



Iron deficiency among athletes and physically active individuals in relation to body fat percentage

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Introduction and objective

- Iron is a nutrient essential for supporting basic metabolic life functions.
- Iron deficiency is one of the most widespread nutrient deficiencies in the world.
 - estimated to be the cause of anemia in 50% of females and 43% of children.
- Reported to be more frequent among athletes and physically active individuals.
 - Female athletes twice as susceptible compared to their sedentary counterparts.
 - 25% to 36% of females competing in sports, 15% among male basketball players.
 - Can have considerable effects on athletic performance.
- Increased risk due to iron poor diet, hemolysis, increased iron losses (gastrointestinal, hematuria, and sweat), or altered intestinal iron absorption.
- Prevalence of iron deficiency is higher among obese individuals, which could be explained due to inflammation.
- **Objective:** To assess the relationship between body fat percentage and iron deficiency among athletes and physically active individuals.



Data collection and processing

- Dataset from studies performed at the School of Sport Science at Umeå University.

	Female (n=122)	Male (n=144)
Age (years)	17.74 (2.02)	17.37 (0.95)
BMI (kg/m ²)	21.01 (2.52)	21.29 (2.31)
% body fat	25.90 (4.47)	15.91 (4.13)
Training (hours/week)	10.33 (2.06)	11.64 (3.46)
Ferritin (µg/L)	37.30 (21.14)	66.18 (32.13)
Hemoglobin (g/L)	130.32 (8.32)	145.86 (8.47)
Erythrocytes (10 ¹² /L)	4.50 (0.30)	4.99 (0.27)
Mean corpuscular hemoglobin (pg)	29.03 (1.74)	29.23 (1.30)
Mean corpuscular volume (fL)	87.63 (4.46)	86.88 (3.70)



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Table shows mean and standard deviation.



Results

- The results are intended to determine if there is a relationship between fat % and prevalence of iron deficiency in athletes.
 - Those with ↑ or ↓ percentage more likely to suffer from iron deficiency?
- Iron deficiency is defined using:
 - Plasma ferritin cut-off: 30 µg/L
 - Hemoglobin cut-off: 120 g/L (female); 130 g/L (male)
- **Secondary objective:** Is there a relationship between training amount and prevalence of iron deficiency in athletes?



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