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ELECTRONIC ACCESSIBILITY ASSESSMENT CHECKLIST  
FOR IMPROVING THE HOME ENVIRONMENT  
OF HEALTHILY AGEING

Degree Programme in Physiotherapy

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## ELECTRONIC ACCESSIBILITY ASSESSMENT CHECKLIST FOR IMPROVING THE HOME ENVIRONMENT OF HEALTHILY AGEING

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The purpose of the thesis was to develop an accessibility checklist for assessing home environment of healthily ageing people. The checklist will be part of accessibility assessment computer program designed by Esteetön Asunto Oy (EAS oy). The checklist focuses on the minimum changes that needs to be done in elderly home so that the living is easy and safe.

The checklist was made by studying theory about ageing. The theory was about changes that happen in human body when ageing. These ageing changes affects on how the elderly is able to survive in ADL functions safely and without problems. In addition, also other accessibility assessment programs have been studied as much it was possible. Context of the checklist has been formed according to that theory which is presented in this Thesis-report.

The idea for the thesis came straight from the Esteetön Asunto Oy. The purpose was to design a checklist which could be used when assessing elderly homes so, that the ageing person could live in own home for longer. The checklist needed to have only the most important questions in it. The questions should have reliable theory behind them. By this the information got from the accessibility assessment would be true and can be used in practice.

The checklist has not yet been use in practice on the time of completing Thesis and it has not been changed in the form of the assessment program. All of the information concerning the list itself and its content is a commercial secret. Because of this the list is not published as a part of the thesis-report.

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## 1 INTRODUCTION

The fact is that the age of the whole population is growing and the elderly people are in better condition. In 2030 the amount of +65 years old will be even 26% of the whole population of Finland (Statistics Finland, 2007). Despite the health issues that appears in older age, people live longer independently. According to research made by The National Institute for Health and Welfare (THL) research- and development center (STAKES), nine out of ten people over 75 years old still lived in their own home. However, many ageing people have health issues before turning 75 and increasingly more after this. The issues are related to ageing and the issues makes surviving of activities of daily living (ADL) harder. (Tilastokeskus, 2005, 115). ADLs are tasks performed by each individual on a daily basis that are essential on independent living. There are five basic ADLs: eating, bathing, dressing, toileting and transferring.

(The website of MedicineNet.com, 2012).

For the purpose of this thesis, the World Health Organization (WHO) definitions of health and active ageing has been used. WHO defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 2012). There are many definitions of healthy ageing, a term which is often used interchangeably with terms such as active ageing, successful ageing, positive ageing and productive ageing. Although there is no universal definition, there is general acceptance that healthy ageing involves more than just physical or functional health. WHO defines active ageing as 'the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age' allowing people to 'realize their potential for physical, social and mental well-being throughout the life course. (Blackberry, 2012, 2).

The ageing of the population increases the demand for health- and elderly care services and causes pressure in expenses for municipalities production of services. The need for social- and health care will increase in future so that expenses in healthcare services increase 17 % from year 2005 to 2020 and social care expenses increase 35% in the same time period. (Karppinen. H, 2007, 3). If the elderly person can sur-

vive at home regardless of his/hers functional ability limitations it affects positively in the cost of elderly care. (Oulasvirta, 2011 ,6.) Every municipality are responsible for arranging the social and health services that older people require.

The ministry of social affairs and health (MSAH) sets out the policy concerning ageing in its strategy, in legislation, quality recommendations, programmes and projects. The aim of the ageing policy is to promote older people's functional capacity, independent living and active participation in society (The webpage of Ministry of Social Affairs and Health, Ageing Policy, 2013).

The Act on Care Services for the Elderly which ensures a high standard of quality nationwide, has now given a possibility to focus more on making living environment better for the ageing. The act was put into force 1st of July 2013. According to the act, providing that kind of possibility to ageing person is cheaper to government than taking them into facility care etc. elderly home. This is based on the fact that the Act guarantees a certain standard of quality for services for the elderly provided by operating units. The number of personnel and their qualifications and job duties must be consistent with the number of elderly persons being provided services by the operating unit and the level of service that their functional capacity requires. The number of personnel and their qualification requirements may be provided for in more detail by decree. (The webpage Ministry of Social Affairs and Health, 2012).

As it is known when people age that the body faces several new problems. This means that some fundamental activities in the normal everyday living might get problematic. Often this leads on facing some difficulties at home which can lead on risk of hurting ourselves. The deficiency or limitation occurs when persons mental or physical ability does not meet the environment set standards. This means that the social and physical environment has a great meaning on how the elderly person feels his/hers ability on surviving. (Tilvis ym, 2010, 439). The meaning of environment emphasizes when functional ability decreases. The wellbeing of elderly person can be increased and surviving at home can be supported by developing the living environment. By making some adjustments to homes that affects positively on elderly persons ADL, they can enjoy living in their homes for longer. Also, it affects positively on the amount of resources which are consumed in elderly care.

In Finland there are already several organizations who are working in the field of accessibility and they are providing exact numeric values as an answer to problems in homes. Such as much space it is needed in the bathrooms when using a wheelchair. (Figure 1.) These are not only for ageing but also to people who are physically and/or mentally challenged. For example Finnish Association of People with Physical Disabilities (FPD, Invalidiliitto) has a project for assessing accessibility.

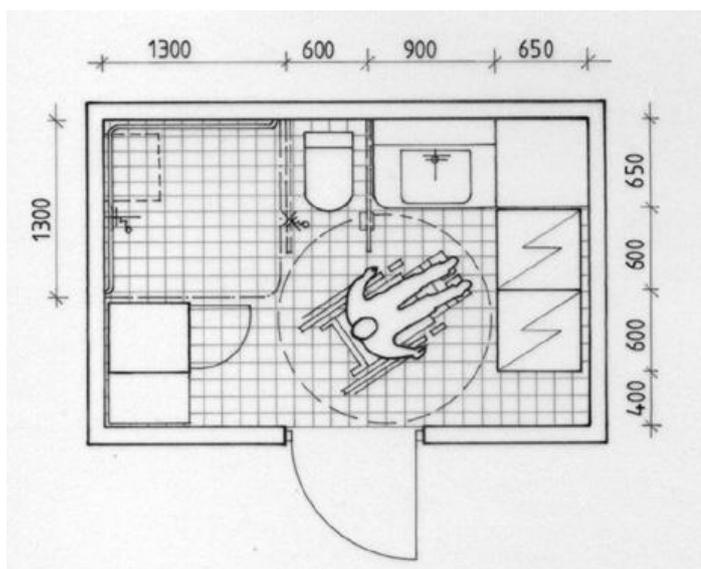


Figure 1. Accessible Bathroom. Invalidiliitto, 2002.

## 2 AGEING

Regardless of the amount of ageing-theories, there is no specific global theory that would explain ageing as phenomenon. (Lewis 1995, 15-16.) The most known "theory" which explains the great amount of elderly is that after the wars, people wanted to start families; people who were born on those times are the ageing population today. Also, because of the fact that the population around the world is increasing we have more and more ageing people. Like mentioned, one of the most important aspects when studying ageing is that people live much longer and they are in better condition. When force degenerates along aging, many ADL functions such as getting up from sitting, posture control and correction movements starts getting diffi-

cult.(Sipilä, 2008, 114.) When physical activity and functional ability decreases and the aches increases, the activity decreases first in societal actions then in doing tasks at home and finally on taking care of oneself and in basic functions. (Oulasvirta, 2011, 9.)

### 3 AGEING CHANGES

The affect of the ageing changes that occurs on different areas of functional abilities are considered comprehensively in theory by adapting International Classification of Functioning, Disability and Health. (ICF) The ageing process is individual and the changes in functional ability vary between the ageing people. Also the rate of different changes in ageing may vary between different functions. (Oulasvirta, 2011, 7).

In normal life people get out of bed, take baths or showers, use the toilet, dress, prepare meals, and eat.(Figure 2.) These types of basic functions allow people to socialize, work, or engage in a myriad of other productive and social activities. In the lexicon of gerontology, these fundamental self-care activities have been labeled *activities of daily living*, or ADLs. The capacity to perform such activities has been confirmed in numerous studies to have broad implications for functioning, reflecting a person's ability to live independently in the community. Disability or functional impairment refers to a person's inability to perform these ADLs and other basic activities without assistance, whether due to aging, illness, accident, or conditions at birth. (Geron,2013).

## ADL

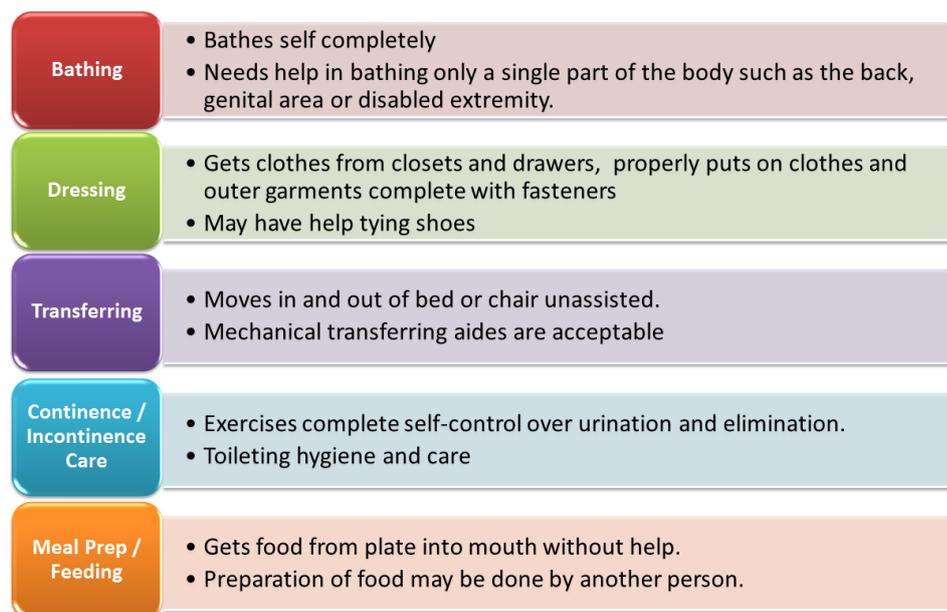


Figure 2. Activities of Daily Living. (Website of The CareGivers, 2013)

One of the most important dimensions of function ability is dependence. Dependence indicates whether an individual needs or uses the assistance of another person or special equipment to accomplish the task. Dependency, by its very nature, implies the use of formal or informal services that are used in response to disability. (Geron, 2013).

According to the multiple research, the problems in motion, the slower speed in walking and decrease in muscle strength predicts clearly weaker survival in ADL, and predicts a decrease in functional ability and even mortality. (Laukkanen, 2008, 270.)

### 3.1 What happens in normal ageing?

The ageing process decreases the muscle mass and the muscles force, velocity and stamina gets weaker. In the joints the ageing increases the stiffness. (Tilvis ym 2010, 22, 25). The weakening muscle strength and mobility causes balance problems. In

elderly persons, the following issues can be observed: The forward posture of the head, rounded shoulders, kyphosis in T-spine, lordosis in L-spine and also stiffening of hips and knees to bent-position (Figure 3.) The degeneration of discs and worsening of mobility are the two main causes for the changes. (Lewis 1995, 158-159.) The atrophy in connective tissue affects degeneratively in joint's - and musculoskeletal system's elasticity and causes weakening in general condition. (Teppo 2001, 275.)

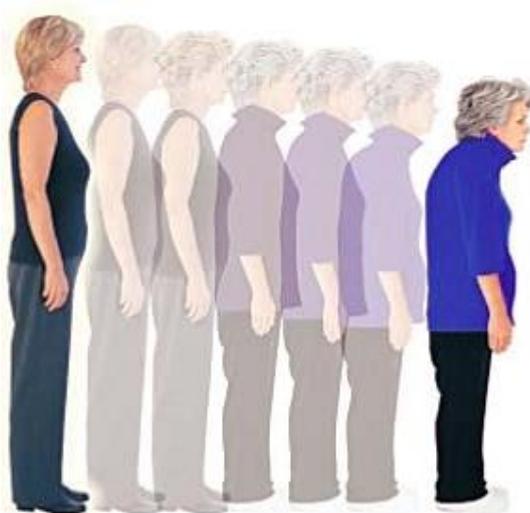


Figure 3. Elderly Posture. (Website of The Physical Therapy Center, 2013)

When ageing the ability to maintain posture changes. It is affected by pathological changes in the muscle strength but also the changes in vision. (Pajala, 2008, 137). Central Nervous System (CNS), Neuromuscular system, Musculoskeletal system and several sensory channel such as sight, hearing and sensation are participating in posture-control. (Pajala, 2008, 136.) Changes in standing posture alters human's support surface area and trough that the functional ability. Breathing in round-shouldered position and using upper extremities becomes more difficult. In addition the gravity of the body may move from the centre line to heels in the round-shouldered position which weakens the posture control and balance. (Pajala, 2008, 138). Also weakened sight and hearing can cause problems in functional ability. Combination of sensory information from different sensation channels (integration) slows down and situations which require fast correction are becoming harder in elderly person. e.g. in situations that requires reacting in environmental changes. For example giving way to

traffic. Slowing of reaction speed is caused by changes in body's speed and weakening of muscle strength. (Pajala, 2008, 138).

### 3.2 Sarcopenia

Sarcopenia can be defined as the age-related loss of muscle mass, strength and function (Waters, 2000, 133.) According to researches the maximum peak of muscle strength appears when person is 20-30 years old. After this it decreases 30-40% annually until age 70.(Kaikkonen 2001, 220). The weakening of muscle strength begins after the age of 50 with 1% per year speed and it speeds up after the age of 60 up to 2% per year. The weakening of muscle strength is caused by changes in the muscle tissue but also diseases and ageing of human tissues. (Sipilä, 2008, 112-113). (Figure 4.)

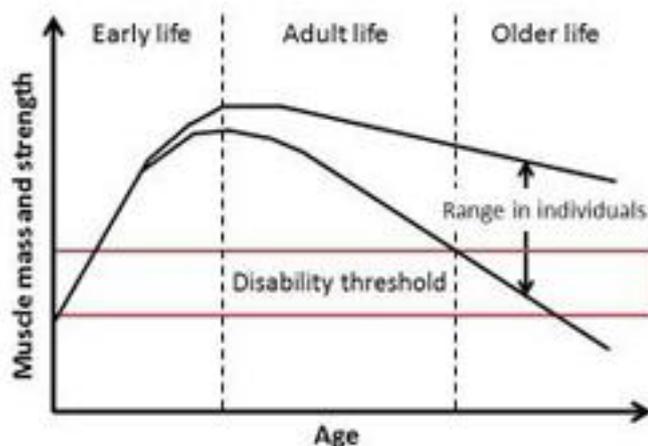


Figure 4. Life course changes in muscle mass and strength. (Website of International Osteoporosis Foundation, 2013)

Sarcopenia typically accelerates around the age of 75. although it may happen in the age of people age 65 or 80. Sarcopenia is a factor in the occurrence of frailty and the likelihood of falls and fractures in older adults. Symptoms of muscle loss include musculoskeletal weakness and loss of stamina, which can interfere with physical activity. Reduced physical activity, in turn, further reduces muscle mass.

Although sarcopenia is mostly seen in people who are inactive, the fact that it also occurs in people who stay physically active throughout life suggests there are other factors involved in the development of sarcopenia. Researchers believe the following factors play a role (Figure 5.): Age-related reduction in nerve cells responsible for sending signals from the brain to the muscles to initiate movement, a decrease in the concentrations of some hormones, including growth hormone, testosterone, and insulin-like growth factor. Also a decrease in the body's ability to synthesize protein and inadequate intake of calories and/or protein to sustain muscle mass.

(Website of WebMD, 2012)

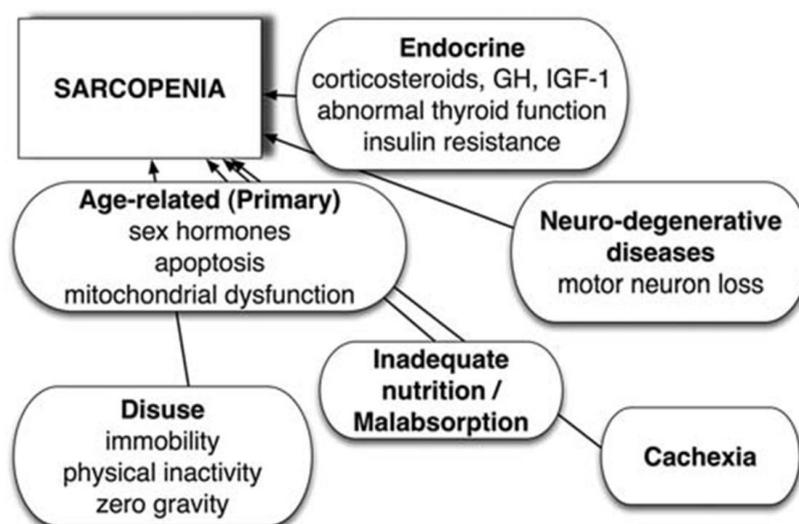


Figure 5. Factors affecting on Sarcopenia. ( Batsis, 2011 )

### 3.3 Mobility

Ageing is generally associated with a decrease in mobility and social interaction and this decrease can be dependent upon various health and social factors. Sustaining levels of activity are important for successful ageing and for those for whom mobility is a problem suffer in a variety of ways.

(Website of New Dynamics of Ageing Programme, 2013).

According to Teppo (2001, 272) the movements of joints are very essential for functional ability and that restrictions in joint's movements or pain may cause difficulties in functioning. The problems in joint mobility are caused by normal changes related to ageing such as degeneration of cartilage-tissue.

### 3.4 Balance

When the control of the balance weakens, human can replace the poor balance with sight. When sight weakens also the balance control decreases and that is the reason why they are essentially connected. (Talvitie, 2006, 41). Therefore many of the problems and accidents in elderly age are related to poor balance. Weakened balance can be seen already in middle-age and if it is not regularly strengthened the risk of balance related problems increases in later life.

### 3.5 Vision

Even a slight deterioration of any of your senses can be scary. Not only can it interfere with personal safety and the ability to understand the surroundings, but also it can have a huge impact on the overall comfort and independence. On the other hand, when aging, some decline in the senses is expected. Vision is often one of the first senses affected by aging.

Multiple structures of the eyes work together to help people see clearly at various distances and under different lighting conditions. These internal and external structures begin to wear down as people get older. Common age-related vision complaints include: "I can't see as clearly as I used to. I have difficulty seeing objects close up. Colors don't seem as vivid. It's getting more difficult to see in the dark. I'm less able to adapt to glare and/or I need more light to see."

(Website of Sharecare, 2009). Functioning in the home-environment becomes difficult when ageing. For example in dim light, on different surfaces, in stairs or perceiving contrast e.g. separating door from the wall. (Hyvärinen, 2008, 179).

### 3.6 Auditory Perception

Age-related hearing loss, or presbycusis, is the slow loss of hearing that occurs as people get older. There is no known single cause of age-related hearing loss. However most commonly, it is caused by the changes in the inner ear. Loss of hearing often occurs slowly over time and there is no cure for it. Presbycusis most often gets

aggravates little by little and the hearing loss cannot be reversed; furthermore may lead to deafness which can inhibit leaving home. Treatment is focused on improving the ADLs. (Website of MedLine Plus, 2012).

### 3.7 Ageing Cognition

Age-related changes in cognitive function vary considerably across individuals and across cognitive domains, with some cognitive functions appearing more susceptible than others to the effects of aging. (Glisky, 2007.) A commonly held misconception is that aging results in an inevitable loss of cognitive abilities and that nothing can be done to halt this decline. Research, however, does not support these claims. While certain areas of thinking do show a normal decline as we age, others remain stable. Moreover, interventions may actually slow some of the changes that do occur. (Website of Memory University, 2013).

**Intelligence:** “Crystalized” intelligence, i.e., knowledge or experience accumulated over time, actually remains stable with age. On the other hand, “fluid” intelligence or abilities not based on experience or education tend to decline. Examples of “fluid” intelligence include ability to think and react quickly, mental flexibility or mental “multi-tasking”, and learning of new information.

**Memory:** Remote memory or recall of past events that have been stored over many years remains relatively preserved in old age. Recent memory or the formation of new memories, however, is more vulnerable to aging. Most often, this means that older individuals take longer (i.e., have to hear/see it more times) to learn new information than they may have when they were younger.

**Attention:** Simple or focused attention such as the ability to attend to a television program tends to be preserved in older age. Difficulties may be encountered, however, when divided attention is required such as trying to pay attention to the television and simultaneously talk on the telephone.

**Language:** Verbal abilities including vocabulary are preserved as we age. Common changes have to do with word retrieval or the process of getting words out. It takes longer and is more difficult to find the words one wants when engaged in conversation or trying to recall names of people and objects. The information is not lost but it is more difficult to retrieve.

**Reasoning and Problem Solving:** Traditional ways of approaching solutions are maintained in older persons. Wisdom of experience in older age can lead to better approaches to some of life's problems than some younger individuals. However, problems that have not been encountered during the older individual's life may take extra time to figure out, and it may be difficult to think of alternative ways of solving a problem.

**Speed of Processing:** Aging does affect the speed with which cognitive and motor processes are performed. This does not mean that the activities cannot be performed, but rather that they take longer.

(Website of Memory University, 2013).

In addition also medication, changes in mood e.g. depression or anxiety, pain, motivation and problems in sensory channels e.g. hearing might cause changes in cognition. Weakened cognition often causes problems when trying to live safely in home-environment.

### 3.8 Social Aspects

Older adults suffer from the same psychological problems as younger adults. While the proportion of mental health problems is approximately the same for younger adults, older adults are more vulnerable than younger adults to develop psychological problems resulting from factors that impact the quality of life such as stress, ill health, loss, decline in cognitive skills, and changes in living situations. (Matteson, 2011) It is hard for ageing people to admit that normal daily living is getting increasingly harder as years pass by. Emotions such as shame, frustration, anger often rises in these situations. (Hervonen, 1998)

As described from accessibility point of view the home where elderly people live in, will become problematic places in it. Just to give some examples, it might get harder to see, get up from bed, take what you need in upper shelves, carry items for long distances etc. The biggest problem with this kind of situation is that the safety is threatened.

### 3.9 Incontinence

Incontinence, the ability to hold the bladder is an embarrassing problem, but it is also extremely common among elderly people. At least 1 in 10 people age 65 or older has incontinence problems. Symptoms range from mild leaking of urine to uncontrollable wetting. (Sollitto, 2010)

Although aging does not cause incontinence, it is more likely to occur in older people. Incontinence can occur for multiple reasons; urinary tract infections, vaginal infection or irritation, constipation, and certain medicines can cause bladder control problems that last a short time. Sometimes incontinence lasts longer and might be due to problems such as: Weak bladder muscles, Overactive bladder muscles, Blockage from an enlarged prostate and Damage to nerves that control the bladder from diseases such as multiple sclerosis or Parkinson's disease (Sollitto, 2010)

Older people have the highest known prevalence of urinary incontinence (UI) and faecal incontinence(FI) of any group, apart from those with special neurological disorders (e.g., spinal cord injury). (Fonda, 1163).

## 4 ACCESSIBILITY

When talking about accessibility it means the functionality of the environment and (The Finnish Association of People with Physical Disabilities, 2010.)

According to physiology the physical body changes along aging we and similarly the performance decreases and this can be effect on some extent. Even though the physical ability has weakened it must not be forgotten that by changing the environment it can support in several ways on how the elderly person survives in ADL functions. (Laukkanen 2008, 264.)

Environmental factors interact with body functions and physics but also with the fields of accomplishment and participation. In other words, they create physical, attitudinal and social environment where human acts. The environment can either support or limit individual performance. Each individual factor creates the base of human life which purpose to other fields cannot be separated. (STAKES, 2004, 12).

In Finland the web page called [esteeton.fi](http://esteeton.fi) is a comprehensive and current source of information concerning accessibility and design for all. The web page is a channel for dissemination of the accessibility material produced by Accessibility Project and by other actors.

The most important legislation controlling land use, spatial planning and construction in Finland is contained in the Land Use and Building Act, which came into force in 2000.

The Land Use and Building Act aims:

to organise land use and building to create the basis for high quality living environments,

to promote ecologically, economically, socially and culturally sustainable developments,

to ensure that everyone has the chance to participate in open planning processes,

and to guarantee the quality of openly published planning decisions and participatory processes, and to ensure that a wide range of planning expertise is available.

These general objectives are supplemented by more specific objectives relating to controls over land use planning and construction. All of these objectives have been designed to help make living environments healthy, safe, attractive and socially functional, with the needs of different groups fully considered.

(Website of Ministry of Environment, 2013).

#### 4.1 Living Environment

Home should be a place where person can live without a constant fear of having an accident and where you can perform ADL functions without a problem. Unfortunately for ageing people often this is not the case. The low level of equipments in elderly home makes living often harder. This leads ageing people to make different means and solutions for surviving at home. (Tilastokeskus 2005, 25, 115.)

Making the living environment accessible means a lot to everyone. Especially the ageing population needs this so that they can live in their home independently and safely. It is not only beneficial to the elderly but also, like described earlier to the government. The changes do not have to be always huge or expensive, and already by making some small changes you can decrease the risk of elderly person hurting him/herself. (Website of Korjaustieto, 2013)

### 5 ESTEETÖN ASUNTO SUOMI (EAS)

Esteetön Asunto Suomi is a private company which invented first objective computer application for making accessibility assessments. They have been working in public field, making assessments to for example hotels and congregation buildings around Finland.

The electronic application includes hundreds of questions and they have been divided in modules such as toilet facilities etc. and by adding all the needed modules together the assessment can be made. Also new modules can be designed so that they answer to need of each individual clients.

The tool that they have designed answers at the moment on the needs of ten type of customers: People with hand disabilities, people with leg disabilities, people traveling with pet, business travelers, people with problems with hearing, people with problems with sight, allergic customers, people in wheelchair, customers with children and ageing people.

Each question in the application have been designed so that it has the theory behind it. When answering to the question, it gives points to each of the customer-type and by the end of the survey it counts the point for all of them.

From that data it can be seen how well for example the hotel fits for each type of customer group. The accessibility professional who have made the assessment will then write a report of the results. The party who has ordered this kind of assessment can then use the information in the way they want. (EAS oy, 2013).

### 5.1 Electronic Tools for Measuring Accessibility

The need for objective tool raised when understanding that there is not anything like that available in Finland. There are a few other electronic tools that are designed for accessibility assessment. All of them are invented in past few years and they are still in developmental phase. For Example IT-ARVi, ESKEH (FPD), HOUSING ENABLER (JAMK) and PROVEPAD

Most of them need a registration or/and payment for even familiarizing into the programmes.

## 6 PURPOSE OF THE THESIS

The purpose of the thesis was to make an accessibility checklist that would help making assessment on elderly home so that they would be able to live home independently and safely longer. The checklist is based on current researches and theory about accessibility. All the information used has been taken from liable sources such as Finnish Association of People with Physical Disabilities (FPD) and the Land Use and Building Act. Also, the one of the purposes for making the thesis was for EAS oy to start working more in the private sector.

The checklist is topical and designed to provide basic information which is required when planning changes to already existing home. This means that only the most important things are considered. By making these changes to ageing persons home the ADL are made safer and easier. The list can also be used already in the construction phase when designing home for an elderly person. The tool is designed so that the object is without operator and the goal target group is healthily ageing people. In summary, this means that the elderly person does not have any assistive aids, serious diseases and is still able to survive home alone.

The checklist was ordered by a company that is oriented on making accessibility assessments. Because of the fact that measuring accessibility electronically is a new invention and field is developing all the time, it means that there is a lot of competition. For this reason, the checklist that I have made is not public and I will be given the final product to EAS OY. Also, during the thesis process all the information gathered for the checklist are commercial secrets and not seen by anyone outside the company.

### 6.1 The Checklist as an electronical tool

The checklist will be attached into electronic application from where it can be used by professional. The application provides possibility to make own comments and it counts points for each question. The points for every question have been supplied to the application beforehand. After answering to each question it will show the report and the points. From that data the expert will write a report which includes propositions for actions. Using the tool does not require anyone to make the changes, it is only for recommendation. In the future, the tool will be made into version which can be used without professional. For example the next of kin can order it and made the assessment on his/her own.

## 7 DISCUSSION

Accessibility is ongoing developmental process. There is still so much to study and those theoretical and material inventions made can still be better and easier to use in everyday life. Until this day, accessibility has been something unknown, used only in professional language and in the public field. Now, the accessibility affects somehow on each of our lives in some extent and will be increasingly more. Because of this the accessibility needs to be developed so that it will answer to everyone's needs. At the moment making the assessment is time consuming and even hard occasionally and the assistive aids used on accessibility problems are expensive, complicated and ugly. Hopefully people will get interested in this developmental process so that someday we can have ecological, cheap and aesthetically pleasing innovations for accessibility problems.

My personal interest in the accessibility has already started when I was rather young. There was someone in my family who needed accessibility devices and aids, so those have been placed all around my childhood home. Like mentioned in previous chapter, the aids were not smart and occasionally they made our who did not need them normal life complicated. The thesis process started when this family member of mine started his own enterprise in the accessibility field. The company was hoping that I could make some kind research for them as in thesis format. The company started in public field, making assessments in hotels, restaurants etc. After few years they had their own working computer programme and they wanted to start doing also the private field.

I was agreed to start working with accessibility assessment that would be used in elderly person's home in autumn 2012. Around those times the act that I have mentioned earlier was put in use and the cost of elderly care got higher. The company wanted me to familiarize myself with ageing, accessibility, accessibility assessment and start going through the material. The thesis was put on hold for few months because of my practice period in Australia in the Spring 2013. When I was able to start working with it again, the final topic was decided. I needed to do short and smart accessibility checklist for ageing people homes so that by ticking the boxes and making

the minimum changes that would be presented the ageing person could live safely and longer in own home.

I started gathering material from schools library. I used books and read a few thesis, but soon I noticed that even though the basic elements are there, the numeric facts and accessibility was changing so frequently that it was hard to get topical information from printed material. Fortunately, the EAS provided me a lot of researches and electronic material they were using such as links, articles, legislations etc. In the Autumn 2013 I was asked to work full day in the company so that first I would be having month period on familiarising myself with the programme and making assessments, going through facts and making sure that the information that was used with the programme was valid. I also started doing an assessment for professional use in home accessibility for elderly. During that month I also learned to do the accessibility assessment and use all the tools for it. My own biggest personal growth in the field of accessibility happened this autumn. I really learned to do assessments in practice, learned how to use the measuring equipment and I was even able to participate on a first private try-out of the accessibility tool. After this it was much easier to handle the theory about accessibility.

The computer programme already had thousand of questions in it and the assessments were extremely time consuming to do. My thesis topic was to answer to one of the problems. I have gone through the questions and decided based on the theory presented in this thesis those relevant things that are minimally required for safe living. The thesis will be finished on November 2013. At the moment EAS Oy has all the rights for the checklist and can use it how they feel. One idea that was discussed that it could be for example published in the internet page of The Central Union for the Welfare of the Aged.

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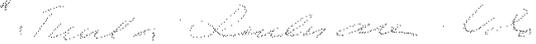
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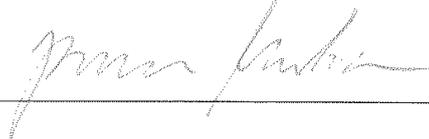
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