidence that iron treatment has an effect on mental development in children below 27 months of age or on motor development.

PMID: 15877905

GB

„Response of urinary biomarkers of systemic oxidation to oral iron supplementation in healthy men.“

DE

Ansprechen von Urinbiomarkern für eine systemische Oxidation auf orale Eisen-Supplementierung bei gesunden Männern.

GR

„Απόκριση βιοδεικτών συστημικής οξείδωσης ούρων στην από στόματος χορήγηση σιδήρου σε υγιείς άνδρες.“

FR

Réponse des biomarqueurs urinaires de l‘oxydation systémique à la supplémentation orale en fer chez des hommes en bonne santé.

CZ

Reakce močových biomarkerů systémové oxidace na perorální suplementaci železem u zdravých mužů.

Food Nutr Bull. 2012 Mar;33(1):53-62.

Response of urinary biomarkers of systemic oxidation to oral iron supplementation in healthy men.

Orozco MN, Solomons NW, Schümann K, Friel JK.

Source Center for Studies of Sensory Impairment, Aging and Metabolism (CeSSIAM), Guatemala City, Guatemala. mnorozco@uvg.edu.gt

BACKGROUND: Urinary biomarkers are used in assessment of severe, clinical oxidative stress. Little is known, however, about their diagnostic value within the normative range.

OBJECTIVE: To evaluate the response of urinary thiobarbituric acid reactive substances (TBARS) and 8-hydroxy-2-deoxyguanosine (8-OHdG) as indicators of systemic oxidation in response to short-term oral iron and antioxidant supplementation.

METHODS: Five healthy adult men participated in the pilot study phase and 12 in the definitive intervention trial. For 7 days each, separated by 12-day washouts, the subjects received different treatment regimens, consisting of 120 mg of iron, 120 mg of iron in refined palm oil, and 120 mg of iron in palm oil combined with one of the two doses of Carotino Tocotrienol Carotene Mixed Concentrate (CTCMC). Creatinine-normalized urinary TBARS and 8-OHdG concentrations were quantified in samples taken from subjects with and without active supplementation. Temporal and correlative associations between TBARS and 8-OHdG were explored.

RESULTS: Daily intake of supplemental iron failed to produce any increment in urinary excretion of TBARS or 8-OHdG. However, a significant within-individual correlation between the urinary biomarkers was observed (Spearman $r = 0.697$, $p < .0001$, $n = 466$). Both doses of CTCMC significantly lowered urinary excretion of both oxidation indicators.

CONCLUSIONS: Despite the lack of effect of oral iron on the biomarkers of systemic oxidation, they show a strong and significant mutual association within the nonpathological range of oxidative stress in healthy male adults.

PMID: 22624298

GB
„Vitamin and mineral status: effects on physical performance.“

DE
Vitamin- und Mineralstatus: Wirkung auf die physische Leistung.

GR
Επίπεδα βιταμινών και μεταλλικών στοιχείων: αποτελέσματα στη σωματική απόδοση.

FR
Statut des vitamines et sels minéraux : effets sur la performance physique.

CZ
Hladina vitamínů a minerálů: účinek na fyzický výkon.

Nutrition. 2004 Jul-Aug;20(7-8):632-44.

Vitamin and mineral status: effects on physical performance.

Lukaski HC.

Source U.S. Department of Agriculture, Agricultural Research Service, Grand Forks Human Nutrition Research Center, Grand Forks, North Dakota 58202, USA. hlukaski@gfhnrc.ars.usda.gov

Abstract

Public health recommendations encourage the selection of a balanced diet and increasing physical activity to foster health and well-being. Whereas the adverse effects of restricted intakes of protein, fat, and carbohydrate on physical performance are well known, there is limited information about the impact of low intakes of vitamins and minerals on the exercise capacity and performance of humans. Physically active people generally consume amounts of vitamins and minerals consistent with the recommendations for the general public. However, when intakes are less than recommendations, some noticeable functional impairments occur. Acute or short-term marginal deficiencies, identified by blood biochemical measures of vitamin B status, had no impacts on performance measures. Severe deprivation of folate and vitamin B12 result in anemia and reduce endurance work performance. Evidence of vitamin A and E deficiencies in athletic individuals is lacking apparently because body storage is appreciable. In contrast to vitamins, marginal mineral deficiencies impair performance. **Iron deficiency, with or without anemia, impairs muscle function and limits work capacity.** Magnesium deprivation increases oxygen requirements to complete submaximal exercise and reduces endurance performance. Use of vitamin and mineral supplements does not improve measures of performance in people consuming adequate diets. **Young girls and individuals participating in activities with weight classifications or aesthetic components are prone to nutrient deficiencies because they restrict food intake and specific micronutrient-rich foods.** This information will be useful to professionals who counsel physically active people and scientific groups who make dietary recommendations to improve health and optimize genetic potential.

PMID: 15212745