Summary

Osteoarthritis (OA) is characterized by pain, and problems with activities of daily life, especially if the hip or knee joint is affected. The aim of this project was to study associations between strength, voluntary activation and physical functioning in elderly patients with OA. People with OA of the knee often have lower muscle strength, but also a lower ability to voluntarily activate their knee extensors. In Chapter 2 we investigated the effects of relatively low stimulation currents on the assessment of VA of the knee extensor muscles. We concluded that by using submaximal muscle stimulation overestimation of VA may even be less compared with maximal nerve stimulation. In Chapter 3, we investigated physical functioning longitudinally in a large cohort of participants with and without self-reported hip or knee OA. Physical functioning was tested with a short battery consisting of a chair stand test, a balance test and a 6 meter walk test, performed in the participants’ home. Chair stand and walking performance were lower in participants with OA 3 to 6 years after OA was reported for the first time, and men were more affected than women. In the laboratory, more elaborate lab tests can be done, such as muscle function tests, standardized stair climb tests and longer walk tests. Such tests may be more sensitive to detect impairments. In Chapter 4, we investigated whether there are differences in muscle function in people with and without OA. Only the battery of home tests showed lower scores in participants with OA, and there were no differences in muscle function. In Chapter 5, we investigated the feasibility and effectiveness of 6 weeks of preoperative training for elderly OA patients undergoing total knee arthroplasty. Pre and post-operative outcome measures were not different compared to a standard training group. We conclude that physical functioning, but not VA is impaired in older people with OA and that strength and physical functioning is more impaired just before total knee arthroplasty. When assessing physical functioning in older participants or patients with musculoskeletal disorders, home tests are a good alternative to lab tests to obtain a representative sample. Preoperative training before total knee arthroplasty can prevent the decline in functioning often observed before surgery, but there were no additional effects of intensive strength training.