



2008

# Home Modifications for the Elderly

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HOME MODIFICATIONS FOR THE ELDERLY

by

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A Scholarly Project

Submitted to the Occupational Therapy Department

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Master's of Occupational Therapy

Grand Forks, North Dakota  
May 10, 2008 and August 2, 2008

This Scholarly Project Paper, submitted by Jennifer Samuelson and Kristyn Kurpius in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

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Faculty Advisor

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Date

PERMISSION

Title Home Modifications for the Elderly  
Department Occupational Therapy  
Degree Master's of Occupational Therapy

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## ACKNOWLEDGEMENTS

The author's wish to thank the faculty of the Occupational Therapy Department at the University of North Dakota for all that they have done to assist in the learning process and preparing the authors for their upcoming careers. The authors would also like to thank their classmates and family whom have been of assistance and support throughout the authors college careers and while completing this scholarly project.

## ABSTRACT

**Purpose:** The purpose of this project was to identify and present methods to increase a person's ability to participate in occupations within their home. "Almost 50 million Americans - about one in five - live with a mental or physical disability, many of their homes are inconvenient, restrictive, or dangerous for them," (McCullagh, 2006, p.54). As a result they are unable to participate in safe and functional occupations.

**Methods:** A literature review was conducted with the use of Pub Med, AJOT, textbooks, home modification handbooks, and the internet. The literature review determined the need for home modifications with the elderly population and identified current home modification designs and products in order to provide the elderly and their families with current information and recommendations.

**Results:** A Home Modification Handbook was designed according to the Ecological Model of Occupation. This product has a strong focus on occupations that elderly commonly participate in their home environment. The handbook is for elderly persons who would like to remain in their homes regardless of natural ageing and personal deficits. The handbook includes questions to consider, modifications, and assistive technology products for individual areas of a house including: entrances, interior walkways and doors, kitchen, bathroom, bedroom, living room, laundry, and general safety

**Conclusion:** This user friendly handbook will provide elderly individuals and their families the knowledge that will allow them to live safe and independent lives within their own homes.

## CHAPTER I

### INTRODUCTION

The purpose of this project was to identify and present methods to increase a person's ability to participate in occupations within the home context. "Almost 50 million Americans - about one in five - live with a mental or physical disability, many of their homes are inconvenient, restrictive, or dangerous for them," (McCullagh, 2006, p.54). As a result they are unable to participate in safe and functional occupations. One population that is particularly effected is that of the elderly population.

This scholarly project focuses on the elderly population because this is a group of people who are increasing in the United States population. They have also been shown to develop health related limitations linked to the natural aging process that when combined with their living environment can and often do decrease the ability to perform successfully in occupations within their home. Occupations could include tasks such as getting ready in the morning, doing the laundry, preparing food, bathing, or simply ambulating around the house. These occupations and an individual's ability to perform these occupations need to be addressed with occupation based interventions to allow them to lead more successful lives.

An occupational therapist plays a major role in the process of home modification and home adaptation interventions. It is the job of the occupational therapist to help people perform successfully in their daily routines and occupations, "Groups of activities and tasks of everyday life, named, organized and given value and meaning by individuals and culture" (Law, Polatajko,



Baptiste, & Townsend, 1997, p. 34). Many of these daily routines and occupations take place in a person's home; therefore an occupational therapist is beneficial in the process.

When an occupational therapist works with a person on home modification, there are several aspects that they need to analyze and steps that they need to take. The role of an occupational therapist is to determine a person's ability to perform occupations successfully; he or she needs to evaluate not only the actual home itself, but also the person. One needs to observe the person, their family or others involved with their living situation, and their home environment and context.

According to an article written by Johansson (2000), OTs are valuable consultants in the area of home modification due to knowledge regarding mobility, sensory limitations, cognitive limitations, and possible hazards that are in the home context. In the current practice OTs conduct tasks such as consulting with architects, designers, engineers, contractors, and public facility managers. This allows OT's to inform or educate other professionals about home modification needs and laws such as the Americans with Disability Act of 1990, (Johansson, 2000). By having contact and good relations with other professionals in the area of home modification, OTs are able to work with clients and professionals to develop interventions that will assist clients to lead more independent lives within their home context.

The intervention used with this scholarly project is a Home Modification Handbook for elderly individuals and their family that focuses on changing the home environment of elderly. The changes recommended in the handbook lead to more safe and successful performance in occupations. Occupations occur in various areas of the house. The areas that are addressed in the handbook include the entrance, the interior walkways and doorways, the kitchen,

the bathroom, the bedroom, the living room, and the laundry room. The handbook also includes a section on general safety concerns throughout the house. The benefits of using this handbook depend on multiple factors. One factor to address is how the elderly and their families will be able to access the handbook. Ideally, possible ways of obtaining the product would be to receive it from their local rehabilitation department, to purchase it from durable medicine stores, or to be able to order it from agencies within their community or from the internet. The success would also be influenced on the compliance with the recommendations and the willingness to conduct change within home environments. It is possible that by having an actual manual in their possession, the elderly individuals would with time implement recommendations addressed in the manual.

The model selected to guide this project was the Ecological Model of Human Occupation (EMHO). One of the goals emphasized with this model is increasing a person's performance in tasks that they have difficulty completing or are unable to complete. By increasing a person's performance, therapists would look at aspects including the *person*, the *task* the person wants to complete, and the *context* in which the person performs. When considering this is a client centered model, each person is viewed as an individual with a unique set of variables regarding *person, task, context, and performance*.

A *person* is considered to be "an individual with a unique configuration of abilities, experiences, and sensorimotor, cognitive, and psychological skills" (Kramer, Hinojosa, & Royeen, 2003, p. 226). These experiences, abilities, and skills make up the person variables, and the variables influence a person's performance in various tasks.

The *task* is defined as “objective sets of behaviors that are combined to allow an individual to engage in performance that accomplishes a goal” (Kramer, Hinojosa, & Brasic Royeen, 2003, p.225).

*Performance* is defined as what “occurs when a person acts to engage in tasks within a context” (Kramer, Hinojosa, & Brasic Royeen, 2003, p.227). People use their skills and abilities to perform in the context. Therefore it depends on the interaction of the person variables and the context.

The *context* is defined as “the set of interrelated conditions that surround the person” (Kramer, Hinojosa, & Brasic Royeen, 2003, p.226). Two contexts that are noted in the EMHO include temporal and environment. Temporal context includes aspects such as a person’s age, developmental stage, life cycle, and health status. The environmental context includes physical, social, and cultural dimensions. The context can be either a supporter of performance or may act as a barrier of performance. This scholarly project mainly focuses on the environmental context by making modifications in the physical environment. The project also considers a person’s temporal context when modifying the environment.

In this scholarly project, the interventions focus on the context in which the performance takes place, such as the elderly person’s home environment. The specific interventions that are used with the EMHO include *establish/restore, adapt, alter, prevent, and create*. The main interventions used in this scholarly project include *adapt/modify, prevent, and create* as applied to *performance* in valued occupations. *Adapt/modify* is used to actually change the environment such as a person’s house. *Prevent* involves addressing possible problems in performance or preventing negative outcomes before they occur.

The intervention of *create* involves creating a set of circumstances that allows all individuals the chance to perform successfully. This means people with or without deficits would be able to function fully in the context (Kramer, Hinojosa, & Brasic Royeen, 2003).

The concepts of the EMHO have been interwoven within this Home Modification Scholarly Project. The basis for home modification fit well with the focus on context and the consideration for person variables that are included within this model. This model does not focus on changing the person, but rather their context and how they are able to perform in their environment. The home modification handbook also has a goal of changing the context in which a person performs in order to increase their independence. The information in the handbook does not aim to change the actual person in regards to curing their health status, but rather takes their possible health conditions into consideration when making recommendations in changing their home context.

The following are terms or concepts that are used throughout the scholarly project. It is important that readers have an understanding of their definitions prior to reading the following chapters.

**Elderly:** age 65 and greater

**Assistive technology:** “Equipment that is used to maintain, enable, or improve self managed functional ability to achieve or maintain independence and increase quality of life” Horowitz, Brennan, Reinhardt, and MacMillan 2006, p. 274).

**Home modifications:** “used in conjunction with assistive technology devices and home repairs” (American Occupational Therapy Association, 2005, p. 28)

**Daily routines and occupations:** “Groups of activities and tasks of everyday life, named, organized and given value and meaning by individuals and culture” (Law, Polatajko, Baptiste, & Townsend, 1997, p. 34).

**Person:** “an individual with a unique configuration of abilities, experiences, and sensorimotor, cognitive, and psychological skills” (Kramer, Hinojosa, & Brasic Royeen, 2003, p. 226).

**Task:** “objective sets of behaviors that are combined to allow an individual to engage in performance that accomplishes a goal” (Kramer, Hinojosa, & Brasic Royeen, 2003, p.225).

**Context:** The various conditions that are either in or around a person that affect their performance (AOTA, 2002).

**Performance:** “occurs when a person acts to engage in tasks within a context” (Kramer, Hinojosa, & Brasic Royeen, 2003, p.227).

Through research and the guidance of the EMHO, this scholarly project was able to identify and present methods to increase a person’s ability to participate in occupations within their home context. The elderly population was of particular focus in the research and development of a Home Modification Handbook. This handbook would be of benefit to elderly individuals and their family by guiding them through the modification process by focusing on various aspects of the individual person, the tasks they wish to perform, the home context they reside in, and the actual performance within the home.

The following chapters include the literature review, the activities/methodology, the product/results, and the summary. The literature review can be accessed to examine in depth information regarding the background research used to guide the development of the Home Modification Handbook. The activities/methodology chapter lays out the process that was used to develop the handbook. The product/results chapter contains the actual handbook as well as

the references used for the handbook. The final chapter of this scholarly project is the summary. This can be accessed for a general overview of the project and for recommendations regarding future advancement in the area of home modifications for the elderly.

## CHAPTER II

### REVIEW OF LITERATURE

Patients attach a great deal of meaning to their homes. For many it holds symbolic representation of their life and the many years of memories. Their home is a space of familiarity and routine which allows them to be secure in the occupations that they perform. However, when the environment does not match their physical abilities it could endanger both their safety and independence.

Homes that the elderly live in are often not designed in a way that will accommodate their current and future needs. Yet as noted by Tinker and Lansley (2005), when people age they tend to prefer to stay in their own homes. Home modification can enable the elderly to be able to live more independent lives in the comfort of their own homes. Home modifications are “adaptations to living environments intended to increase usage, safety, security, and independence for the user. Home modifications are used in conjunction with assistive devices and home repairs,” (American Occupational Therapy Association [AOTA], 2005, p. 28).

It is estimated that by 2030 the number of older Americans will have nearly doubled and older adults will make up about 20% of the entire US population (Mathieson, Kronenfeld, & Keith, 2002, p. 24). With such a staggering statistic, it is important to make sure that this population is getting the necessary help to ensure that they will remain as independent as they can

in an environment that best fits their physical, psychological, and cognitive needs. With shorter stays in the hospital, the elderly are getting discharged to their former home environments while being in a state of frailty with temporary or permanent disabilities. Many elderly have not made the necessary home modifications to meet their current needs and may be forced to relocate to skilled nursing facilities.

For some elderly, the thought that their health condition is permanent is hard to accept. They may feel that once they get stronger they will be able to carry out their activities of daily living and regain their independence. Activities of daily living refer to activities that are oriented toward care of one's own body (Rogers & Holm, 1994). For many elderly persons, their health condition continues to deteriorate and safety becomes a concern. Using home modifications in the home can help to alleviate problems with the normal progression of age or disease. These changes in the home can give the person added security and ensure safety when they are alone.

Nygaard, Grahn, Rudenhammar and Hydling (2004) conducted a study to examine the effectiveness of pre-discharge home visits in geriatric inpatient care. Two visits were conducted by an occupational therapist at each participant's home. The first visit was to evaluate the participant's home before discharge. The most frequent problem that the participants reported was inadequate motor capacity, particularly in the bathroom. The occupational therapist taught the participant ways in which they could modify areas in the home to increase both the safety and independence of the participant. Such recommendations included alarms, adaptations, information regarding support, devices and environmental modifications, and preparation for housing adaptation or installation of devices. The second visit was an interview 2-3 weeks after discharge to see how well the participant was able to re-accommodate to their home environment.



Results indicated that the pre and post discharge home visits were found to be a helpful transition from hospital to home and increased the safety of the participants. By examining this study in particular, one can see that focusing on this one area can play a significant role in whether an elderly person is able to stay in their home. According to the American Association of Retired Persons, more than 80% of adults ages 45 and older “strongly or somewhat agree that they would like to remain in their current residence for as long as possible,” (Bayer & Harper, 2000).

According to Bonder and Wagner (2001) there are many changes that occur during the normal aging process that affect the way elderly are able to function. Many of the impairments associated with the normal aging process include aspects such as hearing, balance, vision, muscle strength, endurance, and cognition. The most common auditory disorder for the elderly population is that of presbycusis. With presbycusis, elderly mainly lose hearing involving high frequencies of sound. As a result, it is often determined to be a problem when they start to have difficulty understanding dialogue, find it challenging to hear the TV, and have a hard time hearing the door bell or telephone ring.

Another auditory defect that is common amongst elderly is tinnitus, which involves hearing noises in the head such as roaring, ringing, or buzzing. The likelihood of a person developing tinnitus depends on their history of being around loud noises; the more people are surrounded by loud noise the more likely they are of developing tinnitus. Those who have vestibular deficits often complain of problems with dizziness and balance. It is common for elderly to become dizzy or off balance when they get up too quickly, step up and down, or walk on uneven surfaces (Wyatt, 1991). For this reason getting up out of a chair or bed, walking up steps, and walking on uneven floors or yards may be challenging.

These and other functional tasks can also become challenging due to changes in vision. It is normal for people to start to develop a decrease in their near vision once they reach age 40. This is called presbyopia, which is also known as "old vision". As stated in Bonder and Wagner (2001), there are about 5.5 million adults with vision impairments in the United States and over a million of them are completely blind.

Bonder and Wagner (2001) continued to state that of those with vision impairments 70% are over the age of 65. The cornea also tends to flatten in later age causing astigmatism. This results in distorted and blurred images. It is also often noticed by the elderly population that as they age they need more time to let their eyes adjust to changes in light. Another common eye condition in the older population is that of cataracts. This can cause color sensitivity and reduced visual acuity when there are minor changes in contrast. For this reason it is helpful for people to have environments that include color contrast between objects and backgrounds. A functional example of contrast colors is having a clock that has black numbers and a white background. Increased lighting can also be a benefit. Better lighting can allow a person to see objects with more ease. As a result people can then complete occupations more successfully and safely. When looking at lighting one also needs to be aware of the flooring that is used in areas of bright light. If a person has waxed floors more glare results. This glare can limit a person's ability to see items on the floor as well as decrease their depth perception.

Glaucoma is another eye condition that effects the elderly population. This condition can cause a decrease in a person's peripheral vision. When this occurs they develop what is known as "tunnel vision", where they can only see clearly directly in front of them and not from the sides of their eyes. When this happens people need to be able to compensate for the vision loss by

physically rotating their head or body so that objects are in their direct line of sight (Bonder & Wagner, 2001).

Muscle strength is another area of decline as a person ages. When a person ages they often lose muscle fibers, decrease the size of the muscle fibers that they still have, and increase the amount of fat and connective tissue that resides in the muscles. With the decreased muscle strength also comes a decrease in flexibility, reaction time, independence, and mobility. These challenges can also result in a greater chance of falling (Bonder & Wagner, 2001).

Another aspect of aging often deals with a person's reaction time and ability to step quickly. As a person ages, their reaction times increase and they are not able to step as quickly as they used to. This can especially be a challenge when in an environment that includes obstacles such as moving children or pets (Luchies, Schiffman, Richards, Thompson, Bazuin, & DeYoung, 2002, p. 1137). For example if a person is working in a kitchen and there are many obstacles the older they are, the more likely they are to trip or run into the obstacle. If there are too many obstacles a person will not be able to perform occupations as successfully or safely.

Endurance often becomes a problem associated with older age due to changes in the cardiovascular and respiratory systems. The oxygen that is transported throughout the body is reduced even though the demand remains high. As a result a person's endurance is decreased causing even low metabolic activities to become tiresome. Due to the increased challenge some may no longer be able to perform some activities that they participated in prior in life. Those activities that they do participate in may require increased breaks in order to keep up the energy needed (Bonder & Wagner, 2001). According to a research article by Velloso and Jardim in 2006 they found that male participants who suffered from COPD decreased their dyspnea and fear when performing four ADL activities using energy conservation postures. These techniques

represent no expense at all to the patient but rather a change in the patient's habits and adaptation of the living environment (Velloso & Jardim, 2006).

Performance in occupations may also become more challenging when executive functioning and cognition is a concern. "Executive functioning is a cognitive skill that involves the planning, initiation, and execution of goal-directed behaviors, mental flexibility, and problem solving" (Johnson, Lui, & Yaffe, 2007, p. 1138). When elderly have significant or minor deficits with these skills, tasks including paying bills, dressing, meal preparation, and shopping can become challenging. Studies show that older individuals have limited functioning when compared to younger individuals. It has also been noticed that there is a preferential decrease in prefrontal cortex volume in people who are older. People who have a significant decrease in prefrontal cortex volume also tend to have more functional deficits (Johnson, Lui, & Yaffe, 2007).

Another factor that is influenced due to decreased cognition is the decline in the ability to recall information from long term memory. This can make tasks challenging if they require a person to memorize information. Being unable to recall information is often noticed when people realize they are unable to remember where they put an object such as keys or a book. Various compensatory strategies can be helpful at allowing a person to use recognition to assist in recalling what is stored. Some examples of memory aids include making lists as reminders, leaving notes regarding phone numbers or messages, writing down information regarding social engagements or appointments, and using devices to assist in remembering to take medication at the proper time (Bonder & Wagner, 2001).

With deficits that develop during the aging process, it is important to assure a person is able to perform occupations successfully. At times people are observed or evaluated in a hospital setting to determine if they are able to function successfully in a home setting. When

this is done, a therapist needs to be aware that a person often functions better in a hospital setting than they do in their home environment. This is due to the amount of distraction that is in their own environmental context. When they are performing in a hospital setting it is often a controlled environment, however when they go home they suddenly need to contend with other family members, pets, and ringing phones. These can present as distractions that can limit their ability to process and manage information (Logan, Weber, Yep-Chow, & Collins, 2007).

Another concern for much of the elderly population is financial management. For many elderly the high cost of institutional care is beyond the amount in which they can pay each month due to their fixed income. According to the 2006 American Community Survey on average elderly 65 and older had a mean income of \$40,044 per year. When factoring in all the monthly expenses that an elderly person has to pay it doesn't leave much for this population to make needed modifications to their home. In 2006 there were 78.7% of elderly owning their own homes in the United States (U.S. Census Bureau, 2006).

In addition to financial concerns, elderly people may be reluctant to modify their homes due to disapproval by family or neighbors, stigma, and denial of health status. Many elderly grew up with limited resources for family members that required assistance in the home. Their options were limited. Either the elderly person stayed with family members or they were sent to live in a nursing home (Fielo & Warren, 2001)

As a great percentage of the United States population reach their later years and undergo the normal aging process, it is important to know how to help them live that last stage of their life the best they can. Often modifications need to be made to help function successfully due to the normal aging process. Once people reach their later years and become considered elderly, there are many questions that arise. One of which is where do they live? Are they able to stay at

home, or do they need to consider going to a nursing home, assisted living facility, or one of the other options where they can get the level of assistance that is needed?

According to Tinker and Lansley (2005), when people age they tend to prefer staying in their own homes. Although this is not always an option for people, there are elderly who would be able to stay in their own home if they had the level assistance that they needed. In the past, much of their assistance that allowed them to stay at home came from other people. However, the 21<sup>st</sup> century has presented a trend toward new community resources. There are now other options for people who would like to stay at home to live independently. Instead of relying on other people for constant help, elderly are now able to take advantage of new technology and use assistive technology and home modification/adaptation. By modifying their living environment and using assistive technology, the elderly will be able to live more independent lives in the comfort of their own homes.

In an article by Horowitz, Brennan, Reinhardt, and MacMillan (2006), AT was defined as, “equipment that is used to maintain, enable, or improve self managed functional ability to achieve or maintain independence and increase quality of life,” (p. 274). The use of assistive technology does not only benefit people in functional aspects of physically completing tasks independently. It also had been found to help elderly feel more secure, promote safety, and reduce the money that elderly spend on formal care services (Tinker & Lansley, 2005). Some examples of AT that are common include walkers, wheelchairs, grab bars, reachers, and bath seats. It has been found that some elderly have a negative viewpoint on assistive technology because using it requires them to make changes in the way they perform a task (Horowitz et.al., 2006). Tinker and Lansley (2005) found that elderly did however welcome the use of assistive technology if they saw that there was a need for it in their particular situation. There are several

benefits of the use of assistive technology that could help elderly in developing a positive view of assistive devices. As mentioned previously it helps improve independence as well as help with the completion of tasks.

The use of AT does not only benefit people in functional aspects of physically completing tasks independently; it also has been found to help elderly feel more secure, promote safety, and reduce the money that elderly spend on formal care services (Tinker & Lansley, 2005). This decrease of money spent on care services is connected to the decreased need of others for help with personal cares (Freedman, Agree, Martin, & Cornman, 2005). The decreased need of assistance from others could decrease the amount of people needing to live in long term care facilities. This in turn would decrease the current stress that has been put on the long term care system (Agree, Freedman, Cornman, Wolf, & Marcotte, 2005).

The use of AT also has an effect on a person's well being and psychological state. According to Horowitz et. al.(2006), depression tended to decrease in people who used optical devices. Rehabilitation that focuses on restoration of occupational performance can also decrease depression. This beneficial contribution to mental health may likely come from the elderly gaining a sense of control in their lives when they go through rehabilitation and learn to adapt to their health concerns or deficits.

More people have likely become aware of the benefits of AT as noted in increased independence and an increased use of AT over the past few years. Agree et. al. (2005) stated "during the 1980's, the number of people using any equipment rose from 3.3 million to 4.1 million, and the number relying only on equipment more than doubled by the mid 1990's," (p. 272). Freedman et. al. (2005), stated that between 1992 and 2001 people who had difficulties with activities dealing with self care declined from 30% to 26% (p.2). They also found that the

number of elderly who had difficulty with at least one activity of daily living who used AT independently increased from 26% to 32% during this same time period (p.2). This article also examined the amount elderly were reliant on other people for assistance.

Freedman et. al. (2005) found that in 1991, 3.2 million elderly in the US were reliant on others, while in 2001 the number went down to 3.1 million (p. 2). Although this does not seem like a clinically significant change, it really is when one considers the aging population. One of the main reasons that elderly need assistance and the use of assistive technology is impairments due to vision deficits. By using vision aids elderly are able to perform occupations better. Some possible aids that one could use include magnifiers, telescopes, large print materials, talking books, and talking appliances such as clocks (Horowitz et. al., 2006).

A study conducted by Horowitz et. al (2006), targeting elderly people with visual deficits showed that a great percentage of elderly used assistive technology during follow-up visits. They found that about 91% used at least one optical device, and that they had anywhere from 0-4 optical devices that they used. Some of the devices that were mentioned were magnifiers and telescopes. They also found that about 79% of the elderly in the study used at least one adaptive device, and had between 0-7 devices that they used. Some of the adaptive devices that were used included aides for telephone use or handwriting, talking books, and white canes. The reason more elderly use optical devices when compared to the use of adaptive devices is that people tend to use items that will maintain their vision first and then compensate for vision problems only when they have to (Horowitz, et. al., 2006).

In order for the aging population to function successfully and safely in their own homes, adaptive or assistive devices should be used. Many home environments present safety hazards as well as barriers to effecting completion of tasks. Therefore, assistive devices are helpful as well



as making adjustments to the home itself. According to Gitlin, Mann, Tomit, and Marcus (2001), hazards that are commonly addressed include “lack of grab bars, loose throw rugs, and obstructed pathways,” (p. 777). These hazards can not only limit function, but can also increase the chances of falls resulting in additional physical deficits. As stated in Gitlin et. al.( 2001), barriers that are present in a house often result in difficulty climbing and descending stairs, reaching cabinets, accessing rooms with wheelchairs, and using faucets, tubs, and showers. Many difficulties are noticed while completing activities of daily living tasks such as making meals, getting dressed, and bathing. Therefore, the most common areas of the house where difficulty arises are the areas where these tasks are completed such as, the kitchen, bedroom, and bathroom (Gitlin et. al., 2001).

An OT plays a major role in the process of home modification and home adaptation. It is the job of the OT to help people perform successfully in their daily routines and occupations, “Groups of activities and tasks of everyday life, named, organized and given value and meaning by individuals and culture,” (Law, Polatajko, Baptiste, & Townsend, 1997, p. 34). Many of these daily routines and occupations take place in a person’s home; therefore an occupational therapist is beneficial in the process.

When an OT works with a person on home modification, there are several aspects that they need to analyze and steps that they need to take. The role of an OT is to determine a person’s ability to perform occupations successfully; he or she needs to evaluate not only the actual home itself, but also the person. One needs to observe the person, their family or others involved with their living situation, and their home environment and context. Context is defined as the various conditions that are either in or around a person that affect their performance (AOTA, 2002).

When evaluating a person's living environment, it is beneficial to consider several different viewpoints. One should evaluate the physical, social, and environmental demands of the home environment (Klein, Rosage, & Shaw, 1999). It can be helpful to let the client report how they believe they are doing in their home and how well they are able to participate in their occupations in their home. Although it is important to evaluate the actual home and to get the view point of the client, it is perhaps even more valuable to actually assess how the person performs in their home. This way an OT can see firsthand what works in the environment and what does not allow the client to be successful in their occupations.

During the evaluation an OT observes a person to determine their mobility level they examine how the individual completes activities such as walking, climbing stairs, and transferring from a seated position to a standing position and vice versa. The OT asks the client to demonstrate navigating stairs and pathways, carrying loads, reaching for low or high shelves, getting in and out of the tub or shower, and using the toilet. As he or she walks through the home, the OT will assess individual's ability to adjust his/her gait while transferring to different surfaces and crossing thresholds.

Home evaluations are beneficial with addressing hazards and barriers in a house. Barriers in the home would include any item or structural part of the home that limits the individual's ability to carry out occupations on a daily basis such as steep steps, thresholds, door handles that are hard to open and small spaces where the individual has a hard time maneuvering. By identifying the hazards and barriers one can make recommendations regarding home adaptation and the acquiring of assistive technology. Some houses can be easily adjusted to make it more accessible by simply installing new assistive technology, while others take more constructional

adaptations, which in turn costs more and requires more time to complete (Tinker and Lansley, 2005).

There are several ways to improve a house. Removing rugs would increase the safety of the individual. It would also allow for easier mobility by reducing the chance of tripping. Adding railings to stairways would also help by improving mobility and safety on stairs. Installing grab bars in tubs and near toilets would allow a person to be more successful in transfers while in the bathroom, therefore improving the person's ability to complete various activities of daily living in the bathroom. One could also install raised toilet seats and bath seats to improve these bathroom activities (Adaptive Environments Center, 2002).

To address some of the needs in a kitchen, one could use a reacher to reach particular items, use trays or carts to help transfer items in the kitchen, and could have faucets with easy to turn handles. To address the needs in the bedroom one could install grab bars to make getting in and out of bed easier and one could lower shelves in the closet so that the elderly person can reach them easier, especially if they are in a wheelchair (Aid Association for Lutherans, 1996). There are also many additional options with improving houses with assistive technology. Making these changes can improve the safety of the elderly person and allow them to be able to complete more tasks successfully and with more ease.

A study conducted by Niva and Skar (2006), examined the activity patterns of five elderly persons. The participants in the study were given the Accessibility in My Home and Occupational Questionnaire to measure the accessibility and usability of their home environment. Barriers in homes that the participant's identified were narrow doorways, high thresholds, inaccessible laundry rooms, and trouble manipulating taps in kitchens and bathrooms. After adaptations were made, researchers found that the participants performed more activities and

additional new activities in their home. For many elderly, this is a common problem. They live at residences that once met their needs but now may be inconvenient, restrictive or dangerous with the use of AT.

Home evaluations are one area that OT can and should be involved in with the care of elderly and with the promotion of assistive technology use. OT should not only complete home evaluations to find barriers in the home, but should also evaluate the person to see what deficits they have and what specific assistive technology they would benefit from.

In addition to AT use, an OT needs to educate the elderly and their care givers about the AT and how to properly use it and maintain it. AT will not benefit a person unless they know how to use it correctly. According to Tinker and Lansley (2005), it would also be beneficial to use terminology that is common to the elderly person in order to receive an understanding of the AT product. It is also helpful to let clients know where they can get the AT that is recommended and how much it's estimated cost is.

Knowing how helpful assistive technology is in helping elderly to achieve optimal function and completion of tasks, it is apparent that OT's and other health professionals should pay great attention to AT. OT's should continue to put focus on AT and recommend it to clients that they see could benefit from it. There are also opportunities for occupational therapists to do research on available AT to determine what products are the best for their clients regarding quality and ease to use. OT's could also collaborate with other professions to develop new technology to assist with the aging population.

When observing client's in their home environment, one also has the opportunity to assess the social dynamics between the clients and the others who are living in the same home or are involved in the person's living situation. It is important to evaluate other people living in

their home in regards to their age, health status, and willingness to help the client in areas of need (Klein, Rosage, & Shaw, 1999). Assessing the strengths, weaknesses, and dynamics of the household can also help a therapist to predict how accepting the client and others living with them will be of modifications.

After an OT evaluates the client and their home environment, they are able to make recommendations for home modification and any assistive technology that could be of benefit to them in making them more independent and successful in their occupations. When giving recommendations, it is also important to educate the client and their family/caregivers in regards to the home modifications and assistive technology that is recommended. It is important that they know why it is essential, where they can get it, how to use it safely and successfully, and how to maintain it. During this time it can also be beneficial for the OT to meet with any contractors who are involved with the project to be sure they understand what the reasoning is for the modifications and why they need to be done a certain way.

After recommendations are made and modifications are implemented, it is important for the OT to have a follow-up plan with the client. This is done to ensure everything is working as it should and that the client is using the items. Without the follow-up plan clients are 60% less likely to continue with home modifications and assistive technology products (Cumming et.al, 2001). In a study conducted by Cumming et. al., they found that participants who believed it likely to prevent falls by making home modifications were more than twice as likely to be adherers as those who did not believe in home modifications.

Home modifications can range from no or little alteration. Examples of this could include, installing grab bars, removing clutter and loose rugs to more extensive remodeling such as installing stairs with risers, widening doorways or installing a walk in shower. It merely depends

on the level of need and how much money the person wants to invest into their home. In recent years modern technology has improved; companies have created assistive devices that are developed for universal design. “Universal design refers to creating new products and environments that can be usable by all people, to the greatest extent possible, without the need for adaptation,” (McCullagh, 2006).

Home modification and assistive technology becomes more relative when considering the importance of independent living among the elderly population. Because of age related changes, the elderly population has increased limitations which make living independently in their homes a challenge. Because people prefer living in their home versus living in skilled nursing facilities, it is vital that home modifications be made to restore their occupational performance and prevent any unnecessary injuries in their home.

In the following chapter, the methodology for the development of a client-centered handbook for elderly persons wanting to make modifications to their home will be discussed. In addition, an overview of the product and the relationship to the literature reviewed will be identified.

### CHAPTER III

#### ACTIVITIES/METHODOLOGY

A literature review was conducted with the use of Pub Med, AJOT, textbooks, home modification handbooks, and the internet. The review of literature was completed between May of 2007 and April of 2008. The literature review determined the need for home modifications with the elderly population and identified current home modification designs and products in order to provide the elderly and their families with current information and recommendations.

One area that was researched and used as a guide throughout the scholarly project process and product development was the selected model. The model selected to guide this project was the Ecological Model of Human Performance (EMHP). One of the goals that are emphasized with this model is increasing a person's performance in tasks that they have difficulty completing or are unable to complete. By increasing a person's performance, therapists would look at aspects including the *person*, the *task* the person wants to complete, and the *context* in which the person performs. When considering this is a client centered model, each person is viewed as an individual with a unique set of variables regarding *person*, *task*, *context*, and *performance*.

A person's experiences, abilities, and skills make up the person variables, and the variables influence a person's performance in various tasks. They determine a person's ability and interest in completing a task. If a person has a cognitive impairment, they may want to prepare a meal because they have an interest in cooking, however based on their ability level, cooking independently may not be an option. At the same time if a person is able to cook, yet

has no interest in the task of cooking, meal preparation may be ignored simply because the individual does not want to cook.

Individuals complete a variety of *tasks* throughout their day to make up performance in occupations. For example if it is a person's goal to be able to get themselves ready in the morning, various tasks could include brushing their teeth, getting in and out of the bath tub, washing hair, and getting dressed. The tasks that a person completes depend on person variables such as skills, abilities, and interests. If a person wants to take a bath they need to have an interest in taking a bath. They also need to physically and cognitively complete the task based on their skills and abilities. The performance in a task also depends on if the task is available or not. If there is no bath tub present in the context, or if the bath tub is not modified correctly, the person would not be able to participate in the task of taking a bath.

Two contexts that are noted in the EMHP include temporal and environment. Temporal context includes aspects such as a person's age, developmental stage, life cycle, and health status. The environmental context includes physical, social, and cultural dimensions. The context can be either a supporter of performance or may act as a barrier of performance. This scholarly project mainly focuses on the environmental context by making modifications in the physical environment. The project also considers a person's temporal context when modifying the environment. For example, if a person's health status prevents them from walking, ramps could be installed in their house to allow for greater mobility while performing tasks.

People use their skills and abilities to perform in the context. Therefore participating in occupations depends on the interaction of the person variables and the context. In order to improve a person's performance, the person variables and/or the context needs to be addressed. In this scholarly project, the interventions focus on the context in which the performance takes



place, such as the elderly person's home environment in general as well as specific areas of the home.

The specific interventions that are used with the EMHP include *establish/restore*, *adapt*, *alter*, *prevent*, and *create*. The main interventions used in this scholarly project include *adapt/modify*, *prevent*, and *create* as applied to *performance* in valued occupations. For example, when targeting the bedroom context, the manual presents a picture of dressing as the occupation typically performed in this room.

*Adapt/modify* is used to actually change the environment such as a person's house. For example, in the home modification handbook a recommendation is made to install handrails on stairways to prevent falls and ease a person success with ambulating on stairs. *Prevent* involves addressing possible problems in performance or preventing negative outcomes before they occur. This could be done through providing information to families or individuals about health or occupation related topics such as how to perform tasks within the house, or teaching individuals techniques for completing tasks in order to prevent injury. For example with this scholarly project the suggestion of discarding throw rugs works in turn help to prevent a person from having a negative outcome of a fall. The intervention of *create* involves creating a set of circumstances that allows all individuals the chance to perform successfully. This means people with or without deficits would be able to function fully in the context. The ideas for home modification that are included in this scholarly project assist in increasing a person's independence and safety whether they have a deficit or not. Therefore if a person lives in a home with other family members, the changes done to assist an individual with a deficit do not interfere with other individual's performance (Dunn, Brown & Youngstrom, 2003).

The concepts of the EMHP have been interwoven within this home modification scholarly project. The basis for home modifications fit well with the focus on context and the consideration for person variables that are included within this model. This model does not focus on changing the person, but rather their context and how they are able to perform in their environment. The home modification handbook also has a goal of changing the context in which a person performs in order to increase their independence. The information in the handbook does not aim to change the actual person in regards to curing their health status, but rather takes their possible health conditions into consideration when making recommendations in changing their home context. Health status was also considered when developing the design of the handbook itself to make it user friendly.

The development of a user friendly manual for the elderly may increase the adherence to the modifications recommendations because they would be able to understand what is included in the handbook and would have possession of the handbook, (Cumming et al., 2001). Having possession of the handbook could allow them additional time to determine their needs and to make modifications. As noted through the review of literature, individuals often do not adhere to recommendations for reason such as concern regarding income, disapproval by family or neighbors, stigma, and denial of health status (McCullagh, 2006). By having the handbook available to them they can make modifications when they are ready to make a change and accept that they have needs that should be addressed.

Specific needs that are of concern with the elderly population, such as sensory and cognitive changes, were also noted through the review of literature. These needs guided the development of the handbook in regards to what information was to be included, and how the information would be presented. For example, because one aspect of decline in the aging

process deals with vision impairment, recommendations such as adding lighting to hallways and installing glow tape to stairs were included in the handbook. The handbook itself was also designed in a way that presents information through large text and large photographs. To address decreases in cognition, text was written at a sixth grade reading level and several photographs were included. This allows individuals to better understand what is written and to be able to connect the text with a visual sample. For example, in the handbook when the sock aid product is described, a picture accompanies the text. This way the person can visualize what the sock aid looks like and how it is used.

Literature provided specific ideas for products and home modifications to promote safety during occupational performance. The various products and modification ideas that were noted through review of literature were compiled and included in the home modification handbook. The products and modifications were laid out in the handbook in eight chapters. Each chapter covers a different area of the house including: entrance, interior walkways and doorways, kitchen, bathroom, bedroom, living room, laundry room, and general safety. Each chapter is split up into four sections: questions to ask, helpful modifications, helpful products, and additional ideas or notes. Because the chapters all include the same format throughout the handbook, the readers are able to understand the layout and included information without having to reevaluate the layout of each chapter. This eases the reading process and allows readers to focus on what is important: home modifications and assistive technology products.

Through reviewing literature, information was gathered to support the need of home modifications with the elderly, to determine the physical, cognitive, and psychological needs of the elderly, and to determine the best way of presenting information to the elderly population and their families. The information gained from the literature review was used to develop a home

modification handbook for elderly individuals and their families. The user friendly handbook can assist individuals in the process of modifying their homes and purchasing new products in order to be more successful in their occupational performance within their home context. In the following chapter one can find the actual home modification handbook as well as a brief introduction to the handbook.

## CHAPTER IV

### PRODUCT/RESULTS

Based on the results of the literature review, a handbook was developed to assist elderly persons and their family members in making an informed decision regarding home modifications and assistive technology products. This handbook has the potential to improve long-term adherence with home modification and assistive technology product recommendations as a resource tool. This is unique to other home modification resources that are currently available, because it examines the person, occupation and interaction in their environment.

The model that was used to guide this project was the Ecological Model of Human Performance. This model specifically does not focus on changing the person, but rather their context and how they are able to perform in their environment. One of the main goals that is emphasized with this model is increasing a person's performance in tasks that they have difficulty completing or are unable to complete. By increasing a person's performance, therapists would look at aspects including the person, the task the person wants to complete, and the context in which the person performs. When considering this is a client centered model, each person is viewed as an individual with a unique set of variables regarding person, task, context and performance.

Literature provided specific ideas for products and home modifications to promote safety during occupational performance. The various products and modification ideas that were

noted through review of literature were compiled and included in the handbook. The product facilitates the exploration of ways to modify a home to fit the needs of elderly persons. This handbook also incorporates occupations that a person routinely participates in at home such as bathing, and dressing.

This handbook is a user friendly tool that was written at a sixth grade reading level to accommodate for literacy or cognitive deficits. This handbook also contains colored pictures of each room of a home and assistive technology products and modifications. This allows for better understanding of the new concepts and connects the text with a visual sample.

The products and modifications were laid out in the handbook in eight chapters. Each chapter covers a different area of the house including: entrance, interior walkways and doorways, kitchen, bathroom, bedroom, living room, laundry room, and general safety. Each chapter is split up into four sections: questions to ask, helpful modifications, helpful products, and additional ideas or notes.

In this handbook all the chapters include the same format throughout; this allows the reader to be able to understand the layout and included information without having to reevaluate the layout of each chapter. This eases the reading process and allows readers to focus on what is important: home modifications and assistive technology products.

Once this product is used to its fullest potential, the elderly person will have a significant amount of information to make the best decision on what type of modifications to make to their home to fit their current and future needs. For many elderly making changes to their home is a

huge step and may need assistance in knowing how to go about making small changes. With this handbook an elderly person can help to ensure both their safety and independence.

Please refer to Appendix A for complete Home Modification Handbook.

## CHAPTER V

### SUMMARY

This scholarly project used information gained from a review of literature to develop a user friendly home modification handbook that is to be used by elderly individuals and their families. This handbook will provide elderly individuals and their families the knowledge that will allow them to make modifications in their home environment and select products that would be of benefit to them. The modifications and products included in the handbook would assist individuals in living safe and independent lives within their own home context.

The success of this handbook depends on multiple factors. One factor to be addressed is how the elderly and their families will be able to access the handbook. Possible ways of obtaining the product would be to receive it from their local OT department, to purchase it from durable medicine stores, or to order it from agencies within their community or from the internet. The success also would be influenced on the compliance with the recommendations and the willingness to conduct change within home environments. By having an actual manual in their possession an elderly person would have the time to implement recommendations addressed in the handbook.

The handbook usefulness could be measured by analyzing statistics regarding successful participation in occupations and the number of falls or injuries that result from accidents within the home environment. When clients receive the handbook they could be asked to report how



their performance has change before and after recommendations was made to their home. They could also be asked to report any falls or injuries that occur within their home. If the performance in increased and the injuries are decreased the handbook would be considered a success.

In order to assure the handbook's success, there are several recommendations. It is recommended that a program be developed to provide the public the opportunity to access the handbook. This could be through ways that were previously mentioned. The most important aspect of the handbook's success is that the people who would benefit from it would also have access to the handbook. If the intended population is not able to access the handbook, the handbook would be a failure. Being many elderly individuals do not have the financial needs necessary to make modifications, it would be beneficial to have professionals work to develop grant programs. These grants could provide home modifications and assistive technology for individuals who lack independence within their homes and are unable to make changes due to limited finances. It is also recommended that healthcare facilities begin to require home evaluations for patients who are returning home to ensure their safety and successful performance with occupations. People may not always accept that they have a need for modifications or assistive products; it would be beneficial to make specific recommendations for them. It is also beneficial for a therapist to actually see the person's home context to accurately assess their living environment and their ability to perform tasks within their environment.

With access to this user friendly handbook the elderly population will be able to make knowledgeable decisions regarding their task performance within their home context. By following the recommendations within the handbook individuals will be able to lead more

successful and independent lives where they truly want to live them; within in the comfort of their own home.

## APPENDIX

# Home Modification Handbook



**By: Jennifer Samuelson, MOTS & Kristyn Kurpius, MOTS**

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## **Introduction**

Homes that the elderly live in are often not designed in a way that will accommodate their current and future needs. Yet as noted by Tinker and Lansley (2005), when people age they tend to prefer to stay in their own homes. Home modification can enable the elderly to live more independent lives in the comfort of their own homes.

This Home Modification Handbook is designed to guide elderly persons and their family members in making their home safer and to increase their independence. This handbook was designed by occupational therapy students for elderly persons living in the community. This book offers large print for ease of reading and enlarged pictures for better understanding.

This handbook separates each room in a house. It uses questions that would be commonly asked or addressed during a home visit. Secondly, this handbook offers helpful modifications to increase safety and independence. Lastly, this handbook provides current assistive technology products to ease everyday activities.



## Entrance

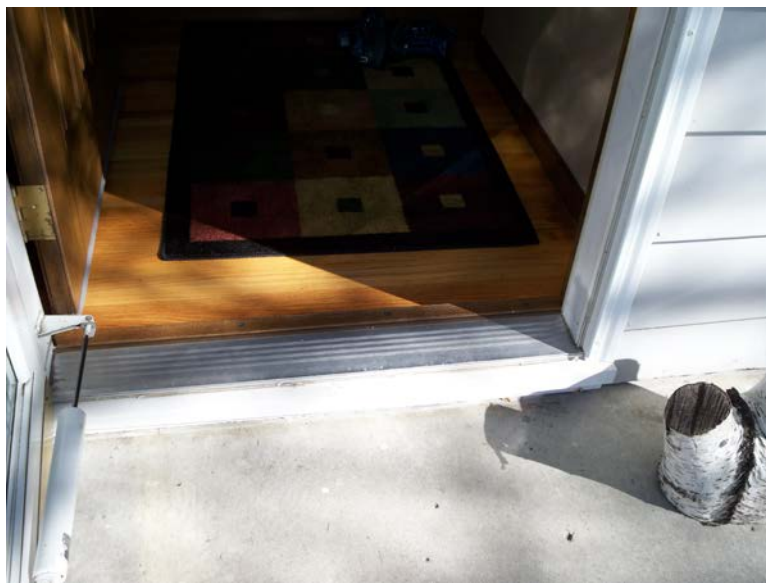


## Questions to ask

1. Do you have handrails on one or both sides of the stairway?
2. Are stairs in good condition?
3. Does the outside of your home provide adequate accessibility?
4. Is there adequate lighting on the outside of your home?
5. Would you benefit in building a ramp to replace stairs or steps outside of your home?

## Helpful Modifications

1. Door thresholds should have a maximum height of  $\frac{1}{2}$  inches.



2. A platform should be constructed immediately outside of the doorway measuring 5 feet long

and 5 feet wide. There should also be 18 feet space opposite of the door swing for easier access.

3. There should be one or bilateral railings; the maximum height should be 32 inches. The ends of the railing should be turned downward to avoid dangerous projections.



4. Entrances should be 32 inches to allow for wheelchair or walker to pass through.



5. It's a good idea to use overhead coverings of ramped surfaces or stairs to protect against natural elements such as ice, rain or snow.
6. To allow for additional door swing, reverse the swing of the door.



7. A smooth pathway surface prevents tripping.
8. The ramp should extend from the platform. The minimum width of the ramp should be 42 inches.
9. For every inch of rise, there should be a foot of ramp.
10. There should be a 6 feet clearance at the bottom of the ramp.
11. The ramp and platform should have a non-slip surface (i.e. gritty paper adhesive, non-skid paint or concrete).

12. There should be curbing of 4 inches to prevent wheelchair deviation around the perimeters of the ramp and platform surfaces.

13. Ramped surfaces longer than 30 feet require level platforms for safety and resting. Level platforms 5 feet x 5 feet are necessary wherever the ramp surface turns.

14. Ramps longer than 30 feet should be built in two or more sections.

15. No more than 5 lb force to open entrance door.

## Helpful Products

1. Ramp is a permanent assistive device that allows a person who has difficulty maneuvering steps to access their home.



2. Portable ramp can be moved to any location where an individual has difficulty maneuvering steps to access their environment.





3. Door opener is a device that allows a person with poor hand dexterity to open their front door by using a button.



4. Grab bar is fastened to the wall for additional handgrip when sitting or standing up.



5. Swing-clear door hinges allows for wider door swing for a wheelchair or walker to pass through.



6. Lever doorknobs have a straight handle that allows a person with poor hand dexterity to open a door.





7. Lighted doorbell and buzzer is built into a doorbell that helps illuminate the button to make it easier to see at night.



8. Motion detector lights for exterior lighting are lights that come on when they sense movement.



**Additional Ideas/Notes:**

## Interior Walkways and Doors



## Questions to Ask

1. Are walkways free of clutter?
2. Are floors the same level throughout the house?
3. Are steps a safe size and height?
4. Are there handrails on both sides of stairs?
5. Are Handrails fastened securely?
6. Are walkways properly light?
7. Are walkways and doorways wide enough for a wheelchair to fit through?

## Helpful Modifications

1. Add a railing to one or both sides of stairways for added safety.



2. Stairs should allow a foot to fit fully on each stair.
3. Enclose each stair so that feet or canes cannot get caught or fall between steps.
4. Install additional lights if needed.



5. High pile carpets should be replaced with low pile carpets to reduce the risk of falls and to help ease wheelchair movement.



6. Doorways should be at least 32 inches wide to allow for wheelchairs to go through.



7. Pocket doors or doors that have swing-clear hinges allow additional room for people and wheelchairs to get through.

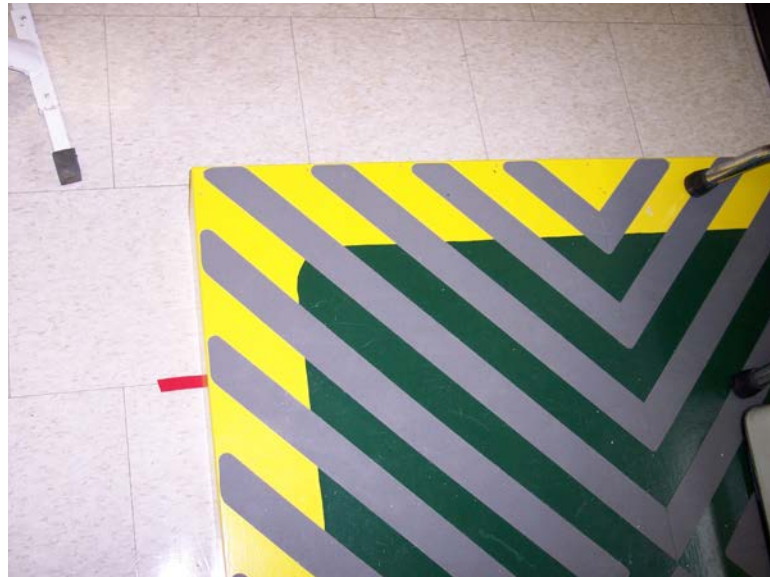


## Helpful Products

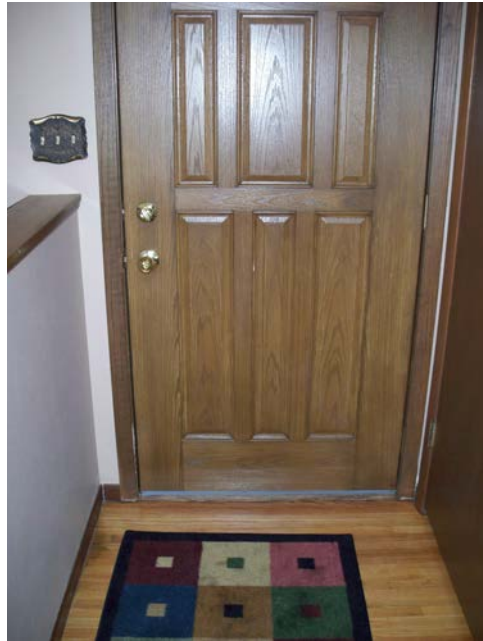
1. Glow tape can be used on steps and walkways to assist a person in seeing the edges during the night.



2. Anti-slip strips can be added to prevent falls.



3. Place a rug with rubber backing by the entrance door to help absorb moisture.





**Additional Ideas/Notes:**

# Kitchen



## Questions to Ask

1. Are cabinet handles easy to use?
2. Are sink faucets easy to handle?
3. Are stove controls easy to reach and safe to use?
4. Is the counter top at a good height?
5. Are appliances and supplies easily assessable?
6. Is there room to sit down while working?
7. Is the water temperature regulated properly (Safe temperatures)?
8. Are the electrical outlets easy to reach and in safe locations?
9. Can the refrigerator door and stove door be opened easily?
10. Is there space to move around in the kitchen?
11. Is there adequate lighting?
12. Is there any trip hazards?
13. Are there slippery floor surfaces?

## Helpful Modifications

1. Install lighting in areas such as over the sink, stove, and over other areas that work is often done at.



2. Single lever faucets are easier to turn on/off.



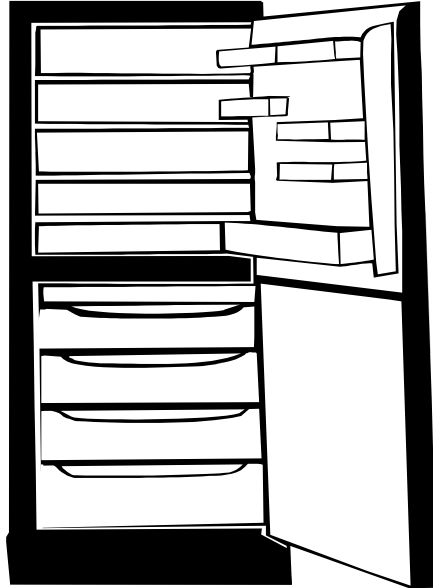
3. Install a spay nozzle with a long hose to allow for one to fill containers on the counter top rather than lifting them in and out of the sink.



4. Install pull out drawers in lower cabinets to reduce bending and reaching.



5. Use a refrigerator that has the freezer component in the bottom to allow one to reach more commonly used items with increased ease.



6. Lower overhead cabinets allow for items to be more assessable.





7. The area under the sink should be open to allow for wheelchair access if a wheelchair is used. In order to do this one could remove the cabinet doors and front frame. Insulation should also be used to cover open piping. This prevents one from being burned if the water running through is hot.



8. Use a tray to slide items across your counter.



9. Use a cart to transport items from one area of your kitchen to another.



10. Have a counter top stove with controls either on the front or on the side to prevent one from reaching over the hot burners. If a wheelchair is used, having the area below the stove open would allow a person to get closer to the stove.





11. Built-in ovens that are installed at counter level or slightly below allow for easy reach and reduced bending.



12. Replace knobs on cabinets with loop handles. This allows one to simply slip their hand in the handle and pull rather than having to grasp the handle.



13. Remove rugs from the floors to prevent the risk of tripping and falling.



## Helpful Products

1. Stools can be used to reach items that are up high. Be sure to have a stool that includes a railing to hang onto in order to prevent falls. Some stools are also designed in a way that would allow one to sit on them while preparing food.



2. Reachers can be used to assist with collecting or picking up items from cabinets or from the floor to reduce excessive reaching and bending.



3. Using lazy susan's in the refrigerator, on counter tops, and in cabinets make items more assessable and easy to reach.



4. If vision is a problem a person can use a timer that has contrasting colors and/or raised numbers. These can be purchased or adapted by using items such as paint, puffy paint, and toothpicks.



5. If one has sink faucets with two knobs, covers are available to put over them to help with better grip.
6. Mirrors can be installed over the stove to allow one to see the burners and can be observed from a seated position.



**Additional Ideas/Notes:**



# Bathroom



## Questions to Ask

1. Are cabinet handles easy to use?
2. Are sink faucets easy to handle?
3. Is the counter top at an appropriate height?
4. Is the water temperature regulated properly (Safe temperatures)?
5. Can the water controls be used in both standing and seated positions?
6. Are the electrical outlets easy to reach and in safe locations?
7. Are there trip hazards?
8. Are there slippery floor surfaces?
9. Can one get in and out of the bath tub/shower easily and safely?
10. Is there space to get around in the bathroom?
11. Is there adequate ventilation?
12. Is there adequate lighting?
13. Is the toilet at a proper height?



## Helpful Modifications

1. Single lever faucets are easier to turn on/off.



2. Replace knobs on cabinets with loop handles. This allows one to simply slip their hand in the handle and pull rather than having to grasp the



3. Remove rugs from the floors to prevent the risk of tripping and falling. However, put one rug by the shower to absorb moisture. Make sure the rug has rubber backing.



4. Install no-step showers to allow for a person to easily walk into the shower or have a wheeled shower chair rolled into the shower.



5. Use anti-slip strips in the bathtub/shower to prevent slipping.



6. Install hand held shower wands that can easily be controlled when standing or sitting.



7. Install toilets that are 17-19 inches off the ground.



8. Install grab bars in the bathtub/shower and by the toilet to assist one in safe transfers. One must be sure bars are attached properly on sturdy surfaces to assure safety. Items such as towel racks and soap holders should not be used instead of grab bars – they were not built to hold the weight of a person.



9. Flat light switches with back lighting make it easier to find and turn on. This is beneficial especially during the night.



## Helpful Products

1. Raised toilet seats can be used on standard toilets to increase the height and allows easier transfers on and off the toilet.



2. Safety frames can be attached to the toilet if grab bars are not used to assist with transfers on and off the toilet.





3. There are various bath/shower chairs that are available depending on the individual's need.
- a. Bath transfer benches allow one to sit down from the outside of the tub and then slide into their tub while in the sitting position.



- b. Bath/shower seats allow one to sit while showering/bathing. This can assist if a person is not able to stand for extended periods of time, reduce the risk of slipping and falling, and allow a person to conserve energy.



c. Shower chairs with wheels are available to be used in showers with little or no step.

4. Long handled sponges can assist with washing hard to reach areas such as feet and back.



5. Soap and shampoo dispensers require less strength and hand control.





## **Additional Ideas/Notes:**

# Bedroom



## **Questions to ask**

1. Do you have difficulty getting in or out of your bed?
2. Is there enough room to dress or undress in your bedroom?
3. Are closet rods and shelves within reach?
4. Are the drawers easy to open and close?
5. Is there space enough to move around in your bedroom?
6. Is there adequate lighting in your dressing area?
7. Is there a light that you can turn on if you need to get up at night?

## **Helpful Modifications**

1. Closet poles and shelves should be at a height that you can reach.



2. Raising items off the floor eliminates bending or leaning.
3. A cord loop around the knob of your night stand may make it easier to pull open (i.e. large rubber band ).



4. Eliminate all cords that maybe a tripping hazard.



5. Rearrange closets so that commonly used clothing is easily accessible.
6. Store shoes and often-worn clothes at waist or chest height.



7. Have phone or calling device close to the bed.





8. Install adequate lighting throughout room.



9. Install low pile carpeting.



10. Remove all loose rugs.



11. Install a lever door handle.



12. Make sure there is a clear and uncluttered path to the bathroom.

13. Install slide-out shelving, adjustable rods, baskets and other closet organizers.
14. If bedroom is on second floor, convert ground-floor room into a bedroom.
15. Widen doorways by removing moldings and replace hinges.



16. Install battery-operated lights in closets and drawers.





## Helpful Products

1. Bed rail is a rail that is positioned between the mattress and the box spring of the bed. It assists a person who has poor upper extremity strength to sit up on the edge of bed.



2. Nightlight is a small light that is used to illuminate dark areas in a home.



3. Leg loop is a long piece of wire that is covered in material with a single loop. This device aids in lifting up the leg on and off a surface.



4. Dressing sticks and zipper pulls allows a person to pull on clothes and to close zippers with limited arm movement.



5. Sock aid is a device that eliminates the need to bend over to put on your socks.



6. Long handled shoehorn is a device that allows the user to slip their foot into the shoe without bending the back of their shoe.





7. Elastic shoelaces eliminate the need to manipulate shoelaces.



8. Reacher is a device assists a person to put on underwear and pants that have trouble bending over.



9. Button hook allows the user to button buttons that have limited finger dexterity.



**Additional Ideas/Notes:**

# Living Room





## **Questions to ask**

1. Are appliances within easy reach such as television or stereo?
2. Is there adequate light in the living room?
3. Does your furniture arrangement allow you enough room to move around?
4. Are there light switches easy to turn on and off?
5. Is the floor surface safe?
6. Are electrical outlets located within reach?

## **Helpful Modifications**

1. Outlet extension cords eliminate the need to climb behind furniture.



2. Remove all loose rugs.



3. Add additional cushions to plush furniture to add additional height.

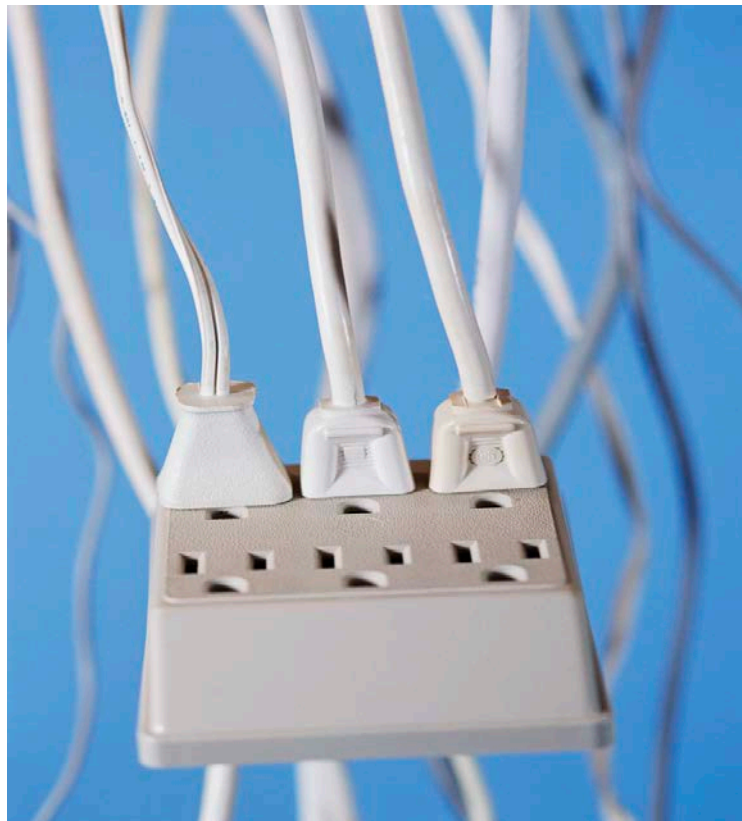


4. Install low-pile carpeting.



5. Remove any clutter or furniture in walking path.

6. Remove all loose cords or wires.



## 7. Install phone or calling device.



## Helpful Products

1. Outlet extension cords allow you to plug in multiple items into it and can be turned on by pressing one switch.



2. Remote controls for television and stereo allow you to access your television and stereo by a push of a button.





3. Automatic chair lifts are an electric device that assists a person up into a standing position by a push of a button.



**Additional Ideas/Notes:**

# Laundry Room





## Questions to ask

1. Do you have difficulty reaching or bending over to reach clothes?
2. Are your controls easy to operate and reach?
3. Is there adequate lighting in the laundry room?
4. Is the doorway wide enough to move through?
5. Is there space to move around in the laundry room?

## Helpful Modifications

1. Laundry sink and countertop should not be elevated no more than 34 inches above finished floor.



2. Clear floor space 36 inches wide across full width in front of washer and dryer and extending at least 18 inches right and left sides.
3. Reversing door hinge to swing in hallway instead of laundry room to allow for additional room.



4. Install storage shelves at an appropriate height for you to reduce reaching or bending.
5. Place table or install counter top to reduce the number of times you have to move laundry.



6. If laundry room is in the basement move to ground-floor.
7. Clearly label control knobs on washer and dryer.
8. Smaller sized washer and dryer can be easier to reach into.

## Helpful Products

1. Front loading washer and dryer are designed to have the doors of washer and dryer on the front of the machine.



2. Front mounted controls are controls mounted on the front of your washer and dryer.

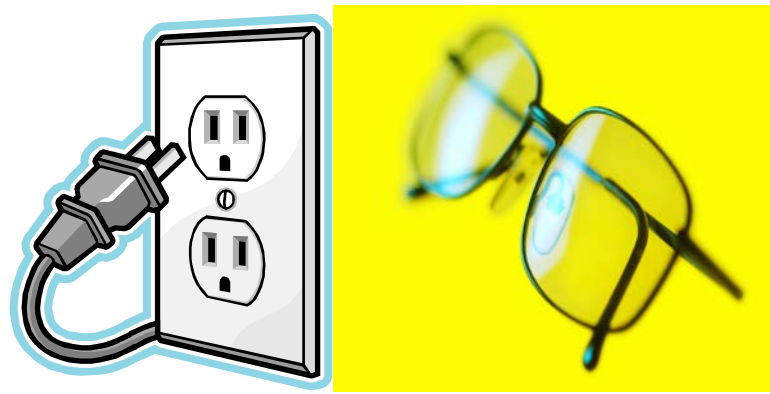
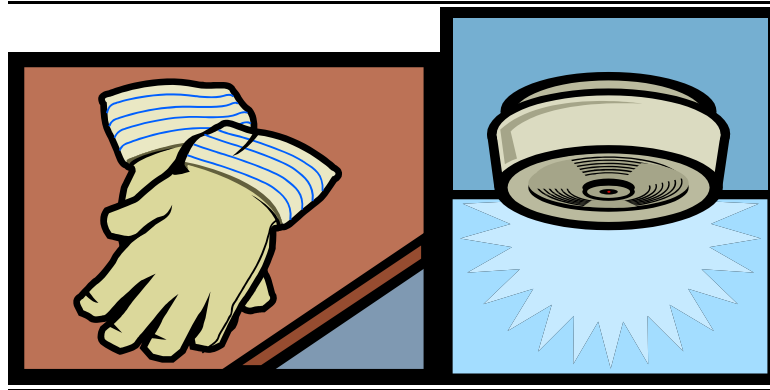
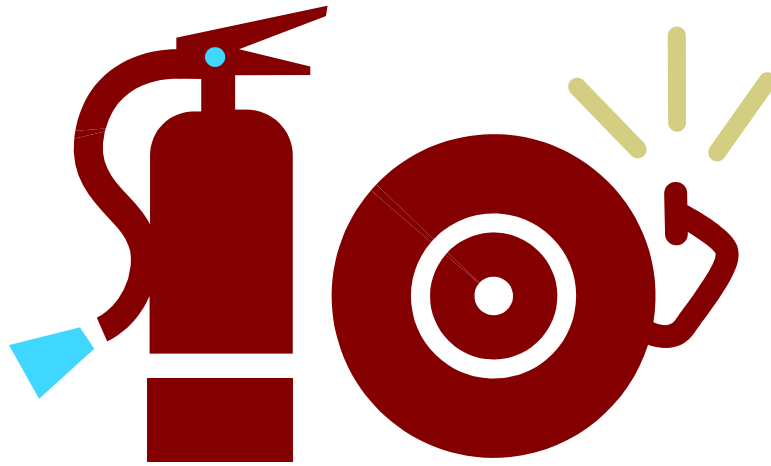


3. A reacher could be used to help remove clothing from the washer or dryer.



**Additional Ideas/Notes:**

# General Safety



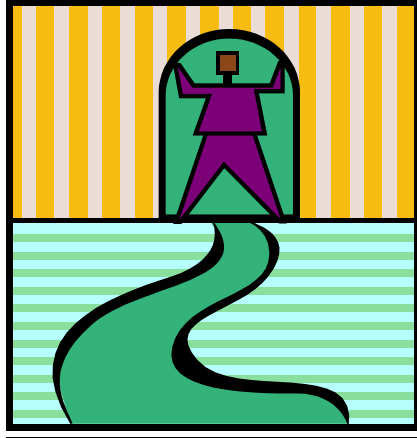
## Questions to Ask

1. Are lights and power switches easy to use?
2. Is there proper lighting throughout the house?
3. Are electrical outlets in safe easy to reach locations?
4. Are electrical outlets properly grounded to prevent shocks?
5. Are extension cords in good condition?
6. Are smoke detectors located throughout the house?
7. Are there fire extinguishers available?
8. Are telephones easy to use?
9. Are telephones available throughout the house in case of an emergency?
10. Are the walk ways clear and non-slippery?



## Helpful Modifications

1. Remove clutter from walking areas to prevent falls.



2. Remove rugs from the floors to prevent the risk of tripping and falling.



3. Avoid waxing floors to prevent them from becoming slippery.
4. Flat light switches with back lighting make it easier to find and turn on. This is beneficial especially during the night.



5. Place extension cords out of the walk areas to prevent falls.



6. Glow tape can be used on steps to assist a person in seeing the edges during the night.



7. Install smoke detectors and fire alarms in each room. Alarms that have strobe lights can be beneficial if a person does not hear well.





8. Community alarm systems can be installed to assist in seeking help in the case of an emergency. These could include items such as pull switches, buttons, and pendants worn on the wrist that can be activated. When activated a call is sent to a community office and to a family member or caregiver.



9. Install carbon monoxide detectors in each level of your home.



## Helpful Products

1. Fall detectors can be accessed by pulling a cord or wearing a calling device on the wrist. If a fall occurs a call can be made to a pre-determined friend or relative or through the community alarm system.



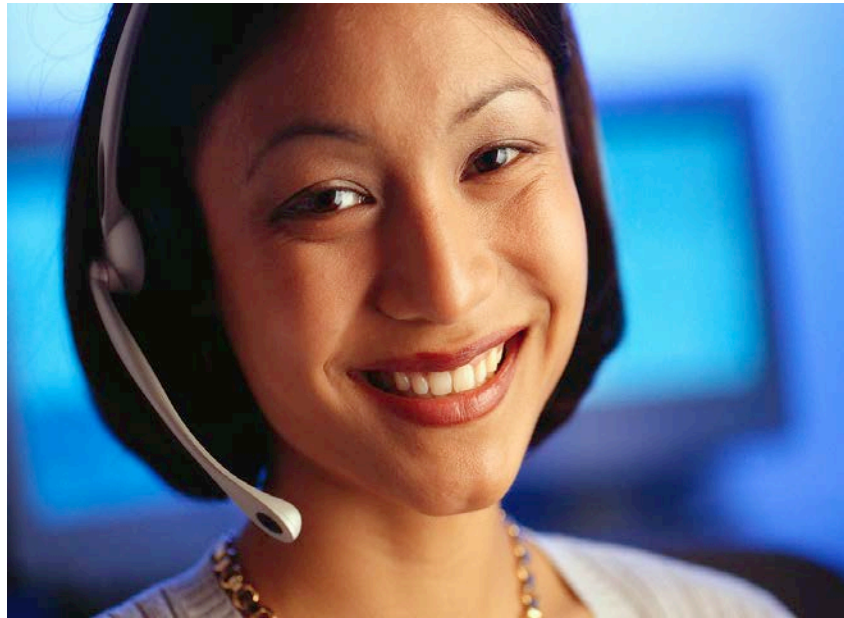
2. Modified telephones can be used to aide with a decrease in vision, hearing, hand grasp, or memory.

- a. Phones with large easy to read numbers are available.



- b. Telephone amplifiers can be used to increase the volume.
- c. Instead of ringing or in addition to ringing some phone have lights that go on when there is an incoming call.
- d. Phones can be programmed with commonly used numbers in case of an emergency.
- e. Some phones have areas where photos can be placed in buttons so a person has to simply recognize a face and press the button to call them.
- f. Phone holders added to the phone to assist in grasping the phone.

g. Hands free phones are available.



h. Many new phones have a speaker phone setting which allows a person to talk on the phone without holding it.





3. Extension cord can be used to prevent a person from having to crawl or reach behind furniture. Just be sure they are in good condition.



**Additional Ideas/Notes:**

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