

Abstract

Title: Effect of sitting posture on different seats on respiratory function while using a smartphone

Objectives: The purpose of this thesis is to investigate respiratory function in sitting posture while using a smartphone. Another objective is to compare the values of monitored parameters and to determine which of the 3 performed experiments exhibit the greatest decreases in respiratory parameters. The last aim is to confirm the difference between female and male values and to show that men have higher values of monitored respiratory parameters and the greater decrease of respiratory function than women.

Methods: 20 healthy young volunteers were recruited (10 women, 10 men). The experiment was carried out on three different types of seats - office chair, armchair and gymball. Participants spent time using a smartphone for one hour. To investigate changes in respiratory function, we measured FEV1, FVC, FEV1/FVC and PEF before and after each experiment was completed. Values were processed in MS Excel. Pair t-test and Wilcoxon test were used to evaluate the effect of sitting posture on respiratory function ($p < 0,05$) A two-sample t-test was used to determine a statistically significant difference in values in men and women, as well as in decrease of respiratory function in men and women. ($p < 0,05$).

Results: The results show that a sitting posture while using a smartphone can reduce respiratory function. The values for FVC decreased significantly in all three experiments, FEV1 in armchair-seat experiment and PEF in armchair-seat and gymball-seat experiment. The greatest decrease in values occurred in experiment 2 – armchair-seat experiment. There was a statistically significant difference in values between men and women. Men have higher values in FEV1, FVC and PEF than women. However, there was no statistically significant difference in the decrease in values in men and women. Gender does not affect relative decrease in respiratory function.

Keywords: sitting, posture, respiratory function, spirometry, smartphone

