AIR IONS, WELL-BEING AND COGNITIVE PERFORMANCE: RESULTS OF A CROSS-OVER EXPERIMENT IN CHILDREN

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Background: Studies indicate that higher concentrations of air ions may have a positive influence on wellbeing and health.In this study, effects of increased indoor levels of air ions on wellbeing and cognitive performance were investigated within an experimental indoor setting. Methods and material: Healthy volunteers (n=10; 8-10 years) participated in a randomized, double-blind, cross-over experiment in two identically adapted living rooms. The increase in air ion concentrations was achieved by a mineral based wall paint. Subjects were exposed to different levels of air ions for two hours each (one week apart). Wellbeing and cognitive performance were assessed by standardized questionnaires (self-condition scale by Nitsch) and tests (general performance test by Horn). Levels of air ions, volatile organic compounds,CO_2, and indoor climate factors (temperature, humidity) were determined by standardized measurement procedures. Results: Measurements of air quality and indoor climate in the two test rooms did not reveal any significant differences except in concentration of air ions: Average total air ion concentration in room B (with special wall paint) was 2,800 per cm^3 versus 1,200 per cm^3 in room A. With regard to self-condition, in both settings almost no changes in tensionbut a significant decrease in readiness for exertion and recuperationof the test persons was observed during the experimental sessions. Tension and recuperationwere significantly higher in testroom B. Furthermore, one out of seven subtests of cognitive performance wassolved significantly better, and for another subtest a tendency for better performancewas observed in the room with the higher ion levels. Conclusions: Higher levels of air ions might be associated with a less pronounced decrease in arousal during prolonged mental activity. This could lead to a better cognitive performance.