Gait disorders (GD) in Parkinson's disease (PD) cause a substantial restriction of patient's independency and current treatment of these symptoms is very insufficient. This thesis refers to the four following original studies:

The first questionnaire study assessed the influence of GD on Quality of life (QOL) deterioration among PD patients and compared influence of different aspects of GD such as freezing, fear of falling, falls and related injuries. Our results confirm that GD have a substantial impact upon the QOL in PD and suggest that fear of falling plays a major role in QOL deterioration.

The second study compared the Pull Test and the Push and Release (P&R) test as regards their ability to predict PD fallers and non-fallers in relation to their medication state. Both clinical tests are valid and relatively equivalent when assessing patients in their Off medication state; however, the P&R test is more accurate than the Pull Test in the On state.

In the third study we analyzed short and long-term effects of subthalamic nucleus (STN) deep brain stimulation (DBS) on PD symptoms. Our results show that short term stimulation has positive effect on majority of symptoms including GD; however, long term stimulation loses its efficiency in gait improvement with stable effectiveness for other symptoms.

The last pilot study evaluated the effect of 60 Hz DBS of STN in PD patients with persisting gait and speech abnormalities despite optimized high-frequency DBS. A significant improvement of gait and speech was evident in a majority of patients; however, it was not possible to use lower frequencies in patients with predominant tremor or rigidity. The studies related to DBS effect on GD open new questions concerning possibilities of alternative therapy for PD patients with gait difficulties.