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Relative Humidity during Antenatal Classes—A Case Study †

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Abstract: The quality of air inside buildings is considered in terms of health and comfort of the occupants. The whole study included experimental research of selected parameters of indoor air in the room of the birth school located in Bialystok. This paper examines the effects of low relative humidity, during gym classes, while the air conditioning unit was working.

Keywords: Indoor Air Quality; IAQ; pregnancy; relative humidity

1. Introduction

Health care is an enormously important issue. These days, many people lead a healthy lifestyle, especially pregnant women. They sign up for birth schools, which have become very popular recently. In the majority of parenting schools, classes consist of a part of the lecture and a part devoted to physical exercises improving the condition of the future mother. The groups most sensitive to the indoor air quality (IAQ) are children, pregnant women, the elderly and sick people. According to ASHRAE standard, an adult needs air within 20 and 25 m^3/h [1]. This amount should be higher for pregnant women due to their increased breathing capacity. Changes in respiratory function are designed to cover a greater demand for oxygen [2]. In the opinion of Śmiełowska et al. [3], a significant impact on the increase in the incidence of different types of civilization diseases is bad indoor air quality. Relative humidity (RH) is one of parameters that play a major role in ensuring thermal comfort. The aim of this paper is to present the results of RH of indoor air during gymnastic classes.

2. The Materials and Methods

In order to verify the range of the relative humidity, tests were conducted using the instrument TSI 9565 (Figure 1) 1.0 m above the floor.

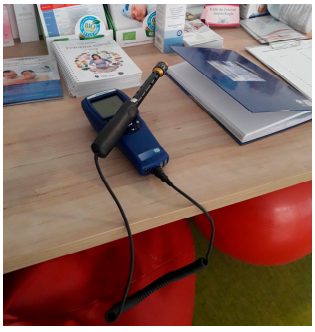

Figure 1. The location of the instrument TSI 9565 (own photography).

Air quality tests were conducted in November 2018 during gymnastic classes, when the heating and air conditioning were working.

3. Results

Figure 2 shows the results of 3 series of measurements conducted for 60 minutes. The first 5 minutes after the instrument was turned on was excluded in order to stabilize measurements.

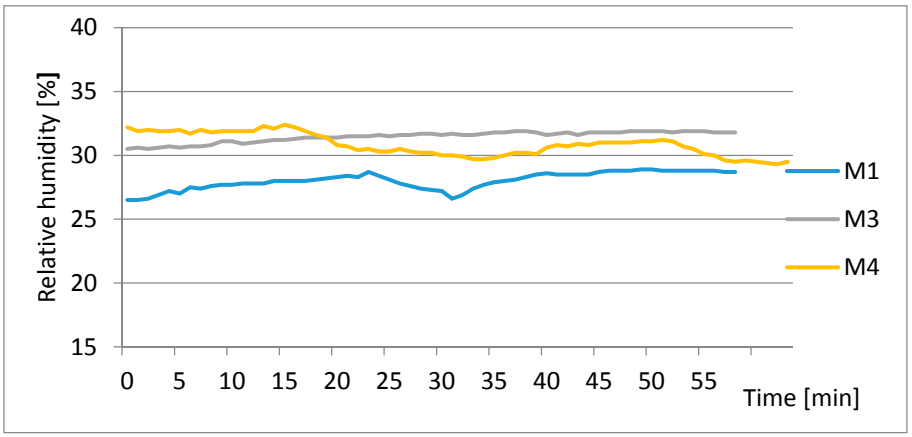

Figure 2. The distribution of relative humidity in the tested room.

A noticeable difference in the relative humidity values was observed. All results oscillated to approximately 30%, which was well below the required minimum. The reason for such low values is the HVAC system operation.

4. Summary and Conclusions

Based on the results of the tests, it is recommended that changes be made in the main control panel of the air HVAC system, namely increasing the setpoint of relative humidity.

Author Contributions: D.A.K. and P.Z. conceived and designed the experiments; analyzed the data and made conclusions while P.Z. performed tests.

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Conflicts of Interest: The authors declare no conflicts of interest.

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