Summary

Continence is highly related to the use of the water closet in the western society. Disabled elderly have problems with using the toilet because of mobility and cognitive disabilities. This can result in undesired loss of urine and feces on other places than the toilet. If a person is dependent in toileting the problem is that assistance must be available 24 hours a day. For elderly living at home this is often not possible when there is no spouse, so they have a big chance to get institutionalized. Institutionalized elderly have commonly problems with using the toilet. Therefore it is of importance to investigate in which extend problems in toileting contribute to incontinence of urine and feces, and explore the possibilities of training toileting skills.

Toileting skills represents the ability of a person to perform several tasks to urinate and defecate on a toilet. Those tasks are; rising up from chair or bed, walking or riding a wheelchair, finding the toilet, manipulation of clothing, sitting down on the toilet. Research on toileting skills is scarce.

The definition of the International Continence Society for urinary incontinence (UI) is: “the complaint of any involuntary leakage of urine”. Fecal incontinence (FI) is the inability to control stool or recurrent involuntary passage of stool or gas through the anus. The severity of UI and FI is often expressed in amount of frequency. In disabled elderly UI and FI are frequently combined. The combination is called dual incontinence (DI).

This thesis comprises several studies on toileting skills, association between toileting skills and incontinence, and training toileting skills in nursing home patients. The objectives of the thesis are: (1) to investigate relations between incontinence (UI, FI and DI), toileting skills and morbidity, and (2) to influence UI by training toileting skills.

Chapter 2 describes a cross-sectional study, based on SIVIS data of all new admissions from Dutch nursing homes over the year 1995. Prevalences of incontinence ad admission in the Dutch nursing
homes in 1995 were high. The prevalence of UI was 47.1 % and the prevalence of FI was 29.4 %. The prevalence of UI only was 19.1 %, of FI only 1.4 %, and of DI 28.0 %. The differences between men and women were only slight. There were, however, substantial differences in the prevalences of incontinence between the two types of residents. Psychogeriatric residents had a much higher prevalence of UI (62.9 %) and FI (42.5 %) than somatic residents (UI 37.9% and FI 21.8 %). In both somatic and psychogeriatric residents the prevalence of UI only and FI only even more so, was low compared to the prevalence of DI.

Toileting skills was made operational with the Toilet Index. In the Dutch nursing homes higher scores on the Toilet Index were significantly related to higher prevalences of UI, FI and DI. In psychogeriatric residents, however, even slightly higher scores on the TI were associated with higher prevalences of incontinence, while in somatic residents the association was spread out over the whole range of the scale.

Chapter 3 describes a cohort study, based on RAI-MDS data of patients in nursing homes in Ohio USA, with assessment on baseline and at 3 months follow up, to establish the change in continence status in post-acute care (PAC) and long term care (LTC) nursing home patients. The overall prevalence of UI was 65.5% and for FI 38.4%. 33.9% of the nursing home patients were continent. The overall 3-month incidence of FI (22.2%) was higher than the incidence of UI (14.8%). Deterioration of continence status occurred in 17.5% of the PAC patients and 15% of the LTC patients and was predominantly from continence to UI only (PAC 10.0%, LTC 8.7%) and from UI only to DI (PAC 29.0%, LTC 34.3%). Improvement in continence status occurred in 9.4% of the PAC patients (mainly UI only to continence) , compared with 2.4% of the LTC patients.

Chapter 4 describes a cohort study, based on RAI-MDS data of patients in nursing homes in Ohio, with assessment at baseline and at 3 months follow up to establish the relation between change in toileting skills and the development of FI in nursing home patients. Toileting skills were scored with the TDS. There was a strong correlation between change in toileting skills and the risk of developing FI . When toileting skills deteriorated, the relative risk of FI increased significantly, and with each step
of decline in TDS the risk of FI doubled. However when the toileting skills improved, the relative risk of FI decreased significantly. The same pattern was found for the correlation between change in toileting skills and the severity of FI.

Chapter 5 describes a cohort study, based on RAI-MDS data of patients in nursing homes in Ohio, with assessment at baseline and at 3 months follow up, to establish the effect on UI and FI of incident morbidity in relation to toileting skills in nursing home patients. Stroke and cognitive decline were associated with a high risk of incident UI and incident FI. In addition incident hipfracture was associated with a high risk of incident FI. These high risks could partially be attributed to decline in toileting skills. The association of congestive heart failure, decline in mood and constipation with incident UI and FI are lower. However UI at baseline is associated with a very high risk of FI, indicating that other factors apart from change in toileting skills and morbidity also contributed to the development of FI.

Chapter 6 describes a randomized single blinded controlled trial on disabled elderly women, clients of Dutch long-term care facilities, to establish the effect of an individualized 8-week training program on mobility and toileting skills with the aim of improving the time needed for specific toileting tasks. The intervention was based on the performance of the tasks of the Toilet Timing test (TT-test). Toileting skills can be improved by a targeted training program. The intervention had a statistically significant effect on the number of women with improvement on the daytime sumscore from the TT-test under standardised circumstances (p=0.05). The effect on the number of women with improvement on the nighttime sumscore was borderline significant (p=0.06). The intervention had a significant effect on speed in the wheelchair group measured with the TT-test under daily circumstances, although the effect was in favor of the control group. There is a tendency towards significance on the following tasks of walking subjects also measured with the TT-test under standard circumstances: the speed of walking, rising from chair and sitting down on toilet. In the intervention group 6 patients reached independent toileting against 2 in the control group.
Chapter 7 describes a randomized, single-blinded trial on disabled elderly women, clients of Dutch long-term care facilities, to determine the effect of training mobility and toileting skills on the severity of UI measured with the Pad test. The intervention consisted of an individualized 8-week training program of mobility and toileting skill, provided by physiotherapists and/or occupational therapists. The intervention was based on the performance of the tasks of the Toilet Timing test. The training program resulted in a 37.7% reduction in the daily amount of urine loss relative to control. Three women in the intervention group compared to none in the control group showed a reduction of the amount of urine loss of more than 90% (p=0.24). A change from dependent to independent toileting occurred in 6 women in the intervention group and 2 women in the control group. The intervention had no significant effect on the number or percentage of micturitions on the toilet. The motivation of women to train their toileting skills was moderate.

Chapter 8 summarizes the main findings of this thesis by addressing the research questions. Strengths and limitations of the study are discussed, followed by the implications for researchers, physicians, carers, nursing home management and policy makers. The chapter ends with suggestions for future research and a general conclusion.

In conclusion: The prevalence and incidence of UI, FI and DI in long-term care facilities were high. The 3 month incidence of FI was highest (22.2%). Deterioration of continence status was stepwise, from continence to UI only and from UI only to DI. So when a patient has UI, then apart from treating the UI it is also necessary to look at possibilities to prevent FI. The incidence of FI correlated with toileting skills, when toileting skills deteriorated, the risk of FI increased significantly, when the toileting skills improved, the relative risk of FI decreased significantly. Therefore, improving toileting skills in patients how became FI could be effective. UI is associated with a very high risk of FI independent from toileting skills, indicating that other factors apart from change in toileting skills and morbidity also contributed to the development of FI. This could be factors of pelvic floor but also it is possible that reduced alertness, endurance and motivation are important.
Stroke and cognitive decline were associated with a high risk of incident UI and incident FI, hip fracture was associated with a high risk of FI. These high risks could partially be attributed to decline in toileting skills. Still it is important to improve toileting skills if possible in the case of incident stroke, hip fracture and with cognitive decline.

Toileting skills can be improved by a targeted training program. The training program resulted in a 37.7% reduction in the daily amount of urine loss relative to control. However this reduction is probably not clinical relevant. The intervention had no effect on the number of micturitions on the toilet and the motivation to train toileting skills was moderate. Still there is enough evidence to state that monitoring and training toileting skills in nursing home patients during the stay in the long-term care facility is feasible and effective in reducing incontinence and incontinence related problems in the nursing home. Independent toileting is an important outcome of rehabilitation programs in geriatric rehabilitation. Further research is recommended to investigate the assessment of toileting skills with the TT-test and the results of the targeted training program in geriatric rehabilitation programs.