Work design for airport security officers: Effects of rest break schedules and adaptable automation

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**Abstract:**
This study investigated whether there is empirical support for the current EU regulation mandating breaks of at least 10 min after each period of 20 min continuously reviewing X-ray images in airport security screening. As a second goal, it examined whether providing more autonomy to airport security officers (in the form of spontaneous rest breaks and adaptable automation) would improve their performance and subjective state. Seventy-two student participants had to indicate the presence (or absence) of a threat item (either a gun or a knife) in a series of grey-scaled X-ray images of cabin baggage. Three work-rest schedules were examined: spontaneous breaks (i.e. participants could take breaks at any time), two 5-min breaks and two 10-min breaks during a 1-h testing session. Furthermore, half of the participants were assisted in their task by an adaptable support system offering three levels of automation: (1) no support, (2) cues indicating the presence of a potential threat item, and (3) cues indicating the exact location of a potential threat item. Results showed no performance differences between break regimes, which suggests that there may be viable alternatives to the current EU regulations. It also emerged that providing participants with adaptable automation did not lead to better detection performance but resulted in a less positive response bias than participants without automatic support. Implications for current aviation security regulations are discussed.

**Keywords:** Adaptable automation, Airport security, Visual inspection, System reliability, Performance