The effect of handling during the adaptation period on the reaction of DA rats subjected to routine experimental procedures

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Aim
An appropriate period of adaptation following transportation is widely recommended for laboratory animals. Some studies have reported that habituation to handling is associated with a reduction in stress response and that such habituation can ameliorate the effects of stress associated with human interactions. Since different methods have been performed, the aim of the present study was to determine the effects of handling method and frequency during the adaptation period on the reaction of rats subjected to routine experimental procedure.

Material & Method
DA rats were chosen due to particular fearfulness. In total, 85 DA/ZTM rats, 42 females and 43 males, were used for the study (38 rats for Experiment 1, 47 rats for Experiment 2). At around 3 weeks of age animals were transported from Hannover Medical School to our institute. After arrival rats were randomly allotted to 4 groups, in groups of two or three per cage.

Groups G5 and G1 were gently stroked for either five or one minutes (Fig. 1). Rats of Group S were grasped by the base of tail (Fig. 2) and animals of Group K were held by gripping around the chest (Fig. 3) without any further contact to humans.

Rats were handled either twice a week (Exp. 1) or daily (Exp. 2) during acclimatisation (4-6 weeks of age), followed by a double blind test. During the tests the reactions of each animal to experimental procedure, such as handling and restrain, were observed and scored by experienced and inexperienced personnel.

Results
Handling methods during acclimatisation showed effects on the reactions of rats to experimental procedure for experiment 1. Animals of Group G5, G1 and K were significantly less anxious about human contact than Group S during the handling procedure (Fig. 4). A similar tendency was found for experiment 2, but the difference between groups was reduced (Fig. 4).

Increasing handling frequency led to a decreased anxiety during handling in Group S and K (Fig. 5), mainly due to the influences of handling frequency on females.

Conclusion
According to the present results, the anxiety of animals can already be reduced, when rats are gently stroked twice a week (one minute per time) during cage changing. Thus to stroke rats regularly during acclimatisation, as well as to train the researcher before a study is performed, will be beneficial for the welfare of animals and reduce the possible influence of stress response on experimental results.