

EU eContent Project
SOUND VITAMINS FOR THE ELDERLY
Final Report, April 2002
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SUMMARY

Old age is often regarded as a time when social opportunities reduce, and in many cultures old people are stereotypically regarded as lonely, socially isolated, and lacking connections to the outside world. In a similar vein, the physical mobility of old people tends to decline as a result of the natural ageing process. A great deal of academic research shows however that these problems in social and physical functioning can be helped by appropriate stimulation. But providing this stimulation is expensive, and at a time of an ageing EU (and global) population there is a need for cost-effective means of providing stimulation to the elderly.

This Action developed one such means, the Silver Bird system. This provides elderly care home residents with audio programmes designed to elicit group discussions and social contact. Another group of Silver Bird programmes provide instructions for gentle physical movements that aim to improve joint mobility. At the start of the Action, Silver Bird existed only in its original Finnish version, and the Action had two aims; 1) to produce linguistically- and culturally-customised versions of Silver Bird for users from English, Swedish, and Hindi backgrounds; and 2) to run a field trial comparing the social and physical functioning of elderly care home residents with or without access to Silver Bird.

This report summarises the findings with respect to these two goals. The main conclusions were 1) that Silver Bird *can* improve several aspects of the social and physical well-being of elderly care residents; and 2) that linguistic and cultural customisation of Silver Bird can be achieved. In short, Silver Bird represents a cost-effective means of providing stimulation to elderly people within several different cultures. The report also describes other lessons learned from the Action and how these have fed through to future activities.

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1. BACKGROUND

Senescence is often regarded as a period of physical and mental decline. The stereotype of elderly people is that they suffer social psychological incapacities (e.g. low self-esteem, isolation from the outside world), which exacerbate the deficits resulting from physical incapacities (e.g. restricted joint mobility, various difficulties in moving about their immediate environment). Research carried out in the public sector (usually by university academics or those working in the medical profession) however indicates that these psychological and physical deficits are by no means an *inevitable* consequence of ageing. Instead, several studies have shown that appropriately enriching the environment of elderly people (through e.g. group discussions, simple physical therapy) can significantly mitigate or even reverse the stereotypical deficits of old age, and improve specifically joint mobility and social psychological factors (e.g. friendship networks, improved mood and self-esteem). These enrichment techniques therefore improve the quality of elderly people's lives, and effectively constitute physical and social psychological 'vitamins'.

However, these opportunities must be viewed in the context of the demographic time-bomb facing the EU and other economies. People across the globe are living longer than ever as a result of advances in the management of physical illness and a growing awareness of the importance of healthy lifestyles. Consequently, the elderly constitute an increasing proportion of the EU population. Eurostat statistics forecast that by 2025 the number of young people aged under 20 will fall by 11.5% and the number of adults of working age will fall by 6.4%: However the number of retired adults will rise by 50%, which Eurostat themselves describe as a "spectacular increase". By 2025 "there will be two to three times as many [80+ year olds] as there are now, bringing with it a proportional increase in the infrastructure needed to cope with their particular requirements". The message is clear: There is a real need for enrichment techniques that are both cost effective and proven to work.

However attempts to put these enrichment techniques into practice are hampered by two major factors. First, they are very labour intensive to implement: Provision of them tends not to be economically cost-effective for many. Second, auditory methods are the only practical means of providing stimulation to the elderly. For example, it would be extremely difficult for care staff to provide instructions to their elderly charges using any method but speech. This places EU providers of stimulation materials at a considerable disadvantage. Put simply, successful pan-European (and indeed world wide) marketing of stimulation materials for the elderly requires their production in several languages. Just as significantly, in addition to customising the materials in terms of language variations, it is also sometimes necessary to customise them in terms of cultural variations. As an example of the latter, several academic studies have shown that different cultural groups have significantly different preferences for leisure activities (cf. Alsaker and Flammer, 1999; Flammer, Alsaker, and Noack, 1999; Katz, 1999; Kvist, Viemerroe, and Forsten, 1989; Machlis and Wenderoth, 1984; Nurmi, Liiceanu, and Liberska, 1999; Rodriguez and Agullo, 1999). It is therefore important to culturally customise the specific nature of any stimulation system for the elderly.

2. SILVER BIRD

Audio Riders is an information technology SME based in the outskirts of Helsinki. The ‘Silver Bird’ auditory stimulation system they have developed recently aims to provide a highly cost-effective means of delivering environmental enrichment techniques to large numbers of elderly people worldwide. The system comprises several channels, each featuring spoken prompts for reminiscence and group discussion (namely ‘golden oldies’ songs; news and current affairs; spiritual / religious content; stories; and quizzes): These are complemented by a sixth channel containing instructions for gentle physical exercise / movements. These channels are delivered via the internet from the company’s headquarters, and are used usually in group sessions involving elderly care home residents and a member of staff. Users can select between the six channels as they choose via a specially designed console. By their nature of their content, the channels are designed to promote physical mobility; group discussion and friendship / social inclusion; cognitive activity; emotional activity; a sense of ‘connectedness’ to the outside world; and entertainment / enjoyment.



The Silver Bird Console

In short, the system allows carers to provide stimulation for the elderly in a very cost-effective and efficient manner. The AR system features a predominantly verbal content, and worldwide marketing requires two further steps. The first of these is customisation for users from different cultural groups. The second is some quantification of the benefits of Silver Bird. The present Action set out to achieve these two goals.

3. THE ACTION

In addition to the existing Finnish prototype, Silver Bird was prepared (with culturally-appropriate customisation) in three other languages, namely English, Swedish, and Hindi. Trials were run in United Kingdom and Finnish care homes owned by Miinan Hoitolat (Finnish), Folkhalsan (Swedish), Anchor Trust (English), and Leicester City Council (Hindi). The UK care homes included residents from English and Hindi cultural backgrounds (with the latter representing a large potential market for Silver Bird outside the EU). The Finnish care homes included residents from Finnish and Swedish cultural backgrounds. Finnish, Finnish-Swedish, English, and English-Hindi cultures also possess very different preferences for leisure activities, which might be expected to manifest themselves through different preferences for channels on Silver Bird. These cultural groups therefore represented a rigorous test of the AR system, and provide extremely useful information regarding its potential in European and global markets.

Within each care home, some of the residents were randomly selected to have access to Silver Bird, while the remaining residents did not have access. Those who had access to Silver Bird participated in sessions approximately two or three times per week. A member of care home staff would advertise a time and place within the home for a forthcoming session. Approximately 6 residents would then take part in that session, which was led by a member of care home staff. Each session typically lasted for approximately 30 minutes and involved selected music and three or four other programmes (which each lasted for approximately two minutes). The programmes were paused at appropriate places and used to initiate group discussions, reminiscences, amusing stories, or a variety of other activities such as singing or clapping.



A Silver Bird session

The main aim of the field trial was to compare the physical and social psychological well-being of residents with and without access to Silver Bird. This was achieved by asking the residents to give ratings on a specially-designed questionnaire. Additional measures included the frequency with which different cultural groups accessed different types of Silver Bird programming, and more detailed comments were obtained from both staff and also the reactions of friends / relatives of the residents concerning their impressions of Silver Bird. In addition to this, care home staff and the friends / relatives of residents with access to Silver Bird were asked to complete specially-designed questionnaires in order to provide quantitative data.

4. FINDINGS

Linguistic and Cultural Customisation of Silver Bird

The first step in the present Action was linguistic and cultural customisation of Silver Bird for English, Swedish, and Hindi users. In some cases it was possible to simply translate programme material available within the Finnish version, given that the material in question was of a generic nature (e.g. a quiz about animals). However a substantial amount of material for each version of Silver Bird had to be prepared afresh. Although completed successfully, this stage of the project proved to be much more difficult than anticipated. A particular cause for concern was the availability of sources for programme material. Although some inspiration could be obtained from the web, we had to rely on the extremely helpful suggestions of care home staff much more than we would have liked. Nevertheless, as already noted, linguistic and cultural customisation was achieved such that preliminary versions of Silver Bird exist for elderly people from Finnish, Swedish, English, and Hindi cultures.

Running the Sessions

The Silver Bird sessions themselves also deviated slightly from our expectations. The reason for this was one of the strengths of Silver Bird, namely its flexibility. Care home staff are able to select programmes at will and build specially-devised sessions for residents with particular needs. However this flexibility caused some initial problems as care home staff who were novices with Silver Bird had difficulties in deciding on the best combinations of programmes. There were also some problems with a lack of IT knowledge on the part of care home staff. Some of the following quotations, made at the time by care home staff, illustrate these points well;

- “Guiding groups has taken much longer than estimated”
- “Knowledge of computers varies considerably between group leaders and this has created some obstacles”
- “It has taken some time before group leaders have understood the true meaning of their role”
- “More support is needed over the longer-term for computing-related aspects of Silver Bird usage. Perhaps some more concrete tools for staff could be provided

via the web, along with ‘ready-made’ Silver Bird sessions. More web-based dissemination of best practice is needed also”

Nevertheless, after the first few months these ‘teething troubles’ were overcome and the sessions ran smoothly, leading to some very positive feedback from staff (see below).

Comparison of Residents With and Without Access to Silver Bird

Data obtained during the field trial showed that residents with access to Silver Bird experienced numerous social improvements (see Appendix 1 for details). In short these data show that residents who participated in regular Silver Bird sessions had more friends; experienced better memory for long-term events; believed that memory problems hampered them less; found their relationships more fulfilling; felt less need to improve their social networks; found it easier to make new friends; felt that they could trust their friends more; reported that they responded more actively to attempts at social contact; took an more active interest in day-to-day events; took a more active interest in outside events (e.g. current affairs); were more likely to keep themselves occupied during the day (e.g. by reading); were more likely to help other residents; and cooperated more with nursing care administered to them. In addition to assessing these social benefits, a series of tests also looked at residents’ joint mobility. Residents with access to Silver Bird had better mobility in the left arm, right arm, left leg, and right leg.

Data from Friends / Relatives of the Residents

Several questions were asked of friends / relatives of the residents who had access to Silver Bird. The answers to these questions do not perhaps tell us very much about the *actual* condition of the residents, but they do tell us about the extent to which the friends / relatives experienced peace of mind. Most ratings were at the midway point of the rating scale. This indicates that although the elderly people required full-time residential care, their friends / relatives had few concerns about their memory for recent or longer-term events; general mood; or degree of social contact (see Appendix 1 for details).

Data from Staff Within the Care Homes

Several questions were also addressed to the care home staff running Silver Bird sessions. These questions assessed their experience of Silver Bird and attitudes towards it. Staff believed that Silver Bird facilitated better care of their residents; provided enjoyable activities for the residents; acted as a good break in residents’ daily routine; brought more structure to the year; provided a useful tool for encouraging discussion; improved the mood of residents; and made the provision of care easier (see Appendix 1 for details).

General Comments Made by Staff, Friends / Relatives, and Residents

This positive assessment of Silver Bird provided via the quantitative data was supplemented by more detailed comments made by staff, friends / relatives, and residents

in a special section on the questionnaires. These comments were almost uniformly positive, with the following examples illustrating the common themes and sentiments.

- “It has activated and refreshed residents. You can learn new things from the residents”
- “Silver Bird helps residents to reminisce. Nurses subsequently know the residents better”
- “Silver Bird creates an opportunity ‘for a living of the wider emotional life’”
- “Silver Bird creates new forms of activity to care for demented residents”
- “Residents go happily to the Silver Bird group”
- “It brings variation to the day”
- “It is a regular refreshment to the residents”
- “Silver Bird helps the residents to get a contact to other residents, and improves residents’ mood”
- “Silver Bird collects the residents together. Many old people enjoy the reminiscing”
- “Silver Bird brings variety and makes a programme for the day”
- “Silver Bird has improved the general mood”
- “Silver Bird is a comfortable form of activity for the residents, and it brings variety to the day. The ‘group moment’ brings feelings of togetherness”
- “Silver Bird is a really good reason for the residents to get together and talk with each other”
- “If Silver Bird sessions are cancelled residents are a little annoyed. Silver Bird has increased discussion”
- “After sessions residents continue discussing matters dealt with during the session”
- “Silver Bird increases the feeling of solidarity. Residents’ thoughts can be exchanged. It is the highlight of the day, and residents look forward to sessions”
- “The days do not seem so long and similar”
- “I have become better acquainted with the residents. Residents have told me a lot from their lives. Residents have become better acquainted with each other, and many of them have picked up. They are now more courageous about talking to each other, and tell their opinions”
- “The residents’ mood has improved. My own relationship with the residents has grown. Silver Bird is a comfortable stimulant also to my own day”
- “[Name of resident] has been generally more satisfied and happier”
- “If [resident’s name] feels better, and is satisfied, it will affect positively the quality of my life”
- “[Name of resident] has always been very social. I believe that Silver Bird facilitates and maintains this”
- “Increases in activities (especially during the autumn) are important so that residents have other thoughts than the arrival of winter”
- “Silver Bird is important because it adds to the quality of life and maintains social contacts”
- “Residents have something to look forward to during the day”
- “There is a good mood after sessions, with more conversation”
- “Regular stimulation is welcome for residents”
- “Residents enjoy the regular recreational moment”
- “Increases conversations”
- “Gives a clear weekly rhythm for residents”

“Relieves feelings of lethargy and stimulates residents”
 “Residents talk more than normal after sessions”
 “There is more contact for residents through Silver Bird”
 “Improvement in social relations”
 “Encourages residents to think and discuss, and improves mood”
 “Residents are happier”
 “Refreshes and stimulates resident’s moods”
 “Residents are satisfied and like Silver Bird”
 “Encourages belonging to a group, and feeling of being part of something”
 “Residents really enjoy the programmes”
 “Refreshing for residents and makes for good conversations”
 “Social interaction adds celebration (!!)”
 “Gives a lot to the group”
 “Conversations continue after sessions”
 “Quizzes give residents a sense of satisfaction”
 “Residents ask when the next session will be, and enjoy getting to know each other”
 “Residents have more activities and stimulation”
 “Brings variety and refreshment to residents”
 “Increases residents’ social relations etc.”
 “More social interaction and variety during the day”
 “All residents enjoyed the programme and requested different types of music. [Resident name] who has some mild cognitive impairment answered questions very quickly and took a very active part. [Resident name] who has learning difficulties answered a couple, and even though her answers were incorrect she wanted to take an active part in the programme”
 “A natural way of increasing communication, and reminiscing”
 “[Name of resident] who recently joined us took an active role in the programme and encouraged others to participate. She answered several questions”
 “After the classical music programme had finished all the residents commented that it was very soothing”
 “Residents had a really good sing-a-long. We used a variety of quite old tunes and everyone enjoyed reminiscing”
 “[Name of resident] really enjoyed the music and said that some of the tunes were really old and she hadn’t heard them for ages”
 “[Name of resident] was curious who was singing some of the songs, but I was able to tell her because they were on Silver Bird”
 “The residents have really enjoyed the hymns. [Name of resident] sung at the top of her voice, she loved it”

Programme Usage

We also calculated the frequency with which different cultural groups accessed different types of Silver Bird programmes. Data on these is reported in percentage format below, allowing direct comparisons to be made between different cultural groups. Clearly, the most preferred programmes were on the music channel: This is not surprising since a typical Silver Bird session would use music a) as a programme in itself and b) just to

provide a short break between different programmes on other channels. More interestingly, comparing across each row shows that different cultural groups differed in the extent to which they preferred to hear different types of material. For example, Finnish users were more likely than others to access the current affairs programmes, whereas English users were more likely than others to select quiz programmes. More simply, when selling Silver Bird in new markets Audio Riders must be ready to prepare different amounts of programming in different languages.

	Finnish residents	Swedish residents	English residents	Hindi residents
Music	69	94	83	94
Current affairs	13	6	3	1
Exercise	3	0	3	1
Quizzes	5	0	9	2
Stories	7	0	3	1
Religion	3	0	0	0

Other Activities

In addition to carrying out customisation work and providing evidence concerning the advantages of using Silver Bird, we also carried out various other activities. These activities have been supported by regular meetings of all consortium members to ensure the input of participants from a wide range of (cultural and business) backgrounds, and a dedicated web site (www.audioriders.fi) that has also helped to raise awareness of our activities.

In June 2001 all consortium members attended Care Expo 2001 (in Birmingham, United Kingdom), a major international trade fair dedicated to the elderly care market. We had a stall dedicated specifically to Silver Bird featuring a demonstration of the system, and the positive feedback received has already convinced Audio Riders of the need to exhibit here again next year. Also in 2001 Audio Riders were invited to participate in the, government-organised, Jetro Exhibition in Tokyo which allowed them to gain some initial exposure (and very positive feedback) in this important non-European market. In addition to this, University of Leicester have already been scheduled to present an academic report of the field trial to the British Association for the Advancement of Science's 2002 Festival of Science.

We also carried out numerous other acts of dissemination via the media. We produced two press releases (in several European languages) to the international press and trade press, and held a press conference in Helsinki to mark the launch of the project. This led to considerable coverage and interest from national and international media (e.g. BBC World Service radio). We are currently preparing several other articles for the specialist media, and Audio Riders are currently organising an industry seminar based on the results of the field trial. These activities will all help to gain and maintain the attention of the elderly care market.

In addition to these dissemination activities, Audio Riders have drawn up confidential implementation and exploitation plans. These will use the publicity resulting from the present project to promote the marketing of Silver Bird both in EU and non-EU countries. Businesses both in the UK and in Japan have been very interested in a new version of Silver Bird (featuring embedded internet access) that has great potential for elderly care. Further to this, Audio Riders believe that the present work significantly supports the Silver Bird brand: Their co-operation with well-known care organizations in the present Action and the good results obtained from the field trial will add considerably to the credibility of the product, and this is something that Audio Riders intend to exploit (particularly in the UK, France and Japan). Furthermore, as a consequence of the Sound Vitamins project and its publicity, Audio Riders have gained good contacts with venture capital and investment programmes in both EU and non-EU countries. Some of these contacts have already proven to be very promising, leading to several different possible investment programmes being planned for product launches in different countries. In particular, through the Sound Vitamins action, Audio Riders has been able to begin examining the UK market and its needs and, in addition to this, an analysis of the possible French market was carried out in April 2001. On the most general level, the Sound Vitamins project has led to Audio Riders gaining important cultural knowhow, that would have been impossible to obtain otherwise.

5. CONCLUSIONS AND FUTURE ACTIVITIES

The main conclusion to be drawn from the present Action is that Silver Bird does indeed improve users' social functioning and physical mobility. It has the clear potential to provide high quality care in a manner that is cost-effective to care organisations and enjoyable for elderly residents. The ageing EU (and indeed global) population means that such a product is extremely timely.

With regard to cultural factors, linguistic and cultural customisation of Silver Bird (although by no means a simple task) was achieved in reasonably short period of time. Furthermore, the field trial demonstrated that Silver Bird has benefits for users from English, Swedish, Finnish, and Hindi cultural backgrounds. In short, the lessons learned here indicate that Silver Bird can be marketed to different cultural groups, even though these may have quite different attitudes towards IT, ageing, or indeed social interaction. Although the system requires appropriate customisation, the positive effects of Silver Bird are not culture-specific.

Dissemination work will continue over future months. However, the present project has also taught us several lessons that form the basis for an application to the EU for follow-up funding. This application is based on a new version of Silver Bird that contains embedded internet access, and which further increases its flexibility. Given the initial problems that this flexibility caused care home staff during the present project, the Action proposed for follow-up funding also includes enhanced support for staff: This will principally involve greater IT support and the devising of a 'cook book' of suggested uses of Silver Bird with residents from different cultural backgrounds and with different physical / psychological problems. Other features of the proposed project are improved

methods of producing culturally-appropriate programming; the subsequent preparation of more programmes in Swedish, English, and Finnish; and the production of a French version of Silver Bird.

Appendix 1 – Details of results

Comparison of Residents With and Without Access to Silver Bird

Social functioning

- When asked to list all their close friends (to which they chatted frequently) the Silver Bird group reported having an average of 3.32 close friends whereas the control group reported having an average of 2.16 close friends. The value for the Silver Bird group was 53.7% higher ($t(308) = 4.92, p < 0.001$).
- When asked to rate their memory for long-term events (i.e. things that happened more than five years ago) the Silver Bird group gave a mean rating of 5.97 and the control group gave a mean rating of 4.19. The rating given by the Silver Bird group was significant at 42.5% higher ($t(308) = 4.23, p < 0.001$). Ratings were given on a scale where 0 = 'My memory has been very poor', 5 = 'Don't know, undecided' and 10 = 'My memory has been very good'.
- When asked to rate how much any memory problems (if any) had stood in the way of them doing the things that they wanted to do the Silver Bird group gave a mean rating of 5.76 and the control group gave a mean rating of 4.93. The rating given by the Silver Bird group was significant at 16.8% higher ($t(308) = 1.88, p < 0.03$). Ratings were given on a scale where 0 = 'My memory problems have really got in the way of me doing the things that I want to do', 5 = 'Don't know, undecided' and 10 = 'My memory problems have not got in the way at all of me doing the things I want to do'.
- When asked to rate how fulfilling their relationships had been over the last two months the Silver Bird group gave a mean rating of 7.07 and the control group gave a mean rating of 6.50. The rating given by the Silver Bird group was significant at 8.77% higher ($t(307) = 1.89, p < 0.03$). Ratings were given on a scale where 0 = 'I have not found my relationships fulfilling at all', 5 = 'Don't know, undecided' and 10 = 'I have found my relationships extremely fulfilling'.
- When asked to rate how much they had wanted more social ties or relationships with others the Silver Bird group gave a mean rating of 6.77 and the control group gave a mean rating of 6.09. The rating given by the Silver Bird group was significant at 11.17% higher ($t(307) = 1.98, p < 0.025$). Ratings were given on a scale where 0 = 'I have really wanted more social ties or relationships', 5 = 'Don't know, undecided' and 10 = 'I have been extremely satisfied with my social ties and relationships with others'.
- When asked to rate how easy they had found it to make new friends the Silver Bird group gave a mean rating of 5.59 and the control group gave a mean rating of 4.68. The rating given by the Silver Bird group was significant at 19.4% higher ($t(307) = 2.40, p < 0.008$). Ratings were given on a scale where 0 = 'I have found

it very difficult to make new friends', 5 = 'Don't know, undecided' and 10 = 'I have found it very easy to make new friends'.

- When asked to rate what proportion of the people they knew they felt they could trust the Silver Bird group gave a mean rating of 7.26 and the control group gave a mean rating of 6.75. The rating given by the Silver Bird group was significant at 7.5% higher ($t(307) = 1.75, p < 0.04$). Ratings were given on a scale where 0 = 'I have felt I could not trust any of the people I know', 5 = 'Don't know, undecided' and 10 = 'I have felt that all the people I know could be trusted'.
- When asked to rate how much they had responded to social contact the Silver Bird group gave a mean rating of 6.86 and the control group gave a mean rating of 5.96. The rating given by the Silver Bird group was significant at 15.1% higher ($t(306) = 2.46, p < 0.007$). Ratings were given on a scale where 0 = 'I have not actively responded to social contact at all', 5 = 'Don't know, undecided' and 10 = 'I have often actively responded to social contact'.
- When asked to rate how much they had taken an active interest in day-to-day events (e.g. watching or listening and reacting to things going on around them) the Silver Bird group gave a mean rating of 6.35 and the control group gave a mean rating of 5.31. The rating given by the Silver Bird group was significant at 19.6% higher ($t(307) = 2.48, p < 0.007$). Ratings were given on a scale where 0 = 'I have not taken an active interest in day-to-day events at all', 5 = 'Don't know, undecided' and 10 = 'I have often taken an active interest in day-to-day events'.
- When asked to rate how much they had taken an active interest in outside events (e.g. taking an interest in the activities of their families and absent friends, or news and sport) the Silver Bird group gave a mean rating of 6.44 and the control group gave a mean rating of 5.40. The rating given by the Silver Bird group was significant at 19.3% higher ($t(306) = 2.31, p < 0.01$). Ratings were given on a scale where 0 = 'I have not taken an active interest in outside events at all', 5 = 'Don't know, undecided' and 10 = 'I have often taken an active interest in outside events'.
- When asked to rate how much they had kept themselves more or less occupied (e.g. by reading, actively watching the television, at hobbies or chatting to others etc.) the Silver Bird group gave a mean rating of 5.26 and the control group gave a mean rating of 2.78. The rating given by the Silver Bird group was significant at 89.2% higher ($t(304) = 5.33, p < 0.001$). Ratings were given on a scale where 0 = 'I have not kept myself more or less occupied at all', 5 = 'Don't know, undecided' and 10 = 'I have often kept myself more or less occupied'.
- When asked to rate how much they had helped other residents (including any kind of help that reflected concern for the other person, e.g. physically helping, comforting or entertaining them) the Silver Bird group gave a mean rating of 4.79 and the control group gave a mean rating of 3.06. The rating given by the Silver

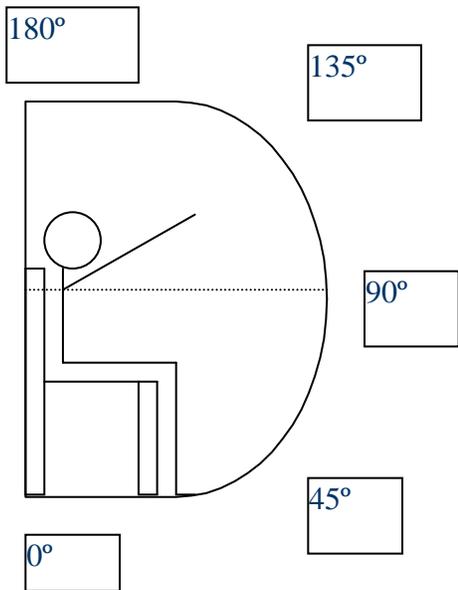
Bird group was significant at 56.5% higher ($t(304) = 3.79, p < 0.001$). Ratings were given on a scale where 0 = 'I have not helped other residents at all', 5 = 'Don't know, undecided' and 10 = 'I have often helped other residents'.

- When asked to rate how much they had cooperated with nursing care administered to them (e.g. cooperation with feeding, bathing, grooming and medication) the Silver Bird group gave a mean rating of 7.92 and the control group gave a mean rating of 7.25. The rating given by the Silver Bird group was significant at 9.2% higher ($t(304) = 2.04, p < 0.021$). Ratings were given on a scale where 0 = 'I have resisted care attempts in a major way', 5 = 'Don't know, undecided' and 10 = 'I have actively cooperated in my own care (e.g. attempted to help and participate when possible)'.

Physical mobility

- When tested for joint mobility in the left arm using Arm Exercise 1 (see below) the Silver Bird group achieved a mean score of 3.53 and the control group achieved a mean score of 3.17. The score achieved by the Silver Bird group was significant at 11.4% higher ($t(264) = 3.27, p < 0.001$).
- When tested for joint mobility in the right arm using Arm Exercise 1 the Silver Bird group achieved a mean score of 3.52 and the control group achieved a mean score of 3.18. The score achieved by the Silver Bird group was significant at 10.7% higher ($t(264) = 2.85, p < 0.005$).
- When tested for joint mobility in the left arm using Arm Exercise 2 (see below) the Silver Bird group achieved a mean score of 3.44 and the control group achieved a mean score of 2.94. The score achieved by the Silver Bird group was significant at 17% higher ($t(264) = 4.22, p < 0.001$).
- When tested for joint mobility in the right arm using Arm Exercise 2 the Silver Bird group achieved a mean score of 3.33 and the control group achieved a mean score of 2.98. The score achieved by the Silver Bird group was significant at 11.7% higher ($t(264) = 2.70, p < 0.008$).
- When tested for joint mobility in the left leg using Leg Exercise 1 (see below) the Silver Bird group achieved a mean score of 2.46 and the control group achieved a mean score of 2.18. The score achieved by the Silver Bird group was significant at 12.8% higher ($t(264) = 2.96, p < 0.003$).
- When tested for joint mobility in the right leg using Leg Exercise 1 the Silver Bird group achieved a mean score of 2.52 and the control group achieved a mean score of 2.23. The score achieved by the Silver Bird group was significant at 13% higher ($t(264) = 3.29, p < 0.001$).

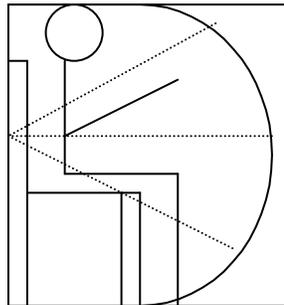
Arm Exercise 1



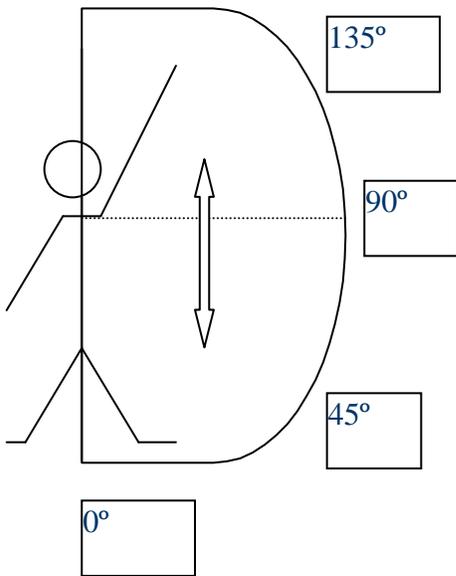
Patient raises her hand from the front of the body.

- 0° - 45° (Score of 1)
- 45° - 90° (Score of 2)
- 90° - 135° (Score of 3)
- 135° - 180° (Score of 4)

Nurse estimates the angles by her eyes.



Arm Exercise 2

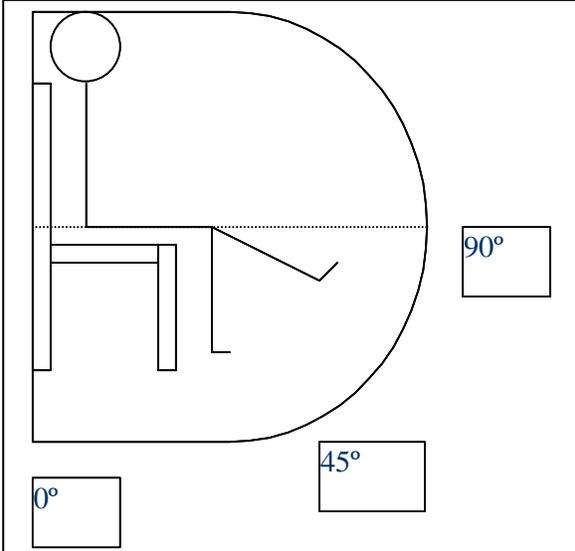


Patient raises her hand from the side of the body. (In this picture patient standing, but she must be sitting while she doing this.)

- 0° - 45° (Score of 1)
- 45° - 90° (Score of 2)
- 90° - 135° (Score of 3)
- 135° - 180° (Score of 4)

Nurse estimates the angles by her eyes.

Leg Exercise 1



Patient sits down on the chair and raises leg as high as possible

Patient raises her leg from the front of the body.

0° or more but less than 45° (Score 1)

45° or more but less than 90° (Score 2)

90° or more (Score 3)

Data from Friends / Relatives of the Residents

- Relatives or friends of the residents were asked to rate the latter's ability to concentrate on a 0-10 scale where 0 = 'My relative/friend's ability to concentrate is extremely poor', 5 = 'Don't know, undecided' and 10 = 'My relative/friend's ability to concentrate is very good'. The mean rating was 4.52 (standard deviation = 2.58).
- Relatives or friends of the residents were asked to rate the latter's memory for recent events on a 0-10 scale where 0 = 'My relative/friend's memory for recent events is extremely poor', 5 = 'Don't know, undecided' and 10 = 'My relative/friend's memory for recent events is very good'. The mean rating was 4.21 (standard deviation = 2.99).
- Relatives or friends of the residents were asked to rate the latter's memory for long term events (more than 5 years ago) on a 0-10 scale where 0 = 'My relative/friend's memory for long-term events is extremely poor', 5 = 'Don't know, undecided' and 10 = 'My relative/friend's memory for long-term events is very good'. The mean rating was 4.71 (standard deviation = 2.97).
- Relatives or friends of the residents were asked to rate the latter's general mood on a 0-10 scale where 0 = 'My relative/friend's general mood is extremely negative', 5 = 'Don't know, undecided' and 10 = 'My relative/friend's general mood is very positive'. The mean rating was 5.64 (standard deviation = 2.86).
- Relatives or friends of the residents were asked to rate the latter's degree of social contact (number of meaningful social interactions) on a 0-10 scale where 0 = 'My relative/friend's degree of social contact is extremely limited', 5 = 'Don't know, undecided' and 10 = 'My relative/friend's degree of social contact is very frequent and varied'. The mean rating was 4.92 (standard deviation = 3.03).

Data from Staff Within the Care Homes

- Staff were asked to rate the extent to which they felt that Silver Bird facilitated better care of their residents (e.g. perhaps by encouraging discussion and therefore building up a stronger relationship) on a 0-10 scale where 0 = 'I feel that Silver Bird does nothing to facilitate better care of my residents', 5 = 'Don't know, undecided' and 10 = 'I feel that Silver Bird does a great deal to facilitate better care of my residents'. The mean rating was 6.28 (standard deviation = 1.69).
- Staff were asked to rate the extent to which they felt that Silver Bird was a fun activity for their residents on a 0-10 scale where 0 = 'I feel that Silver Bird is not at all fun for my residents', 5 = 'Don't know, undecided' and 10 = 'I feel that Silver Bird is an extremely fun activity for my residents'. The mean rating was 9.76 (standard deviation = 2.03).

- Staff were asked to rate the extent to which they felt that Silver Bird acted as a good break in the day, both for themselves and their residents on a 0-10 scale where 0 = 'I feel that Silver Bird does not act as a good break to the day at all', 5 = 'Don't know, undecided' and 10 = 'I feel that Silver Bird acts as a really good break to the day'. The mean rating was 8.45 (standard deviation = 1.49).
- Staff were asked to rate the extent to which they felt that Silver Bird helped to encourage more structure to the year (i.e. through discussion of seasonal holidays and encouragement to acknowledge passing of time) on a 0-10 scale where 0 = 'I feel that Silver Bird does not help to encourage structure to the year at all', 5 = 'Don't know, undecided' and 10 = 'I feel that Silver Bird does a lot to encourage structure to the year'. The mean rating was 7.31 (standard deviation = 1.60).
- Staff were asked to rate the extent to which they felt that Silver Bird was a useful tool in encouraging discussion on a 0-10 scale where 0 = 'I feel that Silver Bird is not a useful tool in encouraging discussion at all', 5 = 'Don't know, undecided' and 10 = 'I feel that Silver Bird is a very useful tool in encouraging discussion'. The mean rating was 8.00 (standard deviation = 1.35).
- Staff were asked to rate the extent to which they felt that Silver Bird had improved the general mood of the residents in their care on a 0-10 scale where 0 = 'Silver Bird has not improved the general mood of the residents in my care at all', 5 = 'Don't know, undecided' and 10 = 'Silver Bird has greatly improved the general mood of the residents in my care'. The mean rating was 6.82 (standard deviation = 1.38).
- Staff were asked to rate the extent to which they felt that Silver Bird had made their jobs easier on a 0-10 scale where 0 = 'Using Silver Bird has not made my job easier at all', 5 = 'Don't know, undecided' and 10 = 'Using Silver Bird has made my job a lot easier'. The mean rating was 5.57 (standard deviation = 2.18).