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Parallel B Moorfoot
Ageing with a disability

ADRIAN MARTIN: Ladies and gentlemen, good morning. Welcome to the second session, parallel talks. My name is Adrian Martin. I work for the Scottish and UK governments. I won't bother to explain how that works but it makes life a bit complicated.

Just to make sure you're in the right session, this is called Ageing with a Disability or, as my wife likes to say, "Age doesn't come alone." We have five speakers this morning, so it is going to be quite a tight timetable. If you have questions for our speakers, we will hold them to the end to deal with those questions. Each speaker is going to have about 15 minutes to speak and I'm going to be quite harsh with them to cut them off if they go over a little. Our first speaker is Tom Gerards, from Strathclyde University. I have just learned that Tom is from Holland. Tom.

TOM GERARDS: Thank you, Adrian. Good morning, all. Welcome to this presentation. It's about a tele-rehabilitation platform. What's unusual about this one is that it is aimed to be scalable and the reason why I'm presenting this here today is because RI aims to improve quality of life of people and by restoring lost function, by rehabilitating people, I think we can improve quality of life. Also, RI aims to create a more inclusive world and I've done my best to make this technology inclusive.

I'll talk a bit about why we need a tele-rehabilitation platform, what I made and how I made it. But let's start by looking at what it actually is. So a platform is this collection of devices and software and for tele-rehabilitation we are aiming to deliver a health service over distance without the need to travel.

Why do we need such a thing? If the papers are to be believed, it's because the NHS is on the edge of collapse. The NHS is under financial pressure in a nutshell. If you look at why the NHS is under financial pressure, which conditions take up the most resources, it's not what you might expect, like cancer and A&E. It is actually long-term conditions, which I believe is defined as conditions that last for over a year and limit what people can do. This includes diabetes, arthritis, but according to that definition it also includes disability. Long-term conditions are responsible for 60% of all hospital bed days and even 80% of all GP visits in the UK. So if we want to help the NHS, these would be the conditions to focus on.

Now, because of these financial pressures that the NHS is facing, a policy of early discharge has been adopted. You can see it right there. This is actually leading to this cycle or spiral even, where we go from early discharge... there is nothing wrong with early discharge but the problem is that once people leave the hospital they're now in their own home, away from health professionals and they receive insufficient rehabilitation because they now rely on travelling physiotherapists and that service is already overburdened. Because people get insufficient rehabilitation, it leads to an increase in residential and nursing home care, which exacerbates the financial problems. We get less preventative services and it just keeps spiralling down by increasing hospital bed pressure even more.

So we know this cycle exists for seven years now, but still we have not managed to fix it. If you look at fixing it, we could build more hospitals but financial pressures are there so no money for that. Instead, what we should do is become more efficient and to do that we need technology. If you look at farming technology, it has allowed us to progress from each of us growing our own food to just a few people using technology and being able to grow the food we all need. Because of that, you know, we are all able to be here today.

Now, if you look at where we could use technology, we could target rehabilitation or target prevention. Now, I don't believe we need preventative technology -- we need it but we have the preventative technologies we need. We already have the technology that lets us age healthily and coincidentally would also help with global warming, air pollution and traffic congestion. Bicycles, I should disclose at this point that I'm Dutch and my view on this point might be biased! But back to the serious presentation, if we're not going to target preventative technology, we should target rehabilitation technology and try and make rehabilitation more efficient. It is exactly what tele-rehabilitation is believed to be able to do.

It has always been very researched focused and it has always, well, been like this a little, where it's not very easy to use and it would not be very easy to produce thousands of devices like this. Once you know that you can't have or that there is no scalable technology, you also know why after more than 50 years of research we don't have tele-rehabilitation in practice yet. If you look at the development model with these phases that technology needs to go through before it gets implemented, then we are failing to transition into the third phase simply because the technology is not scalable and we cannot do the large-scale research that we need and especially large-scale cost effectiveness research would be needed to drive the field forward. The aim is to develop this technology, I think, and so after reading all of these background articles and literature, I started looking into the literature on how to make scalable technology. I uncovered this list of properties where ease of use is very important; low cost is important as well in terms of cost effectiveness. If your technology costs more than just sending a physiotherapist, it is not enough. Cost effectiveness depends not only on minimising cost but also on maximising function. I looked at the kind of functions that would maximise effect. There we go. I came up with this list, video calling because this enables good communication between the patient and therapist and it's arguably the most important function that a platform would provide but there are more. For instance, exercise games that would motivate people to do more exercise. Bio feedback because it would enable for people to do their exercises even if their physiotherapist is not with them at this very time, known as a synchronised services, and a couple more.

Then, the design I came up with to deliver on these properties and functions looks like this. I use a user-centred design that puts the person at the centre of the design. So instead of looking at a technology you might be comfortable with or you think might work, you actually look at factors that humans might need, in terms of reduced vision or reduced memory skills, to try and make this technology as accessible and inclusive as I possibly could.

In the bottom you can see... well, let's start with the tablet computer using a touch screen, because it's the most intuitive interface. A simple menu with high-contrast colours, and then linked to a condition-specific measuring device, my prototype is for total knee replacements. I came up with this device that can measure knee angles. Here it is. I've called this thing a Chain Linked Electro Goniometer or CLEG. It was 3D printed. The nice thing about the CLEG is that it's robust and it was cheap to make and it can accurately measure knee angles, because it can follow the strange movements that the knee exhibits, because the knee is not a simple hinge joint.

This then plugs into the tablet computer and because of that it doesn't need batteries that could run out.

It doesn't need troublesome wireless data connections, all known to be barriers in the adoption of tele-rehabilitation technology. Using this, together with the tablet, patients can do their bio feedback and do their exercise games, and they can send information on progress over the internet to the therapist computer. Now the therapist has a computer, just standard computer, because this will feed into their daily practice.

Then, some functions that this platform provides, I've added a few screen shots. In the top you see the bio feedback app, letting people know if they are doing their exercises correctly. If they don't, the knee joint will turn yellow or red. Here, you see again that people can play using the platform, hopefully motivating them to do more exercise.

After I made all of this, I was obviously very happy! But my supervisor made me go to health professionals and see what they thought of it. I was happy to see that they agreed that this platform would be easy to use, but they had some critiques. One was that I was planning to send them raw data and they were not happy with this at all because they don't want to spend their time analysing data. They want to spend their time on patients. Another point was that they would like an activity monitor to get some insight on the activities that people were doing. So I did what they told me and I built in an activity monitor into this CLEG, using a very simple algorithm that just uses diffraction of the maximum hip angle over the maximum knee angle seen during an activity. This can now differentiate between things like walking, doing sit to stand exercises, or squatting exercises. Using this activity monitoring function, built into the CLEG, is automated data analysis. Instead of sending numbers to therapists, we can send data to them saying that the patient did five sit to stands in five seconds and this was the range of motion they exhibited. Because the therapists also wanted the range of motion assessment to be accurate, I compared it against a laboratory system for measuring joint kinematics, so in this case knee angles. As you can see, the two devices agree very well. There are differences between the devices though. The lab system is expensive. It costs more than 100 times as much as the CLEG does. It is stationary, whereas the CLEG is mobile. It needs trained operators, whereas this just switches on and off. And also this is more robust so for use in a homely setting, I would rather have this than the big lab system. Regardless of the cost that would make the system unusable.

So for the CLEG, we have this cheap, robust instrument. I compared... I 3D printed three of these and compared their accuracy against set angles with an RMS, so an average error of 1.1 degrees at most. It was good. In a sample of 12 volunteers, it was found not to influence what it is aiming to measure so that's always good to know. It can do activity recognition. I wish I could give you numbers here but I'm still analysing the data.

In conclusion, the platform can deliver all functions. It is low cost, high-quality, highly flexible. It seems to be easy to use. The therapists agreed it was. There is still a question on whether patients will think it's easy to use. More questions still on if we can meet the properties of minimal training and minimal tech support for patients, but I'm hopeful that once we answer these questions we will be able to advance the field of tele-rehabilitation and perhaps even change the way healthcare technology is developed, going to a model where making inclusive technology is the standard rather than the exception. Thank you for your attention. That was my presentation. (Applause)

ADRIAN MARTIN: Thank you very much, Tom. Thank you for sticking to time. Having gone through surgery and rehabilitation myself last year, it was presented as a fact that I was unusual, which I always like to be called unusual but I was unusual because I was told that most people who get rehabilitation don't do as they're told and don't do their exercises, so anything that helps that is great.

Our next speaker is Rex Khan who is from Hong Kong and he will talk to us about falls and trips and so on and how he deals with them in Hong Kong.

REX CHAN: Ladies and gentlemen, it is my privilege to be here to share with you my study. A study on fall exercise intervention for persons with intellectual disabilities. I'm from Hong Kong and the Fu Hong Society. We have to admit, that everyone will be getting old, including me. It's irreversible. You cannot change it. But at least we have to do something for it. For me, just in the morning, when I attend a plenary session, I very definitely agreed with active ageing. So ordinary people, what can they do is have a balanced diet, a healthy lifestyle, or maybe if like Chinese kung fu, they can practise martial arts. I always practice bar tum gung; I don't know the English name. For the intellectual disability in people, we have to do something for them. Let me see. Now, according to literature for the ID persons, they are getting much older than normal subjects, usually about 40 they're getting old. When they're getting old, they also face the same problems, such as impairment, dementia and osteoporosis. What can we do? All of the factors can result in falls and the results of falls can be debilitating. For society, there is an agency in Hong Kong for 40 years it commits to providing innovation and persons with IDs. For the past ten years, I, as physiotherapy is, have been involved in a lot of studies in order to cope for the fall. For risk factors, since it's multi-factorial, therefore, we need to do some assessment in order to screen out the eligible candidates so we can render some eligible intervention for them. Just now, the speaker mentioned about exercise and using information technology, but for the ID patient they are passive due to cognitive disability and they cannot co-operate. Therefore, for me, as a physiotherapist I want to make it simple. So assessment and outcome tools are very crucial for me to evaluate the improvement of them. In dementia, I would try various methods and various prevention strategies in order to deal with the coaching, in order to deal with the ageing problem, especially on the falls issue. Now, I as a physiotherapist for 35 years, so quite old, sorry 35 years, I've tried my best to render different forms of exercise. In my opinion, I would say simple exercise for the patient would be rather effective. If you involve them to do a lot of movement, balancing, obeying instructions according to the computer, it won't work. So I set the objective to evaluate the effectiveness of a specifically designed exercise regime, by respective change in three outcome assessment tools. They are, firstly, the Bergs Balance score, abbreviated to BBS, the total score is 56. The time up and go test, TUG, the benchmarking is less than 14 seconds. The user has to complete the task. So the third test is the Tinetti balance score, it is 16. For the detail of this three outcome assessment tool, I tend not to go into detail, because they are all valid and reliable. You research them in the website.

It is a study but plainly speaking, I will make it not so boring! For the method in order to accomplish the task we have to finish it phase by phase. Firstly, we have to collect enough data, so all of the baseline sampling data, we tried to recruit as much as possible. There are 70 eligible candidates under the same settings, under the same type of stuff in their daily activity. We have to capture their gender, sex, degree of the intellectual disability, their mobility status and also, just now as I've mentioned about the outcome assessment tool, for the BBS, there are three different categories to identify the fall risk. So I would say, just like you have some idea, the maximum score is 56. Full score, well done! But for no risk user, very low-risk user, it identifies as 41 to 56. For medium fall risk, it is 21-40. For the high-fall risk, it is 0 to 20. After we capture all of the preliminary data, we go to phase two. It is the essence of the whole project. I go through the exercise regime for 24 weeks with 23 users. They are labelled as medium fall risk, because in my perspective if high-risk you cannot do much more them. Most IDs, they may be very disabled, they may have difficulty in walking and maybe wheelchair-bound. For the very low risk, their progress would not be very obvious. So we take the medium risk users. The measure is essentially for all of the pilot studies and research. In order to have the batteries out, all of the eligible candidates under the same inclusion criteria, so we can imagine that they can co-operate, they can obey some very, very simple instruction, and also, secondly, the outcome indicator, just as I mentioned, three of them are both valid and reliable. They're mostly used in gender but we tried to apply them to ID patients. Thirdly, the fall exercise protocol, just now as I've mentioned, I use simple exercises. How simple? It is just sitting in a chair, using some weights, and some single extending and standing, whatever. But it works, really. And then regular monitoring for the implement through the 24 weeks. We chart the attendance record to make sure they do it to their maximum capacity. We ensure

their attendance, so we avoid the home visits. So the results and findings, we can see what happens. It's lucky, it's lucky really by me as the moderator, using the three outcome assessment tools, I rated a score; there was all improvement for the pre and post-BBC tests, the TUG tests and the Bergs Balance score. The female subjects showed better performance compared with the male. Do you know the reason why? As a female, they're smart? Yes! Maybe! The females, they are rather tough, I'd say and much stronger than men. Even in Hong Kong the females are dominant! Okay, I don't mention this! The degree of the IDs, mobile status and correlating factors. Age is not a correlating factor, plainly speaking. So even if you are older... for example, I'm older than you, maybe my exercise tolerance score is better.

Now we come to the final part, the discussion part. Now, three outcome indicators pre and post-P value is 0.000, whilst the TUG test is only 0.026. There's some significance in terms of using the statistics, what we call non-par metrics. There's improvement and 5% and, therefore, significant, because the P is less than 0.05. For the future direction, there are two important things. The first thing is the assessment tools. In my opinion, the impression and implication on my study, I would say most IDs are very simplified tool by scoring, by observation, is most effective in the future to identify those four risk users, especially for the ID patient. If I used a complicated tool, like the TUG, it's less than 0.026. Why? There are 14 items, the assessment is rather complicated. So just very simple assessment. I hope that we can make it work in the future. When I go through the literature study, I will try my best to find it. Okay. And then a score observation tool, as I've mentioned. Finally, this is the last slight. For the therapeutic intervention, I would like to mention the laser acupuncture. One thing quite interesting for me is that in addition to being a physiotherapist for 35 years, I'm also a Chinese medicine practitioner for ten years. I learned Chinese medicine can in order to do better for my service provision. I want to advocate east meets west. I used laser acupuncture. You see in this photograph, this one, it's from, do you know where? Not made in China! It's from Taiwan. The next one, that one, is from Germany. So both of them are working. I'm using the Chinese medicine meridian therapies. I will try to persuade the user to come down, come down, they use the acupuncture. For example, this is the pointer. I go for it every 30 seconds. So the time's not consuming. But it works! It's user friendly. Even on the skull, even work for the dementia. Finally, we come to the vibration or what we call oscillation therapy. We use oscillation machine. Both types. This one is from the Chinese university of Hong Kong. The red one is making use the ultrasonic mechanism. So, finally, I hope that by whatever means the ID persons, they are the minority, but really they still have the human rights. In the coming future, I hope that all of us serve them. That comes to the end of my presentation. Thank you for your time and attention. Thanks, Adrian.

ADRIAN MARTIN: Thank you very much, Rex. That speaks to getting in early for prevention of all sorts of conditions.

Our next speaker is Anne Rahikka. I hope I pronounced that correctly. She's from Finland and is a research manager there. She will take us through dealing with senior citizens and treatments available. Thank you, Anne.

ANNE RAHIKKA: Good morning, everyone. I'm delighted to be here and have this opportunity to tell you a little bit about our work I work in the Miina Sillanpaa foundation, which promotes rehabilitation services for elderly people but also for working-age people. Our services have redemption homes for elderly people and does research and development in this field. My presentation is about a project called the senior citizens home, which was a two-year project and it was a research and a develop project. The focus of our project was in home rehabilitation. Why home rehabilitation? Well, the reason is the ageing of the society, of the Finnish society. Because of that in Finnish care policy, living at home is the ultimate goal to organise Finnish elderly care services nowadays and also in the future. So we have the same issues in Finland as in many other countries around the world around ageing. I want to tell you about our experiences of our research and development and also introduce the effects of home rehabilitation in our

project.

First, I will tell you a little bit about the structure of my presentation. I will introduce the aims of the project and then tell you about the elderly people who participated in the project and their rehabilitation model. The methods we used to evaluate the effectiveness and what kind of technology we used. I will also tell you a very short story about Elisa, she's an old lady who attended the rehabilitation and, at the end, I will introduce the findings and conclusions.

Okay. The aims of the project were to develop a rehabilitation service concept for senior citizens, to implement user participation methods in the development and to pilot technology, assistive rehabilitation. The project consortium consisted of the Miina Sillanpää Foundation, Wilhelmina Services, which is a company owned by the foundation. We had had also the city of Helsinki and the municipality of Sepäl. It was financed by Tekas, which is a Finnish funding agency for technology.

A few words about the subjects and the rehabilitation model. The subjects of the project were all home care customers of the city of Helsinki. The customers consisted of two groups, so we had two groups in this project. We had home care customers who received the home care services of the city of Helsinki and then we had those elderly people who received only home care support services. In Helsinki home care support services can consist of food service or safety phone, or assistive devices and so on.

At the beginning of the rehabilitation, the home care customers they had an individual assessment. Then they had this 12 weeks rehabilitation period, which consisted of physical exercises and during that 12 weeks they also received guidance from the home care workers. Home care support service customers had the same, they had 12 weeks' rehabilitation period with physical exercises. But they got the guidance from... but the guidance was given by the physiotherapist and they had also had an opportunity to participate in group rehabilitation.

The research part in this project was carried out by an action research method. The methods that we used to evaluate the effects of the rehabilitation. In this project, we used physical activity and we measured physical activity by using short physical performance battery (SPPB) this was done at the beginning and the end of the 12 weeks' rehabilitation period. We were also interested in the quality of life, which was evaluated with Euro HIS-8 method. The technology applied consisted of activity trackers and we had also one virtual group and we had virtual group meetings.

We had semi-structured interviews and we had four customer panels, because one of our aims of the project was to use user participation methods. So the elderly people participated both in the development and in the evaluation.

Here is a little story, a short story about Elisa who attended the 12 weeks' rehabilitation period. Elisa is now an 80-year-old lady who receives home care services. She doesn't have any memory disorders and the need for home care services is quite small. Before the lay period, Elisa was depressed and she was quite withdrawn. At the beginning of the rehabilitation, her physical activities skills were quite poor. During the rehabilitation period, Elisa attended balance and gym. According to her own notes of the rehabilitation period, that her self-esteem rose and her mood improved at the same time as her physical activity got better. Her neighbours remarked that nowadays she's more social and she thrives in the company of others. After 12 weeks, her results of the physical activity improved significantly and she was more satisfied with her quality of life. Nine months after rehabilitation, Elisa still goes to gym group and she enjoys her life. This was one story of those elderly that attended the project.

I won't go into detail of the findings because of the lack of time. But here are some findings of the physical

activity and quality of life of the two home care groups that we had in this project. According to the results, there was positive improvement in both groups; especially there was significant change in the support care customers' physical activity.

As a summary of the findings, the functional activity and quality of life improved during the 12 weeks of all patients in both groups. Those elderly people who had individual rehabilitation plans and who also attended group rehabilitation showed more positive improvement in the physical activity and quality of life compared to those who had only rehabilitation at home with the guidance of home care staff. One explanation is that the physical activity of the support service customers was better at baseline and they were also a little bit younger but that doesn't explain everything. The positive improvement is also the result of the social relationships and social interaction in the group. This was also mentioned in the customers' feedback that we got from the project.

The conclusions. Home rehabilitation is effective intervention in improving the physical activity of the elderly people. The best results, according to our project, were achieved by the combination of an individual and group rehabilitation. It's important to keep in mind that physical activity and quality of life are closely connected together and they go hand in hand. Technology offers new possibilities, as we heard earlier but according to our experiences, there is still need for further development to better meet the needs of the elderly people. We used activity trackers and our experience was that they produced moderately well information about the daily activity but excluded those who used a walker. In the project, we had problems also with collecting the data of the activity trackers. We had also one virtual group pilot and at the beginning we had problems with the technology but we solved those problems and as a whole the experience of the virtual group was positive. For instance, we learned that this kind of groups, they are useful for elderly with physical disabilities, people who have problems leaving the home and so on. Also, the customer panels, they proved a useful method to involve customers in the development process and evaluation. It was the best way to hear the hopes and needs of the elderly. Thank you. (Applause)

ADRIAN MARTIN: Thank you, Anne. A presentation. We now welcome Tove Lise Nielsen.

TOVE NIELSEN: Thank you. We focused on client-centred occupational therapy in the homes of older adults. We tested the effect on their occupational performance. Older adults' activity and participation can be explained by the model of functioning disability and health from the ICF, since it points out influencing components and how they may interact. Older adults' activity and participation can be hampered by disease and trauma, such as stroke, chronic obstructive pulmonary disease, diabetes, pneumatic diseases and fall-related injuries. In addition, the ageing of cells and of the muscular skeletal can moderate activity and participation. Mobility is often impaired as well as activities within self-care, productivity and leisure and social participation. These problems can threaten older adults' quality of life and ageing in place. The environment can support activity and participates but it can also affect it in negative ways, home hazards are an example of the latter. Home help and home rehabilitation, assistive devices and home modifications are elements that may support older adults ageing in place, through compensation, improvements in level of functioning and a safer environment. In Denmark, occupational therapists are much involved in the rehabilitation of older home dwelling citizens. The call of occupational therapy is to aim the informants of occupations that the individual values. Occupational therapists define occupations as groups of activities and tasks of everyday life, given value and meaning by individuals in a culture. Occupations are actually everything that people do to occupy themselves within the areas of self-care, productivity and leisure. Occupations bring meaning to life and, importantly, they have a therapeutic potential.

Clients-centeredness is a core value of occupational therapy. We focus on co-operation with the client, on partnership and empowerment of the client, on clients' goals, and on listening, respecting clients' values,

and meeting clients' needs. Occupational therapists were involved in improving older adults' occupational performance in two typical ways, through client-centred occupational therapy and through home care reablement. The home care reablement had a very limited focus. The older adults should practice their daily activities and tasks to which he or she would otherwise have to have home help and the aim was to reduce home care costs. Since a number of referrals to home care reablement was increasing and less older adults were referred to client centred occupational therapy, the therapists were worried that the older adults' access to valued occupations was endangered. The occupational therapists -- they wished to carry out and study the effect of an intensive client-centred occupational therapy programme and I got involved in this as part of my PhD. Our study aim was to test the hypothesis that home-based intensive client-centred occupational therapy, referred to as ICC-OT, is more effective than usual care in improving older adults' occupational performance and satisfaction. We designed a control trial and included 119 home-dwelling older adults. Their mean age was 78 years and the age span was from 60 to 96 years. 72% were women and 28% were men. 87% were already receiving some home care at baseline. All were Danish speaking. We excluded older adults who were formally received home rehabilitation, who had predefined severe conditions, such as dementia, cancer or motor neurone disease. They were also excluded if they were abusing drugs or alcohol, or were in severe pain.

The intervention group received the ICC-OT, which was an extension of the usual practice. The aim was to improve occupational performance. The focus was decided by the older adults and based on the Canadian Occupational Performance Measure, the COPM. Goals were set in co-operation with the older adult and the occupational therapist and the approach was occupation based and individual therapy, in which to allow the extent the older adults' practised exactly the activities and tasks they wished to improve to restore the quality of their occupational performance. Assistive devices and adapted methods of doing were introduced to enable safe and effective performance of activities and tasks. In addition, the participants had usual access to home care, meal service, assistive devices and physiotherapy, which is provided free of charge in Denmark when certain conditions apply. This intensive programme lasted up to 11 weeks, twice a week, with a maximum of 22 visits.

Now, the control group received the usual practice, with the aim to compensate for problems within self-care, cleaning and cooking, and to minimise the need for home help. This focus was decided by the municipality's home care policy. The participants had access to home care, meal service, assistive devices and physiotherapy. They also had access to three weeks of home-care reablement, by home care assistants. If the home care officer thought they had a potential of improving. They could receive a maximum of three visits by an occupational therapist in relation to home care reablement.

The participants were invited to join the study when they contacted the municipality or applied for home help, or having their home care needs re-evaluated. After enrolment and random allocation, the intervention group received the ICC-OT for 11 weeks, and they then had the usual practice for the rest of the six-month period. The usual practice group received usual practice for all six months. All participants were assessed at baseline before randomisation, and at three and six months.

As for assessments, the interview based Canadian Occupational Performance Measure was used to identify and prioritise the older adults' performance problems, and to assess their performance and satisfaction. The observation based of motor and process skills, the AMPS, where the older adult is engaged in the performance of activities relevant to him or her was used to assess the quality of performance through observable motor and process skills.

I will now tell you a few more details about the ICC-OT programme from my analysis of what actually went on for those 59 older adults who were randomised through this programme. 52 received the programme. The mean number of visits of 15, the equivalent to 11 hours. The older adults identified problematic

activities and tasks on the COPM. As they were free to choose what to work on in the intervention group, it was rather interesting for us to see they chose to spend the time on with the occupational therapist on. We found that at group level, the time spent on chosen activities was fairly evenly distributed on self-care productivity and leisure. Typical self-care activities were bathing, grooming, dressing, mobility and shopping. Activities within productivity were most often cooking, cleaning and laundry and leisure activities were typically hobbies, walks and socialising.

These are the preliminary results concerning our primary hypothesis that occupational performance as measured on the COPM would improve more in the ICC-OT group. The figures show the results at three months. Improvement, as you see the step between the dark blue and the light blue column, it took place in both groups. But mostly so in the ICC-OT group. Their results are shown in the columns to the right. The between group difference in improvement of 1.26 on the COPM performance at three months was statistically highly significant. At six months, there are no figures showing that, the ICC-OT group maintained most of their improvement whereas the usual practice group did not. The between group difference of close to 1.0 was still statistically significant.

Concerning the secondary outcomes at three months, both groups had improved their satisfaction as measured on the COPM and both groups had improved the quality of their occupational performance as measured on the motor skill of the assessment of motor and process skills. At six months, the ICC-OT group had further improved their scores on these scales and the between-group differences were now highly significant. Exploratory analysis show that the ICC-OT worked regardless of the participants' age or gender. Participants with better general health had better outcomes.

From our initial analyses, we can conclude that in-home occupational therapies in which the participating older adults intensively practise the activities they value the most effectively improves the performance of these activities. The effect persists for three months after discharge from the occupational therapy programme. These results can support the planning of intensive and clients-centred occupational therapy interventions, as well as home-care reablement with more focus on clients' priorities.

Thank you all for listening! I also want to express my warm thanks to the older adults in Randers who participated in the study, to the occupational therapists and other staff involved in allocating assessments and interventions and to those who supported the study in so many other ways. Thank you.

ADRIAN: Thank you, Tove. Our final speaker is Thomas Kaul from Germany, who is going to be speaking to us about the experience of older deaf people in Germany.

THOMAS KAUL: I'm coming from Cologne, from the University of Cologne. My focus is on deaf people and deaf in this context means sign language using deaf people. It's a very small group and was very have very specific needs.

There are two projects I would like to present, which we conducted in the last ten years. The first was the Project Sigma, the situation of Deaf, elderly Deaf people in Germany and the Project Gia, which tries to set up a support system for this target group.

We have four members. Our intention was to work together with Deaf people and there are always Deaf people in our team who are responsible for some parts of our project. We started in 2006 until 2009. There was the first objective was to explore the living conditions and the individual resources of elderly Deaf people. I told you that it's a very small group, one per thousand; about 80,000 people in Germany are Deaf and using sign language. And if you consider the aged group, it's more smaller than that, about 12,000 or 15,000 people are Deaf and using sign language in Germany, and are old. We would like to explore the

quality and quantity of services of services for this target group and measure how they can get information and consulting and how is the healthcare situation or the social care situation for them and are there special needs which are not supported.

We made, for instance, three studies. First of all, we interviewed the Deaf people. It's a qualitative approach, because Deaf people have problems to learn spoken language and, as a consequence, they have problems to learn written language. It's always a challenge for them. So it's very difficult to use instruments which are based on written language. So we used always a face-to-face contact and interviewed them. The interviewer was Deaf people and the interviews were translated and then transcribed. And then we interviewed on the one hand experts who have contact with the elderly Deaf and made a written survey via the internet. We tried to get representatives from nursing and retirement homes for Deaf people. It's only some in Germany.

Some results. The family network is not highly meshed. The specific situation of the Deaf elderly in Germany is that they are, during the National Socialism, they are sterilised. So they often have no children. So the support of the family is very low. And so they are also isolated. But on the positive side, there's a close network with the Deaf community. The Deaf community is a community who uses sign language and they are often in the local associations of the Deaf communities and have groups for elderly people where they meet each other. If it's possible to go to these groups, it's very positive for the Deaf. But they are very active! They take long ways to go to the groups, to get information about outings and there is also honorary work amongst Deaf people. If mobility is reduced, then the contact and the access to the Deaf community are also reduced, and they are getting more isolated.

One of the greatest challenges is that they are not well informed, because they can't use radio, or use the television in the same manner, and they can't read normal information material, so they need also information in sign language to get the specific support but there is no information in seep language, so the Deaf Association have home pages where you can get information, but the elderly are not very well internet based.

On the other language, healthcare professionals who are working in nursing homes or in support services don't know very much about Deaf people. They can't use sign language, they don't anything about culture of Deaf people, and so the lack of knowledge leads to an often rare unoperated care. Very often the Deaf are very, very isolated in nursing homes for hearing people.

There are only some specific offers and supply for elderly Deaf people. In Germany, in 2006, we had only one service centre for deaf people, and some nursing homes so that there is no support system and they don't know how to get the information which is necessary. At the end, if mobility decreases, if they become ill or dementia exists, they have to make a decision that is really difficult. They have to decide whether they stay at home without support, or they go to a specific institution, regularly in another town or far away, where specific support is possible, but then the social network to the Deaf community breaks down.

We have made some recommendations. On the one hand, there has to be a structural development. We have to increase the specific offers for this target group, to make the networks better they need more information and the society needs more awareness about this small group. We need some quality management for the institutions. What kind of qualification must they have? What standardisations in the processes? Not only sign language, but also technical equipment and so on. So we set up a second project, Project GIA. We set up a competence centre, two competence centre for elderly deaf people in Germany as a pilot study. The goals are to improve the supply and support for this group. They should get better access to general offers for elderly Deaf people. And on the other hand we should expand the specific offers which are based on Sign Language. The sense centres are working like a bridge between two systems. On the one

hand, the system for hearing people and on the other hand the system for Deaf people.

The second aspect is to develop specific information material for Deaf people. Normally, it's based on sign language. You can use the internet on the one hand. On the other hand, you need people who are able to communicate and to inform the Deaf people in the centres or in the Deaf associations. The third aspect is to create recommendations for the politicians to develop the system furthermore. We set up two centres. We have four target groups. First of all, the elderly Deaf people themselves and then if there are relatives or friends of elderly Deaf people, who take care of them, then institutions who want to support deaf people but have no experience in working together with deaf people and institutions and professionals and associations of the Deaf who are not experienced in supporting elderly people. There are three levels, service, information and clarification and networking and development. Examples, there is a deaf people who needs support and we support them to get appropriate offers. Where can they get the right healthcare or nursing homes? Where are they? Are they in the next city? Have they to go to other countries, for instance? Is it low Saxony or Hamburg, it's a support for the decision. The institutions which want to set up a specific offer for Deaf people. They have to know what is necessary to make a good support for deaf people. You need a person who is able to use sign language. The best thing is to have Deaf people who are using sign language and working together in this institution and which technical support is necessary and what kind of specific care is needed.

Then the information level is to set up information material to motivate the discussion within the group. They have to how will I live in old age, and they have to start the reflection process very early, and not that the decision comes in the situation itself. We have to go into the associations of the Deaf to motivate such processes. They have to get information about specific questions in this area, what is the patient decee, often Deaf people don't know what it is and it is necessary to have something like this. What is dementia? What consequences are coming from the dementia and so on? We have to set up something like material which can be used and we use videos with sign language and people who are going from one association to another to inform the Deaf people. It's more or less face-to-face culture. It's not based on written language. Collecting and developing approach with information material and so that they can get this information which is necessary. We are setting up some trainings and some information offers for the Deaf people, which is based on sign language. We have a home page at the association of the Deaf, where there is a lot of information about dementia and social care when they are aged. The main challenge in this context is to have nowadays a lot of resource shortages. It is very, very difficult to convince politicians to support and, last but not least, to finance necessary competence centres and these specific offers. It's always a kind of discussion about resource allocation, who gets the money, and that's the main problem today. From perspective of inclusion, they are very open but if it's necessary to finance such concepts, it will be very difficult. Now, we are trying to set up in every state in Germany Such a competence centre and that's the main discussion we have had to solve this problem. Thank you.

ADRIAN: Thank you, Thomas. It's interesting the plight of people with Deafness, given what was said this morning about social interaction being desperately important to stave off dementia. Because our speakers have been very good and kept to time, we have time for questions. If you have any questions for any of our speakers, if you'd like to raise your hand and a microphone will come around. If you could say who you are and where you're from and if the question is for any one of our particular speakers. Are there any questions? All of those hands. The gentleman over there, could you just wait for the microphone?

FLOOR: I'm Jack from West Bartonshire, which is not very far from here. One of the -- the main question to everybody is, you know, when you've got a physical disability like I've got, like cerebral palsy, there was not really much in there that helped me to know what was happening, you know, in the world, around physical disabilities like mine, as you grow old.

ADRIAN: What specifically do you want to know?

FLOOR: I just want to know what is there out there, you know, for people like myself who have a physical disability and who is a wheelchair user, who can't walk, so, therefore,... to me, I got the impression there and maybe I'm reading it wrong, I'm getting the impression that was elderly people growing old with age who have mobility problems, with age. My mobility problem gets a lot worse with age, a lot, lot worse with age. I'm just wanting to know... I couldn't see anything there that was going to help people with my condition.

ADRIAN: All right. Do any of the speakers want to pick that up? People who have a long, enduring condition... and are entering old age, what provision is there perhaps in various countries from where the speakers have been?

FLOOR: [inaudible].

ADRIAN: I think most of the speakers have been talking about things that happen as people get older as opposed to things that happen to people who already have the disability, which is a slightly different issue. Is it possible to say, for example, what happens in Denmark for people who have enduring disability?

>> In Denmark with enduring disability, they also age. As we heard this morning, they are often treated the same as everybody else who is age. The system that is set in place to assist older adults is also the system that should help people who are ageing with disabilities. It was also a problem at times this morning. There are I'm sure many cases in which the support system or the people working there are not really aware of the difference between treating someone with a persistent disability and someone who is abling and becoming disabled. So we haven't really got anything great set in place for that yet.

REX CHAN: From my perspective, you are wheelchair bound but I think you're still very active. It is what we called community activity in Hong Kong. From a physiotherapist's perspective, in Hong Kong, if you are treatable and you need treatment, an organisation can find help. The physiotherapist services in the outpatient department or can be home based. If you can't go to outpatient department, we go to your home to offer you service, maybe a few times a week. If you are being hospitalised every day, I'm sure physiotherapists will visit you. They will give you your necessary treatments. In Hong Kong, a lot of people are very proud and, therefore, if you are disabled and you really need somebody to help and there is nobody able to help you and you are wheelchair bound and getting stuck in the house, you have to wait for the old age home. The old age homes are usually private. For the Government ones, there is a long waiting list. In Hong Kong, I'm sure the welfare is not very good but it is still adequate. Activation, even you as disabled cannot give up. Otherwise your ageing process will be hastened very quick. Good luck! Keep on!

FLOOR: I will take the microphone. I'm sorry that you don't have any services right now, but I think it's because of the financial situation, the NHS just cannot afford to do too much so I think this illustrates how travelling can be a big problem in healthcare and I just hope in the future we can fix this and come up with technology or maybe or maybe more community-based care, so even people who cannot travel can get healthcare.

ADRIAN: Any other questions? The gentlemen in the checked shirt there.

FLOOR: My name is Niels; I'm from the municipality of Helowil in Denmark. I'm wondering about Deaf people. In Denmark, there are about 5,000 Deaf people and about 1500 who are elderly. We have a lot of people, I work in a healthcare centre and we have a lot of people who are almost deaf. I was wondering

could any of the things you discover be used for people who have serious hearing problems and are elderly. Do you have any good things we can do for them? Is it only Deaf people who use sign language that you are talking about?

THOMAS KAUL: I'm talking about Deaf people who are using sign language and on the border, if you can say, there are deaf people who are using sign language and are hard of hearing. These people who use sign language don't have the opportunity to read written material and communicate with support services. So the board is really high. That was our focus and not deaf people. There is a small difference in using written language. Deaf with capital letters means Deaf people who are using sign language. If you use deaf with a small "d," you are referring to deaf people who have a hearing loss but who use spoken language. It's from an audiological perspective. The capital "D" is a cultural perspective and based on sign language. We have a small, small group in our focus.

ADRIAN: Another question down the front.

FLOOR: My name is Jed, and I work here in Scotland for a disabled people's organisation. I'm currently working on what is termed here as "bed-blocking" with the NHS. I was very interested to hear what the speakers from Denmark and Finland were saying and the studies they had done. I was wondering if there were any similar studies, because that would be helpful for me, those kinds of studies.

ADRIAN: Do people understand what the questioner means by bed-blocking. People stay in hospital...

FLOOR: What they mean by that is that people get ill, get disabled, they go into hospital, and they get fixed and they go back out into the community and whatever some of them, whatever drove them there in the first place it gets them again and they go back into hospital, and they stop other people from being able to use the beds, because the service is not there when they get home. What I'm doing is working with the NHS and the social services here to look at whether there are ways, when they get home, they're not continually coming back into hospital and thus freeing up the beds. The kind of thing that is being done in Denmark and Finland is the kind of thing that I'm starting to look at as these good models as to how we might start to approach this. I was wondering if there was any more similar kind of services that had been done either in those countries or other ones.

ADRIAN: Thank you. Is that something that you recognise in Finland and in Denmark?

TOVE NIELSEN: I have a fellow PhD student with me and looking at whether older people who have been in hospital and have come home and they are then readmitted to hospital, and what they are actually trying to do is to look into whether a thorough assessment of the needs of the older adult before him or her leaving the hospital, and rehabilitation services initiated immediately after they are coming to their home, and whether that will be preventative. We are looking forward to looking into her results within the next half a year.

ADRIAN: Thank you. Do you want to make a contribution?

ANNE RAHIKKA: In Finland, in several municipalities, they are developing this system and that wouldn't kind of happen. After you are hospitalised, there is this group of home care service personnel who take care of you and look after you when you go back home, so that you won't be back in the hospital in a couple of weeks again. I think nowadays in Finland, there's quite a lot that the municipalities' -- not put money -- but they want to develop this process so that it would be better, for instance, elderly people.

ADRIAN: Thank you very much. Tom, would you like to make a comment?

TOM GERARDS: Yes. I think what you're talking about with the bed-blocking is what I talked about earlier as well. It's this cycle that keeps going. I call it hospital bed pressure but I think we mean the same thing. If you want to read more, there's a Cochrane review, which is by a Mr Ward and it's on rehabilitation environments. The summary of it is that basically this bed-blocking keeps going on because we don't have enough rehabilitation for people. So I think if we could just rehabilitate people, then they would stop coming back and blocking beds.

ADRIAN: Tom, while you have the microphone, can I just ask about your device, the CLEG? Are you developing similar devices for other rehabilitation situations, for shoulders or ankles?

TOM GERARDS: Funny you should ask, because if somebody wants to sponsor my post-grad, I would appreciate that!

ADRIAN: I will check my cheque book.

FLOOR: Hi. My name is Monica and I'm a PhD student, the same place as Tove. I've been conducting studies in Denmark about outgoing multidisciplinary teams. We do have them and we use them when you have like a patient with a hip fracture. We use the teams both in the municipality and also in hospital, where they can come home to you after your hospital discharge and help you. The municipality team is there for four to five months, whereas 30 days is the normal procedure to be there if you are a hospital-based team. But it's not the perfect system. I'll talk about that later this afternoon! It might be a possibility.

ADRIAN: Thank you. Thanks very much. We're about running out of time. I know people will be anxious to get downstairs for lunch. Could I just thank all of our speakers and all of our questioners for their participation? Thank you very much, indeed. Thank you very much.