

In the proper development of medical devices, usability testing is indispensable. Prior to these testings, specific training is essential since regulations require intended users of medical devices to receive training before initial use. To assure realistic conditions, it has been recommended to allow an appropriate time interval between training and usability test although no specification of the interval's length is given. By means of this thesis it has been sought to clarify the questions on what influence the *retention interval* between training and initial application of medical devices has on corresponding performance decay. Since the complexity of medical work systems is increasing this thesis also aims to answer the question what influence medical devices' *perceived complexity* has on performance decay after training.

To this end 48 participants were assigned to one of six research groups which differed in medical devices' perceived complexity (more complex syringe driver, less complex syringe driver) and retention intervals (1 hour, 1 day, 1 week). During the training session each participant had to practice five tasks actively until he could execute them independently. After one of the defined retention interval the participants' performance on five trained tasks and two untrained tasks was measured.

Outcomes revealed that the participants' test performances significantly decreased 1 week after training compared to 1 day after. The differences after 1 hour and 1 day however were non-significant. With regard to the devices' perceived complexity, no significant differences were found either. The findings of this study strongly suggest that retention periods between training and usability tests in medical engineering should be 1 week rather than 1 day or 1 hour. The occurrence of a higher number of Use Errors helps to find more usability problems and assures high safety standards within the development of medical devices.