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Welfare Technology Improving Geriatric Rehabilitation

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Abstract

The purpose of this thesis was to find useful welfare technology tools to enhance the holistic rehabilitation in the Noormarkku Geriatric rehabilitation unit. The aim was to find welfare technology tools that could be used in geriatric rehabilitation and to evaluate their suitability for the Noormarkku Geriatric rehabilitation unit's use, and to make a development recommendation for the Noormarkku Geriatric rehabilitation unit based on the findings.

This thesis was made in cooperation with the Noormarkku geriatric rehabilitation unit. They were developing their services to offer more holistic rehabilitation for their elderly customers in Porin perusturva. Their aim was to increase the rehabilitation especially in the areas of psychosocial and cognitive rehabilitation by welfare technology tools.

This thesis was produced as a literature review and a survey. The literature review worked as a background for the survey presenting different welfare technology tools for geriatric rehabilitation. The survey was implemented for the multiprofessional employees in the Noormarkku Geriatric rehabilitation unit to recognize the suitable welfare technology tools for the unit's use.

A development recommendation was made based on the findings of the literature review and the survey. The results showed different welfare technology tools, that fit the criteria presented in the thesis, were found suitable for use in geriatric rehabilitation in the Noormarkku Geriatric rehabilitation unit. From these eight tools Moto Tiles, Yetitablet, HILDA and MOTOmed combined with Memoride were chosen to be recommended for the unit. The conclusion of this thesis showed that welfare technology is a good addition for modern geriatric rehabilitation. There are many different welfare technology tools suitable for elderly people and these tools are found to be versatile, feasible and effective to offer holistic geriatric rehabilitation.

Key words
Welfare technology, gerontechnology, geriatric rehabilitation, elderly

CONTENTS

1 INTRODUCTION 5
2 PURPOSE OF THE STUDY AND DEVELOPMENT TASKS 6
3 GERIATRIC REHABILITATION 6
3.1 Geriatric rehabilitation in Finland 8
3.2 Elderly services in Porin perusturva 9
3.2.1 Noormarkku Geriatric rehabilitation unit 10
4 WELFARE TECHNOLOGY FOR ELDERLY 12
4.1 Gerontechnology 12
5 DEVELOPMENT TASK 14
5.1 Literature review 15
5.2 Survey 16
5.2.1 Survey questions 16
5.2.2 Survey implementation 17
6 WELFARE TECHNOLOGY TOOLS 17
6.1 Moto Tiles 17
6.2 Yetitablet 18
6.3 HILDA 18
6.4 Memoride 18
6.5 Memoera 19
6.6 MOTOmed 19
6.7 Virtual reality 19
6.8 Ainone balance 20
7 RESULTS 20
8 CONCLUSIONS 24
8.1 Development recommendation 25
9 DISCUSSION 27
9.1 Development tasks 27
9.2 Discussion of the results 29
9.3 Risk management 30
9.4 Reliability and ethical aspects 31
9.5 Feedback 32
9.6 Suggestion for further research 33

REFERENCES

APPENDICES

1 INTRODUCTION

This thesis considers welfare technology as a tool to improve elderly people's rehabilitation in a geriatric rehabilitation unit. The goal of geriatric rehabilitation is to improve the quality of life of the elderly, help the daily living, and improve the elderly coping at home. Geriatric rehabilitation consists of many areas of rehabilitation, which all have effect on one another. It must consider the elderly's health holistically: physical condition, nutrition, medication, sociality, psychological condition, cognition, risk management of accidents like fall prevention, home situation and service need assessment, among others. (Tilvis et al., 2016.)

Welfare technology has been around for some time but is currently growing in popularity and is becoming more and more accessible for everyone. Welfare technology could have a significant impact on human well-being, care, and rehabilitation (Koikkalainen et al., 2020). Welfare technology field grows constantly, and it is becoming a permanent part and a useful tool to geriatric rehabilitation.

Research gap was found in combining the geriatric rehabilitation with welfare technology. In the exploratory literature search, studies, which addressed elderly, geriatric rehabilitation and welfare technology simultaneously, were not easily found from the sources with these keywords. Therefore, there was a need to research the area and find the relevant information about the topic.

This thesis was made in cooperation with the Noormarkku Geriatric rehabilitation unit (Kotiinkuntoutusyksikkö) which is a part of Porin perusturva. The need for this research is coming from the unit as a part of their rehabilitation development plan.

2 PURPOSE OF THE STUDY AND DEVELOPMENT TASKS

The purpose of this thesis is to find useful welfare technology tools to enhance the rehabilitation in the Noormarkku Geriatric rehabilitation unit to improve the holistic geriatric rehabilitation by welfare technology. The aim is to find welfare technology tools used in geriatric rehabilitation and to evaluate their suitability for Noormarkku Geriatric rehabilitation unit's use, and to make a development recommendation for the Noormarkku Geriatric rehabilitation unit based on the findings.

Development tasks are:

- What kind of welfare technology tools could be used in geriatric rehabilitation based on literature and other sources?
- Which welfare technology tools do the employees find suitable for improving the rehabilitation in the Noormarkku Geriatric rehabilitation unit?
- What kind of development recommendation there would be to improve the geriatric rehabilitation by welfare technology in Noormarkku Geriatric rehabilitation unit?

3 GERIATRIC REHABILITATION

Geriatric means a speciality focusing on health care of elderly people and the problems that are specific to aging. Geron is Greek and means an old man (Shiel, 2019.) There is no certain agreement or direction what it means to be old, but the most used and relevant definition of geriatric population is chosen to be 65 years or older (Cifu et al., 2018 p. 1).

Geriatric rehabilitation is very wide term that includes improving an elderly person's ability to function and promote their health, and to give them the resources to manage their own life. Geriatric rehabilitation supports a person's participation in society and survival in everyday life. It is recommended to be implemented by a multiprofessional

team, so the whole concept of holistic geriatric rehabilitation would be achieved. The range of geriatric rehabilitation includes physical, mental, and social functioning as well as functional deficits, geriatric assessment, multidisciplinary teamwork, and resource-based practices. (Tilvis et al., 2016.)

Geriatric rehabilitation is needed to improve the ability to function impaired by acute illness or injury or the physical, mental, or social disability associated with inactivity. Rehabilitation can also be preventative. In recent years, the concept of rehabilitation has expanded to include not only the physical but also the mental and social rehabilitation of the elderly. Effective rehabilitation improves the elderly's chances of independent and self-sufficient life. The range of geriatric rehabilitation methods should be utilized at different levels of care, from home care to hospital rehabilitation units, where multi-professional teamwork becomes central. (Tilvis et al., 2016.)

Therefore, holistic geriatric rehabilitation can have a significant effect on elderly quality of life as their physical, mental, social, and cognitive functioning improves. This makes the elderly more happy, healthy, and more satisfied in their lives. Geriatric rehabilitation does not only have an effect for the individual but it is in favour for the whole society.

Geriatric rehabilitation has always been practiced and its benefits have been extensively studied. With economic scarcity, preventive services such as rehabilitation are often overlooked or under-invested. Possibly, geriatric rehabilitation has also received less attention in society. This needs to change to provide better care of the elderly as it brings joy not only for the individuals, but also for the whole society. (Husu et al., 2018; Vasankari et al., 2018.)

It is expected that in 2040 there will be approximately a million over 75 years' old persons in Finland. Aging brings with it illness and impairment of physical functioning as usually the quantity and quality of movement is reduced, and the self-care is forgotten, or it becomes not feasible. In Finland, the Regional Health and Welfare Survey (ATH) showed that only 11.5% of older than 75 years old met the daily recommendation of endurance exercise and only 2.5% were training muscle strength

and balance training as recommended (Husu et al., 2018 p. 40-41). According to Vasankari et al. (2018), the low physical activity causes, in addition to other human disadvantages, costs in terms of direct health care costs as well as productivity inputs lost. In addition, immobility imposes the costs of home and institutional care for the elderly, the cost of exclusion and additional costs of social benefits. (Vasankari et al., 2018.)

3.1 Geriatric rehabilitation in Finland

The services for the elderly are described widely in Finnish laws, regulations, and quality recommendations:

- Social Welfare Act (1301/2014)
- Act on the Status and Rights of Social Welfare Clients (812/2000)
- Health Care Act (1326/2010)
- Act on the Status and Rights of Patients (785/1992)
- Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons (980/2021)
- Act on Disability Services and Assistance (380/1987)
- Quality recommendation to guarantee a good quality of life and improved services for older persons 2020–2023: The Aim is an Age-friendly Finland

The laws and regulations such as quality recommendations offer a good substructure for services for the elderly in Finland. Nevertheless, the services for the elderly and rehabilitation prospects do vary inside the country. In 2018, Lönnroos et al. argued that there is wide deficiency in geriatric rehabilitation services in Finland. The main arguments were that Finland lacks systematic, comprehensive, and equal geriatric rehabilitation. In Finland, most rehabilitation services for the elderly are provided by the public healthcare. This means that every municipality and city arrange their own services according to law. In practise, it seems that the current services are not sufficient throughout Finland. The study also shows that the rehabilitation in Finland starts too late and the preventive perspective has been ignored. (Lönnroos et al. 2018, 1800-1801.)

Finland’s health and social services reform is a part of the Finnish government's program to reform the entire Finnish social and health care system in 2023. The aim of the reform is to provide the best, most efficient and equal services for the entire Finnish people and to address social- and healthcare challenges such as the growing amount of elderly and managing the resulting challenges. (Finland’s Health and Social Services Reform, 2021). Progress reports on the reform have been published. One of the reports, namely Sote ja ikääntymisen ongelmat – selviämispolun etsintää, considers the problems of aging and coping with them. The report shows that the elderly services are currently in a pit in Finland, and there is not much of preventive services for the elderly available. Preventive services, such as rehabilitation, should be established more with good geriatric expertise and taking advantage of welfare technology functions. (Koikkalainen et al., 2020.)

Finnish Ministry of Social Affairs and Health has considered the development of elderly services as part of the reform in their National Programme on Ageing 2030. The red thread of the report is a plan to improve preventive care and rehabilitation for the elderly, to ensure equality of services for the elderly, to develop the elderly living and to highlight the use of technology in care and rehabilitation. (Finnish Ministry of Social Affairs and Health, 2020.)

3.2 Elderly services in Porin perusturva

Porin perusturva is the city of Pori’s organization, which arranges the social, and health services in the area of Pori, Ulvila and Merikarvia. Its services include primary health care, dental care, hospital services, substance abuse and mental health services, rehabilitation services, services for the elderly and people with disabilities, family counselling, adult social work, and child protection. The operating model of Porin perusturva is based on the population's need for services, prevention, and multi-professional work. (The City of Pori, 2021.)

Porin perusturva offers services for the elderly widely: health and social services, elderly living services, short-term care, hospital services and home services for

example. The website of Porin perusturva, does not specifically advertise any kind of geriatric rehabilitation, but when browsing the pages, the brochure of the Noormarkku Geriatric rehabilitation unit can be found. (The City of Pori, 2021.) Porin perusturva is currently developing the elderly services as a part of the Productivity programme. The long-term enhanced supported living should be reduced due to productivity and resourcing. There is significant need for preventive services such as rehabilitation and quality home services in the future, what are supposed to be developed further in Porin perusturva. (The City of Pori, 2020.)

3.2.1 Noormarkku Geriatric rehabilitation unit

Noormarkku Geriatric rehabilitation unit is part of the City of Pori's healthcare and social services, Porin perusturva. It is located in Pori, Noormarkku in Noormarkku Health Center. There is a one big ward where are:

- 24 customer Geriatric rehabilitation unit (Kotiinkuntoutusyksikkö) that is managed by elderly services of Porin perusturva and
- 15 patient Acute short-term ward (Akuutti lyhytaikaisosasto Noormarkku) that is managed by hospital services of Porin perusturva.

The ideology of the Noormarkku Geriatric rehabilitation unit is to offer rehabilitation for elderly (aged 65 or older) after a hospital treatment period. Usually, the customers come straight from the hospital to rehabilitation with a doctor's referral. In the background, there is often fall history or infections, which have led to decreased functioning. In Noormarkku Geriatric rehabilitation unit works a multi-professional team including a geriatrician, physiotherapists, registered nurses, practical nurses, and a social worker. The rehabilitation is versatile. Customers get daily rehabilitation by physiotherapists and nurses. The heterogeneity of the customers requires customization from the rehabilitation and the rehabilitation is carried out according to an individual plan. A geriatrician makes a holistic geriatric evaluation including diagnoses and assessment of medical treatment. The customer's performance is assessed and measured regularly in daily tasks, measurements, and physical performances. (Porin Perusturvakeskus, 2017; Rauhalammi, 2020.)

The rehabilitation has an aspect of "rehabilitating to home" which means that the main aim is that the customers could still manage at home. Sometimes the hospital period may take their strength away and cause difficulties to cope by themselves. Rehabilitation contains a holistic assessment of mental, social, and physical functioning such as mobility, memory, mood and nutrition and aids. The focus is also on fall prevention. Customers and relatives are strongly involved in rehabilitation and care planning with regular communication and care meetings. Physiotherapists and nurses do home visits where the home environment is assessed and made safe through assistive aids and modifications. Assessment of the need for services and arranging the services is an important part of the work. Going home is carefully planned individually and carried out, if necessary, through home trials and home holidays. Not everyone recovers and gains sufficient functioning; it is necessary to assess the need for long-term supported housing, for example from a nursing home. An important aim of the rehabilitation is to reduce institutional care if it is considered unnecessary. (Porin Perusturvakeskus, 2017; Rauhalammi, 2020.) This is also a part of Satakunta district's age strategy for elderly. In the strategy, one of the most important aims is to reduce the inhabitants in institutional care to 6% of population in Satakunta by 2025 (Rehula, 2019, 6) while in 2019 the figure was still 8.3%, (Finnish institute for Health and Welfare, 2021).

In 2020, the Noormarkku Geriatric rehabilitation unit rehabilitated up to 139 customers. Most of the customers needed rehabilitation after a fall or an infection. Average time for the rehabilitation was 32 days in total and 61% of the customers went home after the rehabilitation process. The others went back to hospital or into institutional care. The age of the customers varied between 65-97 years, but majority of the customers were aged 75-85. (Rauhalammi, 2020.) This marks the frames for the rehabilitation, how it should be accomplished and what to consider. Institutional conditions in the department make the safety and hygiene of the rehabilitation and its tools important. The equipment should be accessible, easy to use, easy to modify and portable due to the large department, different customers and the short rehabilitation periods.

It could be said that the Noormarkku Geriatric rehabilitation unit is the largest department in Porin perusturva offering holistic geriatric rehabilitation. The unit is constantly developing the rehabilitation, as also this thesis is made as a part of the development plan.

4 WELFARE TECHNOLOGY FOR ELDERLY

Welfare technology is technology that improves the lives of the user in ways of improving safety, maintaining the person's ability to function, participation and improving the self-sufficiency of a person for example with disabilities. It is technology for those in need and it is expected to reduce the pressure from care at the health and welfare sector. Welfare technology can include security alarms, mobile devices and applications, mobility aids, e-services, communication services and much more. (Nordic Welfare Centre, 2021.)

Bringing new technology for the elderly people requires consideration of special features. Especially for the elderly there are requirements for the technology such as usability, customizability for individual use and accessibility, because of the challenges and changing circumstances and challenges of aging. (Elers et al. 2018.)

4.1 Gerontechnology

Gerontechnology is a term for welfare technology used for elderly people. Gerontechnology explores and develops devices, services, and surroundings to support good and safe old age. When an elderly person's independent performance becomes more difficult due to a decrease in senses, memory, fine motor skills, muscle condition or physical functioning, gerontechnology, is used to support the elderly person, their relatives and nursing staff. The aim is to prevent functional impairment due to aging with the help of technology. The good daily life of an older person and living at home

can be supported by technology. Gerontechnology must adhere to the principle of accessibility, considering the individual needs of users. (Forsberg et al., 2014, 14)

Gerontechnology, similarly as other welfare technology, can be divided to different categories. There are several opportunities to utilize technology in health and welfare.

The categories are for example:

- Self-care technology
- Safety technology
- Communication technology
- Health technology including rehabilitation technology

These categories include many kinds of technology from gaming and monitoring to mobile applications and smart home features. Elderly could benefit from all the categories if the products and services were developed to their needs. (Lee, 2018, 30-34.)

It is hard to find studies about the use of gerontechnology in geriatric rehabilitation in general. It is surprising because it is a trending subject nowadays. Many researches are underway, but do not have result publicly available yet. Common knowledge is that many health care facilities have started to provide services using welfare technology and certainly gerontechnology in geriatric rehabilitation as well. There are not that many technology options available in Finland yet and the market is surprisingly narrow. The technology wave originally started from Asia, but in 2018, the markets for gerontechnology were quiet in Korea. A study shows that the reasons for it could be the lack of public awareness and education, healthcare professionals not working together with the producers and innovators of technology and lack of general experience of the new technology. The key to what is to expose the technology for people gradually by introducing the new technology and guiding for its use in Living Lab environment or other. (Lee, 2018, 30-34.) Gerontechnology brings many opportunities to geriatric rehabilitation in the future.

Huge challenge for gerontechnology is how the elderly receive the technology in their lives. It is generally considered that elderly would not be eager to use technology and would not learn to use new technologies easily. It might be partly true, because elderly have not had a chance to be surrounded by technology all their lives what makes it harder to process. In the study of Erhola et al. (2013), the Finnish elderly were not highly receptive of new technologies in their lives. Elderly did not feel that technology would have the ability to make their lives better and the only technology they used was television and mobile phone. (Erhola et al. 2013.) Generally, the use of technology has increased, and experiences show that elderly today are also interested in the technology and the interest is only growing. In Sweden in 2020, a survey displayed that the root cause is not necessarily in the elderly's attitude toward technology, but in the fact that they do not feel they are benefiting from the technology. The solution to this is seen in need assessment for technology by professionals with the elderly and, accordingly, acquire the necessary equipment. (Zander, 2010.) Therefore, the key is to find the right technology for the elderly when the needs meet the desires. Of course, it is crucially important to introduce technology to older people in the simplest terms possible, guide its use calmly and clearly, and allow time for learning.

5 DEVELOPMENT TASK

This thesis is made in cooperation with the Noormarkku geriatric rehabilitation unit. They were developing their rehabilitation to offer more holistic rehabilitation for their elderly customers in Porin perusturva. The aim for them was to increase the rehabilitation especially in the areas of psychosocial and cognitive rehabilitation, without forgetting traditional physiotherapy. Part of the development was digitalization and provision of new modern aids and rehabilitation equipment. This thesis is used as a part of the bigger development plan. It was agreed with the Noormarkku Geriatric rehabilitation unit that they needed to find out what means of welfare technology could be procured for the department. The purpose was to first explore the possible different options, and then to decide, through the opinions and skills of the unit's employees, which products could be procured for the unit's use.

This thesis was implemented as a both qualitative and quantitative research by doing a literature review and using that as a background for a survey that was be implemented for the Noormarkku Geriatric rehabilitation unit's multiprofessional employees. The topic was unique as there were no research about this kind of geriatric rehabilitation unit (kotiinkuntoutusyksikkö) and welfare technology. No material was found in the literature to tell what kind of technology could be used in this particular unit. Therefore, the survey addressed to the employees' expertise was supposed to evaluate the suitability of technology to the Geriatric rehabilitation unit.

5.1 Literature review

The purpose of the literature review was to search for information on various welfare technology tools and to find the best possible alternatives (maximum of 10) for possible future use of the unit. The tools were found from the literature and the internet. Sources were found in both Finnish and foreign sources by various projects reports and presentations. Some intimation was obtained from the Welfare Technology fair in 9.-10.11.2020 by Satakunta DigiHealth project, Ministry of Social Affairs and Health of Finland's Hyteairo-program, educational institutions and various organisations presenting their opportunities. Based on the literature, experience and prior knowledge, the tools selected were expected to meet at least the following criteria:

- Safety: safe to use for both the customers and the employees
- Accessibility: should also be available for those in weaker condition using e.g., mobility aids
- Usability:
    - easy to use for the elderly
    - easy to use for the employees: clear instructions must be provided, no profound training required for use
- Hygienic: easy to clean between uses
- Customizability: easily and quickly adjustable and customizable for different customer use

- Durability: must be as long-lasting and reliable to use as possible
- Portability: should not require changes to the premises and can be moved to other premises as needed e.g., due to changes in the activities of the ward.
- Comprehensiveness: the combination of the tools should provide holistic rehabilitation in all areas of geriatric rehabilitation (physical, mental, social and cognitive rehabilitation)
- Price: the aim is to find the most affordable but high-quality alternatives. The set price limit is a maximum of 10,000e per device, but the main emphasis is on cheaper options.

5.2 Survey

The survey was chosen, as a method to explore the employees' experiences because of it was easy to implement to a large group of people. Group interviews were also planned but could not be carried out due to Covid-19 pandemic restrictions. Surveys produce broad data that is easily measurable. Open questions add deepness and discussion about the topic, so it fits also as a qualitative method (Hall, 2017). Part of the thesis was to consider how welfare technology tools could improve the rehabilitation in Noormarkku Geriatric rehabilitation unit. On that account, there was made a survey to all the employees of the unit (including at least a geriatrician, physiotherapists, nurses, and a social worker). It was important to address the survey to all the employees of the unit who participate in rehabilitation, as they know best the Noormarkku Geriatric rehabilitation unit's ideology, needs and customers as well as their needs.

5.2.1 Survey questions

The survey (Appendix 1) consisted of both qualitative (open ended) and quantitative (structured) questions that were produced based on the findings from the literature review. First, there was a short description about the topic and three general questions about welfare technology. After that, there were descriptions of different welfare technology tools (8), videos or photos. After each tool description there were six

questions concerning employees' opinions about tools suitability and feasibility precisely for the Noormarkku Geriatric rehabilitation unit's use. Last, there was a question regarding respondents' opinions of which of presented tools would suit best for Noormarkku Geriatric rehabilitation unit.

5.2.2 Survey implementation

The survey was done as an online survey by Google Forms in Finnish only because all the employees were Finnish. Survey link was sent to 46 employees 9.7.2021 by email. Response time was extended due to summertime and holidays until 22.8.2021. The survey was promoted in the unit by talking about it in ward meetings and reminders about it by email. The employees were given 30 minutes of work time to answer the survey. The total number of responses was 24, which was found to be a good result.

6 WELFARE TECHNOLOGY TOOLS

The welfare technology tools chosen for the research were Moto Tiles, Yetitablet, HILDA, Memoride, Memoera, MOTOmed, virtual reality and Ainone Balance as they apply to the criteria and would be able to provide a very comprehensive range of rehabilitation. Some products needed to be excluded from the study because they did not meet all the required and desired criteria.

6.1 Moto Tiles

Moto Tiles is an innovative welfare technology product for the development of motor skills and mobility for the elderly, rehabilitatees and everyone, regardless of age. Moto Tiles includes a variety of exercises and games that are played by touching tiles with a touch sensor with feet. Moto Tiles can be used to analyze the game results as the development in playing can be monitored long term. Studies show that using Moto

Tiles significantly improves the balance, mobility, strength and motor skills of special groups. Moto Tiles is easy to use. The package includes ten tiles, a charging unit and a tablet. The devices are also easy to transport and store. The tiles can be placed on the floor in the desired order. (Meditas, 2021.)

6.2 Yetitablet

The Yetitablet is a giant touch screen that can be used as an aid in both physical and cognitive rehabilitation for the elderly and special groups. The Android operating system is also suitable for people with limitations in motor skills or impaired vision. The big screen makes customers move on larger lines, which helps them stay active and rehabilitate motor functions. Yetitablet is versatile and there are many different applications like games (bingo, memory games, bowling), quizzes, news, karaoke, music, virtual tourism with Google Earth or other applications. (Kuori Oy, 2021.)

6.3 HILDA

HILDA is a comprehensive content service for the elderly. With HILDA, stimulating activities can be organized effortlessly. The service is easy to use. The service includes a HILDA box that is connected to the TV and is used with the TV remote control. HILDA can be used to activate physical functioning, elevate mood and improve quality of life, alleviate behavioral disorders, and support mental functioning. The service takes into account in many ways the dimensions of mental, physical, cognitive and social functioning as it plays music, videos, chair gymnastics instructions, remembrance sessions and virtual nature walks. (Kardemummo Oy, 2021.)

6.4 Memoride

Memoride, the wheel of memories, can be used to make virtual trips to your own beloved landscapes. The service includes a device that is attached to the pedal of an exercise bike like MOTOmed and the progress of cycling is monitored on the screen. It can cycle to any destination provided by the map service, such as the rehabilitates

own old home regions or sunny promenades from abroad. The device can be used to remembering, thinking back the ages and discuss different places, phenomena and events, so it brings sociality and happiness into rehabilitation besides physical performance. (Memoride, 2021.)

6.5 Memoera

Memoera Trainer includes over 20 different games and missions to refresh brain activity in a multidimensional way, maintain cognitive function, alleviate the symptoms of memory disease and slow its progression. Memoera is specially designed for people with memory problems, so it is safe and easy to use. All content and device features have been carefully researched and selected to fit cognitively disabled. Memoera can also be used independently and suitable tasks can be found even for a person who only remembers a minute back. The games include verbal, pictorial, reasoning and memory tasks, among other things. (Memoera, 2021.)

6.6 MOTOmed

The MOTOmed loop exercise therapy device offers easy and safe rehabilitation with motor-assisted or passive movement gently moving the legs and also the arms and upper body. MOTOmed training is also well suited for the elderly, for example, to maintain walking ability and balance. The MOTOmed loop-training device has a touch color display to monitor the exercise and development. Training data, such as distance and time, and the proportion of passive and active training are shown separately. The device offers different therapy programs as well as games and motivational programs. (Haltija Oy, 2021.)

6.7 Virtual reality

Virtual reality, or VR, is an imaginary or simulated environment created by a computer. A virtual experience is an authentic feeling experience and comes with the feeling that you are yourself a part of virtual reality. It is possible to play games or

visit different destinations like abroad. The virtual experience can also be implemented for people with reduced mobility. In the study of Lietzen's master thesis, the elderly were able to use virtual reality in rehabilitation, stimulus use, calming down and alleviating behavioral symptoms. The nurses felt that they could utilize the virtual experience in a variety of ways in their work. (Lietzen, 2020.)

6.8 Ainone balance

The Ainone Balance application helps the professional to assess the functional capacity of an elderly person, a rehabilitator, an athlete or a young person. The device includes a mobile application and a Movesense sensor. With the Ainone Balance measurement application, balance can be evaluated easily and quickly. The device can be used to assess the functional capacity of an elderly person and to monitor the progress of rehabilitation. Measuring balance helps identify its deterioration as you age. Concrete results motivate and engage the patient, as well as illustrate the development of rehabilitation. (Ainone Oy, 2020.)

7 RESULTS

Complete results of the survey can be found in Appendix 2 in figures. This is only an analysis of the final results of the survey and the developing tasks.

The survey got 24 responses in total. That is considered a very good result, as the response rate was 52% when the link was sent to 46 respondents

The employees in Noormarkku Geriatric rehabilitation unit are very interested in welfare technology. 63% of the respondents were interested or extremely interested in welfare technology (Figure 1). Up to 71% of the respondents were willing to use more welfare technology tools in their work (Figure 2). These results show that there is a demand for change and development in the rehabilitation field by the employee

interests and opinions. Employees are motivated and most of them are certainly aware of what welfare technology is and what opportunities it gives. When talking about particularly the use of welfare technology in Noormarkku Geriatric rehabilitation unit, 67% thought that the usage should be increased. This is a good foundation for the thesis – employees are open to new ideas, demand the development, and want to acquire new tools and devices from the field of welfare technology.

Eight different devices were chosen for the survey based on the criteria of the research. These devices or services were Moto Tiles, Yetitablet, HILDA, Memoride, Memoera, MOTOmed, VR and Ainone Balance. In the survey (Appendix 1), there were questions of each device separately. These questions were intended to sort out and to compare them between others. Full results and figures can be found in Appendix 2. Here is the summarised analysis.

The best results based on the ratings from 1-10 got MOTOmed, Memoride, HILDA and Yetitablet, as their overall rating was 8. Moto Tiles, Memoera and Ainone Balance all got the average score of 7, which is also good. The worst rated device was virtual reality with a score of 6. Based on the overall score, all of the devices could be candidates to be used in the Noormarkku Geriatric rehabilitation unit. Nevertheless, let us observe the result a little more thoroughly.

54% of the respondents could imagine Moto Tiles in use in the Noormarkku Geriatric rehabilitation unit (Figure 4). The percentage is quite low compared to other devices. Moto Tiles is seen to help achieve most of the goals in the rehabilitation. Best score it got from physical and cognitive rehabilitation, but others have high scores as well (Figure 5). Moto Tiles also seems to moderately save the resources from the rehabilitation (Figure 6). It is small and is easy to travel with, bring to rehabilitation premises, patient rooms and elsewhere. It seems that Moto Tiles is considered a good device for geriatric rehabilitation based on these results. Although the open question about the challenges brings up the most concerning features that may have been a reason for lower overall ratings. The employees were worried that the elderly customers are not functional enough to use the device, and the usage is considered little difficult. It needs one person or more to use it and to make it safely. The

employees were also worried that the elderly would not be motivated to use Moto Tiles, as it is completely something new. Still, most of the employees, 55%, would be willing to use it in their work (Figure 7.) Moto Tiles got an average score of 7.

Yetitablet was rated highly. 75% of the employees could see the product in use in the Noormarkku Geriatric rehabilitation unit (Figure 9). Just like Moto Tiles, Yetitablet was considered to check all the boxes about the goals for rehabilitation (Figure 10) of which it got best ratings from all the devices in overall perspective for all the holistic features of geriatric rehabilitation. It was also seen to save well the resources for rehabilitation (Figure 11). 76% of the employees were willing to use it in their work (Figure 12). However, it got only the average score of 8 from 10. The employees were concerned whether or not the elderly would be motivated to use the device, as the elderly are not usually familiar with mobile technology like tablets and smart phones. The device needs a person from staff to help the rehabilitees to use it. Some of the employees were worried that customers with a memory disorder would not be able to use the device. In addition, the motivation of employees to use this device was seen challenging, and some of the respondents were worried that the device would not be in active use.

HILDA got employees excited as 92% of the employees could see the product in use in the Noormarkku geriatric rehabilitation unit, which means that only two employees would not see the use of it (Figure 14). The employees thought that HILDA would promote mental rehabilitation more than others (Figure 15) would and it was seen to reduce the need for resources in many categories (Figure 16). 75% of the employees would be willing to use it in their work (Figure 17), which is almost as high score than Yetitablet. The employees did not think that there would be challenges with HILDAs use, so as far as it seems, it was considered refreshing and quite accessible for elderly. Only few respondents thought that there could be motivational issues from the elderly to use it. HILDA easily got an average score of 8.

All the employees thought that Memoride is for sure a good match with the Noormarkku Geriatric rehabilitation unit, as 100% of the respondents thought they could see the device in use there (Figure 19). Memoride would promote physical and

mental rehabilitation better than the other goals for rehabilitation (Figure 20) with also decreasing the use of resources well (Figure 21). 76% of the employees would be extremely interested to use it in their work (Figure 22), which is as high score as Yetitablet got. They also got the overall score of 8. It was great that the employees were not concerned about using Memoride at all. It got no responses about challenges but only high reviews.

Based on the results, Memoera was found to be a good addition only for mental and cognitive rehabilitation (Figure 25). Still the employees saw the use of it as 83% could see the product in use in the Noormarkku Geriatric rehabilitation unit (Figure 24). 71% of the employees would want to use it in their work (Figure 27), which is little lower rating than the others got so far. The employees were concerned about the customers getting motivated to use the device, as the target group for the usage is customers with a memory disorder. The employees were not convinced that the customers could use the device on their own, which increase the use of resources. Memoera got an overall score of 7.

MOTOmed was found a very traditional welfare technology device with some new fresh features, which got the employees interested. All the employees could see it in use in the Noormarkku Geriatric rehabilitation unit (Figure 29) and 79% of the employees would like to use it in their work (Figure 32), which is highest score for that question so far. MOTOmed was seen only promoting the physical rehabilitation (Figure 30) but also reduce the use of resources well, especially the time of physiotherapists and the space in rehabilitation premises (Figure 31). This was an abnormal answer, as other devices were not that clearly seen to change the resource needs. MOTOmed was not found to be challenging to use, as most of the respondents said that they were already familiar with the device, as an older version of it is in use in rehabilitation premises. It seemed to be easy to receive and got overall average score of 8.

Virtual reality did not inspire the employees. Only 33% of the respondents could have seen it in use (Figure 34) which is the lowest score of all. The overall rating was also only 6. It was seen as a good device, and it could have potential in rehabilitation

(Figure 35) but it had many challenges to begin with. The employees expressed that the device would not be usable for elderly. It needs too much assistance with its use for another person. The employees were also worried that the elderly customers could have difficulties to understand the alternated reality and it could cause anxiety and fear. 63% would not really want to use it in their work Figure 37), which is reasonably low.

As last of the devices, there was Ainone Balance. The employees found it as a good product in its category but it was nevertheless felt to be a very small addition to rehabilitation and to provide help only physically (Figure 40). It was seen as a very important part of evaluating the balance, but it was felt that it was not versatile enough compared to other devices. Only 54% could see it in use in the unit (Figure 39). It was also perceived as a challenge that the unit's customers already have a very poor balance, so it would no longer need equipment to measure it, but it can be detected even without it. Overall score was only 7.

8 CONCLUSIONS

Geriatric rehabilitation needs to be developed and welfare technology should strongly be a part of the development in the future. Geriatric rehabilitation is important as a preventive and curing service. The elderly and the society benefits significantly from the high quality and variety of holistic geriatric rehabilitation as it has an effect on improving the quality of the elderly’s lives and reducing the need of institutional care. (Finnish Ministry of Social Affairs and Health, 2020; Koikkalainen et al., 2020; Lönnroos et al., 2018, 1800-1801.) The thesis was expected to form a development recommendation containing guidelines of what tools enhance the holistic geriatric rehabilitation. Geriatric rehabilitation needs to be implemented by a multiprofessional team to offer holistic geriatric rehabilitation where to consider all the important geriatric features of physical, mental, and social functioning as well as geriatric assessment (Tilvis et al., 2016). Gerontechnology aims to prevent functional impairment due to aging with the help of technology. The good daily life of an older

person and living at home can be supported by technology. Gerontechnology must adhere to the principle of accessibility. (Forsberg et al., 2014, 14.) Welfare technology for the elderly requires also usability and customizability for individual use (Elers et al., 2018). The needs assessment for the geriatric rehabilitation should include the technology to acquire the necessary equipment (Zander, 2010).

There was no accurate budget for the development recommendation as the Noormarkku Geriatric rehabilitation unit. Porin perusturva has allocated money from the productivity program to the development of geriatric rehabilitation to reduce the need of institutional care. (Porin perusturvakeskus, 2017.) Geriatric rehabilitation needs to be developed as it reduces the need of resources from the society in long term (Husu et al., 2018; Vasankari et al., 2018.)

The results of the research give encouraging directions of what the employees think are the best to purchase. It was clear and intentional, that the devices were very different and offered different kind of rehabilitation. Based on the findings the most versatile ones − Yetitablet and HILDA −were much liked options as they give so much of content and are accessible for all. Clearly, the employees also love the traditional devices like MOTOmed, which was already familiar to most of the respondents. Memoride compared with MOTOmed could be considered as a perfect match; it would bring out the best in physical rehabilitation, but combine it strongly with mental, cognitive and social rehabilitation too. Memoera could bring joy especially for customers with mental disorders but based on the findings the same kind of content could be achieved with Yetitablet. Virtual reality was not seen a good match with elderly at all, and Ainone Balance was found too narrow and maybe its use would be too late for this particular customer base. Therefore, from the survey the result turns in to Yetitablet, HILDA, MOTOmed and Memoride.

8.1 Development recommendation

Based on the acquaintance of different welfare technology devices and the survey for the employees of the Noormarkku Geriatric rehabilitation unit, a recommendation for the rehabilitation in the unit can be formed. The best devices and of all, the necessary

additions that develop rehabilitation the most must be Moto Tiles, Yetitablet, HILDA and MOTOmed combined with Memoride.

To form truly holistic geriatric rehabilitation, all the aspects of it should be considered and it consists of a connection between these devices.

- Moto Tiles bring a completely new approach to physical rehabilitation. It surely effects the muscular strength especially in the lower limbs in a positive way and uses gamification to motivate the customers. It is quite easy to use, but it needs good orientation and guidance. It fits in a small space and is easy to carry around in a bag. Charging and cleaning are considered easy. (Meditas, 2021.)
- Yetitablet is very versatile and was picked because of its very wide aspect for rehabilitation. It also has an opportunity to replace many other devices like television with its comprehensive content. It is easy to move around with its wheeled stand. It is easy to keep hygienic as it can be cleaned with alcohol between the users. (Kuori Oy, 2021.)
- HILDA brings the television alive. It offers a wide range of content that is very specifically designed for the elderly. It is easy to install and use on TV. The customers could be able to use it independently. The product provides personalized content that can increase the motivation for rehabilitation. (Kardemummo Oy, 2021.) It is possible to get similar content through Yetitablet but finding similar content can be challenging. In addition, HILDA can be used, for example, in a dayroom television for group rehabilitation, while a customer uses the Yetitablet for individual rehabilitation.
- MOTOmed is a good addition even though there is already one old version in use. New version has new features, that motivate differently in the rehabilitation through gamification, and it also measures the rehabilitates progress. MOTOmed is a traditional rehabilitation tool that is easy to use and clean. The device is easily adaptable between the customers. (Haltija Oy, 2021.) With the addition of Memoride to the device, it brings out the best of geriatric rehabilitation. Memoride increases the amount of mental and cognitive rehabilitation such as

social interaction while pedaling the wheel with other rehabilitees (Memoride, 2021).

If new equipment is acquired for the unit's use, it must be implemented by giving the employees and customer's good orientation, instructions and support for the tools use. Thorough systematical orientation will courage the users to use the welfare technology tools in the future (Lee, 2018, 30-34).

9 DISCUSSION

The purpose of this thesis was to find useful welfare technology tools to enhance the holistic rehabilitation in the Noormarkku Geriatric rehabilitation unit. Three development tasks were set to answer this purpose, which aimed to find welfare technology tools used in geriatric rehabilitation and to evaluate their suitability and benefits for the Noormarkku Geriatric rehabilitation unit's use by the employees. The thesis corresponded to the purpose and aims assigned to it. Development tasks were executed thoroughly.

9.1 Development tasks

The first development task was about finding the welfare technology tools for geriatric rehabilitation. The method to answer this was doing a literature review. First, the field of welfare technology had to be researched and then add the aspect of geriatric rehabilitation. Welfare technology is a quite new trend and there is not that much of information and researches done. This was found challenging in the process, as there was very little information about welfare technology in geriatric rehabilitation. The criteria for finding the welfare technology tools suitable for geriatric rehabilitation needed to be set without previous research, which was challenging. The criteria was set taking into account the specific characteristics and needs of the rehabilitation of the elderly and the department itself. Safety, accessibility, usability and being hygienic are

typical to consider, but especially this kind of use also needed customizability and durability, as the tools would be in the use of many elderly people. The key was to find tools that enhance the holistic rehabilitation, so the comprehensiveness was important. The price cap came from the client and it seemed appropriate. The future of the Noormarkku Geriatric rehabilitation unit under the same roof has been at stake, and for the continuity of the ward, the equipment had to be portable if there was a need to relocate them. The criteria guided the research well. Only few criteria was forgotten from the list and was incorporated into the implementation of the study. The tools had to be able for order from Finland, or through a Finnish company, and they had to be able to be charged through a bill. After finding the right criteria, the welfare technology tools suitable for geriatric rehabilitation were found quite easily from the literature and searching through the internet, brochures, presentations, and advertisements.

The welfare technology tools chosen for the research were Moto Tiles, Yetitablet, HILDA, Memoride, Memoera, Motomed, virtual reality and Ainone Balance. Some good products were excluded from the study because they did not meet all the required and desired criteria. For example, care robots (like Pepper and Zora) were too expensive and therefore could not be obtained. Due to the difficulty of hygiene and cleaning, for example, textile-coated products had to be excluded (such as PARO). Products that offer great sensory experiences would have been desirable for research, but the Magic Carpet, for example, was too expensive for the budget and Tovertafel was eliminated because it is not available in Finland.

The other development task was to resolve the suitability of the welfare technology tools for the Noormarkku Geriatric rehabilitation unit. The literature review found the suitable welfare technology tools and guidelines for geriatric rehabilitation, so after that there was a task to determine which of them are suitable for the Noormarkku Geriatric rehabilitation unit's use. Some of the search criteria for the tools directly indicated that they were suitable for use by the ward. However, the best way to find out was to ask the ward's professional staff about it. This was done by conducting an extensive survey for all of the employees. The survey was not the preferred option for this purpose. The primary purpose would have been to interview the staff of the ward from different professional groups, for example a group interview. However, this was

prevented by the organization's strict restrictions on the Covid-19 pandemic denying any extra meetings by the employees. However, there was a desire to involve as many professionals as possible, and to get as many voices heard, as possible, so individual interviews were not a viable option. Thus, the survey was selected as a suitable method. Compiling the survey was challenging, but it turned out great. The survey included brief demonstrations of the devices, pictures, and videos that asked questions about the devices. The survey was successful as it got 24 responses in total. That is considered a very good result, as the response rate was 52% when the link was sent to 46 respondents. Over 50% survey response ratings can be found excellent as they may describe the high motivation of the respondents, which also leads to the quality of the responses. High response rate describes a personal relationship within the survey author and respondents (Cleave, 2020.) Just like it was considered in this case. The responses were high quality and showed a good basis for research. The survey made it easy to answer the development tasks.

9.2 Discussion of the results

The results of the study were clear. The thesis managed to respond very well to all development tasks. The survey proved to be an even better research method than previously thought. Based on that, the presentation of the results was easy. The results showed that certain devices were better suited for the use of the Noormarkku Geriatric rehabilitation unit than others were, and the employees impressed genuine interest in welfare technology.

The results gave encouraging directions of what the employees think were the best to purchase. It was clear and intentional, that the devices were very different and offered different kind of rehabilitation. The range between the ratings from the employees for the devices was narrow, which could mean that all of the devices were considered quite good, and none of them was clearly the best. Based on the findings the most versatile ones − Yetitablet and HILDA − were much liked options as they give so much of content and were accessible for all. Clearly, the employees also loved the traditional devices like MOTOmed, which was already familiar to most of the respondents. Memoride compared with MOTOmed could have been considered as a perfect match;

it would have brought out the best in physical rehabilitation, but combine it strongly with mental, cognitive and social rehabilitation too. Memoera could have brought joy especially for customers with mental disorders but based on the findings the same kind of content could be achieved with Yetitablet and Memoera was not that comprehensive in other aspects of criteria. Virtual reality was not seen a good match with elderly at all, and Ainone Balance was found too narrow and maybe its use would be too late for this particular customer base. Therefore, from the survey the result turns in to Yetitablet, HILDA, MOTOmed and Memoride.

The results were to be expected, but the study also showed surprises. It was particularly gratifying to have a good reception for almost all the welfare technology tools, which showed the interest and openness of the staff in welfare technology. However, the staff was not particularly vigilant in the field of welfare technology and was not particularly familiar to most. The results were therefore encouraging to produce a development recommendation for the Noormarkku Geriatric rehabilitation unit. The development recommendation was directly proportional to the opinion of the staff as the results of the survey. Based on the study, Moto Tiles was also included in the development recommendation, although it was not a staff favourite based on the survey. It showed particularly good content for geriatric rehabilitation and met the criteria given, so it was also seen suitable for the unit's use. In the end, the development recommendation was sensibly compiled to comprehensively cover all aspects of geriatric rehabilitation. The recommendation became clear and concise, with all the necessary information that can be handed over to the unit.

9.3 Risk management

The thesis brought several risks, but they were quite well managed. The most challenging risk was the continuity of the ward. The Noormarkku's ward has had uncertainty about the continuity of the ward's operations, as in the autumn of 2020 there was a proposal to close down the entire department. After all, it was decided to continue the ward's operation until further notice. The planning phase of the thesis began before the proposal of closing came. This caused a delay in the design phase of the thesis, as it was uncertain whether that research would be worthwhile. However,

this risk was taken as there was seen an opportunity for it. In the end, the department has been given an extension for the time being and is unlikely to close any time soon. The resulting delay in the thesis progress was overcome in time by intensifying the implementation phase. In addition to this challenge, time became a major risk in any case, as there were several obstacles to completing the thesis. Everything was still completed on time.

The cooperation with the ward and the employees, success of the survey, such as the adequacy and quality of its responses, was also a risk. However, this was found to have been an unnecessary concern in the past, as the survey was a success and cooperation with the client and employees managed well.

9.4 Reliability and ethical aspects

The research ethics were considered during the thesis process. The thesis applied the needed research permissions from SAMK and the city of Pori as the client. The study has used carefully selected sources which reliability has been verified. The materials used in the study are documented in the reference list in accordance with copyright regulations. The survey was done anonymously. Anonymous surveys add responses and add a survey's reliability (Murdoch et al. 2014). The survey was voluntary, the respondents were adults, and the research topic was not considered sensitive to the respondents, so there was no need for an ethical permission to the survey. The data of the survey was handled carefully and anonymously and was destroyed after the research. Individual responses were not reported, only summaries of responses or excerpts from responses anonymously.

This thesis was done by an employee, an assistant head nurse, of the Noormarkku Geriatric rehabilitation unit so that may have had an effect of interest in the research. This may have influenced slightly in the research results, as the survey concerned the employee's workplace and the author was their supervisor. This may have had an effect on the research being more sensitive and to avoid the reliability issues, the survey was done anonymously. Something good may have emerged from the

prevailing relationship, as the survey was a complete success and could have been the result of a good relationship between the researcher and the participants.

9.5 Feedback

Feedback on the study was collected throughout the study from both the client, Porin perusturva, and the supervising teachers. The feedback was both positive and critical, which guided the progress of the study well. In connection with the return of the development proposal, the customer was asked for feedback on the success of the output. The feedback was very positive. The study was carried out on schedule, although there were challenges in its implementation at various sections. The research was considered to be very important for the development of the department. The study was carried out in good co-operation and the process was reported regularly to the client. The development recommendation was received by the unit with special interest. The particularly warm feedback was the direct implementation of the development recommendation in practice. The department has acquired the equipment identified in this study for use. The recommendation has not been fully implemented as not all products will fit into the department's budget at once, but it is possible that more purchases will be made in the future. Currently, the department has acquired Yetitablet, Moto Tiles and MOTOmed. Memoride and HILDA were indefinitely excluded. It would have been desirable to acquire the Memoride, but unfortunately, its sale in Finland had been discontinued during the completion of the study.

In terms of self-assessment, the study has been very successful. The evaluation of the thesis is hard, because there are no benchmarks for this kind of research. All aspects of the research went smoothly, the research was on schedule, it had adequate resources, which had to be flexible, but everything went well and the output was considered great. The study was interesting, especially because it was so strongly related to the development of the department. Warm feedback from the department has been the most important thing for success. The employees have been enthusiastic about the research and its output giving the power to take the research forward. In terms of research output, it could also have been useful to get more critical feedback and development suggestions for research. However, the thesis was very successful

compared to modest expectations, and the active introduction of the development recommendation and the acquisition of new equipment for the department came as a surprise. It was, of course, a very positive surprise and showed special praise for the study. Overall, the thesis was successful.

9.6 Suggestion for further research

It would be good for each study to have a follow-up plan on how they can be continued in the future. For this study, the development work could be related to the support of geriatric rehabilitation with welfare technology tools at a general level, but also to the post-study follow-up at a practical level. At a general level, there has been very little research and reporting on improving geriatric rehabilitation with welfare technology tools. Welfare technology is a relatively new topic, and the need for geriatric rehabilitation is acute in the society. Therefore, the relationship between the two should be further explored. At a practical level, it would be particularly interesting for the department to obtain information on how the introduction of welfare technology tools has been received in the unit, how it has been perceived to affect the implementation of geriatric rehabilitation and what kind of feedback the equipment experience has provided.

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Note: The survey was in Finnish as all the respondents were Finnish. There are short translations in English in the separate text boxes. These were not part of the original survey.

Kysely Noormarkun kotiinkuntoutusyksikön työntekijöille hyvinvointiteknologiasta

Hei Noormarkun kotiinkuntoutusyksikön työntekijä!

Opiskelen Satakunnan ammattikorkeakoulussa Hyvinvointiteknologian koulutusohjelman ylempää amk-tutkintoa. Teen opinnäytetyötä hyvinvointiteknologian käytöstä apuvälineenä geriatrisessa kuntoutuksessa ja tavoitteenani on löytää keinoja parantaa Noormarkun kotiinkuntoutusyksikön kuntoutusta hyvinvointiteknologian avulla.

Kysely koostuu kysymyksistä liittyen hyvinvointiteknologiaan ja siinä esitellään erilaisia laitteita tekstin, kuvien ja videoiden avulla. Laitteista kysytään myöhemmin kysymyksiä. Varmistathan että laitteen äänet ovat päällä, jotta voit toistaa videoita.

Vastaathan kyselyyn huolellisesti. Kyselyyn vastataan nimettömänä ja vastaukset käsitellään luottamuksellisesti. Tulokset esitetään niin, ettei yksittäisiä vastauksia pystytä tunnistamaan. Vastaaminen kestää n. 30 minuuttia.

Kiitos vastaamisesta!

Seuraava Sivu 1 / 11 Tyhjennä lomake

Title: Survey for the employees of Noormarkku Geriatric rehabilitation unit

Short description of the thesis and instructions for the survey.

Hyvinvointiteknologia

= Welfare technology

Hyvinvointiteknologia on teknologiaa, jonka avulla voidaan nostaa elämänlaatua parantamalla turvallisuutta, ylläpitämällä toimintakykyä ja lisäämällä esimerkiksi vanhusten omatoimisuutta ja osallistumista omaan arkeen. Hyvinvointiteknologia on hyvin laaja käsite kaikelle hyvinvointia parantavalle teknologialle, sillä se pitää sisällään esimerkiksi hoidossa käytettävät laitteet, apuvälineet, turvahälyttimet, mobiililaitteet ja -sovellukset, digipalvelut ja paljon muuta.

Lähde: Andersson, B. (2021). Welfare Technology. Nordic Welfare Centre. https://nordicwelfare.org/en/welfare-policy/welfare-technology/

Short description about welfare technology in general.

Kuinka kiinnostunut olet hyvinvointiteknologiasta? *

	1	2	3	4	5	
En yhtään kiinnostunut	○	○	○	○	○	Erittäin kiinn

How interested are you in welfare technology?
1= Not at all interested
5= Extremely interested

Olisitko kiinnostunut käyttämään työssäsi enemmän hyvinvointiteknologian välineitä? *

	1	2	3	4	5	
En yhtään kiinnostunut	○	○	○	○	○	Erittäin kiinnostunut

Would you be interested in using more welfare technology tools in your work?

Pitäisikö mielestäsi hyvinvointiteknologia käyttöä lisätä Noormarkun kotiinkuntoutusyksikössä? *

- ○ Kyllä
- ○ Ei
- ○ En osaa sanoa

Takaisin Seuraava

Do you think the use of welfare technology should be increased in the Noormarkku Geriatric rehabilitation unit?
Yes
No
I am not sure

Laite 1. Moto Tiles Liikuntalaatat

Moto Tiles -liikuntalaatat on innovatiivinen hyvinvointiteknologian tuote motoriikan ja liikkuvuuden kehittämiseen – niin ikäihmisille, kuntoutujille kuin kaikille ikään katsomatta. Moto Tiles sisältää erilaisia harjoituksia ja pelejä, joita pelataan koskettamalla jalalla laattoja, joissa on kosketusanturi. Moto Tilesiin voi luoda käyttäjiä, joiden pelituloksia ja kehitystä seurataan pitkällä aikavälillä, vaikka kuntouttajien toimesta. Tutkimusten mukaan Moto Tilesin käyttö parantaa huomattavasti erityisryhmien tasapainoa, liikkuvuutta, voimaa ja motoriikkaa.

Lähde: Meditas. (2021). Moto Tiles – liikuntalaatat. https://www.meditas.fi/moto-tiles

Tutustu tuotteeseen: https://www.meditas.fi/moto-tiles

Short description of Moto Tiles, reference, and link to its website.

Video: Moto Tiles Liikuntalaatat

Video about Moto Tiles; how it can be used, for whom, where and experiences of it. (3:03 min) https://www.youtube.com/watch?v=2loVLmcroFk&t=30s

Note: In the original version of the survey the questions about the welfare technology devices were placed under every description separately. To avoid the repetition and save space from this attachment, the questions have been placed in the end of this attachment. The questions were the same for every device.

Laite 2. Yetitablet

Yetitablet on jättikosketusnäyttö, jota voidaan käyttää apuvälineenä sekä fyysisessä että kognitiivisessa kuntoutuksessa ikäihmisille ja erityisryhmille. Android-käyttöjärjestelmä sopii myös henkilöille, joilla on rajoitteita motorisissa taidoissa tai esimerkiksi heikentynyt näkö. Iso näyttö saa asiakkaat liikkumaan suuremmilla linjoilla, mikä auttaa pysymään aktiivisena ja kuntouttaa motorisia toimintoja. Yetitablet on monipuolinen ja erilaisia sovelluksia on paljon, mm. bingo, muistipelit, tietovisat, uutiset, karaoke, musiikki, muistelu Google Earthin avulla yms.

Lähde: Kuori Oy. (2021). Yetitablet. https://yetitablet.com/

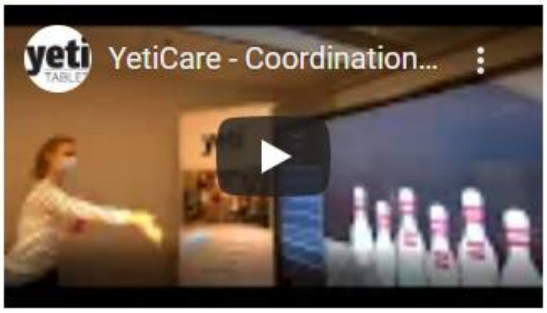
Tutustu tuotteeseen: https://yetitablet.com/

Short description of Yetitablet, reference, and link to its website.

Video: Yetitablet toimintakeskus Kartanonhaassa

Video about Yetitablet in use in activity center Kartanonhaka (1:25 min) https://www.youtube.com/watch?v=lsHyldZtiW

Video: YetiCare - Coordination applications: Balloons and Bowling



Video about Yetitablet's service package Yeticare in use, introduction to coordination applications. (0:29 min) https://www.youtube.com/watch?v=OSYQ5dui_0

Laite 3. HILDA

HILDA on ikääntyneille suunnattu monipuolinen sisältöpalvelu, "ikäihmisten Netflix". HILDAn avulla voidaan järjestää viriketoimintaa vaivattomasti. Palvelu on helppokäyttöinen. Palveluun kuuluu HILDA-boksi, joka liitetään televisioon ja palvelua käytetään television kaukosäätimellä. HILDAa voidaan käyttää aktivoimaan fyysistä toimintakykyä, kohottamaan mielialaa ja parantamaan elämänlaatua, lieventämään käytöshäiriöitä ja tukemaan psyykkistä toimintakykyä. Palvelussa on huomioitu monipuolisesti niin psyykkisen, fyysisen, kognitiivisen kuin sosiaalisenkin toimintakyvyn ulottuvuudet mm. tuolijumpan, muistelutuokioiden ja luontoretkien avulla.

Lähde: Kardemummo Oy. (2021). HILDA. https://www.kardemummo.fi/palvelukuvaus/

Tutustu tuotteeseen:
https://www.kardemummo.fi/

Short description of HILDA, reference, and link to its website.

Video: HILDA-palvelu

Video about HILDA-service, introduction of what it is, for whom, how to use it, where it can be used? (2:11 min)
https://www.youtube.com/watch?v=X7SwJxI2DOs

Laite 4. Memoride

Memoride – Muistojen pyörällä voidaan tehdä virtuaalimatkoja omiin rakkaisiin maisemiin. Palveluun kuuluu laite, joka kiinnitetään polkulaitteen polkimeen ja pyöräilyn edistymistä seurataan näytöltä. Pyöräillä voi mihin vain karttapalvelun tarjoamiin kohteisiin, esim. omaan vanhaan kotiseutuun tai aurinkoisille rantakaduille. Laitteen avulla voidaan muistella ja keskustella eri paikoista, ilmiöistä ja tapahtumista.

Lähde: Memoride. (2021) Award winning virtual cycling platform for the elderly.
https://www.memoride.net/

Tutustu tuotteeseen: https://www.memoride.net/ (englanniksi)

Short description of Memoride, reference, and link to its website.

Video: Memoride - muistojen pyörä

Video about Memoride. Introduction to what it means, how to use it and for whom its developed. (2:55 min)
https://www.youtube.com/watch?v=fj-2rBo2LME&t=4s

Laite 5. Memoera

Memoera Trainer sisältää yli 20 erilaista peliä ja tehtävää. Pelien tarkoituksena on virkistää aivotoimintaa moniulotteisesti, ylläpitää kognitiivista toimintakykyä, helpottaa muistisairauden oireita ja hidastaa sen etenemistä. Memoera on suunniteltu erityisesti muistisairaille ihmisille, joten sen käyttö on turvallista ja helppoa. Kaikki sisältö ja laitteen ominaisuudet on huolellisesti tutkittu ja valittu. Memoeraa voi käyttää itsenäisesti ja vain minuutin muistavalle ihmisellekin löytyy sopivia tehtäviä. Peleissä on muun muassa sanallisia, kuvallisia, päättely- ja muistitehtäviä.

Lähde: Memoera. (2021). Memoera-trainer. https://memoera.fi/index.php/memoera-trainer-ammattilaisille/

Tutustu tuotteeseen: https://memoera.fi/index.php/memoera-trainer-ammattilaisille/

Short description of Memoera, reference, and link to its website.

Video: Memoeran esittely

Video about Memoera. Introduction to what it is, how to use it, and for whom it is developed. (1:01 min) https://www.youtube.com/watch?v=5_JLwzk7LXE&t=2s

Laite 7. Virtuaalitodellisuus

Virtuaalitodellisuus eli VR on kuvitteellinen tai simuloitu ympäristö, joka luodaan tietokoneella. Virtuaalielämys on aidon tuntuinen kokemus ja tulee tunne, että olet itse osa virtuaalitodellisuutta. Mahdollisuutena on pelata pelejä tai vierailla erilaisissa kohteissa esim. ulkomailla. Virtuaalielämyksen pystyy toteuttamaan myös liikuntarajoitteisille.

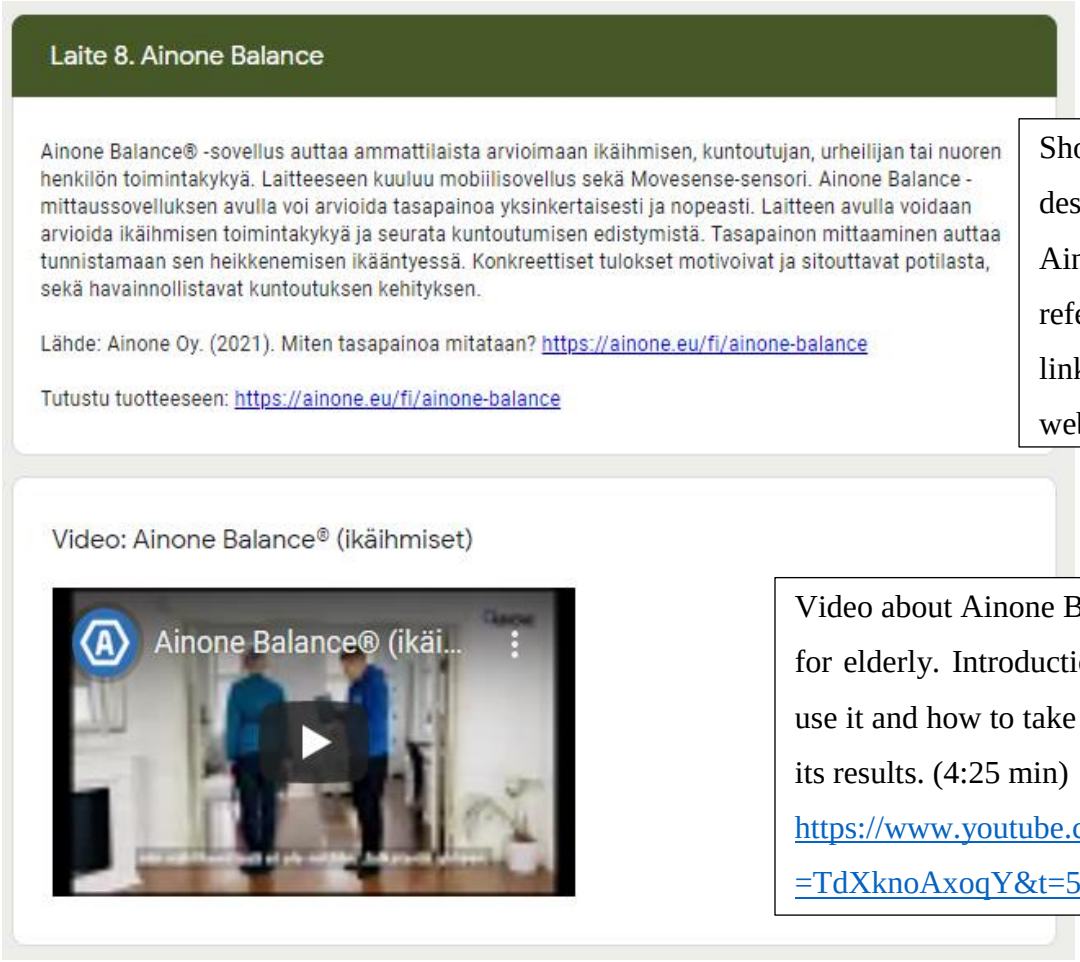
Opinnäytetyön tutkimuksessa ikääntyneiden todettiin voivan käyttää virtuaalitodellisuutta kuntoutumisessa, virikekäytössä, rauhoittumissa ja lievittämässä käytösoireita. Hoitajat kokivat voivansa hyödyntää työssään virtuaalielämystä monipuolisesti.

Lähde: Lietzen, I. (2020). Virtuaalielämyksiä palvelutaloon. https://www.theseus.fi/bitstream/handle/10024/343035/Ilona_Lietzen_.pdf?sequence=2&isAllowed=y

Short description of VR (Virtual Reality) and reference.

Video: Seniors travel using VR (englanniksi)

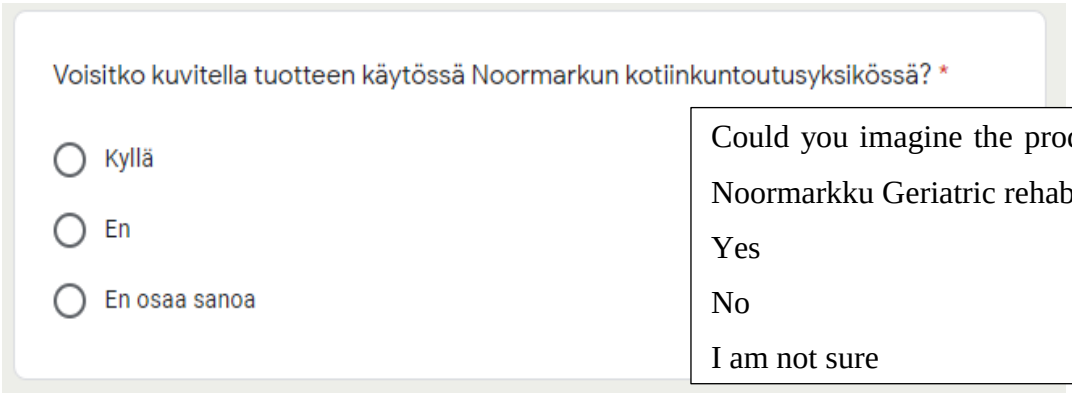
Video about Senior travel using VR, showing how virtual reality can be used with elderly. (1:49 min) https://www.youtube.com/watch?v=a3kwztYUueQ&t=2s



Short description of Ainone Balance, reference, and link to its website.

Video about Ainone Balance in use for elderly. Introduction to how to use it and how to take advantage of its results. (4:25 min) https://www.youtube.com/watch?v=TdXknoAxoqY&t=5s

After every description of a device there were six questions according to the device. Here are the questions.



Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

Yes

No

I am not sure

Mitä seuraavista asiakkaan kotiinkuntouttamisen tavoitteista tuote voisi auttaa saavuttamaan? *

- [ ] Fyysinen kuntoutuminen
- [ ] Psyykkinen kuntoutuminen
- [ ] Sosiaalinen kuntoutuminen
- [ ] Kognitiivinen kuntoutuminen
- [ ] Elämänlaadun parantaminen
- [ ] Kotona pärjäämisen helpottaminen
- [ ] Ympärivuorokautisen hoidon tarpeen vähentäminen
- [ ] Muu:

Which of the following rehabilitation goals could the product help achieve?

Physical rehabilitation

Mental rehabilitation

Social rehabilitation

Cognitive rehabilitation

Improving the quality of life

Improving surviving at home

Reducing the need for long-term care

Other, what?

Mitä seuraavista resursseista tuote voisi säästää parantaen kotiinkuntouttamisen tehokuutta? *

- [ ] Lyhentää asiakkaan hoitojakson pituutta
- [ ] Vähentää hoitajien ajantarvetta
- [ ] Vähentää fysioterapeuttien ajantarvetta
- [ ] Vähentää lääkärin ajantarvetta
- [ ] Pienentää tilantarvetta potilashuoneissa
- [ ] Pienentää tilantarvetta osaston tiloissa
- [ ] Pienentää tilantarvetta kuntoutuksen tiloissa
- [ ] Muu:

Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

Shorten the length of the rehabilitation period

Reduce the time required by nursing staff

Reduce the time required by physiotherapists

Reduce the time required by a physician

Reduce the need for space in patient rooms

Reduce the need for space in departmental premises

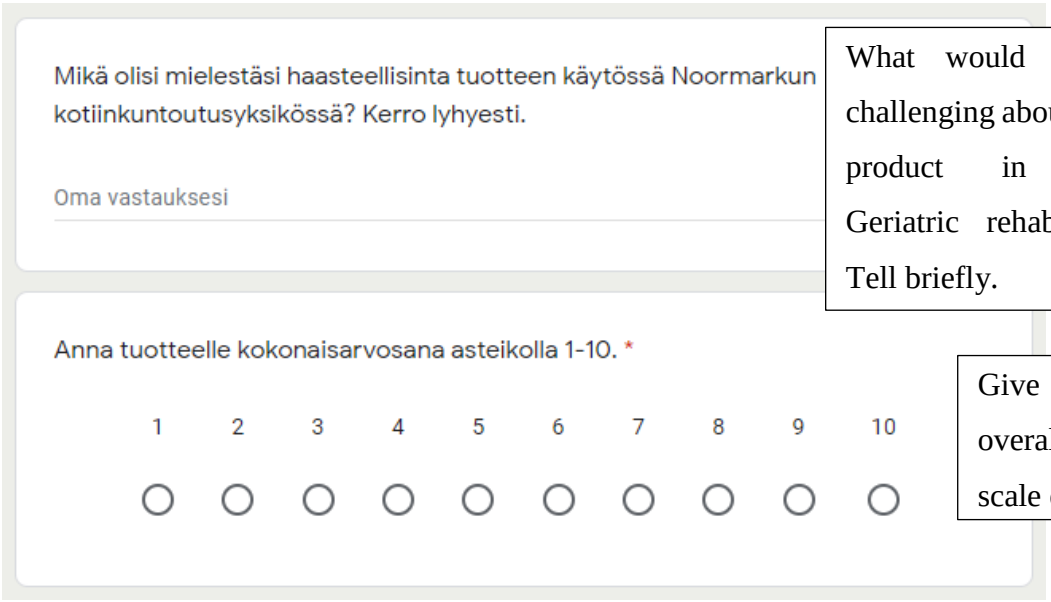
Reduce the need for space in rehabilitation premises

Other, what?

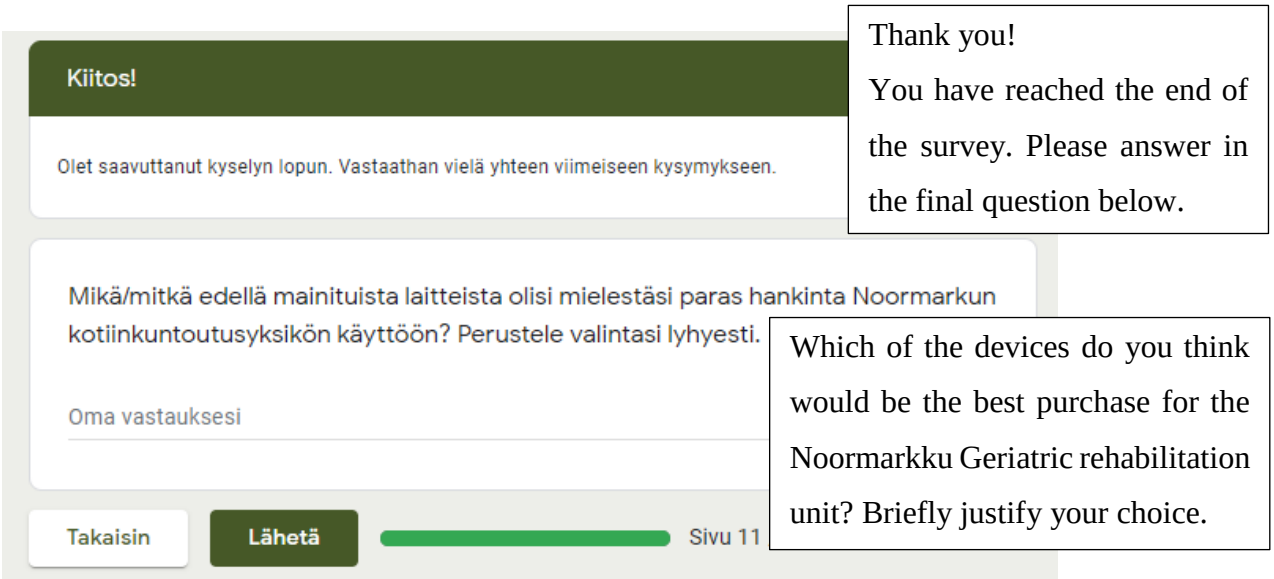
Jos tuote tulisi käyttöön Noormarkun kotiinkuntoutusyksikköön, olisitko halukas käyttämään sitä työssäsi? *

	1	2	3	4	5	
En yhtään halukas	○	○	○	○	○	Erittäin halukas

If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



After all the description of the devices and their questions, there was one last question and a thank you note.



APPENDIX 2

SURVEY RESPONSES (24 responses)

PART 1. GENERAL QUESTIONS ABOUT WELFARE TECHNOLOGY

Figure 1. How interested are you in welfare technology?

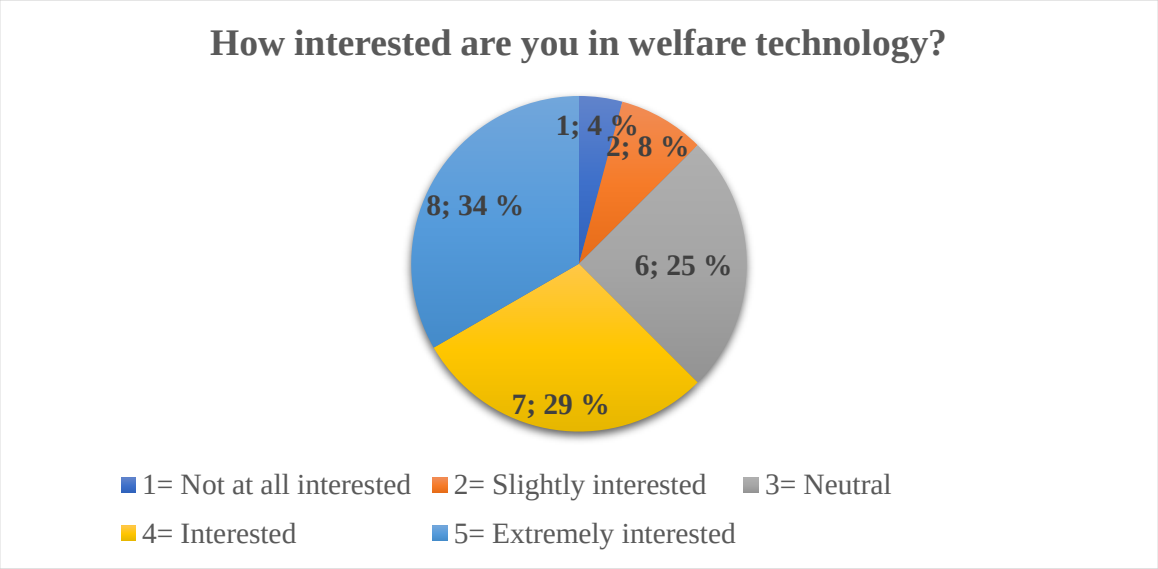


Figure 2. Would you be interested in using more welfare technology tools in your work?

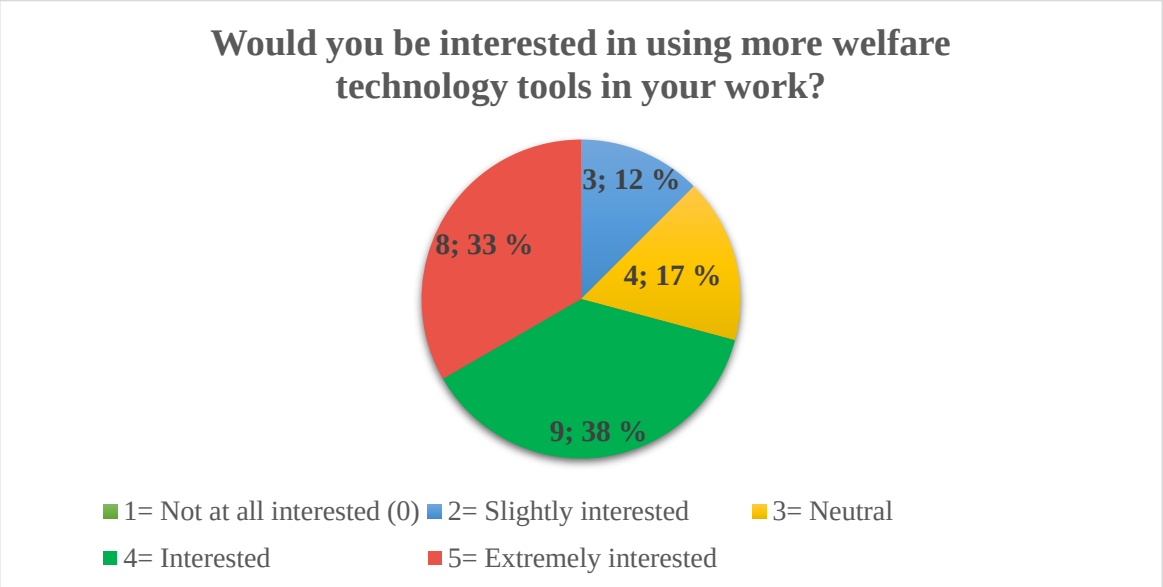
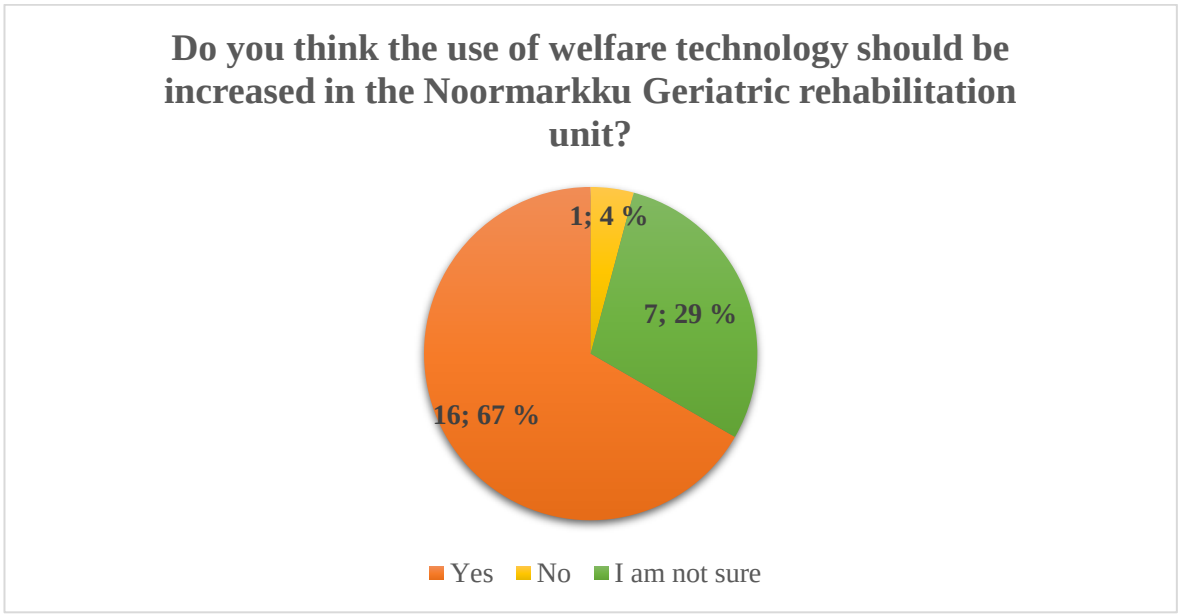


Figure 3. Do you think the use of welfare technology should be increased in the Noormarkku Geriatric rehabilitation unit?



PART 2. MOTO TILES

Figure 4. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

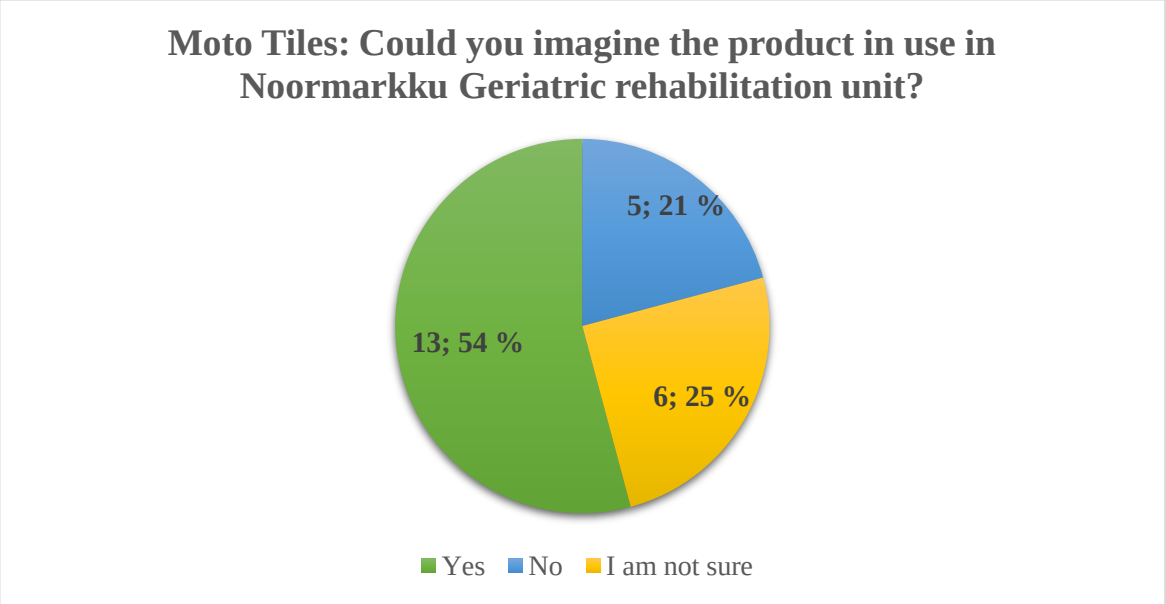


Figure 5. Which of the following rehabilitation goals could the product help achieve?

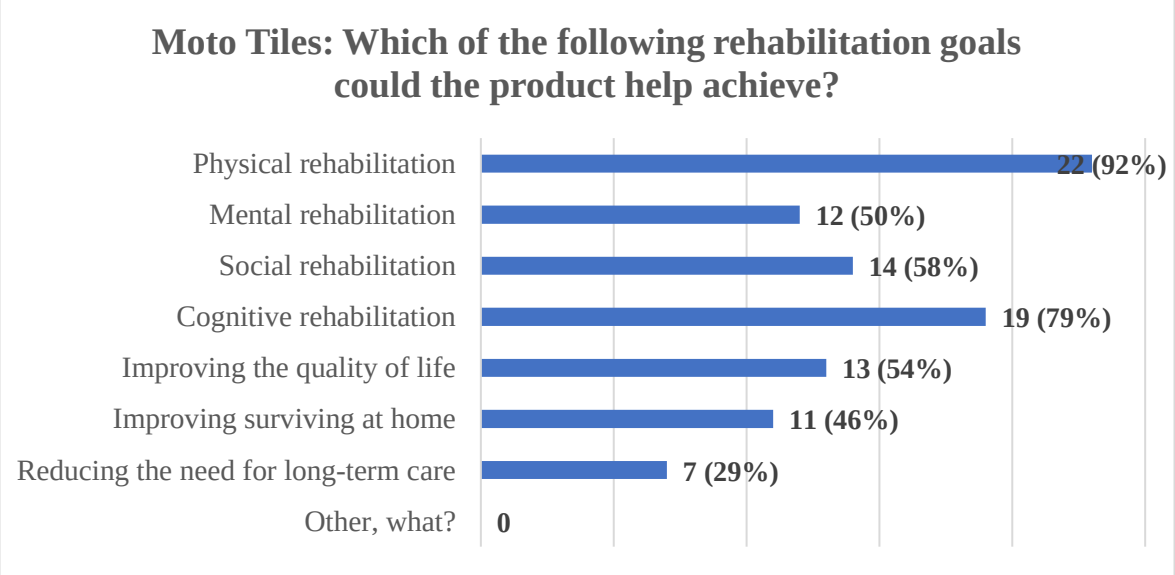


Figure 6. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

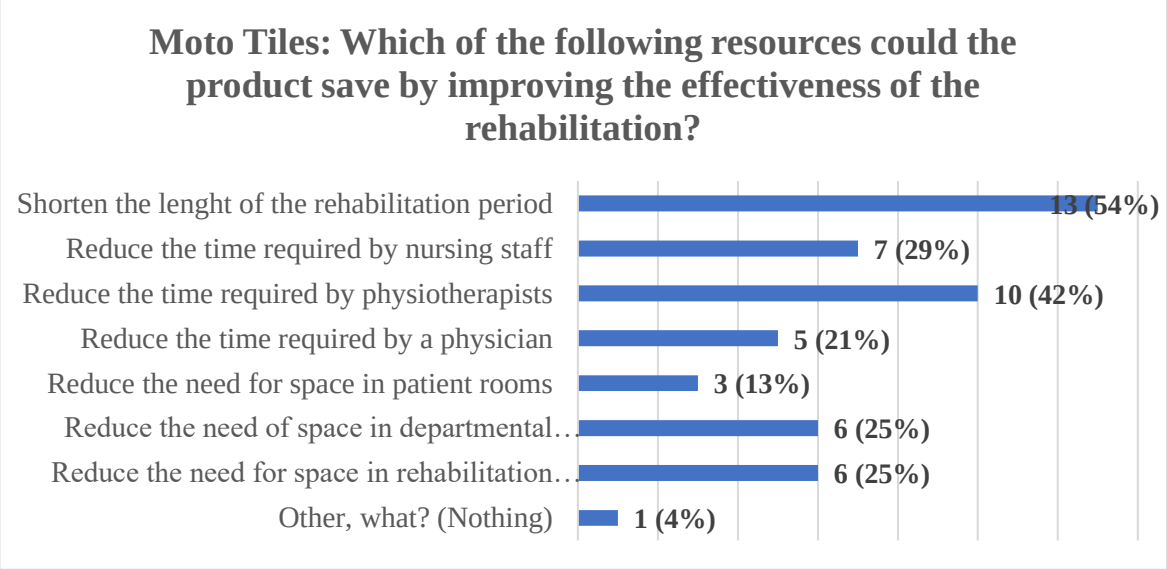
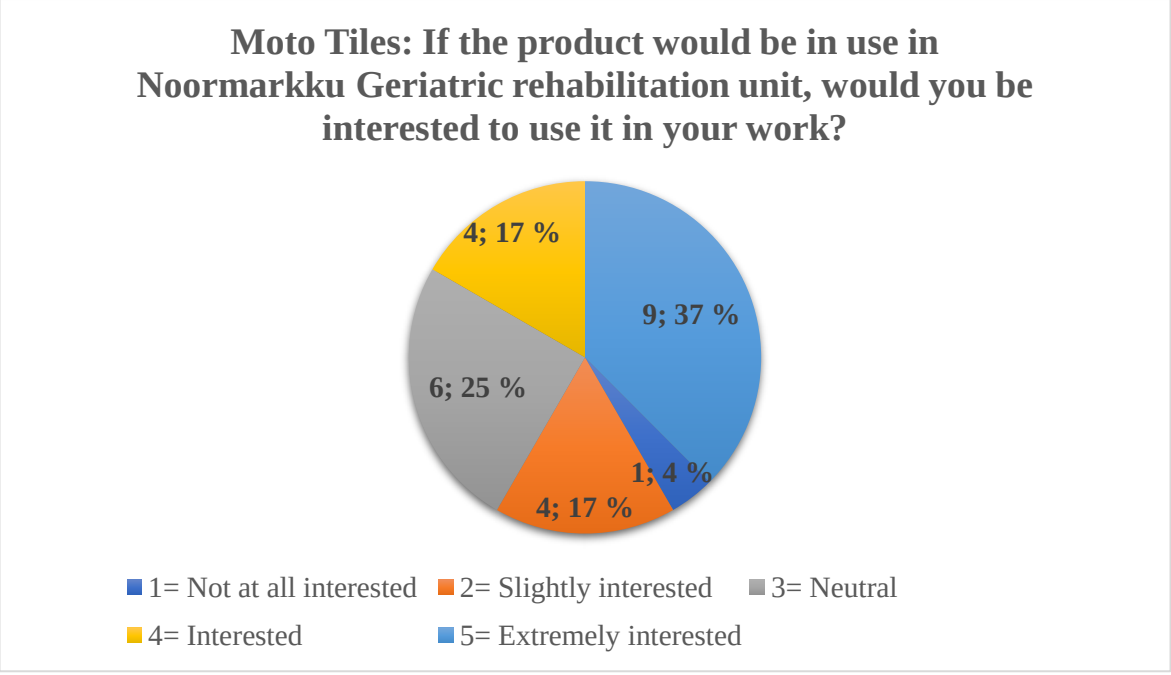


Figure 7. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 8. Give the product an overall rating on a scale of 1-10.

Moto Tiles average score: 7 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 3. YETITABLET

Figure 9. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

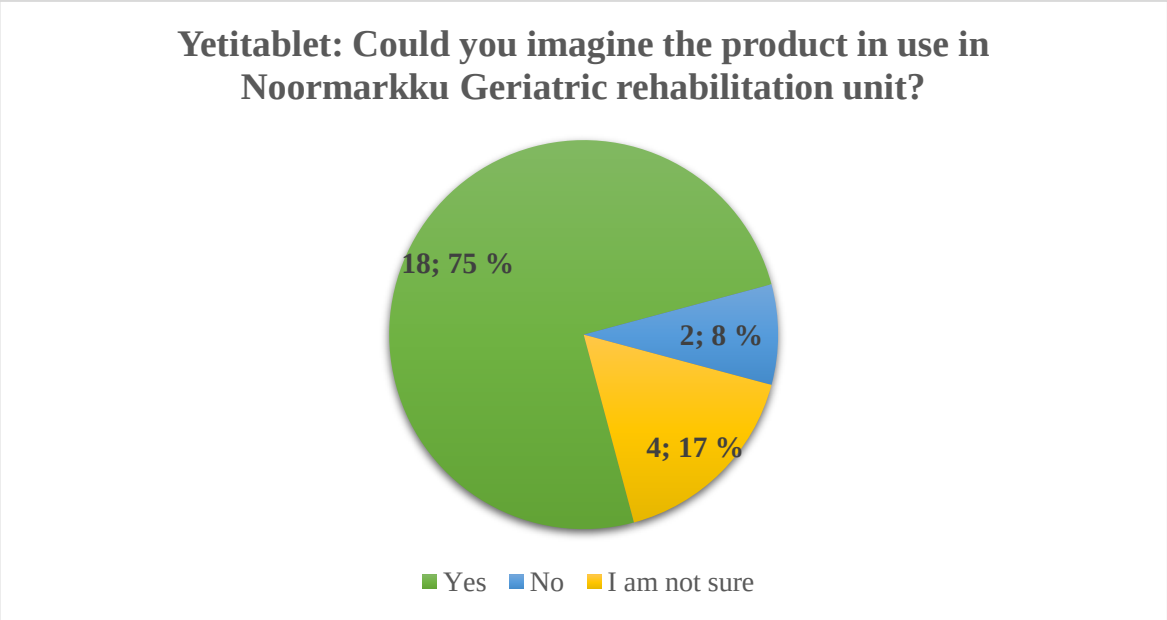


Figure 10. Which of the following rehabilitation goals could the product help achieve?

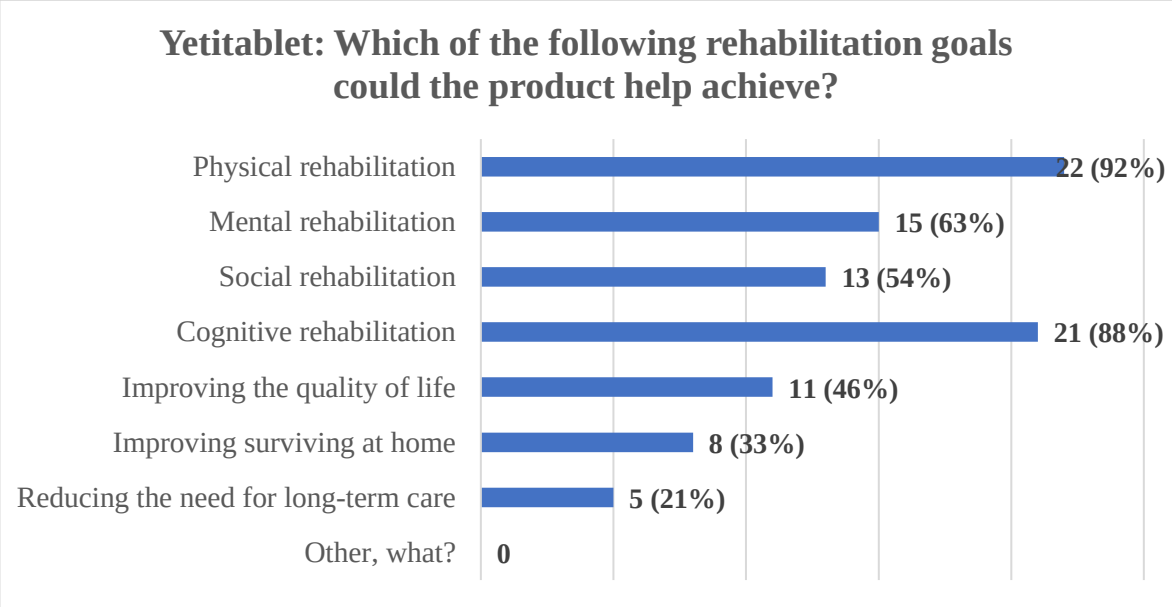


Figure 11. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

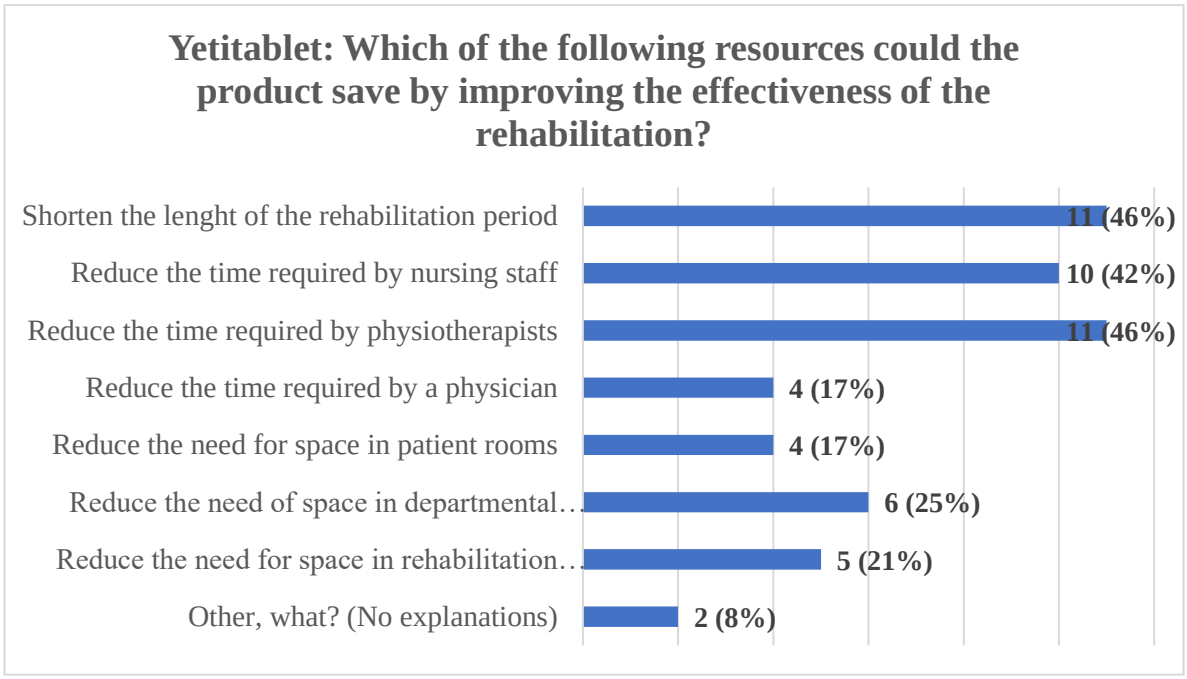
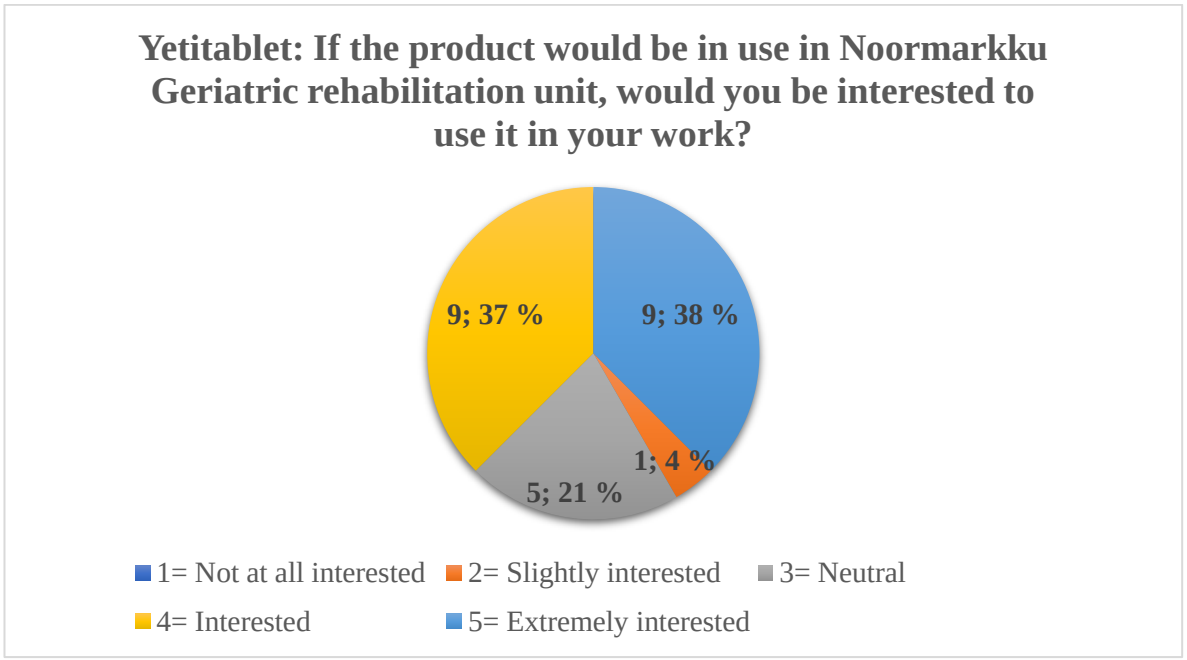


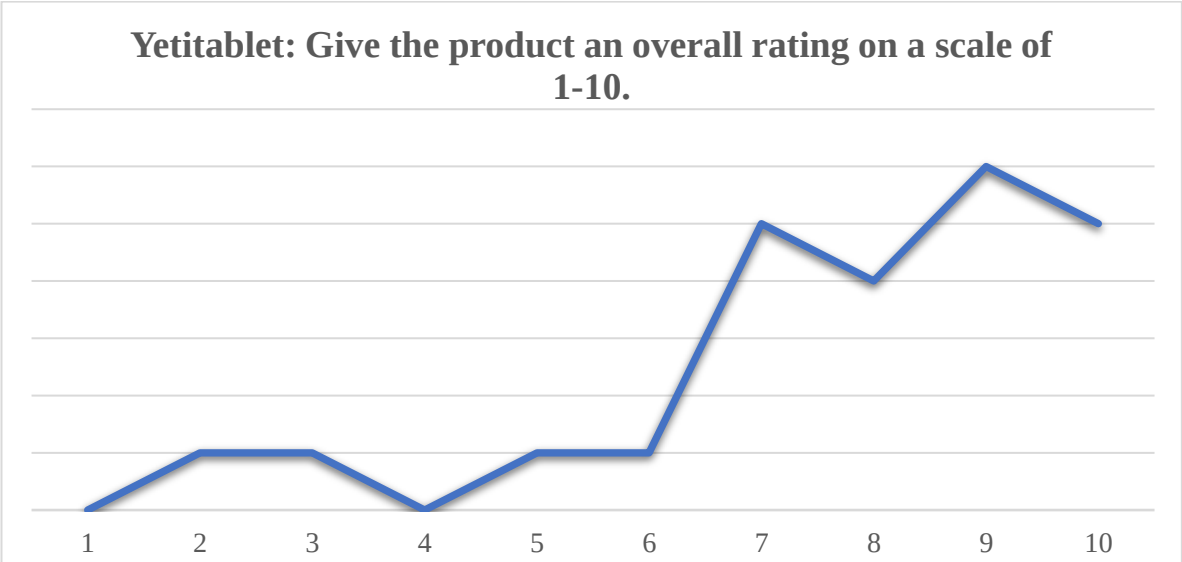
Figure 12. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 13. Give the product an overall rating on a scale of 1-10.



Yetitablet average score: 8 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 4. HILDA

Figure 14. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

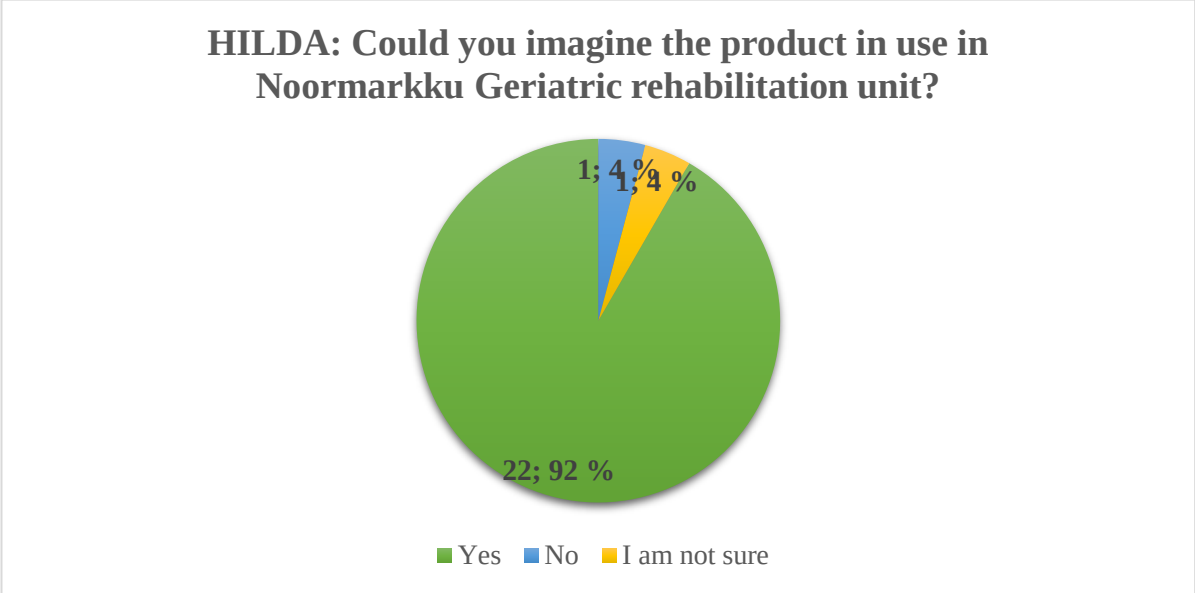


Figure 15. Which of the following rehabilitation goals could the product help achieve?

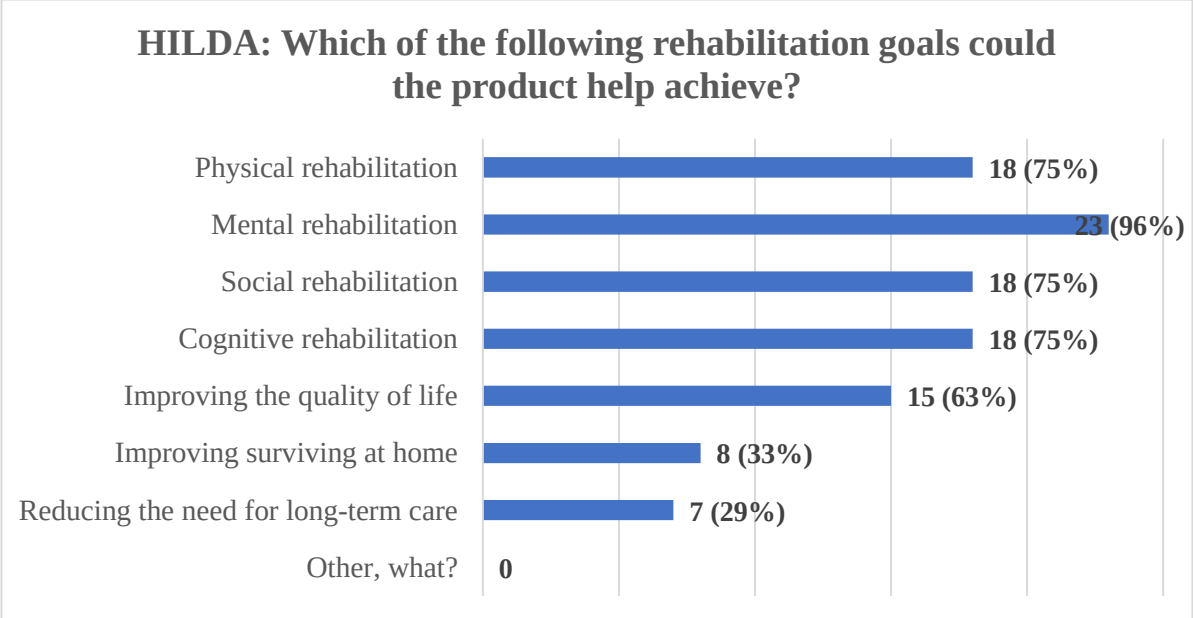


Figure 16. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

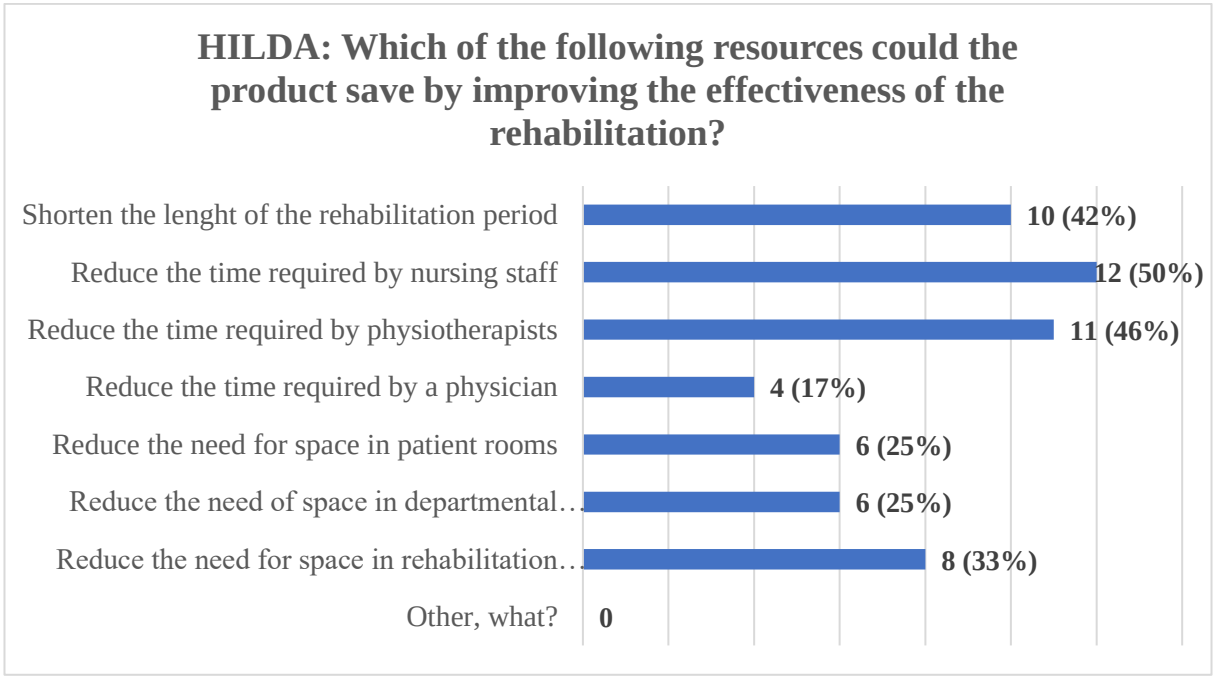
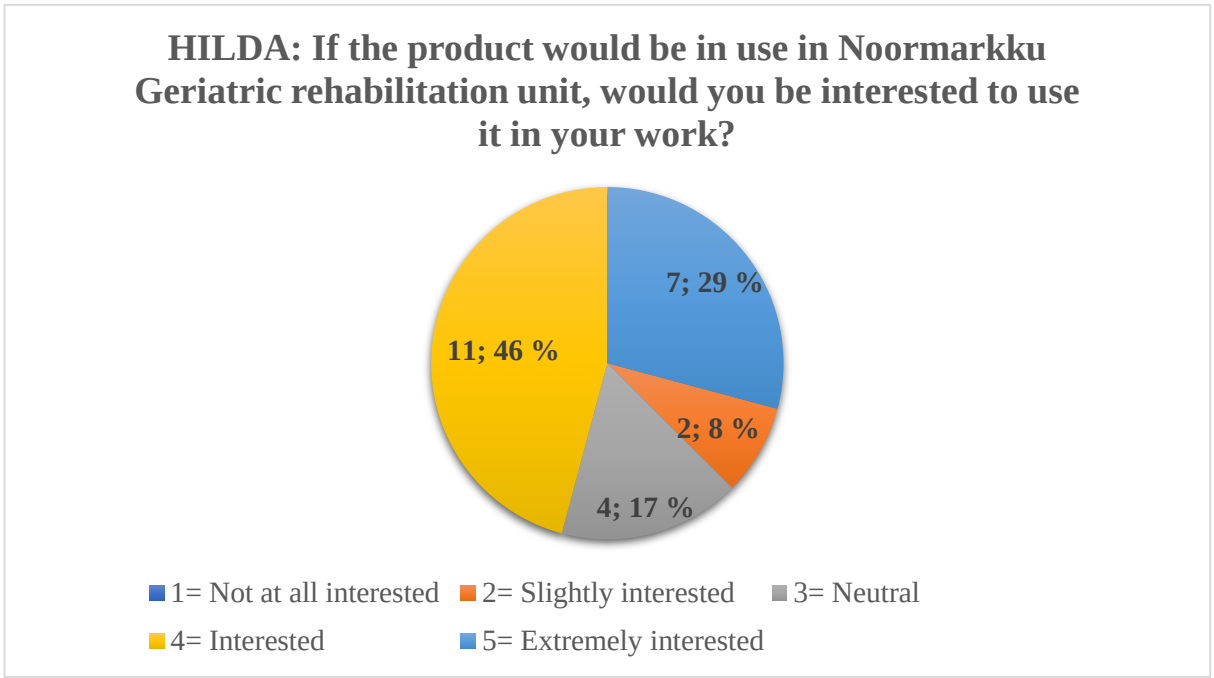


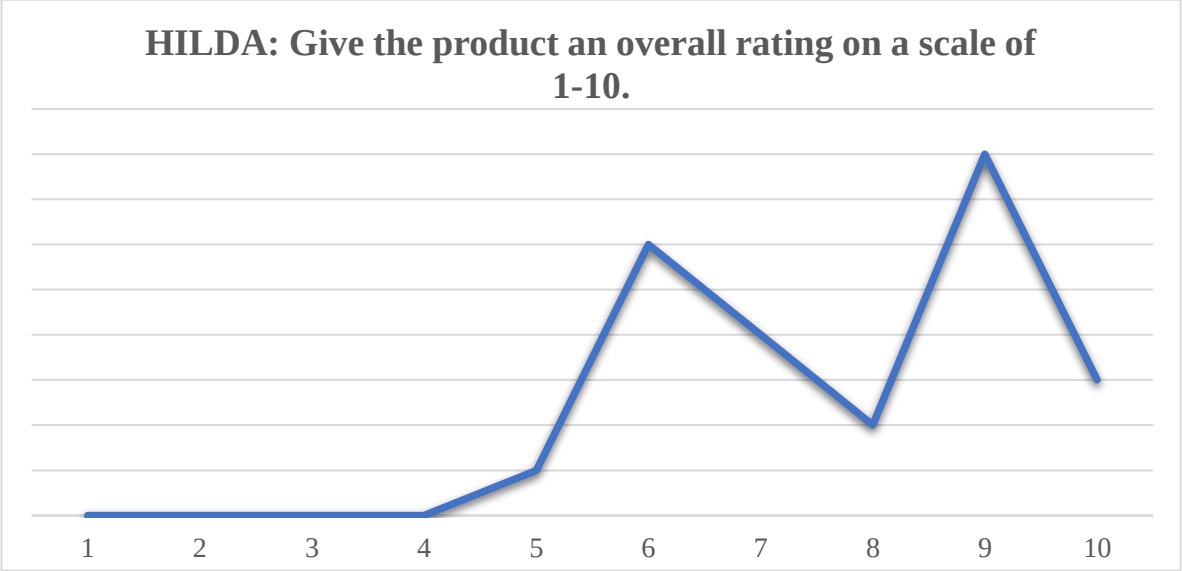
Figure 17. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 18. Give the product an overall rating on a scale of 1-10.



HILDA average score: 8 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 5. MEMORIDE

Figure 19. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

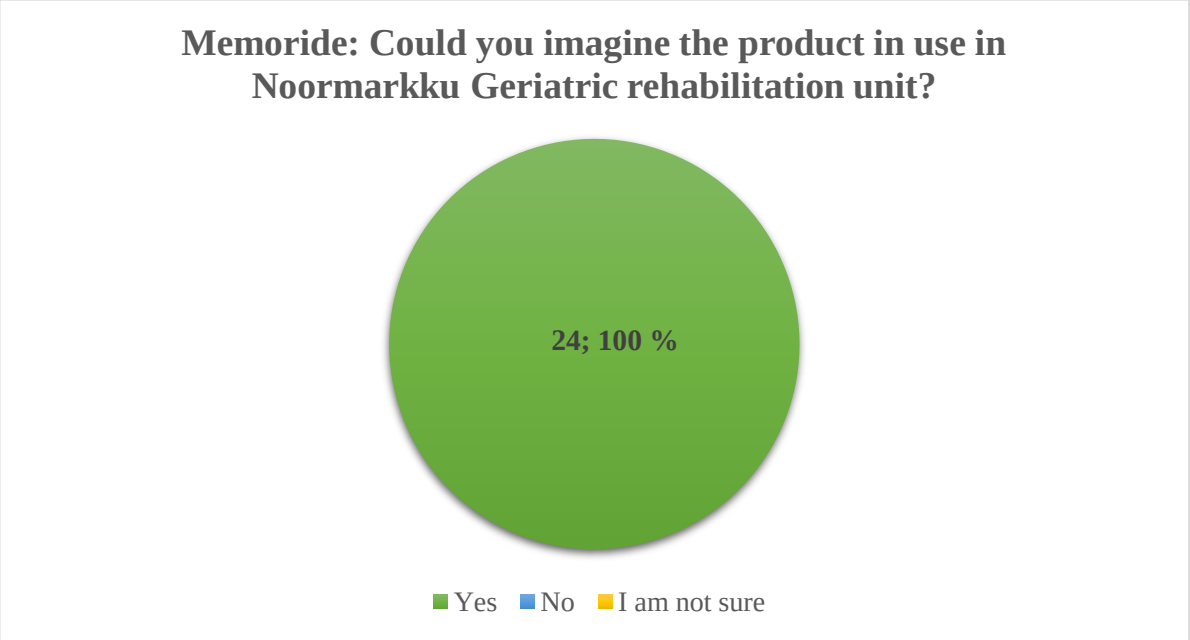


Figure 20. Which of the following rehabilitation goals could the product help achieve?

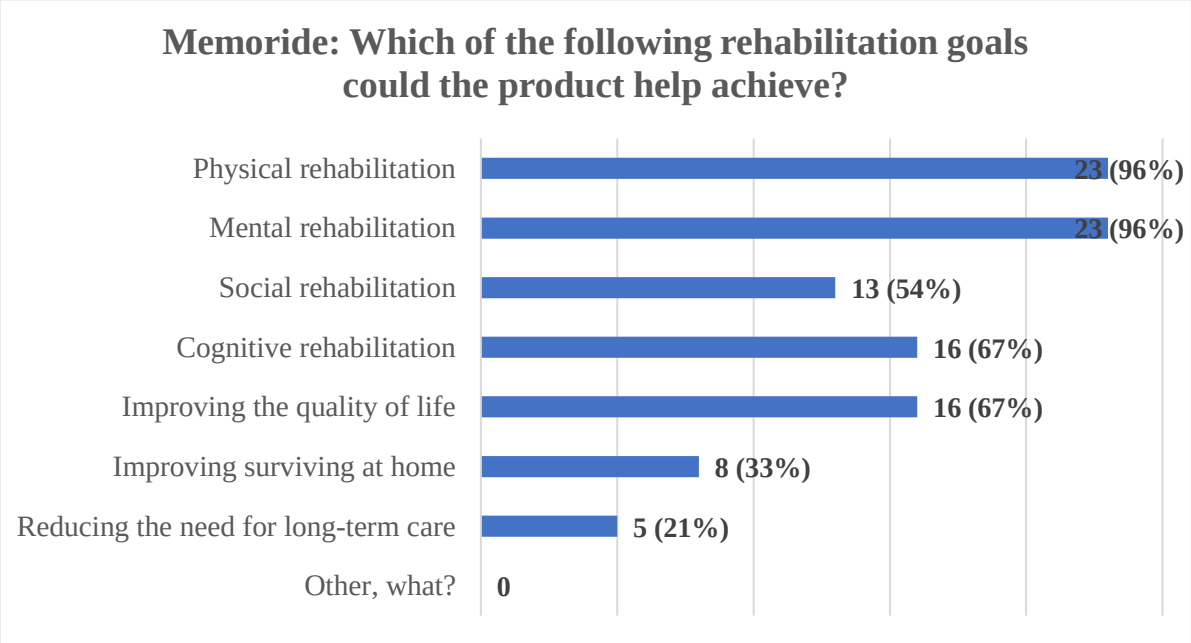


Figure 21. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

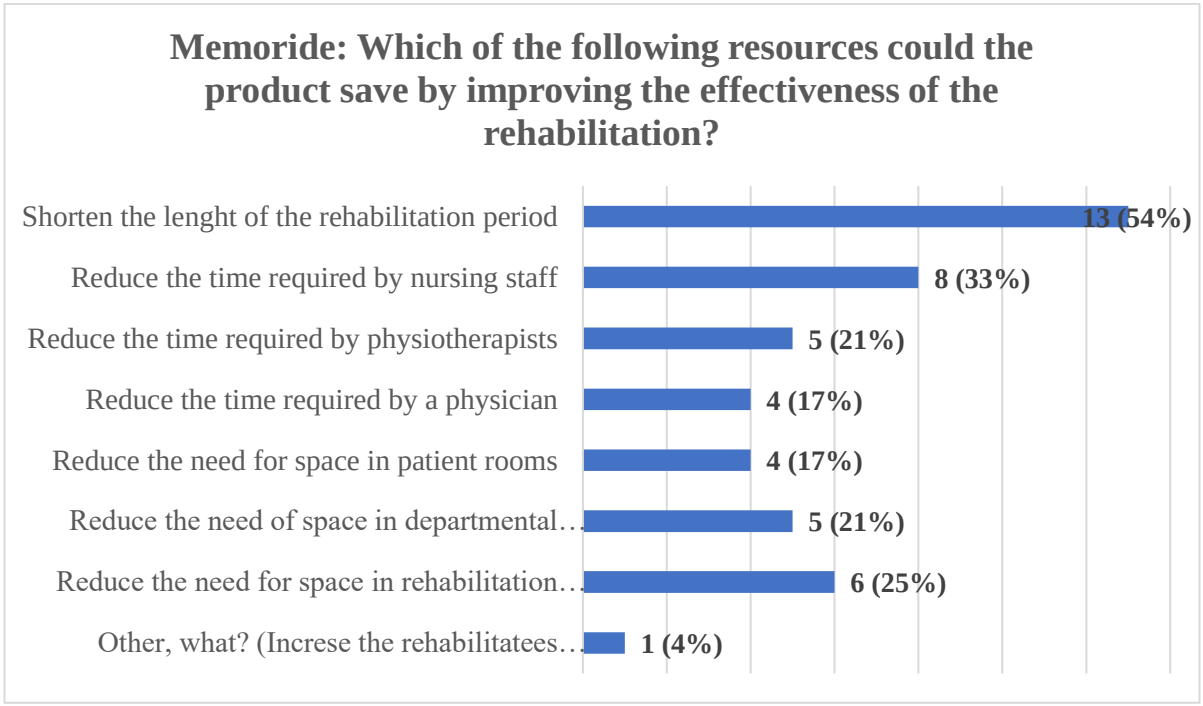
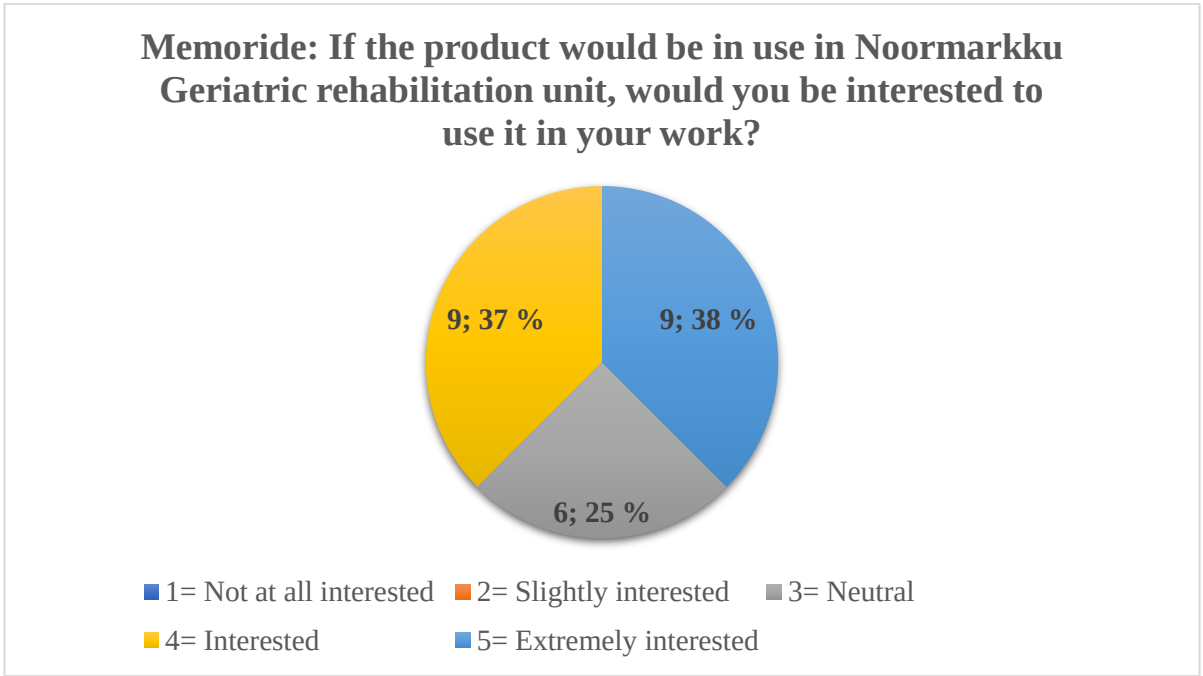


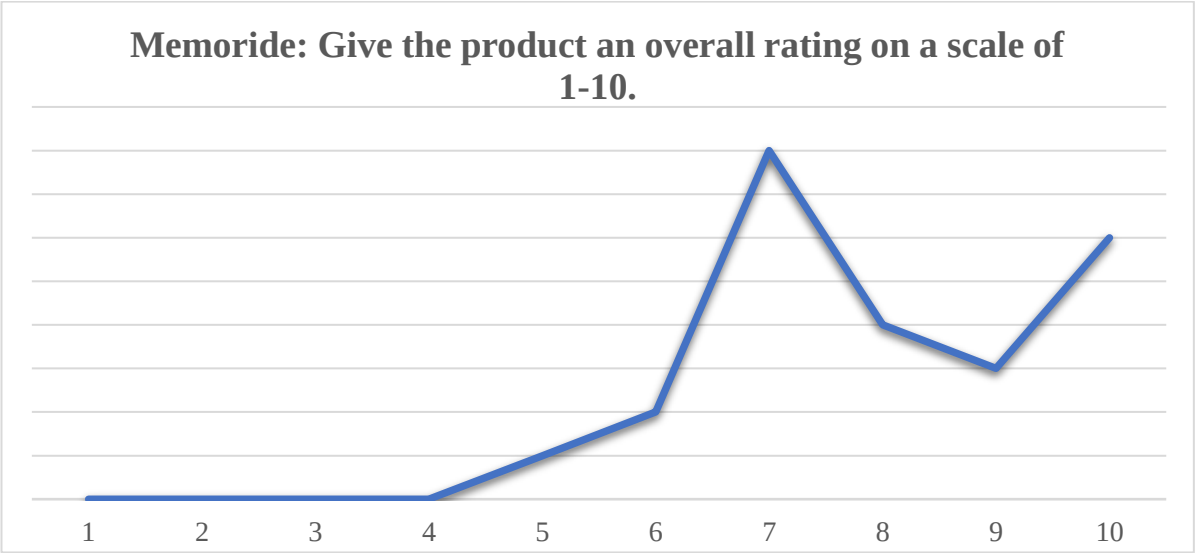
Figure 22. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 23. Give the product an overall rating on a scale of 1-10.



Memoride average score: 8 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 6. MEMOERA

Figure 24. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

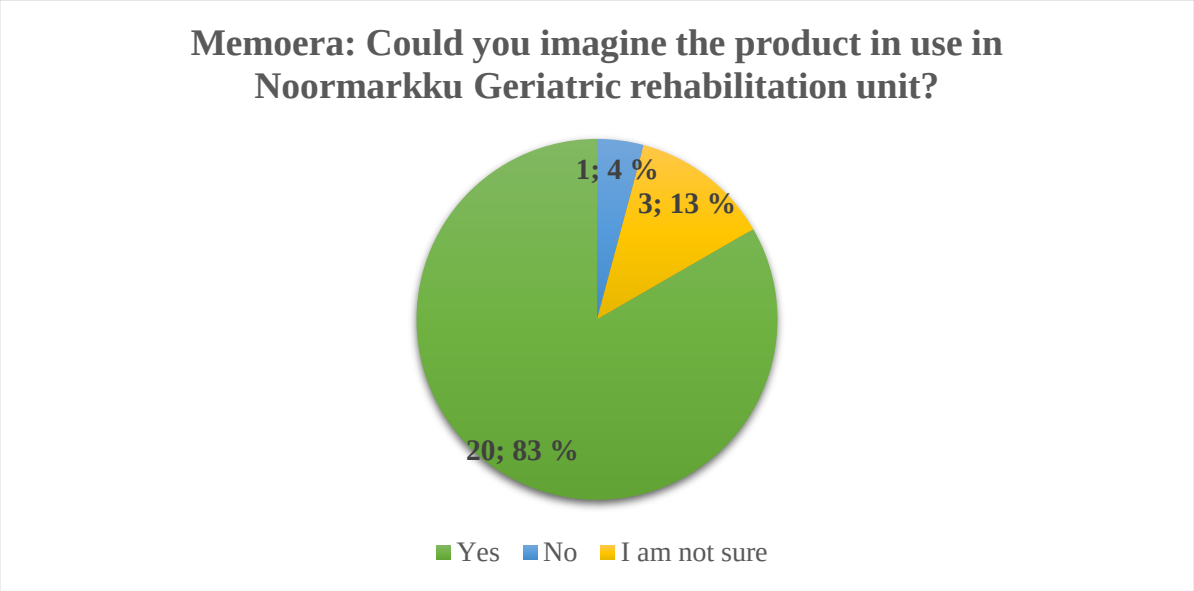


Figure 25. Which of the following rehabilitation goals could the product help achieve?

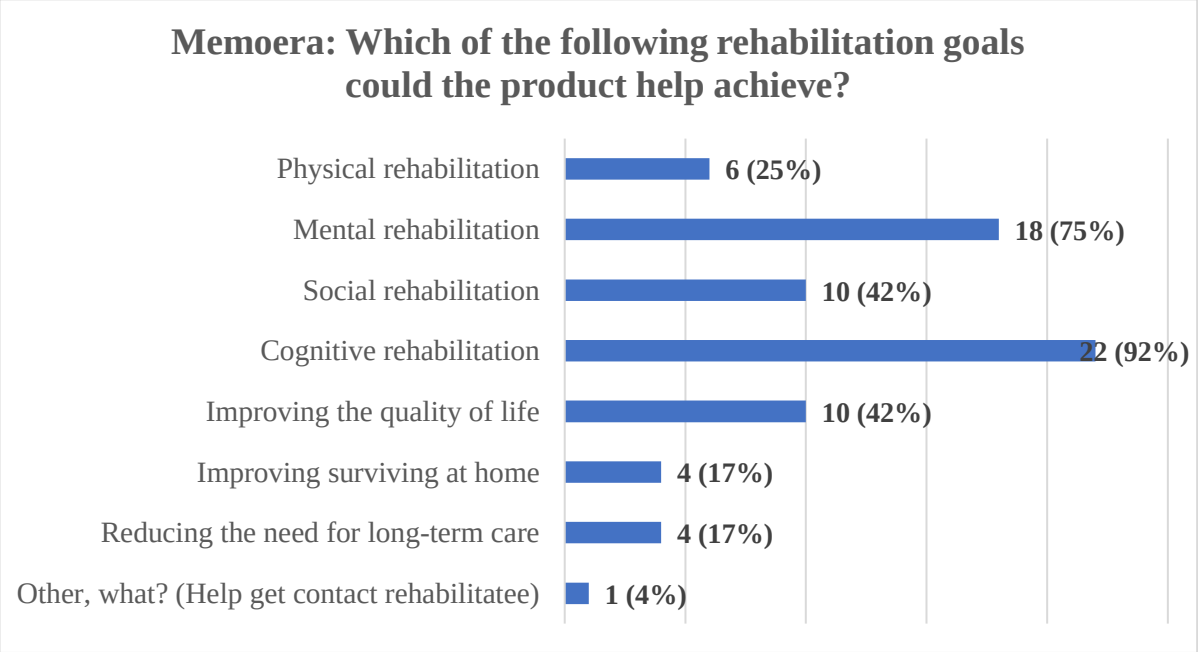


Figure 26. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

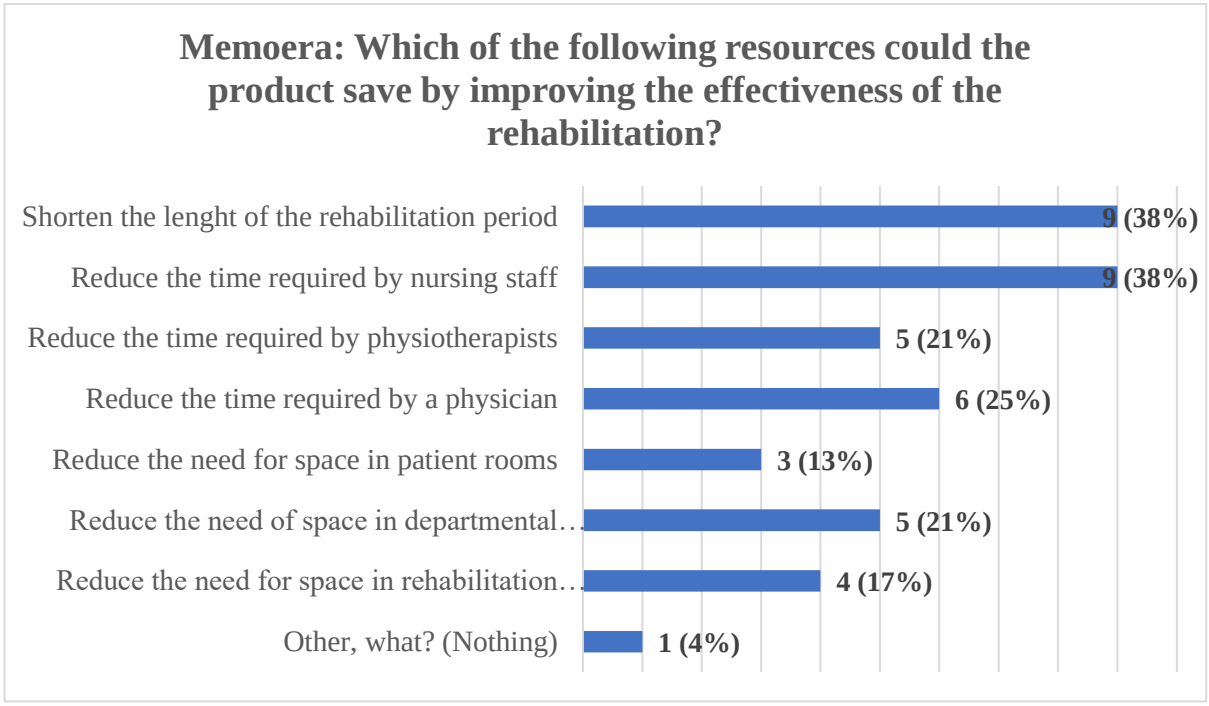
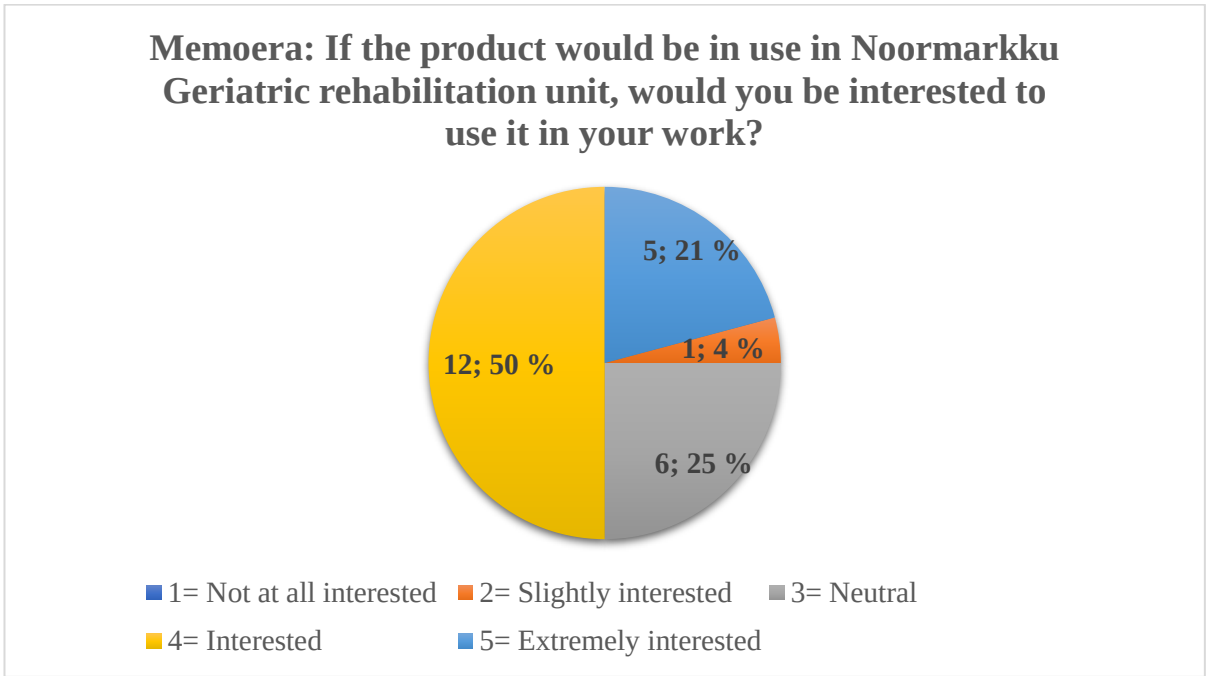


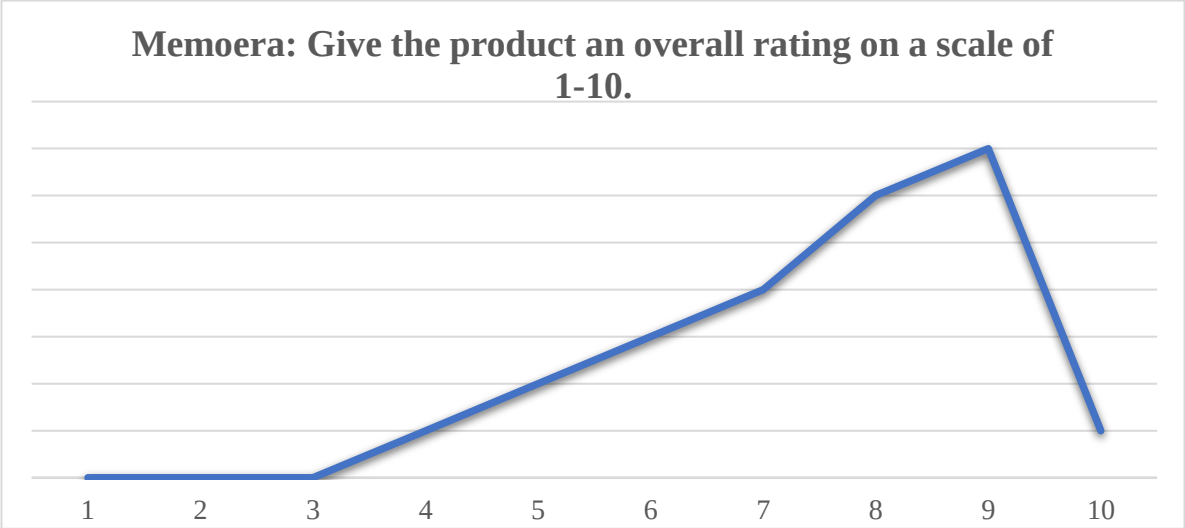
Figure 27. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 28. Give the product an overall rating on a scale of 1-10.



Memoera average score: 7 (rounded to the nearest whole number)
The amounts of a particular ratings are displayed in the graph.

PART 7. MOTOMED

Figure 29. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

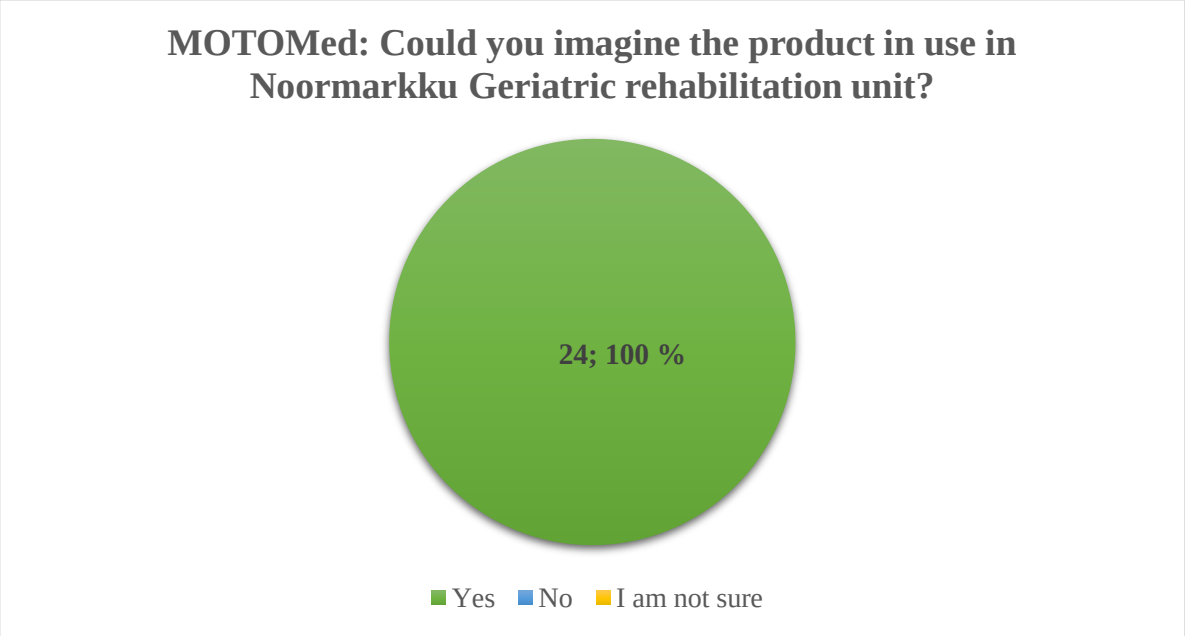


Figure 30. Which of the following rehabilitation goals could the product help achieve?

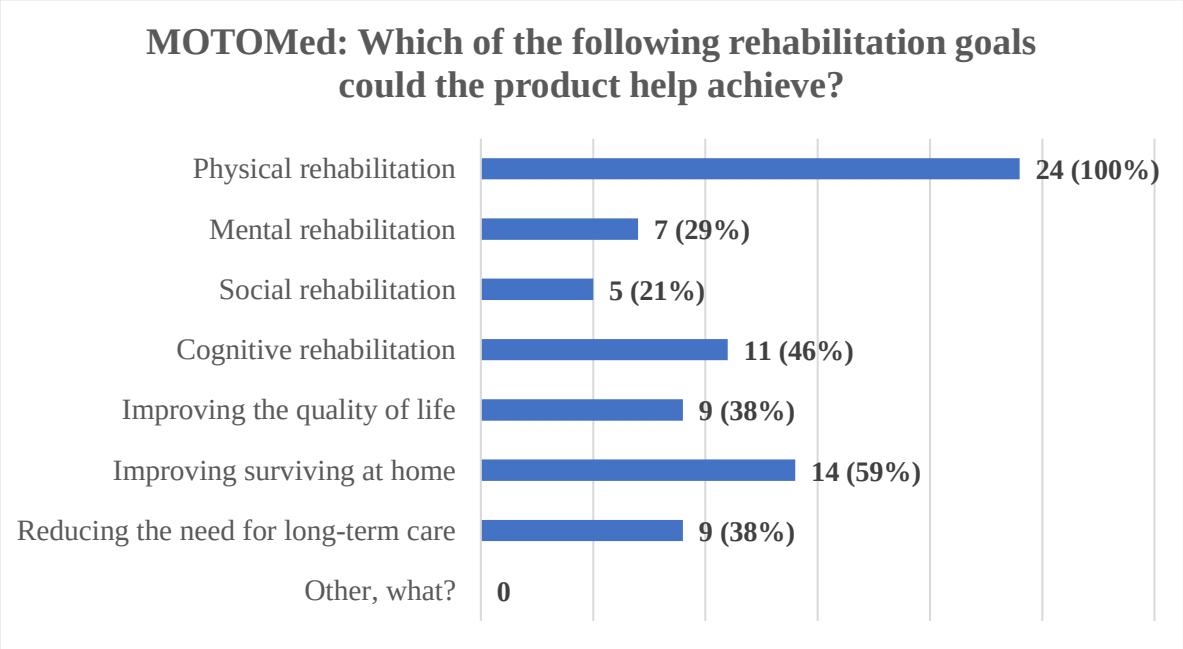


Figure 31. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

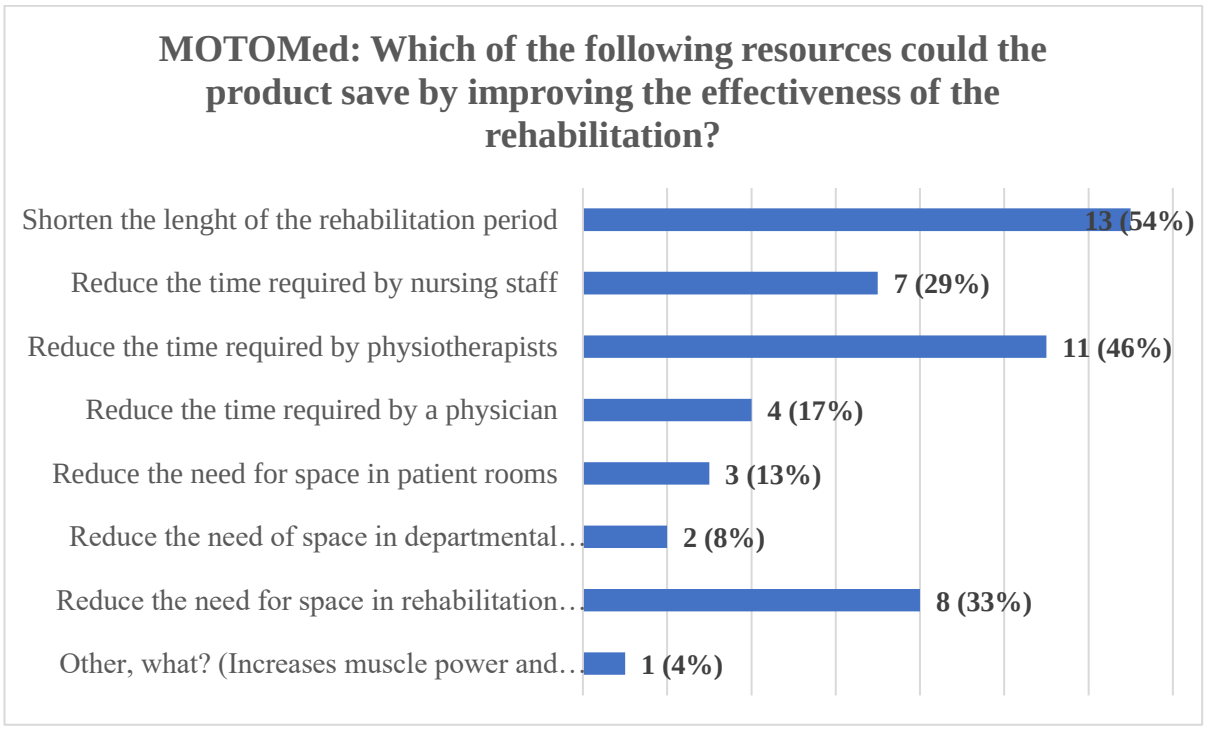
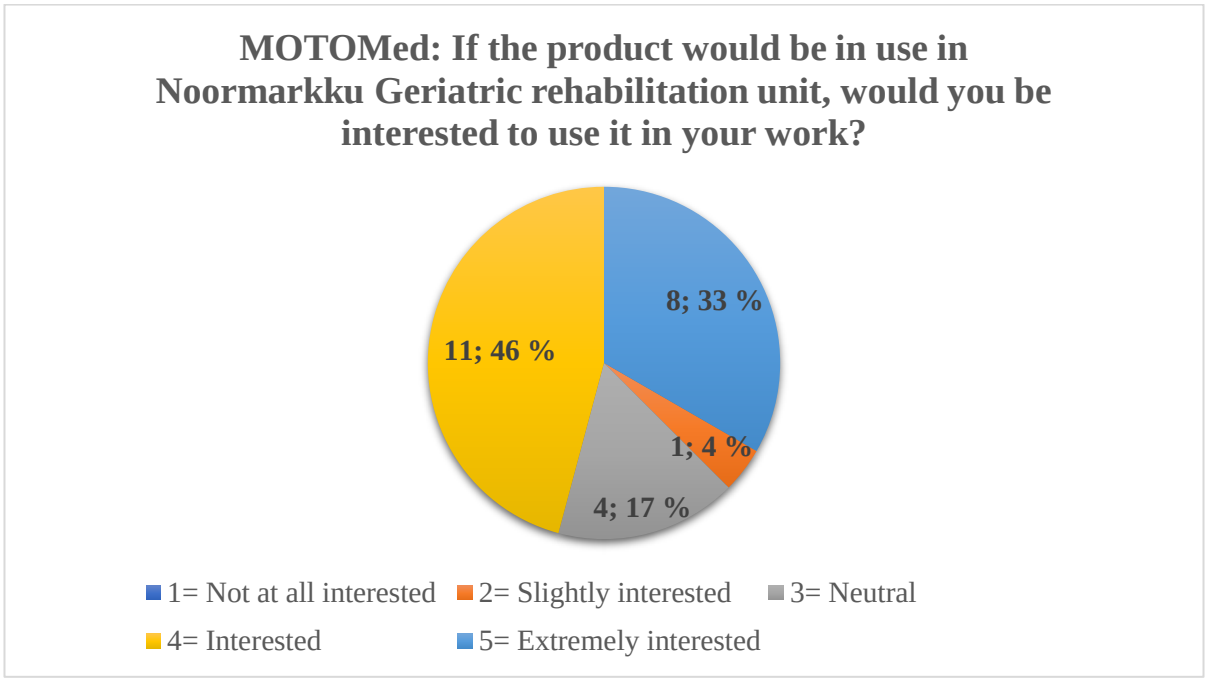


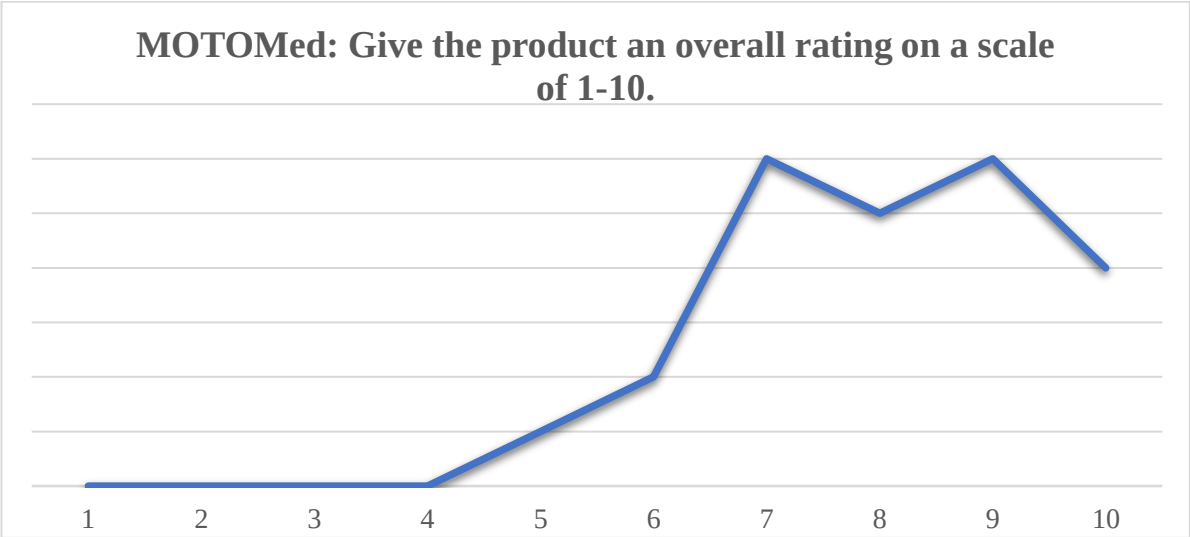
Figure 32. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 33. Give the product an overall rating on a scale of 1-10.



MOTOmed average score: 8 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 8. VR – VIRTUAL REALITY

Figure 34. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

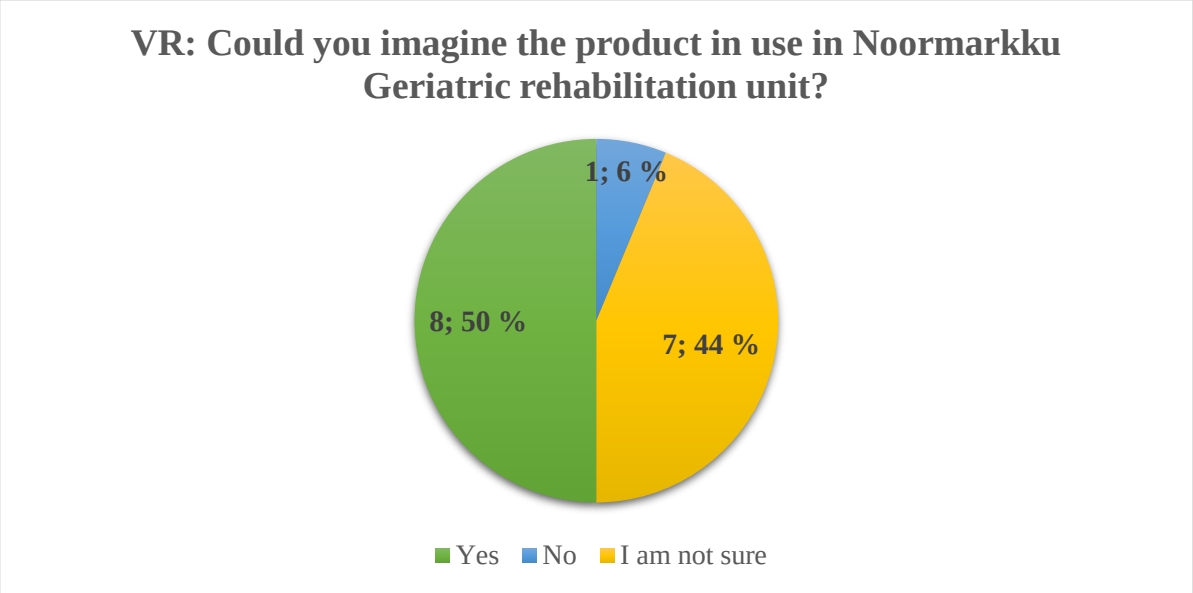


Figure 35. Which of the following rehabilitation goals could the product help achieve?

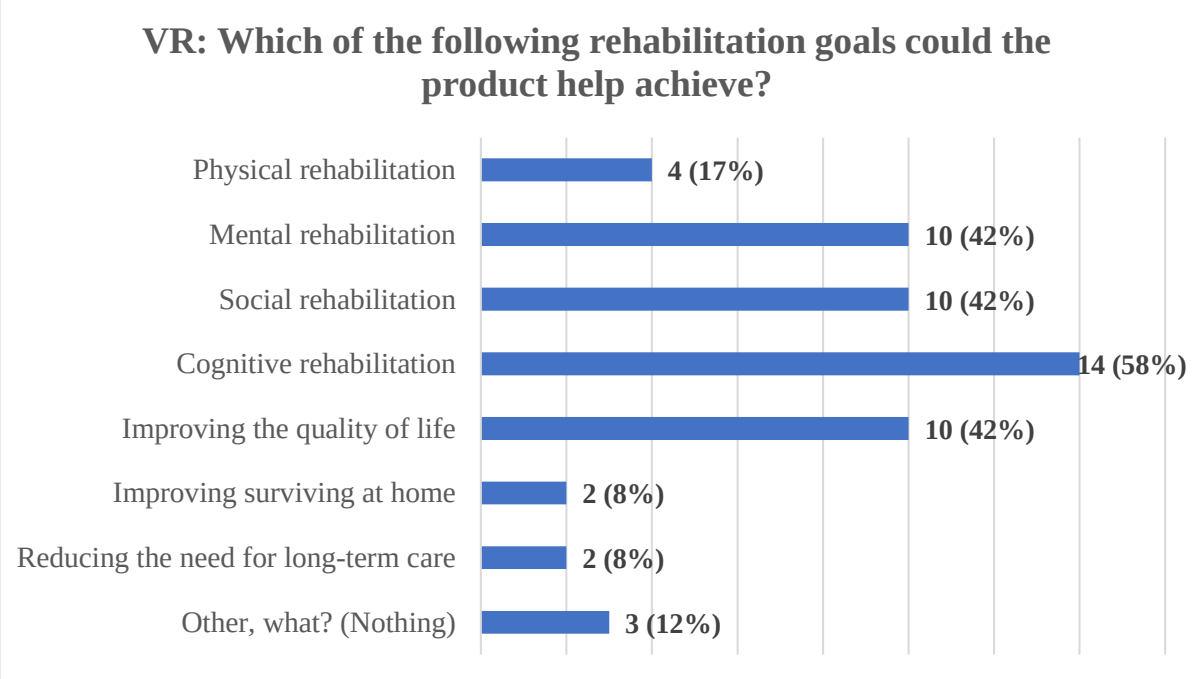


Figure 36. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

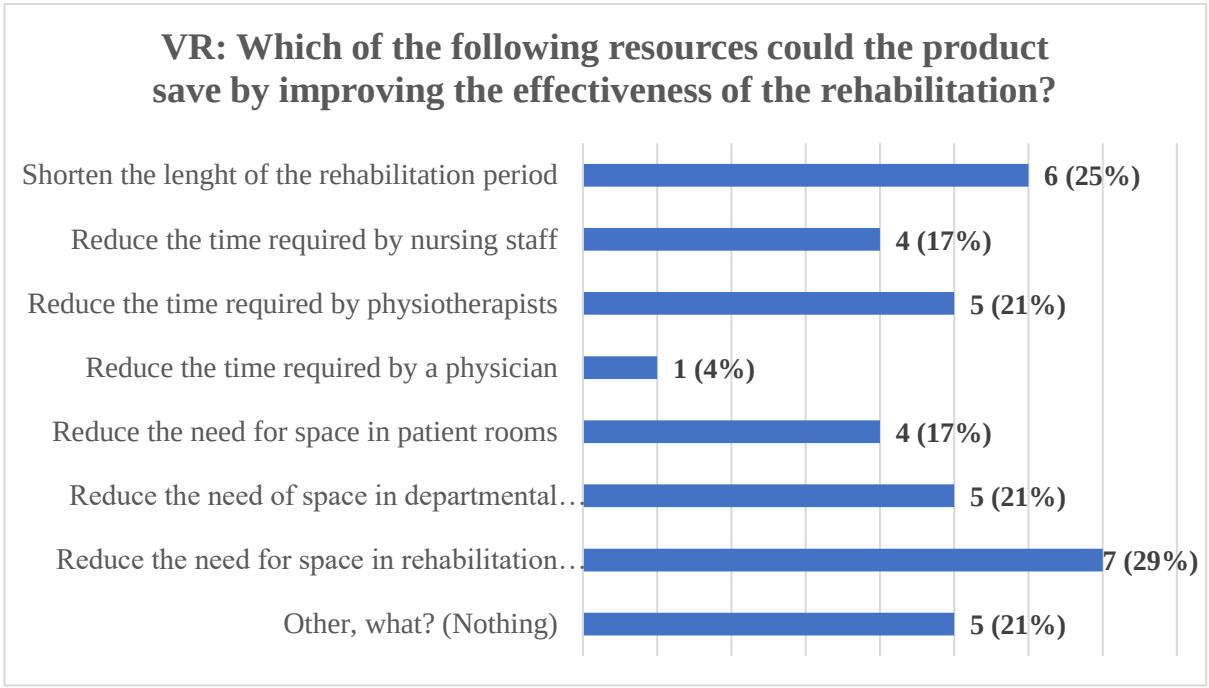
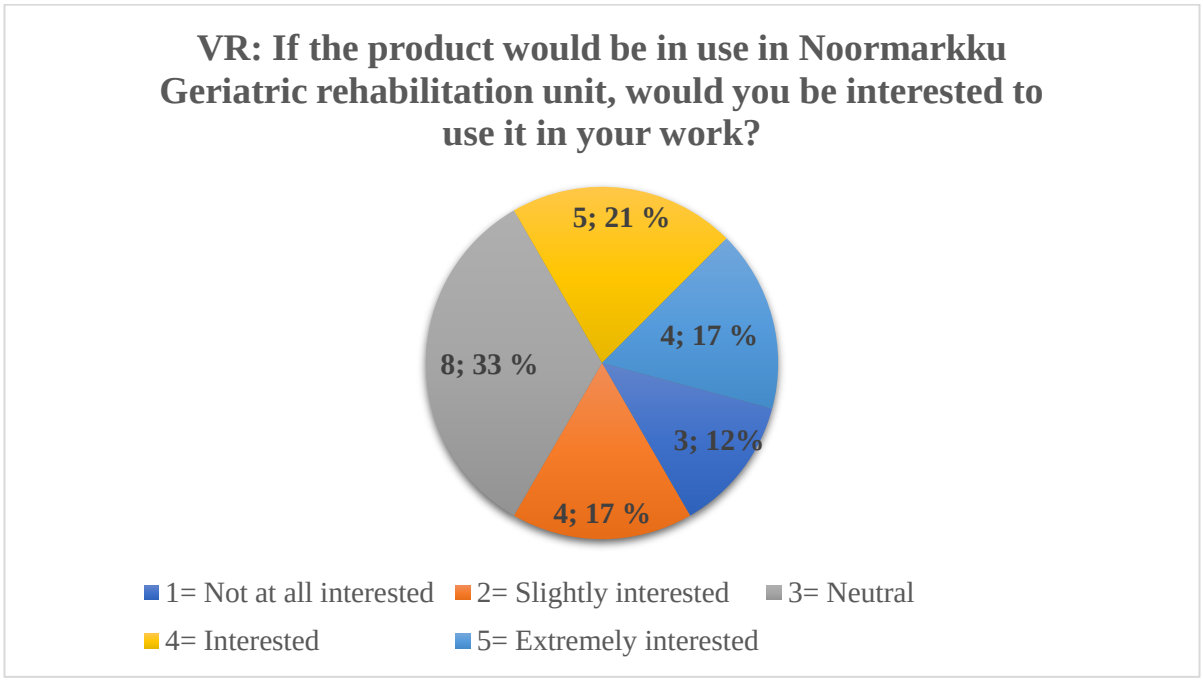


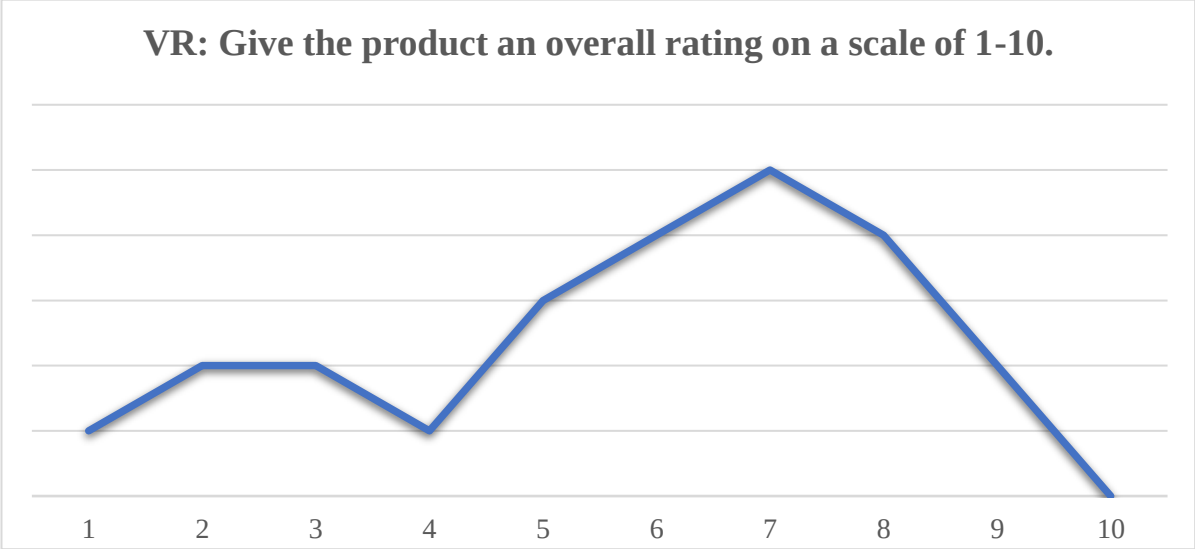
Figure 37. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 38. Give the product an overall rating on a scale of 1-10.



VR average score: 6 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.

PART 9. AINONE BALANCE

Figure 39. Could you imagine the product in use in Noormarkku Geriatric rehabilitation unit?

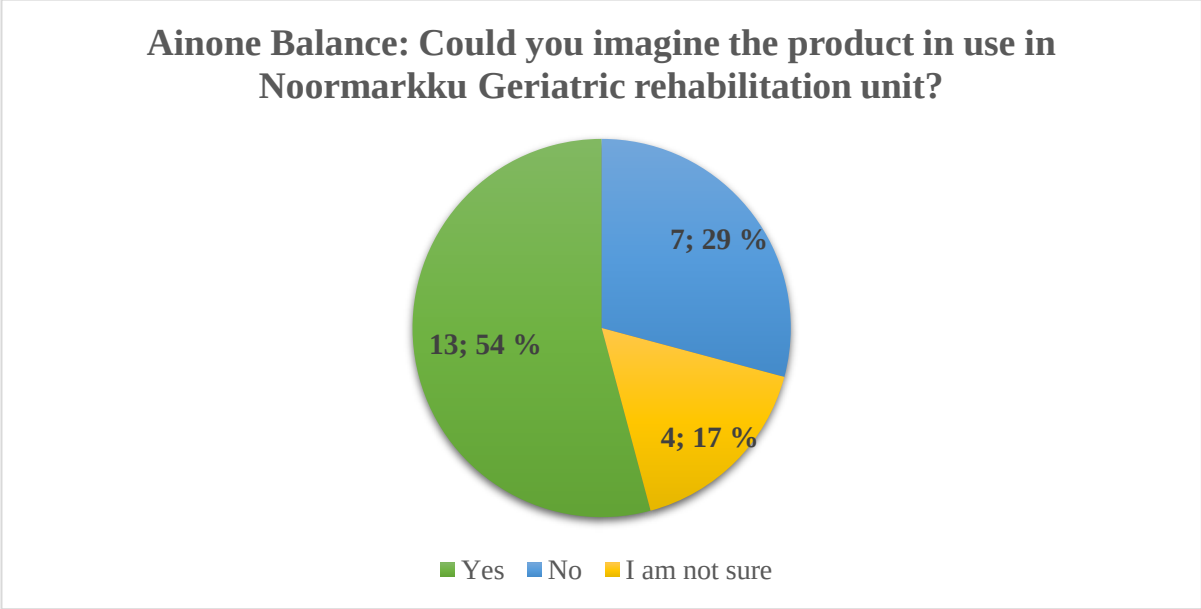


Figure 40. Which of the following rehabilitation goals could the product help achieve?

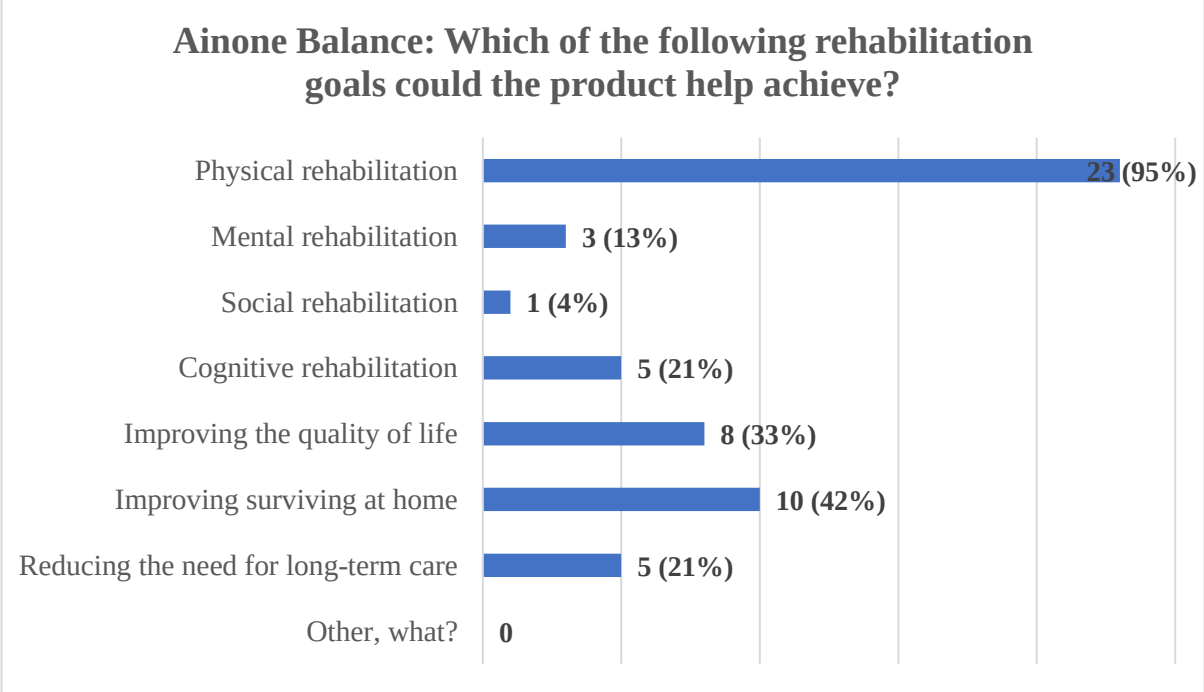


Figure 41. Which of the following resources could the product save by improving the effectiveness of the rehabilitation?

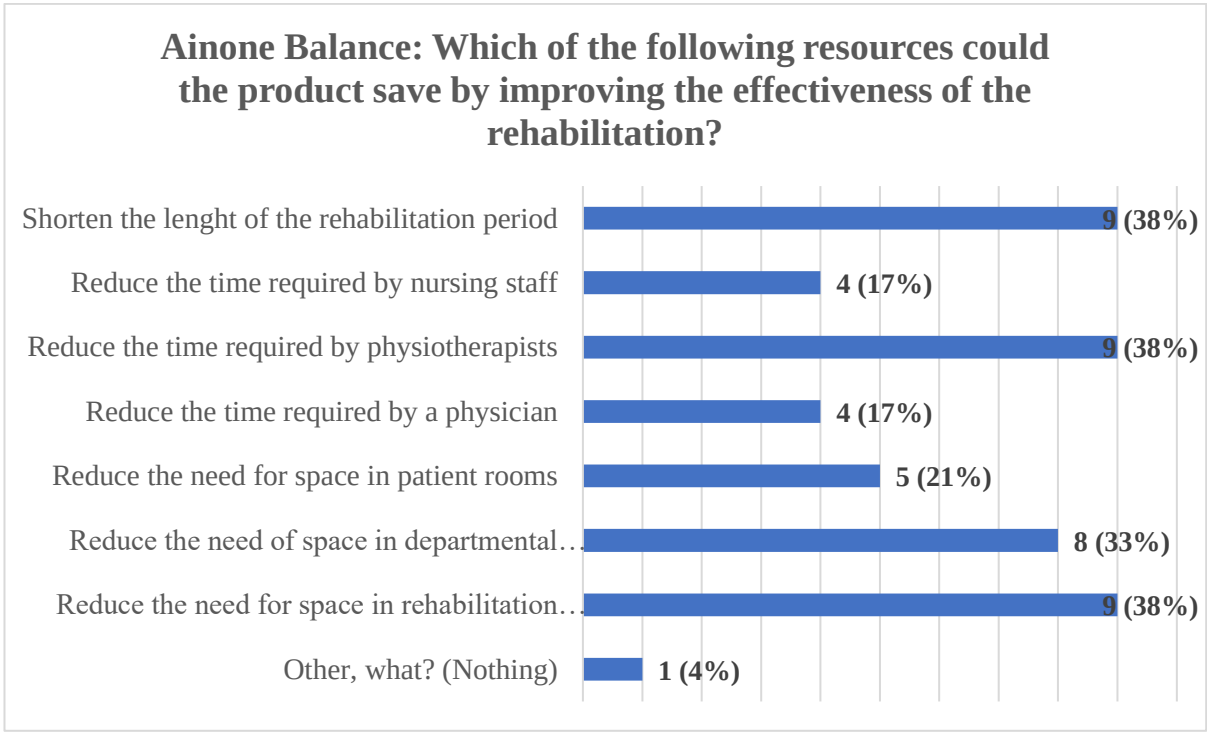
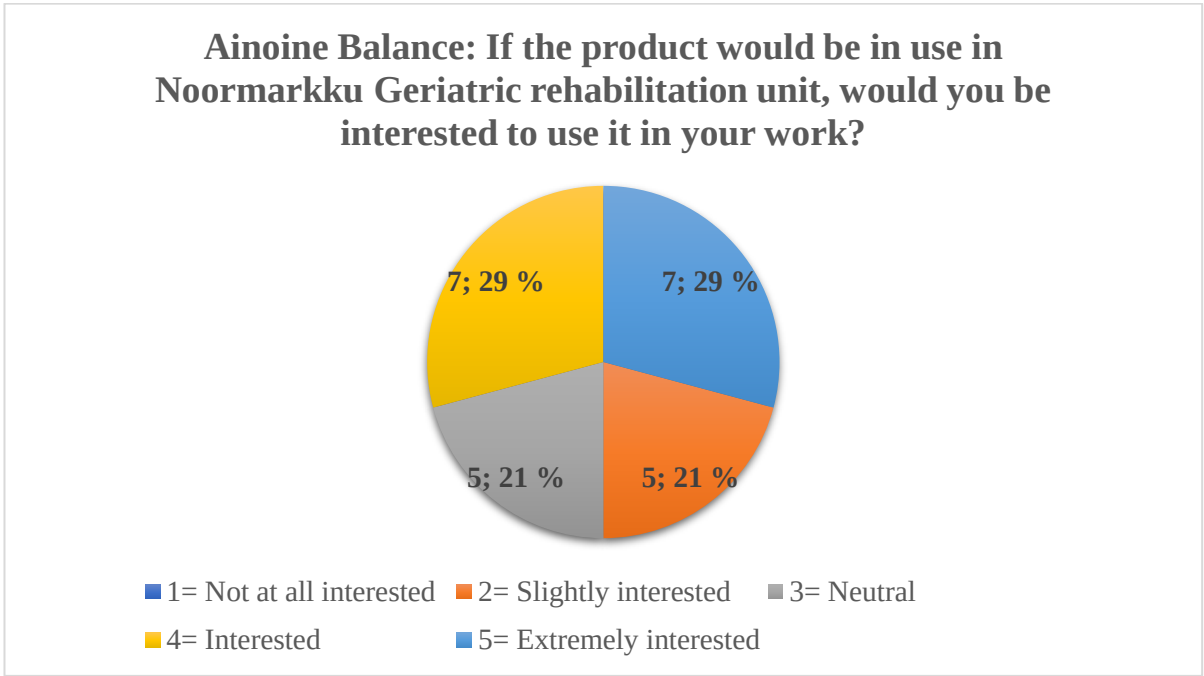


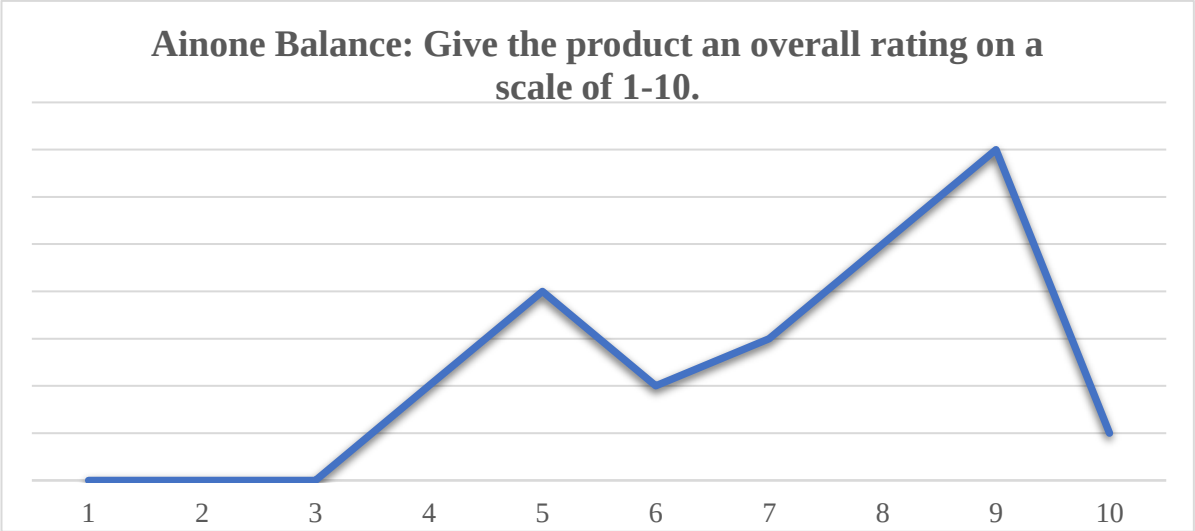
Figure 42. If the product would be in use in Noormarkku Geriatric rehabilitation unit, would you be interested to use it in your work?



What would be the most challenging about the use of the product in Noormarkku Geriatric rehabilitation unit? Tell briefly.

(Open questions responses are not available publicly due to data protection. Summary can be read in the report's result analysis)

Figure 43. Give the product an overall rating on a scale of 1-10.



Ainone Balance average score: 7 (rounded to the nearest whole number)

The amounts of a particular ratings are displayed in the graph.