

# Breaking through dementia with interactive play

An evaluative study on the Yalp Sona sound arch in 10 Elderly Home Gardens



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The dementia friendly interactive play set Yalp Sona was installed at 10 elderly care home gardens. This white paper will discuss the measured effects of the Yalp Sona Interactive play set, on the elderly and elderly with Dementia and Alzheimer's.

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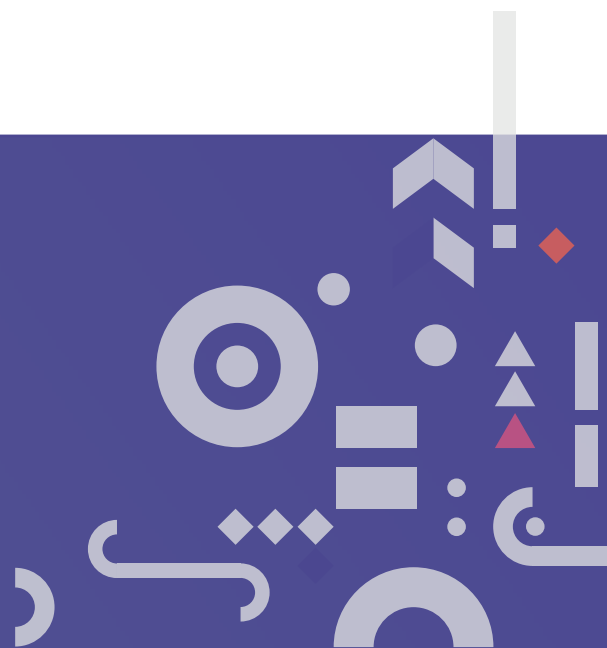
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# Introduction

## The effects of the Yalp Sona sound arch on elderly with dementia

Exercise and movement is highly beneficial for the elderly. This is true for all seniors regardless of whether they receive extra care and support or not. Various studies have shown that this age group is not active enough and are a priority focus for the UK Government, as demonstrated in the Sporting Futures strategy released in 2015.

Inactivity is even more prevalent for elderly citizens who live in care homes. How can we motivate people to be active, in particular within this age group? Music and fun! This inspired a new project with the Sona, sound and play arch, to encourage senior citizens to be active, move freely, enjoy music and interact with other generations too.



### The Benefits of the Yalp Sona:

- Movement is FUN, instead of making it “mandatory.”
- It facilitates active movement combined with playful memory training (and a delaying effect on the dementia process)
- Accessible to all - including wheelchairs
- Solution for outdoor area with added health benefits through being outdoors
- Minimal space required and appropriate fit for health care and elderly home gardens
- Nice place to meet and bring together three or even four generations at once
- Innovating Health Care

Between November 2013 and May 2014, in the framework of a project called ‘An Interactive Sound Arch for Joint and Individual Movement,’ The Yalp Sona interactive sound and play arch was installed at 10 senior care facilities in the Netherlands. Evaluation of the usage of the Yalp Sona sound arch was developed in the subsequent autumn of 2015. Hereby multiple goals were set and evaluated, one of these was aimed specifically at the relationship between dementia, and elderly people being active together while using the Yalp Sona. The result all turned out unanimously positive across all ten different locations where the Sona was installed. Detailed feedback was provided in the evaluation report and included many positive statements:

**“By using music, the Sona sound arch enables the passivity of people with dementia to be broken effectively.** These results are recalled in every single evaluation. It is very clear that the music on the Sona sound arch works very well for people with dementia. During the observations it also became clear that the Sona games that contained music, appeals most to people with dementia. Various forms of communication became easier, and passivity was indeed broken through. The results, however, were also highly dependent on how the supervisors acted, and how they approached the session. “

In addition, a number of important recommendations emerged. These focused on active supervision, implementation, positioning of the Sona, and game adjustments specifically tailored to this target group.



# BACKGROUND

## Exercise and Play in Healthy Communities

Elderly people living in care homes are highly inactive and have little opportunity to exercise. This is evident from several studies, including a Dutch TNO study carried out in 2011, commissioned by the Ministry of Health, titled “Preventative Moving in Institutions for the Elderly.” Of course, many residents in care homes are limited because of age or due to a physical or mental disability which may limit their capability to move extensively. Yet there is still much to be gained by opening up their possibilities for a more active life. Relatively speaking, most people spend too much time sitting down, without being challenged to exercise more. Unfortunately, for many residents, boredom sets in and can be highly demotivating to then engage in anything.

That is unfortunate, because exercise has many benefits, including:

- It enhances physical strength
- It improves cognition and better function of the brain.
- It provides fun, personal contact and socialising.
- It builds self-confidence and promotes independency of elderly



For Yalp, the designer, developer and manufacturer of Yalp Sona, these benefits were reason enough to set up a research project with the interactive Sona arch in health care settings.

It was implemented in 2012, by DAZ; a healthcare innovation research desk. DAZ is an agency within the field of healthcare innovation with specializes in dementia. DAZ Managing Director Ruud Dirkse has written three of the most popular books on dementia Netherlands and Flanders, and was coordinating author.

### About DAZ

DAZ is a leading Dutch organisation in the modernisation of dementia care. They are leading the following projects, amongst others:

- **DemenTalent**, helping people with dementia reintegrate into society by volunteering.
- **Applying the learning capacity of people with dementia**, including the teaching of regular routes, using a tablet computer and unlearning disturbing behavior.
- **Helping the creation and usage of experience and exercisegardens**, by facilitating various forms of training.

**DAZ has initiated the four most popular books on dementia in The Netherlands and Belgium.**



# The Relationship between Exercise, Music, the Outdoors and Dementia



## **“Exercise**

*Moving about and exercising are just about the most important things one can do to combat dementia. It decelerates the dementia process, as research shows.*

*Thanks to the production of various hormones and increased bloodflow, the brain starts to function better. Exercise is a context for social contact; also very important for those with dementia. Exercise also helps the prevention of disturbing behavior, and allows for the “venting” of frustration. Lastly, exercise is great for the circulatory system, the bones, muscles and is the best way to prevent accidents.*

## **The outdoors**

*One third of those with dementia are also depressed. Depression can be prevented through more (outdoor) light, but also through contact with nature. It can also lead to less moping, as someone is less likely to become bored. Being outdoors, exercising, and having fun are great ways to treat depression, potentially complemented by medication and counseling.*

## **Music**

*Just like exercise, music is also great for the brain. Music activates essential brain circuitry, which allows people with dementia to “open up” again.*

*The combination of exercise, music, and the outdoors, being together, and “playing” underneath the Yalp Sona is fantastic for dementing individuals, in every way.”*

As explained by Ruud Dirkse, Managing Director of DAZ.



# Project

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The project set out a range of targets, in addition to the aforementioned goal to break the passivity of people with dementia, including a physical realization within 11 institutions. Of these, 10 are eventually realized. This was done by:

1. Zorggroep Apeldoorn e.o. - location Randerode, city of Apeldoorn
2. ZuidOostZorg - location Neibertilla, city of Drachten
3. Zorgcentrum De Posten - location city of Enschede
4. Stichting Groenhuysen - location Kroonestede, city of Hoeselt
5. Stichting Groenhuysen - location De Zellebergen, city of Oudenbosch
6. Opella - location De Stolpe2, city of Harskamp
7. Florence - location Houthaghe, city of The Hague
8. Malderburch - location city of Malden
9. HilverZorg - location Zonnehoeve, city of Hilversum
10. Sutfene - location St. Elisabeth, city of Zutphen



## Project Continued...

Other focus areas strongly steered towards the usage and implementation Sona, but also focused on elderly residents being more active with other generations.

The final plan was submitted to - and accepted by a prominent Dutch healthcare fund named NutsOhra. During the implementation in 2013 and 2014, various health institutions, physiotherapists, occupational therapists, nurses and other staff worked closely together with residents to shape the project.

### **In 2015 the final report presented a really positive conclusion:**

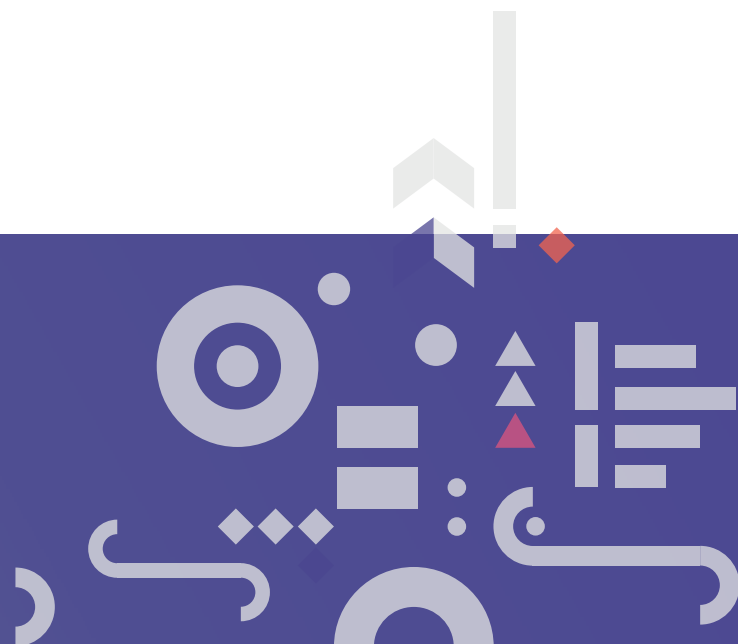
Throughout the duration of this project, a total of 1720 hours of use was recorded on these 10 Sona's. Once an effort was made to go under the arch, a lot of enthusiasm and fun followed. This is true for both the seniors who live at the care homes, as it is for neighborhood children.

In practice, the arch is used more by people with dementia, than by people with somatic and rehabilitating residents. The intuitive nature of the games is the reason for this, in addition to them being less embarrassed by spectators. The fact that children also make use of the sound arch provides a source of fun and points of contact. The exact placement of the sound arch also affects use, as is shown accordingly with these 10 Sona's. Being too visible causes embarrassment to the elderly, while being too far out of sight often means the arch is less likely to be included in activities. In summary, the elderly and children that use the arch, reap many rewards; a lot of fun is had, plenty of exercise, and movement without reservation.

### **RECOMMENDATIONS**

There are still many opportunities for a more successful implementation of the Sona sound arch in the existing locations and indeed new, that will encourage more usage and interactivity. The four points mentioned in the evaluation report are:

1. **Pay more attention to implementation processes.**
2. **Dare to let go.**
3. **Allow yourself to be guided by the laughter and the fun that people have.**
4. **Do not run too many projects at once.**



## About Yalp Sona

The Sona sound arch was originally developed for children and has been very successful, by 2015 more than 125 Sona's were installed at sports and play areas across the globe, 72 of these are located in the Netherlands. At these locations it is often the most highly used device. The built in internet connection allows the Sona to read how much the arch is actively used and which games are the most popular. The interactive design of the Sona makes it highly suitable for use by the elderly and people with care needs due to the following features:

- Music / sound in order to stimulate movement.
- An interactive nature – by game design and interaction with other people
- A flat floor, making the sound arch also very suitable for people who have difficulty walking.



Due to the success of the Sona sound arch in the Netherlands, it is now also exported to many other countries, although still mainly for children. In July 2012, a Sona sound arch was placed in Finland, next to a healthcare facility. Within a couple of weeks it became very popular amongst the residents, and was used for fun and exercise. Finally, it is worth mentioning, we are also seeing disabled children including those with wheelchairs enjoying and interacting with the Sona. This is partly due to the flat and easy access flooring. Such is also the case at Bio Holiday Parks, in Arnhem and at a rehabilitation center called The Roessingh.



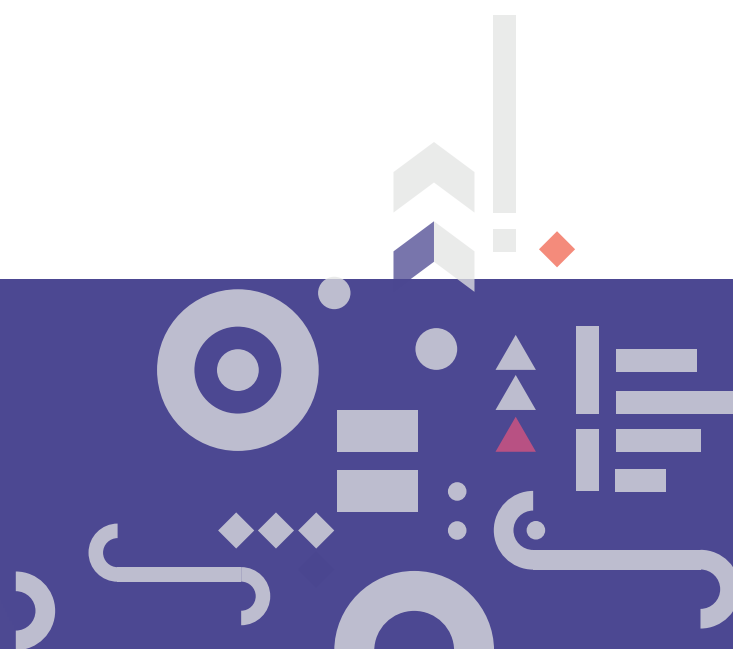
3G – Wireless  
Internet  
Connection



# How does Yalp Sona Work?

**The sound arch is an interactive play and exercise device and works as follows:**

- Under a large arch; with a diameter of 5 meters, a multi-coloured carpet is fitted with markers and numbers.
- The top of the arch contains an advanced motion detection camera and tracks movement in relation to the markers on the carpet.
- Starting a game is as easy as pressing a single button, and listening to a brief set of instructions.
- The sound arch contains several games. If the same button is pressed again, another game is selected.
- Instructions are given for each game. For example, the arch provides a calculation: “ $2 + 3$  is...?” The user must now jump towards the correct box on the floor. When chosen correctly, the Sona gives out a compliment, and continues with another equation.
- At the inception of this project the Sona hosted nine games. However as the Sona is an online device it is possible to download other games. The Sona is continuously being developed and innovated on so it is a structure that is ever-evolving. Now, after the end of the initial project period, the Sona contains 11 games (10 separate games and one expansion). Many of the existing games can be adapted to the wishes of the senior target group.
- It also hosts games that work with music. The game ‘Musical Chairs’ for example is played in larger groups. Once the music stops, everyone must immediately stop dancing around. The arch calls out whoever is still moving, by mentioning the number of the box the person is now standing on. The game is ultimately very similar to traditional game of musical chairs.
- Music is the core of the Sona.
- The Sona is suitable for outdoor use.
- It has a low barrier to access; when stepping onto the Sona floor, play can be started immediately.
- It is suitable for larger groups
- The Sona is very safe, due to its leveled floor.



# The Games

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The Sona was adapted for the elderly where pre-existing games were modified to make them more suitable for this target group. **In The Netherlands, these games are narrated by Dutch celebrity Olga Commandeur, former Olympic hurdler and very well known by the elderly for her daily morning-exercise program on national television.** Alterations were also made in the speed of the games, the interpretations and musical adaptations.

- **Exercise with Olga:** a game where exercise is done to music. Per lap time of 1 minute, references are made to certain movements; which can then be emulated. Each user has their own number spot on the Sona flooring. After a lap is finished, a winner is announced: the person who has moved about the most. After a break of 15 seconds, a next lap starts.
- **Chair Dance:** a game where you have nice walks to the music, or better yet dancing around to the music. But beware: the music can suddenly stop! Stand still as quickly as possible. The number is called of the person that moves the most. If everyone remains standing their grounds, applause ensues!



- **Dance Contest:** This is one of the most popular games. Two groups dance against one another: blue against green. The dance movements are measured by Sona music during rounds of 30 seconds. After each round the winner is announced.
- **Math Race:** A very simple game. You will hear a number, and need to go to the relevant plane on the floor. This should be done within a certain time limit. If you are going along flawlessly for 30 seconds, you will go up a level. By doing so the game speeds up faster and faster. Which level can you reach?
- **Math Race (PRO)** is a variant of the game Math Race. Equations are called out, and the player must go to the correct answer on the floor. For example: "3 plus 2!" The player goes to 5. If you reach it on time, then the next equation follows. If you are late, you start again at your current level. The time you have to solve the sums gets increasingly shorter! Math Race PRO is identical to Math Race, but then more difficult. In addition to addition and subtraction, the game also includes division, multiplication and square roots. This only makes it more enjoyable for many.

## The Games Continued...

- **Reaction Race Chinese:** This is the Math Race, but in Chinese! The game starts at level 1, where you hear a number in Chinese, followed by the translation (ba .... Eight!). By playing that round, you gradually learn to recognize the numbers. At level 2, players are thrown into the deep end: the numbers are announced in Chinese only! Who will master this first?
- **Code Breaker:** A great mental game. You hear a series of digits (the code) you must then tap the floor in the correct order with your feet. Every time you tap the correct number, you hear a click to confirm. If the code is complete, another code follows. The higher the level, the longer the codes!
- **Command:** A game that revolves around cooperation! You hear commands like “all off the floor” “on the even numbers “and” not green! “. By following the orders successfully together, higher levels are reached. The game goes faster and faster.
- **Finding Animals:** This game is very fun to play with small children. Hereby animals are searched for. “Where do you hear the monkey?” Then you hear different animals at different spots on the floor as you walk over them. If you hear a monkey, then keep moving in that place until you hear confirmation: “Yes, good job!”. Spots are changed around at random.
- **Time trial:** A very special Sona game. It not only makes use of the floor underneath the Sona, but rather the overall area. The arch acts as a start and finish, and participants can make a custom created trail to follow. For example, “first the arch; then across the path; around the tree; then tap the wall; and then return to the Sona.” Sona calls the start and finish, and broadcasts the traveled time to the tenths of second. For example “25 seconds and 6 tenths!” Users ‘race’ each other - one after the other. It is important that the floor of the Sona remains empty during the race, because when someone returns from a lap, the time is stopped.





## About Olga Commandeur



Olga Commandeur, born in IJmuiden, The Netherlands on October 30th, 1958 is a retired Olympic athlete. Despite starting relatively late with track and field at the age of 13, she quickly grew to the Dutch top. Initially within the junior teams, with impressive results, such as a world record for 800 meters in 2016, and winning a European youth championship for the same distance. Later as an all-round star, and a 400 meter hurdler, with the Olympic games of 1984 in Los Angeles; where she reached the semi-finals.

During her elite sports period, she also finished an education to become a physical education teacher, at the ALO in Amsterdam. Next she became a national radio presenter in 1991, for a show on morning gymnastics.

Up and to this day, Olga is the face of the national Television show “The Netherlands in Movement.” (“Nederland in Beweging”), which is aired twice a day. This morning exercise show has amassed an enormous following. Since April, 2008, Olga has been running her own businesses called ‘Olga Commandeur Promotions.’ This is her platform for speaking engagements and producing workouts with themes such as healthy exercise and (elite) sports in relation to organisational goal setting. She is exclusively involved with Yalp, for the production of various exercise concepts for seniors and people with dementia.

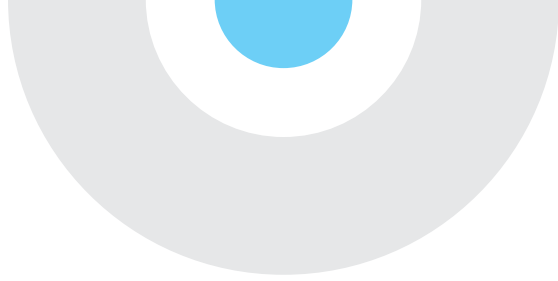
**Olga is the Celebrity, and the face of vitally aging in The Netherlands and has a large senior - but also younger following.**





# Project Layout Sample





**For more information and video's, see:**

**[www.yalpinteractive.com](http://www.yalpinteractive.com)**

