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<p>[Background] The humid sensation is closely related to the sense of comfort in humans. However, the formation mechanism of the humid sensation remains unclear in many areas. In our laboratory, we have shown that thermal sensation at nasal area may be an important factor in the humid sensation. It also suggests that the humid sensation may be enhanced in correlation with the temperature of the dew point temperature (Td). In this study, we performed controlled breathing by varying the temperature of the inhaled air and the Td and measured subjective sensory and physiological data during the breathing. The purpose of this study was to explore the factors involved in the formation of the humid sensation based on these analyses and previous findings.</p> <p>[Methods] Eighteen healthy male and female subjects (7 males and 11 females) were selected. The experiment consisted of controlled breathing through a respiratory mask that covered only the nasal area for 6 minutes per trial. The controlled breathing consisted of a 3-second nasal inhalation followed by a 3-second oral exhalation, for a total of 60 breaths. Eight trials were conducted (control trials) with varying combinations of inhalation temperature conditions (15, 25 and 35°C) and dew point temperature conditions (8, 14 and 20°C). In addition, a similar experiment was conducted by mixing inhalation air with vaporized l-menthol (menthol trial). The humid sensation and thermal sensation to the inhaled air, humid sensation, thermal sensation and thermal comfort in the whole body during breathing were evaluated using the Visual Analog Scale (VAS) with a 10 cm straight line, mm from the left end. The questionnaires were performed before started, 2, 4 and 6 min after the start of controlled breathing. The nasal temperature (T_{cavity}), the frontal skin temperature (T_{head}), the nasal skin temperature (T_{nose}), and the heart rate (HR) were measured continuously during the experiment. [Results] There was a significant positive correlation between the amount of T_{cavity} change and the humid sensation to the inhaled air. There was also a significant positive correlation between temperature sensation and humidity sensation to the inhaled air. On the other hand, no similar correlations were found between T_{cavity}, whole body humidity sensation, and temperature sensation. [Discussion] The results suggest that changes in nasal mucosal temperature due to changes in the local environment in the nasal cavity play an important role in the formation of the humid sensation. As one of the mechanisms to perceive the humidity of the environment, the involvement of the sensation in the nasal cavity was shown to be possible.</p>	