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### **Comparison of blood and saliva lactate concentration and its modifications by physiological parameters**

Recently saliva is a popular biochemical material in sportphysiological studies.

The aim of our studies were to investigate how saliva and blood lactate concentrations are related after a maximal intensity treadmill exercise and to identify the physiological and biochemical factors influencing lactate levels.

In this study the participants were healthy students ( $n=16$ , mean age:  $22,83 \pm 3,09$  y). We allocated them into two groups by training hours (athletes and non-athletes). Anthropometric characteristics, body composition and physiological parameters (heart rate, RR-variability) were measured in both groups. Blood and saliva samples were collected before and 1., 4., 8., 12., 15., and 20 mins after the treadmill test. The lactate concentration of the saliva was analyzed in a spectrophotometer, and a lactate analyzer was used with the blood samples.

The studied groups were similar in anthropometric parameters. In the blood samples we registered the lactate peak at 1. minute in the athlete and non-athletes groups also, after 1. min lactate concentrations decreased. Lactate level changes of saliva were monitored and two lactate peaks were registered in athletes. These peaks didn't appear in non-athletes. Lactate parameters of athletes were always lower compared to non-athletes in both fluids. We found significant differences between blood lactate concentrations ( $p_{8min} = 0,015$ ,  $p_{12min} = 0,018$ ,  $p_{15min} = 0,025$ ,  $p_{20min} = 0,032$ ) in both groups. We found a significant correlation of saliva and blood lactate concentrations after exercise. Furthermore we

found parameters influencing lactate concentrations (spirometric parameters, body fat percentage, fat mass, weight and height).

Stronger correlation was noted between salivary lactate and blood lactate in athletes, than in controls (athletes:  $r = 0,514$ ,  $p = 0,000$ ; non-athletes:  $r = 0,384$ ,  $p = 0,004$ ).

Finally we can state that the research of the saliva lactate concentration is an effective method to asses fitness level.