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Determination of the Effects of Break Times and Caffeinated Coffee Based on Earlobe Pulse Rate Analysis

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Abstract

This paper investigates the stress of a static worker using work load, pulse rate and chaos system analysis to determine the effect of rest during work for stress reduction, and the effect of caffeinated coffee on the body of a static worker. The method used in three experiments to create stress for the static worker was the Uchida-Kraepelin test. The first experiment showed that drinking a beverage was better than not during 5-minute breaks. The second experiment included a 20-minute break providing the subjects with beverages with and without caffeine. When the correct answers were checked along with pulse rate and chaos attractors, the effect of the break time was more positive for those who drank caffeinated coffee. The number of subjects was increased from 10 to 38 and we applied the double-blind test to investigate the detailed effect of caffeine. The subjects were required to work up to 150 minutes. The 150-minute test was divided into 10 rounds with 15 minutes in each round. Based on the results, the subjects who drank caffeinated coffee exhibited better performances on the test than those who drank non-caffeinated coffee. The pulse rate test showed that consuming caffeine resulted in the reduction of the pulse rate. Based on the findings, break time was very important for static work. Likewise, drinking caffeinated drinks can improve body performance.

Key words

[Earlobe pulse wave](#), [Static worker](#), [Uchida-Kraepelin test](#), [Chaos system](#), [Break times](#),

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