SOLID FIR FURNITURE REDUCES STRAIN

during and after concentration periods

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Hypotheses

A room completely furnished with solid fir has positive short term effects on concentration, well-being, strain, heart rate and/or heart rate variability.

Methods

schematic test procedure

period 0	period 1	period 2	period 3	period 4	period 5	period 6	period 7
demographic Variables	**Rest sitting**	**Concentration period d2, KLT-R-A, d2**	**Rest sitting**	**Rest lying**	**Rest sitting**	**Concentration period d2, KLT-R-B, d2**	**Rest sitting**
15-20min	10min	32min	10min	10min	10min	32min	10min
	well-being	strain	strain	well-being	well-being	strain	strain well-being

We used a balanced, cross-over design under a standardised laboratory procedure. The testing happened on two consecutive days at same time and consisted of two strain-periods (30 min) intercepted by a rest-period (30 min). 50 persons (25 men, 25 women) with an average age of 25.6 (±9.1) years were measured twice in two equally looking rooms furnished with fir (solid wood) or fir sham (walls, floor, furniture).

Fir room

Sham room

Results

Psychology

In resulting subjective strain from the concentration periods there was a significant interaction between time and room (p=.041). Test persons reported to be less stressed in the fir room after the first concentration period, so the same objective load was subjectively experienced less intense in the fir room (see figure 2). Concentration values (d2, KLT-R) did not differ significantly between the two rooms (p>.05) as is shown exemplarily in figure 1. Test persons achieved comparable concentration test values in the sham and the fir room.

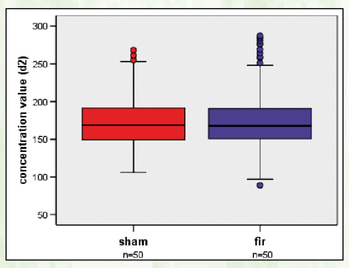

Fig. 1: *Concentration values in the fir and the sham room (p =.804)*

Physiology

Physiologically test persons reacted – similarly to the subjective strain findings – differently in the two rooms. Numerous parameters of the heart rate variability implied that people were less stressed in the fir room compared to the sham room. These findings were most apparent during the rest period immediately after the nap (SDNN: p<.01; RSA, LF, HF, TOT: p<.05) and during the concentration periods (SDNN: p<.01; RSA, LF, HF, TOT: p<.05).

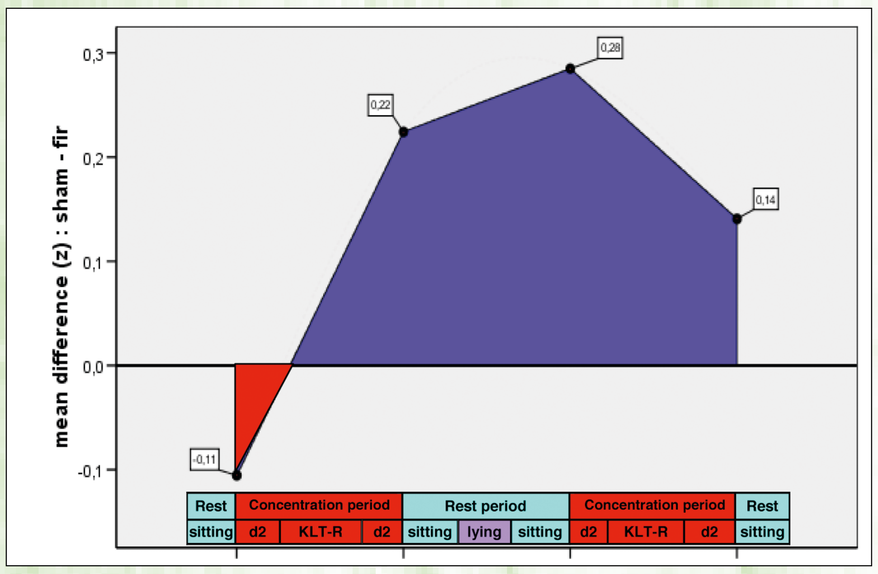

Fig. 2: *Interaction between time and room for experienced strain (p =.041)*

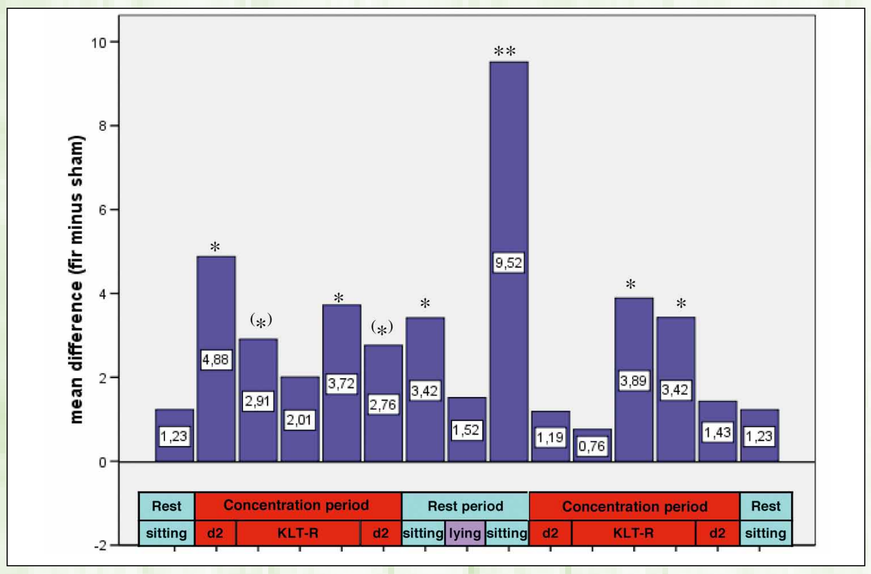

Fig. 3: *Significant difference between the rooms for SDNN*
*Note: **…p<.01, *…p<.05, (*)…p<.1*

Further there were non-significant interactions between the nap (before, afterwards) and the room (fir, sham) in the range from p=.105 to p=.131 for varying concentration parameters in both concentration tests (d2 and KLT-R). Test subjects showed a slightly stronger decrease of mistakes from before to after the nap in concentration test values in the fir room compared to the sham room. These results suggest that people benefited more form the nap in the fir room.

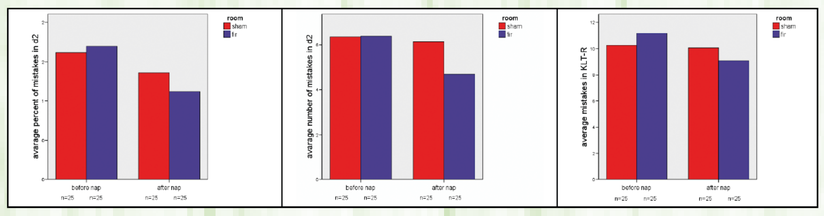

Fig. 4, 5, 6: *Interactions between time and room for d2 (p=.105, p =.131) and KLTR (p =.123)*

Conclusion

Summarizing psychological and physiological results, findings can be interpreted as an efficiency gain due to decreased stressing effects of the concentration periods and improved recovery ability in the fir room. Though concentration values were comparable in both rooms, people reported and showed (physiologically) less strain (during and after concentration periods) and higher recovery (in rest periods). This efficiency gain is further supported by the slightly stronger decreases in concentration tests mistakes after the nap including rest period in the fir room.

Same quality of work can be achieved with less effort

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