

## Abstract

**Aim:** This study aimed to investigate whether vegan endurance athletes, specifically runners, experience nutritional deficiencies due to a purely plant-based diet. Partial goals were set to evaluate whether these athletes have sufficient energy intake and receive adequate macronutrients and risky micronutrients.

**Methods:** The research was conducted as a pilot study for the extensive European project VEGAN Screener. Based on the completed questionnaire and meeting the criteria, 11 participants ( $n = 11$ ) were selected. The subjects underwent body composition analysis using bioimpedance, their resting energy expenditure was measured by indirect calorimetry, and blood was taken. The subjects then performed a 4-day food record (self-reported 4-day Dietary Record), which was analysed using new software. The complete dietary record was analysed for only eight subjects ( $n = 8$ ). Nutritional data were analysed using the left-sided Mann-Whitney U test, which belongs to the group of non-parametric tests. The test was conducted at a significance level of  $\alpha = 0.05$ .

**Results:** The average BMI of the subjects was  $20.87 \pm 1.58$  kg/m<sup>2</sup>. Two subjects ( $n = 2$ ) had a lower body fat percentage than is adequate. The biochemical blood test results indicated a possible vitamin D and iron deficiency. When comparing actual energy intake with recommended intake,  $p = 0.9999$ , meaning that vegan endurance athletes consume sufficient energy. For the second hypothesis, only partial results can be presented, indicating that endurance athletes who follow a vegan diet have enough fat in their diet but may be at risk of low carbohydrate and protein intake. The third hypothesis can also be interpreted only as partial results, indicating that vegan endurance athletes are at risk of inadequate calcium, vitamin D, and iron intake. Based on these results, iron and vitamin B12 deficiencies are unlikely. However, due to the small sample size, the results are insignificant, and more high-quality studies are needed to address this issue.

**Conclusion:** There may be a correlation between vegan diets and nutritional deficiencies in endurance athletes, which can have a negative impact on athletic performance and recovery. There are considerable individual differences in the composition of the diet and in monitoring the intake of particular nutrients and subsequent adequate supplementation. However, it seems that veganism can be a full-fledged way of eating for endurance athletes.