The active place avoidance task represents one of the methods of the study of animal cognition. In this task, a subject is put on a rotating circular arena and avoids invisible sector that is stable with respect to the room. Rotation of the arena means that the subject's avoidance must be active, otherwise the subject would be moved in the punished sector by the rotation of the arena and a slight electric shock would be administered. The experiment described in the present work explored the effect of variable arena rotation speed on the ability to avoid the punished sector. Rats in a group with a variable arena rotation speed learned to avoid the punished sector with the same speed and attained the same ability to avoid the sector as rats in a group with a stable arena rotation speed. The only difference between the two groups was found in a preferred position within the room. No difference was found between the two groups in the dark phase, where the rats could not use orientation cues in the room. Only one rat was able to learn the avoidance of the punished sector in this phase. The results of the experiment suggest that idiothetic orientation and interval timing are not crucial for learning of the avoidance of the punished sector. However, idiothetic orientation is sufficient for the avoidance of the punished sector in the dark. Next, the thesis describes newly developed software for analysis, exploration and inspection of data from the active place avoidance task – Carousel Maze Manager. The software was written in accord with requirements of data analysis reproducibility and is freely available on the internet.