



Abstract

Biochemical and Hematologic Monitoring and Evaluation of Elite Greek Track-and-Field Athletes †

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Abstract: **AIM:** Monitoring biochemical and hematologic parameters in athletes at regular intervals is essential for the evaluation, protection, and improvement of their health and performance. The aim of the study was to monitor and evaluate the biochemical and hematologic status of elite Greek track-and-field athletes included in the roster of the Hellenic Athletics Federation (SEGAS). **MATERIAL AND METHOD:** 162 athletes (87 female and 75 male), aged 15–38, provided 285 blood samples one to four times over two years. Parameters monitored included indices of the iron status (hemoglobin, hematocrit, iron, total iron-binding capacity, transferrin saturation, and ferritin), glucose, the lipidemic profile (triglycerides, total cholesterol, HDL cholesterol, and LDL cholesterol), indices of the protein status and renal function (urea and creatinine), creatine kinase (CK) as an index of muscle fiber damage, γ -glutamyl transferase as an index of liver damage, minerals (calcium and magnesium), vitamins (folate, B₁₂, and D), cortisol and testosterone (indices of catabolic–anabolic balance), and thyroid-stimulating hormone for checking thyroid function. **RESULTS:** Although most parameters were normal, there were several instances of alerting values. These included high iron in females (in 13% of cases); hyperglycemia (10%) and hypercholesterolemia (14%) in males; high (11%) or low (15%) folate in females; and low (18%) folate in males. In 48% of cases in females and 74% in males, CK was higher than the normal values for the general population, although only 5% and 9% of cases, respectively, were above the proposed values for athletes (Mougios, *Brit J Sports Med* 41: 674–678, 2007), suggesting increased muscle fiber damage. There was also high prevalence of excessive vitamin B₁₂ (41% in females and 32% in males) and vitamin D insufficiency (54% in females and 38% in males). Hypercortisolemia, indicative of high physical and/or mental stress, was manifest in 15% of cases in females and 9% in males, whereas 21% of cases in males had high testosterone. **CONCLUSIONS:** These findings suggest some problems of training overload, malnutrition, and excessive vitamin and mineral supplementation in elite Greek track-and-field athletes. Personalized advice and instructions are necessary to remedy the problems identified.

Keywords: biochemistry; hematology; track-and-field



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