

Study of:  
The Impact of T3 Ping Pong on the Elderly

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**Stage 1: Seated T3 at UK Care Homes  
for the elderly including Alzheimer's and Dementia sufferers.**

Version 1.0 – April/May 2016  
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## Contents

Introduction .....	3
Summary .....	3
Background Information .....	6
• The Game/Session .....	6
• The Equipment Used.....	7
• The Participants .....	8
• Medical Profiles .....	8
• The Sample Groups.....	9
Questionnaire Answers.....	10
Quotes.....	12
Implementation Team Observations .....	12

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## Introduction

This study was carried out over an 8-period in April/May 2016 in London, UK. It was designed to test the suitability of SEATED T3 3-a-side ping pong (firstly using the T3ONE70 indoor table), as a physical and mental fitness tool amongst elderly UK care home residents. Each participant had one or more of the following disabilities; Alzheimer's, Dementia, Mental Health problems and physical limitations in mobility due to aging.

## Summary

Back in 1998, Japanese studies showed the world how ping pong activated up to **5 portions of the brain** in Alzheimer's subjects during play. In light of this surprising and positive discovery, table tennis was designated the **'World's Number One Brain Sport'**.

Today, 18 years on, T3 3-a-side ping pong experienced a similar revelation as it completed stage 1 of its study on; 'The impact of T3 Ping Pong on Elderly UK Care Home Residents including Alzheimer's and Dementia sufferers.'

Touring a range of inner London care homes, to first test SEATED T3 ping pong where communal space is limited, T3 discovered that it wasn't just about the physical and mental health benefits of ping pong that were experienced, but with T3 came something extra; an overwhelmingly positive emotional reaction to game. Time and time again the implementation team witnessed the fun and joy experienced by the participants.

The study showed just how good ping pong was at stimulating yet more parts of the brain!

At the end of each session 100% of residents fed back that they 'enjoyed participating', 'would like to play again' and 'had fun!' 75% described it as 'sociable' with 68% loving the fact that they could chat while playing. And a further 45% saying specifically that '...It makes them laugh!' Almost three quarters of them also agreed that it would be a great game to play with visiting family and friends.

It was definitely voted as a weekly activity option they would like to have with 20% even suggesting daily.

After an initially cautious response from a number of onsite physiotherapists, by the time they had witnessed the whole session, they all agreed that the social and physical benefits combined made it a winner. The only negative comment received from one was '...but who is going to pick up the balls?' A volunteer quickly jumped in and said 'I will - this is worth it!'

T3ONE70 was the right choice of table for the homes in terms of size, ease of set up, number of players round the table and storage. It fitted well in all venues. And the circular shape meant it could also be used in smaller rooms where for example, traditional rectangular tables would struggle to be accommodated. The physical testing of the 'seated' aspect of the game, using standard static care home lounge chairs and wheelchairs worked well with no issues for the players or Activities Coordinators.

Some of the care homes did discuss taking the table outside in summer or using the T30 full size tournament table, but there was quite a lot of compelling evidence to suggest that the participants

were much more comfortable playing inside with consistent lighting<sup>1</sup>, no breeze or temperature fluctuations<sup>2</sup>, sound control<sup>3</sup> and a familiar, consistent and flat surface underfoot.

The best colour combination for play was by far 'an orange ball on the matt black surface'. The hard net was also enjoyed and useful as participants, especially those not playing a game, could track the ball for longer and give them multiple chances to reconnect with the ball. The activity wasn't over in one shot nor were they reliant on an opponent to return the ball. Better players tended to hit harder and enjoy the centre position often refusing to rotate or leave the table.

Interestingly the 3-a-side aspect of T3 often didn't concern the participants who were more interested in how many players they could get around the table. The average number of players at each session was 8 (this usually included 2 wheelchair participants - one per side), 4-a-side worked well as players tended not to 'poach' or reach too far across for the ball due to physical or sight impairments).

The research teams noted that at the end of each session approximately a third of participants had slight but visible, perspiration on their faces. However when asked if the room was too warm or stuffy at the time, players were all very firm in answering 'no' and any breeze was found to be uncomfortable or even irritating<sup>2</sup>. This was in fact the only negative encountered.

Each care home had an average of 20% negative participants who said they did not want to join in but by the end of the session they were laughing with everyone else and didn't want the session to end. It was also heartening to receive personal 'thank yous' and 'requests to return next week!' from these players especially.

Some of the better players tried out the smaller T3 Supermini bats (see pg.7), expectation was that it would reduce strike rate – it did not! Some even played better as they found it easier to hold the smaller bat due to weak/arthritis hands and wrists.

They all very much enjoyed holding their own ball, as well as serving. Lots of free play took place using multiple balls to warm up. Structured sessions were more effective where play levels were similar.

Those with more extreme physical disabilities, through mental health issues, dementia or more advance Alzheimer's, responded very well to one on one coaching and with only one ball in play at a time. The rest of the players surprisingly, responded better with multiple balls on the table, they found it more fun! And felt it gave them more chances to hit.

At each venue there were approximately the same number of observers in attendance who watched the games and were also keen 'to give it a go' at the end of the session. The ETTA (English Table Tennis Association) attended one of the sessions and commented that as **'...residents were able to play from their seats, it meant that they were able to rest and compete for a longer period.'**

**'Everyone without exception enjoyed the event. I've never seen them so engaged with each other too – there's a lot of banter, and noise!'** Robyn Deutsch – Activities Coordinator

**'It's a miracle game for the elderly!'** said daughter of 97 year old mother with Alzheimer's **'I've never seen my mother so engaged since she came here 2 years ago... excuse me, watching her is making me cry, I'm so happy for her.'**

*Stage 2 of the Seated T3 Ping Pong Trials are planned to take place July/August 2016*

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For more information on the 'Impact of T3 amongst the elderly' and other ongoing T3 studies; please contact: [digi@t3pingpong.com](mailto:digi@t3pingpong.com)  
 Following the completion of this study the T3 Academy will be opening a T3 drop in centre - 'T3 Seniors Club' in North London Sept 2016

## **Footnotes**

<sup>1</sup> : Vision: At first changes are slow. As we approach the age of 40, the ability of the lens to focus on near objects has greatly decreased and within the next 3 years, most people who still can see clearly when viewing distant objects are not able to see print within arm's reach. They must hold the newspaper or novel further and further away, until they would need to hold the print beyond their fingertips to see it clearly. Dr. Alan Glazier (owner and founder of Shady Grove Eye & Vision Care, is a frequent lecturer at national eye industry conventions and is a published author.) As people age, the following occur: The lens stiffens, making focusing on close objects harder. The lens becomes denser, making seeing in dim light harder. The pupil reacts more slowly to changes in light. The lens yellows, changing the way colours are perceived. The number of nerve cells decrease, impairing depth perception. The eyes produce less fluid, making them feel dry. Changes in colour perception: Colours are perceived differently, partly because the lens tends to yellow with aging. Colours may look less bright and contrasts between different colours may be more difficult to see. Blues may look greyer, and blue print or background may look washed out. These changes are insignificant for most people. However, older people may have trouble reading black letters printed on a blue background or reading blue letters. By Richard W. Besdine, MD [www.merckmanuals.com](http://www.merckmanuals.com) Elderly persons may have difficulty distinguishing between colours. They need three times the amount of light to see, but are sensitive to glare. Colours such as red, green, yellow or blue will appear muted to the elderly eye. If the colours red and blue are placed beside each other, older people with this difficulty may find it hard to distinguish between these two colours. Using bright colours when designing for the elderly will help with acuity loss. Cataracts. Easily detected in an eye test, this gradual clouding of the eye's lens is extremely common in over-60s. A simple operation can restore sight. Glaucoma. This is related to an increase in pressure in the eye that leads to damage of the optic Macular degeneration. This is a disease of the retina caused by ageing. The retina is the nerve tissue lining the back of your eye. There are two types of macular degeneration. The first type, called dry macular degeneration, gets worse very slowly. The other type gets worse very quickly. This needs to be seen as an emergency in a hospital eye unit for prompt treatment.

(2014) A new study finds that many people lose their ability to clearly distinguish certain colours as they age, with losses typically starting around age 70 and getting worse over time. The lenses of their eyes can become yellowish, causing them to see as if they were looking through a yellow filter, she said. This can disrupt their so-called "blue-yellow" vision, preventing them in certain situations from distinguishing blue from purple and yellow from green and yellow-green. Problems are especially apparent when colours are washed out. SOURCES: Marilyn Schneck, Ph.D., scientist, Smith-Kettlewell Eye Research Institute, San Francisco; Michael Crognale, Ph.D., professor and director of cognitive and brain sciences, department of psychology, University of Nevada, Reno; Stephen Dain, Ph.D., professor, School of Optometry and Vision Science, University of New South Wales, Sydney, Australia; March 2014 *Optometry and Vision Science* Colour-vision problems in the blue-yellow spectrum affected 45 percent of people in their mid-70s, and that proportion rose to two-thirds by the time people reached their mid-90s. Few people had problems with the red-green spectrum. By Randy Dotinga

<sup>2</sup> Heat: The number of sweat glands and blood vessels decreases, and blood flow in the deep layers of the skin decreases. As a result, the body is less able to move heat from inside the body through blood vessels to the surface of the body. Less heat leaves the body, and the body cannot cool itself as well. Thus, the risk of heat-related disorders, such as heatstroke, is increased. Also, when blood flow is decreased, the skin tends to heal more slowly. The fat layer under the skin thins. This layer acts as a cushion for the skin, helping protect and support it. The fat layer also helps conserve body heat. When the layer thins, wrinkles are more likely to develop, and tolerance for cold decreases.

<sup>3</sup> Hearing: Exposure to loud noise over time damages the ear's ability to hear. Nonetheless, some changes in hearing occur as people age, regardless of their exposure to loud noise.

As people age, hearing high-pitched sounds becomes more difficult. This change is considered age-associated hearing loss (presbycusis). By Richard W. Besdine, MD More than 70% of over 70 years-old and 40% of over 50 years-old have some kind of hearing loss. Most of the 11 million people in the UK with hearing loss developed it as part of the natural ageing process. Age-related damage to the cochlea, known as presbycusis, is the single biggest cause of hearing loss. The vast majority of people with hearing loss are over 50 years old and the prevalence increases with age. Hearing loss affects: 41.7% of over 50-year-olds, 71.1% of over-70-year-olds

## Background Information

### Stage 1: Seated T3 at UK Care Homes for the elderly including Alzheimer's and Dementia sufferers.

### The Game/Session

T3 Ping Pong is 3-a-side ping pong. It follows similar rules to traditional table tennis with a few simple changes.

#### T3 Game Rules:

- When serving, the ball must land within the correct third. When the ball is in free play, it can bounce anywhere on the table, once per side. Volleying is not permitted.
- Three players per side, total of six players. Each team of three players use T3 bats marked 1 to 3.
- Service is always delivered from the centre third of the table. To start, player 1 (bat 1) serves twice to his opponent, also player 1, standing directly opposite. Ball must land in correct 'third' of the table.
- Player 1 then serves to opponents 2 and 3, standing diagonally left and right, respectively. Two serves to each player, so six in total.
- Receiving team maintain same starting positions throughout so all players receive two serves.
- Service then changes sides, and above steps 3 to 5 are repeated from other team.
- Service then continues to change sides after each ('service round' of) 6 services: to players 2 (bat 2), then players 3 (bat 3), whilst players 1 exchange positions with them.
- During play, each player can only hit **two consecutive** shots. If a player takes more, the point is automatically awarded to the opposing team.
- After service, the ball is in free play anywhere on the table.
- The winning team is the first to reach **15 points** with two clear points. Best of three games wins the set.

All sessions were played **seated** in either existing 'static' care home lounge chairs, or residents own wheelchairs, on a T3ONE70 indoor table.

#### T3 Seated Game Rules:

- When serving, the ball must land within the correct third. When the ball is in free play, it can bounce anywhere on the table, once per side. Volleying is not permitted.
- Three players per side, total of six players. Each team of three players use T3 bats marked 1 to 3.
- Service is always delivered from the centre third of the table. To start, player 1 (bat 1) serves twice to his opponent, also player 1, standing directly opposite. Ball must land in correct 'third' of the table.
- Player 1 then serves to opponents 2 and 3, standing diagonally left and right, respectively. Two serves to each player, so six in total.
- Receiving team maintain same starting positions throughout so all players receive two serves.
- Service then changes sides, and above steps 3 to 5 are repeated from other team.
- Service then continues to change sides after each ('service round' with the **same server on each team until the game is over**)

- During play there is **no limit** to the number of **consecutive** shots a player can take.
- After service, the ball is in free play anywhere on the table.
- The winning team is the first to reach **15 points** with two clear points. Best of three games wins the set.

### 1 hour sessions

In each care home our sessions were extended to between 1.5 - 2 hours as residents did not want to stop playing! Where games could not be played due to too many players per side, limited physical or mental coordination, the sessions were kept as skills sessions working with a number of balls at a time and multiple serving and feeding.

## The Equipment Used

### 1. The T3one 70

- The **T3one70** is a static ping pong table that comes in two semi-circular adjoining halves. Each half has 4 adjustable screw-in legs. Height 0.76, Diameter: 1.70m
- The net is solid, comes in two halves, is free standing and slots together on the table top.
- All surfaces and the net are matt black with white lines and graphics.
- The table top meets ITTF approved ball bounce



### 2. Full Size T3 Adult Bat

- Colour: black/white & red on reverse.
- Wooden handle
- Size: Width: 15cm / Handle: 10cm / Length of bat: 22.5cm



### 3. T3 SuperMini Bat

- Colour: blue/white and red on reverse.
- Strong 5-ply blade, wooden handle.
- Size: Width: 12.5cm / Handle: 7.5cm / Length: 21.5cm



### 4. Armchair or wheelchair



## The Participants

### By: Sample size, Profile & Gender

6 care home/68 participants

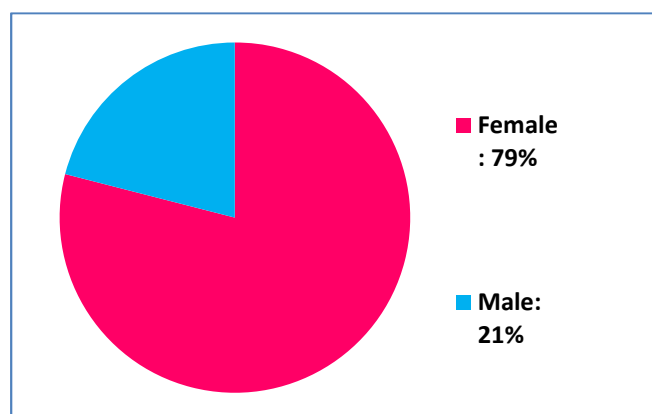
Each care home had similar profiles in terms of resident's age range, physical and mental challenges. With the exception of two homes that offer specialist care for those with pre-existing mental health problems, here the age range was slightly younger.

All participants chose to play **seated T3 Ping Pong**, **88% in static cushioned care home armchairs** from the lounge areas, these players either used a walking frame or walking sticks to reach the table. **12% were seated in their everyday wheelchairs**

Age range: 74 – 98yrs

Mean age: 84.7yrs

Median age: 86yrs



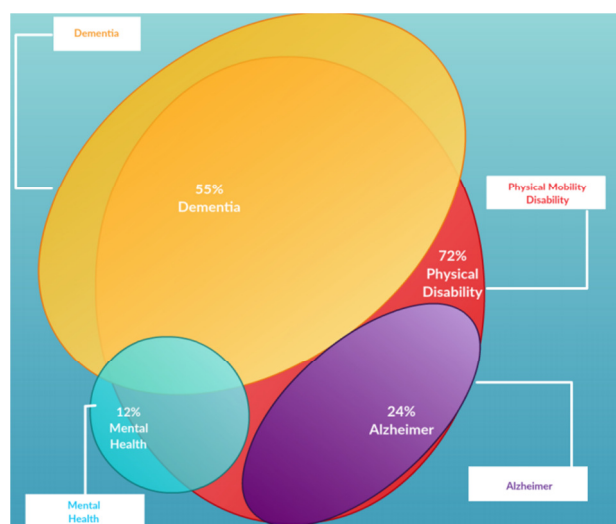
## Medical Profiles

Mental Health Problems (lifelong): 3% /+ (D) 9%

Dementia (D): 55%

Alzheimer's: 24%

Non sufferers (physical disability from aging only): 18%





## Personal Background

Good representative spectrum of varied blue and white collar workers and professionals;  
*Teacher/mother & housewife/father/Nurse (x2)/mechanic/porter/caretaker/admin*  
*BBC/painter/office worker/domestic cleaner/gas man/historian (PhD)/accountant/lawyer/GP*

## Past sports played

*Football/swimming/ping pong/tennis (x2)/running/rounders/games/cricket*

*Most of the women had only participated in sport when they were girls at school.*

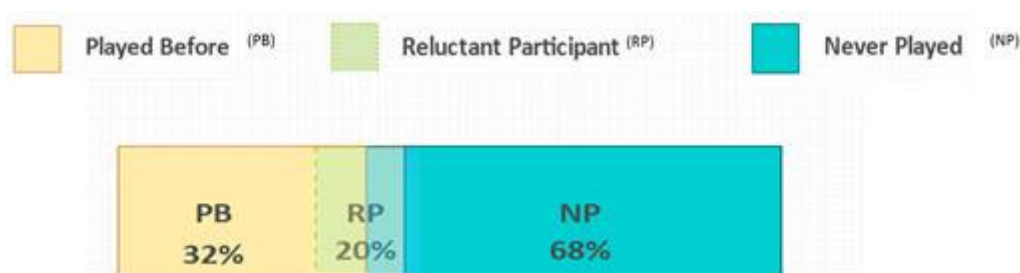
## The Sample Groups

**Played before: 32%**

**Never played: 68%**

**Reluctant participant: 20%**

**Familiar with the game ping pong from their younger days: 100%**



In each care home visited the reaction from the groups was surprisingly similar. Of those who had played ping pong before, albeit 40-80 years ago, they shared **positive memories and this encouraged them to participate with no anxiety.**

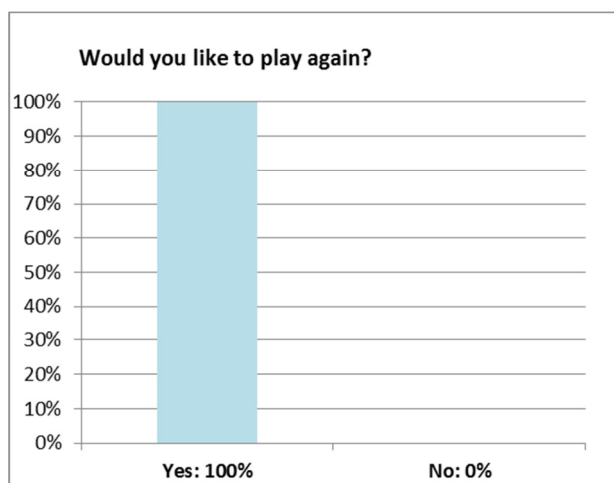
For those who had never played before the novelty factor was strong and this prompted immediate conversation amongst all players.

The third group made up approx. 20% of each group and they were the '**reluctant participants**', who had initially agreed to participate, but later become confused, had forgotten they had agreed to try it out, or were very unhappy that their regular exercise had been substituted with ping pong.

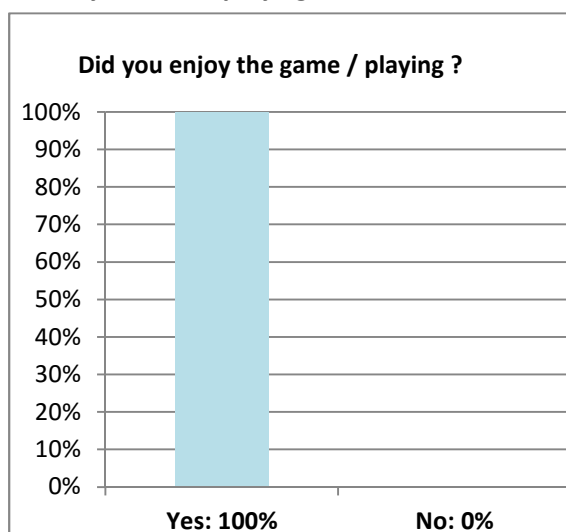
## Questionnaire Answers

### Reaction to T3 Ping Pong

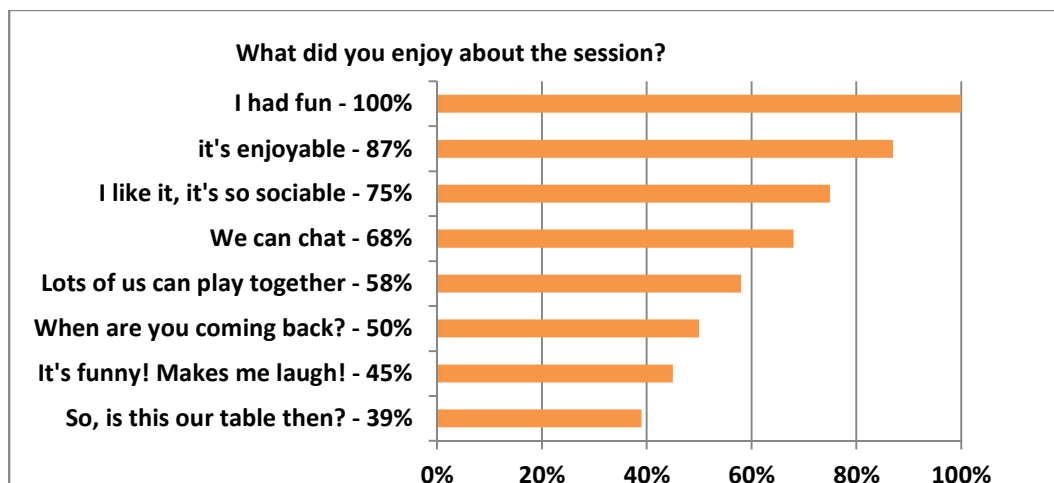
1). Did you enjoy the game/playing? Yes: 100% No:0%



2). Would you like to play again? Yes: 100% No: 0%

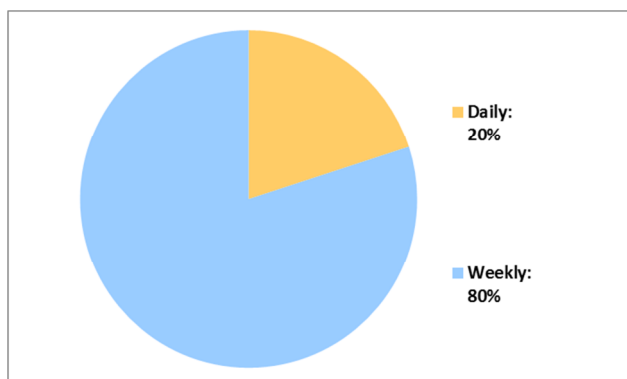


3). What did you enjoy about this session? Top 8 comments:



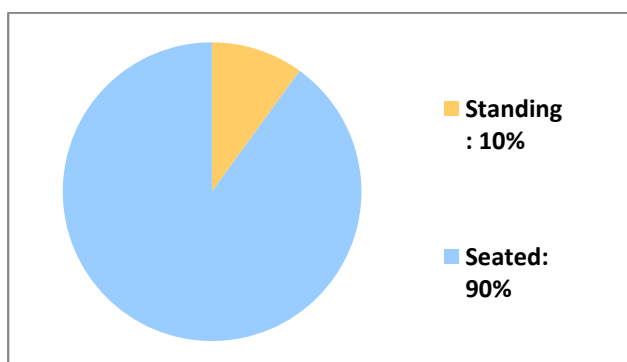
**4). How often would you like to play T3 ping Pong again?**

**Weekly: 80% Daily: 20%**



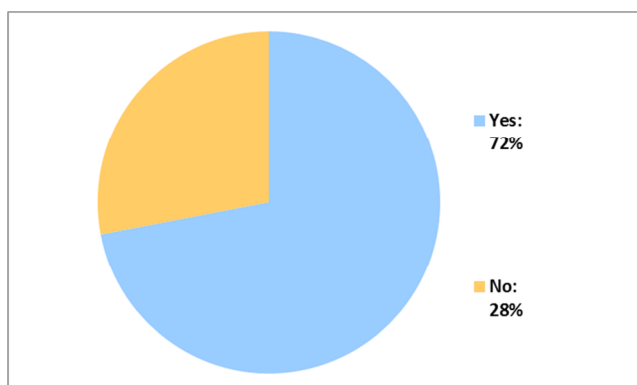
**5). Would you like to play seated or standing?**

**Seated 90% Standing:10%**



**6). Would you like to play with family and friends visiting?**

**Yes :72% No: 28%**



## Quotes

Selection of typical quotes from; Care Home Directors, Managers, Activities Managers & Co-ordinators, Careers and Resident's Children/visitors:

*'It was wonderful to watch EVERYONE participate and they so obviously are enjoying themselves!'*  
Care Home Director

*'I like the fact that people in wheelchairs can easily join in.'* - Activities Dept. Manager

*'...I really like the simple seated aspect of the game, the chairs are familiar so it's one less barrier to overcome!'* - Activity Co-ordination Manager

*'...participation was much better than I had expected as they had a cooked breakfast today and normally they are very difficult to engage if not asleep, so I'm very pleased with the results.'* - Activities Manager

*'I've never heard so much noise and excitement coming out of the lounge! Everyone else wants to know what's going on!'* – Care Home Manager

*'Look! This is a great table for chatting, often the only time many of them get to chat is at 3pm tea time when we serve it at tables for 3-4 people.'* - Activities Co-ordinator

*'There's so much laughter, not to mention the competitive spirit!'* – Activities Manager

*'... they want to beat each other and improve themselves, the target is to hit the ball, but very soon it becomes to win the point some things never change do they!'* Care Home Director

*'Their sense of humour seems to have returned! Fantastic to experience.'* - Care Home visitor.

## T3 Implementation Team Observations

Participant's first impressions:

FAQs: 'Wow what's this! It's round that's great' 'I've never seen one of these before' 'how do I play?'

The question of where shall I sit never came up they just walked in and sat where ever they liked – or was a space – or where we could make a space!

## Background Information on T3 Ping Pong Ltd.

### What is T3?

T3 is the evolution of ping pong/table tennis into a **team sport**. There are **three** or **six** players per team and it follows similar rules to the traditional game, but it is played on a circular table.

The distinctive circular design and specially constructed net are the foundations of a game which offers a greater range of shots increasing the scope for some spectacular rallies.

Launched in 2013, this unique British made and designed product, is being described as the biggest game changer in over 100 years of table tennis.

T3 ping pong also caught the attention of the International sports community at ISPO in January, where it was awarded 'FINALIST' in the ISPO 2016/17 Brand New Awards held in Munich, Germany.

From the beginning, our mantra has been "Two's company, three's a team". Team spirit is in our DNA. We're passionate about encouraging as many people as possible, young and old, to get active, to pick up a bat, and play together as a team. Players of all abilities and ages team up alongside one another, enjoying the individual challenges as well as the strategy only a team sport can offer. T3 is fast becoming the new kid on the ping pong block. It's faster, smarter and more fun offering players a wider range of shot directions and lengths than the conventional game.

[www.t3pingpong.com](http://www.t3pingpong.com)

For more information, images and latest developments, please contact:

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