

The Relationship Between Body Fat Percentage, Fluid Intake, Energy Intake, and Macronutrient Intake with Agility Among Badminton Athletes Aged 10–17 Years at Academy Badminton Jember

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ABSTRACT

Agility is one of the essential biomotor components that supports badminton performance. It is influenced by various factors, including body fat percentage, fluid intake, and the adequacy of energy and macronutrient intake. Badminton athletes aged 10–17 years require higher nutritional intake to support both athletic performance and physical growth and development. This study aimed to analyze the relationship between body fat percentage, fluid intake, energy intake, protein intake, fat intake, carbohydrate intake, and agility among badminton athletes aged 10–17 years at Academy Badminton Jember. This study employed a descriptive correlational design with a cross-sectional approach. A total of 100 athletes were selected using a total sampling technique. Body fat percentage was measured using a Karada Scan, while energy and macronutrient intakes were assessed using a 2×24-hour food recall method. Fluid intake was collected using a fluid intake questionnaire, and agility was measured using the Illinois Agility Test. Data were analyzed using univariate analysis and Spearman correlation test with a significance level of 95% ($\alpha = 0.05$). The results showed that most participants were male, aged 16 years, and had been training as badminton athletes for more than three years. Bivariate analysis revealed significant relationships between body fat percentage and agility ($p = 0.000$), fluid intake and agility ($p = 0.000$), and fat intake and agility ($p = 0.010$). However, no significant relationships were found between energy intake ($p = 0.656$), protein intake ($p = 0.304$), or carbohydrate intake ($p = 0.587$) and agility. In conclusion, body fat percentage, fluid intake, and fat intake were significantly associated with agility among badminton athletes aged 10–17 years at Academy Badminton Jember. Therefore, regular monitoring of body composition, adequate fluid consumption, and appropriate dietary fat intake are recommended to optimize athletes' agility and overall performance.

Keywords: agility, badminton athletes, body fat percentage, fat intake, fluid intake.