

## **Abstract**

**Title:** Power output and selected cardiorespiratory parameters in elite athletes during the third to fourth week after COVID-19 infection

**Objectives:** The aim of this thesis is to compare power output and selected cardiorespiratory parameters in elite athletes before and three to four weeks after COVID-19 infection. Since the elite athletes undergo these health checks on a yearly basis, it is possible to compare the data before and immediately after the infection without difficulty.

**Methods:** This thesis has a character of a quantitative research based on testing the outcomes with confirming or denying hypotheses. Out of the total of 64 elite athletes with the CPET data after the infection 17 athletes, fulfilling other criteria, were selected. I was provided with the data by Centrum sportovní medicíny z. s.. These values became the foundation for statistical hypotheses testing. Analysis of the data was done by means of a pair t-test in R software.

**Results:** There were no significant differences in the majority of the spirometry parameters. Only the inspiration vital capacity was significantly higher ( $p = 0,004$ ) after the COVID-19 infection in 14 athletes with  $0,21 \pm 0,18$  l improvement. There were significant differences in five of CPET parameters. Load in RCP was significantly lower ( $p = 0,011$ ) in 13 athletes with  $48 \pm 35$  W deterioration, maximal load was significantly lower ( $p = 0,031$ ) in 11 athletes with  $44 \pm 33$  W deterioration, maximal heart rate was significantly lower ( $p = 0,012$ ) in 13 athletes with  $15 \pm 11$  1/min deterioration, maximal breathing rate was significantly lower ( $p = 0,005$ ) in 14 athletes with  $16 \pm 7$  1/min deterioration and tidal volume during maximal exercise was significantly higher ( $p = 0,028$ ) in 13 athletes with  $0,57 \pm 0,47$  l improvement.

**Keywords:** sport, COVID-19, function tests, respiratory system, performance, spirometry, cardiopulmonary exercise testing