

## **ABSTRACT**

**Title:** Evaluation of red blood count and biochemical parameters in elite runners - a case study

**Aims:** The main goal of this work is to determine the dynamics of biochemical parameters and red blood count in relation to the individual phases of year training cycle in two elite runners on medium and long distances. The second goal is to examine the data with the intention of discovering the character of the trend of individual parameters in terms of four seasonal testing for each of the probands.

**Methods of work:** The method of content analysis of record sheets related to red blood count (RBC, HGB, HCT, MCV, MCH, MCHC, RDW) and biochemical parameters (iron, transferrin, ferritin, iron saturation of transferrin) was used to develop the work. These sheets were provided to me by the coach of both probands. The provided data were recorded in tables which were the basis for the graphs in the final part of the work. The graphs were used to monitor the fluctuation of the values of individual parameters with respect to the RTC of each season, and possible mutual relations in the variability of these parameters were sought. The long-term trend was also examined in terms of the dynamics of the parameters.

**Results:** The measured values of individual parameters of the athletes studied by me are in the range of reference intervals determined for the general population, however, it is important to note that in most cases they are in the lower half of the interval. The reason for the lower values is the presence of sports anemia. When monitoring the dynamics of values in terms of seasonal periodization, in most cases there is a decrease in values at the beginning of the season caused by sports anemia. In the racing period (first and second) the values of individual parameters (especially HGB, HCT, RBC) for both athletes increased in most cases. In the first proband in terms of longitudinal fluctuation of values, the values increased in most (7 of 10) examined parameters. In the second proband from the point of view of more seasonal testing, there was progression in a smaller part (4 out of 10) of the measured parameters.

**Key words:** red blood count, biochemical parameters, sports anemia, year training cycle, elite runners