



# Evaluation of the Just Bowl Programme

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## Executive Summary

### Background

Just Bowl was launched in 2014 as the Bowls Development Alliances community engagement programme. The programme aimed to enable the sport of bowls to be played anywhere, at any time, by anyone. In 2018 Just Bowl secured funding from Sport England to explore the impact of the Just Bowl programme on care home residents and people affected by cancer.

### Scope of the Project

The project consisted of two strands:

*Strand one:* Evaluation of Just Bowl for care home residents.

*Strand two:* Evaluation of Just Bowl for people affected by cancer.

### Aims of the project

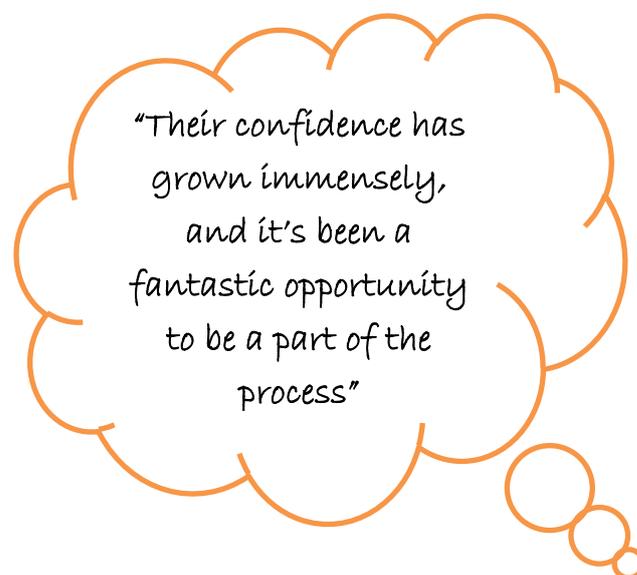
Primary outcome: Impact of the Just Bowl programme on physical activity behaviour on elderly care home residents and people affected by cancer.

Secondary outcomes: The impact of the programme was explored on a number of secondary outcomes to provide greater insight into the effectiveness and scalability of the programme. Such as mental wellbeing, exercise self-efficacy, participant experience and perceptions of professionals.

### Key learnings from strand one

#### *Factors affecting project delivery*

- The population group included in the evaluation are of advanced age; 75% of the participants were aged 81-100 (48% 81-90; 27% 91-100). Finding enjoyable activities for elderly people to engage in is a priority.
- The majority of participants had a disability (88%). Many participants had more than one disability; with the most common being mobility issues and dementia.
- The levels of impairment of the residents make it unlikely they will exercise independently. The inclusive nature of Just Bowl means that people are not excluded because of their impairments.
- The carers were engaged in the sessions and endorsed the programme.
- Some carers were seen to be risk averse and found it difficult to encourage the residents to undertake various tasks independently i.e. collecting the bowls instead of encouraging the residents to do so.



## *Outcomes*

- Engagement in Just Bowl was high with a total of 150 residents participating and an average of 8.3 sessions attended.
- The sessions were of light intensity which was agreeable with the population and supports the advice provided by the CMO physical activity guidelines.
- Carers felt that the Just Bowl sessions increased resident's confidence and their functional ability.
- Initially residents were apprehensive about their ability to participate. However participating in the sessions showed how residents were able to do more than they realised and this subsequently improved their confidence.
- Participant self-efficacy improved from baseline to follow up.
- The Just Bowl sessions created a social atmosphere in the care homes and provided residents with an opportunity to interact.

## *Learnings to take forward*

- Ensure that staff training has a section which focuses on the positive impact physical activity can have on residents and person-centred care.
- Although those taking part did not demonstrate a change in inactivity levels the amount of time spent sedentary was reduced.
- Carer interviews discussed how participating in the sessions had improved participants mobility and confidence.
- It is important to identify an individual member of staff who will drive the activity each week and ensure other staff members are engaged.

## **Key learnings from strand two**

### *Factors affecting project delivery*

- Identifying groups to participate in the programme was challenging. This was due to changes at Macmillan Cancer and the loss of the physical activity teams.
- Consistency of attendance was a factor with some of those attending the sessions. This was due to participants undergoing treatment and feeling unwell.
- Several participants reported high physical activity levels and therefore found the intensity of Just Bowl too low.

## *Outcomes*

- The total engagement was 64 attendees with 34 individuals participating in the research.
- There was no change in physical activity levels at follow up.
- The follow up data reported that participants improved their mental health including a higher proportion of people reporting improved life satisfaction and lower anxiety.

- Participants reported enjoying the sessions and the opportunity to socialise in a group.

### *Learnings to take forward*

- The intensity of Just Bowl sessions could be increased using weighted bowls resulting in a higher level of difficulty.
- The impact on mental and social wellbeing was encouraging and warrants further exploration.

### **Limitations**

- The level of participant impairment had implications for the collection of evaluation data in strand one. Collecting data was difficult due to participants not having the capacity to complete the forms or answer questions. The nursing home staff would complete the forms for the participant. This affects the validity of the questionnaire data.
- It is difficult to distinguish any changes that might have occurred during the Just Bowl programme, from changes that would occur during usual care. A control group would provide the most reliable evidence on the effectiveness of the Just Bowl programme; this was out of scope for this evaluation.

### **Conclusion**

- The Just Bowl programme has been successfully delivered in 12 Brighterkind care homes, 4 Cancer support groups and 10 Guinness Care assisted living home across England.
- The Just Bowl sessions proved to be a fun, enjoyable activity that created a friendly, sociable, and competitive atmosphere wherever it was played.
- Although Just Bowl is a light intensity activity it was shown to be an ideal activity to break up the large amounts of time care home residents spend sedentary.
- The Just Bowl sessions ultimately increased the resident's confidence in their ability to do activities.
- Support is needed to increase the care home resident's autonomous but safe participation in the sessions and general daily activities.
- More research is needed to investigate if Just Bowl can be a tool to increase functional capacity in disabled populations such as care home residents and stroke patients.



# Introduction

## Report overview

### The aim of the report

This report presents the findings of the Just Bowl programme. The Just Bowl programme was split into two project strands.

- Strand one: Evaluation of Just Bowl for care home residents.
- Strand two: Evaluation of Just Bowl for people affected by cancer.

The results of each strand are discussed within the report and key interpretations and recommendations are highlighted to inform the future implementation of the programme.

The report provides the following:

- An overview of Just Bowl and populations it is trying to impact.
- Findings from strand one and strand two.
- Recommendations for practitioners, care home staff, community workers trying to promote physical activity.

## Background

### Just Bowl

Just Bowl was launched in 2014 as part of the Play Bowls Strategy to encourage more people aged 16 and over with a disability to participate in bowls. The programme was effective and brought 1,750 with a disability into the sport.

In 2018 Just Bowl secured 18 months of funding from Sport England's "Tackling Inactivity" funding stream. The aim of the programme was to measure the impact of Just Bowl on people aged 70 and over and those recovering from cancer. The Just Bowl programme incorporated two strands. The first centred on care home residents and the second included people affected by cancer.

The Just Bowl team conducted site visits to identify the space available and follow this with training of the staff at the venue. Following the training the venue is supplied with the Just Bowl equipment for 12 weeks. The equipment consists of a 30 foot mat and a Just Bowl bag containing targets, a wedge, barriers, and bumpers to encourage innovative playing options.

## Partners

**Strand 1 - Care Home Provider - Brighterkind** – Brighterkind has 70 care homes geographically spread between Inverness to Jersey. A total of 3,780 registered beds and over 4000 team members offer a mixture of nursing, residential, dementia and palliative care to mainly frail and elderly residents. The Brighterkind concept is focused on offering a real home with real people that care. The Brighterkind experience is underpinned with three signature elements: extraordinary care; recreation and activity; food and dining.

**Strand 2 - SGV Cancer support, Nightingale Cancer Support Group, Stepping Out Cancer Support Group, Walsall NHS, Force Cancer, and Horizon Macmillan Centre/Albion in the community** - Originally Just Bowl partnered with Macmillan Cancer Support. After the commencement of the programme Macmillan disbanded their physical activity team. Therefore the Just Bowl staff developed relationships with individual cancer support groups.

**Sheffield Hallam University** – The Centre for Sport and Exercise Science (CSES), which began operations in 2000, is an internationally recognised centre of excellence for research and consultancy in the areas of physical activity for health, sports performance, and wellness. CSES has been the independent evaluator of the Just Bowl programme.



## Case study 1: Hungerford - Brighterkind

BrighterKind care home in Hungerford took part in the Just Bowl 12-week research project and the feedback from staff and residents was excellent. As a result, the home has now purchased equipment to ensure that the activity continues beyond the 12-weeks.

Figure 1: Hungerford Care Home



Residents wanted to be a part of Just Bowl from week one and really enjoyed the sessions which also encouraged other residents not normally active to take part. The weekly sessions showed that regardless of age or disability, Just Bowl can be played by everyone.

Whether participants chose to use the activity to socialise or as a friendly competition the emphasis is always on having fun.

Figure 2: Resident participating in a Just Bowl session.



*“Residents who previously had a stroke and thought they could not participate were able to play, and it made them more confident. Some new residents found this helpful to make friends with existing residents”*

Hungerford Staff Member

*“She was so thrilled and thoroughly enjoyed both playing and winning! She was always a gambler and to be able to enter a physically active competition and win even at the age of ninety-seven was a real highlight for her and it was also a turning point. I do hope that Just Bowl becomes a regular activity in many care and nursing homes”*

Daughter of resident

## Strand 1: Effect of the Just Bowl programme on the physical and mental health of care home residents.

### Background

The global numbers of adults aged 65 years and older will double to around two billion by 2050 [1]. The global increase in the aging population places pressure on healthcare services for older adults[1]. Although prolongation of life remains important, preservation of independency and function are of great significance in later life[2]. One of the most important approaches to ensuring increased independency is to increase physical activity among older people. Unfortunately, physical activity tends to decline and sedentary behaviour increases into later life[3]. Physical activity can help to reverse some of the age-related declines in physical and psychological function[3]. Older adults who participate in any physical activity gain some health benefits; some physical activity is better than none[4].



Promoting physical activity among older people is one of the five priority areas set out by the World Health Organisation in their physical activity strategy[5]. Strand one of the Just Bowl programme aimed to engage elderly residents in a care home setting. Care home residents spend the majority of their time inactive[6]. The levels of sedentary time resulted in the National Institute for Health and Care Excellence issuing a call for older people in care homes to be offered opportunities to participate in meaningful activity that promotes their health and mental wellbeing[7].

### Methods

Brighterkind identified six care home sites that were interested in participating in the Just Bowl programme. Following the agreement of the sites, the Just Bowl staff visited the care homes to provide staff with training (2 hours). The training included safe use of the equipment, how to make the game accessible, how to keep people engaged and how to complete the evaluation including; obtaining consent, data collection, and recording session attendance. After the training, each care home was provided with the Just Bowl equipment. Care home staff then organised and promoted the Just Bowl sessions to the residents. They were encouraged to run 1-2 sessions per week for 12 weeks.

### *Evaluation approach*

Primary outcomes: Impact of the Just Bowl programme on physical activity behaviour on elderly care home residents.

Secondary outcomes: The impact of the programme was explored on a number of secondary outcomes to provide greater insight into the effectiveness and scalability of the programme. These included;

- Mental wellbeing and exercise self-efficacy - using Sport England's suggested measures.
- The participant experience of the programme - via session observations.
- The professionals experiences of the programme and its impact on residents.

**Process evaluation:** This was implemented to enable us to understand 'what worked' and 'what didn't'. This was incorporated into the qualitative interviews with care home staff and the session observations to identify the successes of the programme. Adopting a process evaluation is important to help capture the complexity and multi componentry nature of public health programmes.

**Outcome evaluation:** This measured if the programme achieved its outcomes, specifically, if the residents became more active as a result of taking part in the programme. Findings from patient questionnaires were used to determine if Just Bowl successfully achieved its primary and secondary outcomes. Site specific case studies are also provided to deliver context and enrich the quantitative data.

### *Ethics*

It was anticipated that many participants in the care homes would suffer from dementia. Gaining consent for participation in populations with dementia is a complex issue [8]. A diagnosis of dementia does not necessarily indicate incapacity to give consent[8]. The professionals in the care homes will decide if the person is capable of giving consent. Additionally, a 'one-off' act of attaining consent is inadequate for people with dementia[8]. The project followed the process consent method developed by Dewing (2007)[9]. The method comprises five elements:

1. Background and preparation - researcher clarified that permission to access the person with dementia was gained from the staff.
2. Establishing the basis for consent - The care home staff established capacity for consent.
3. Initial consent - The care home staff took consent.
4. Ongoing consent monitoring - Initial consent was revisited and re-established at every occasion or even within the same occasion.
5. Feedback and support - the researcher provided feedback about a person's wellbeing to the care home staff if there were concerns.

## **Outcome measures**

Quantitative:

- The Just Bowl participants were given questionnaires at three time points; baseline, at the end of the Just Bowl programme (12 weeks), and at 6 months. Self-report physical activity, mental wellbeing, and exercise self-efficacy were measured using Sport England's suggested measures.
- Demographic information was collected including; Date of birth, gender, nationality, disabilities.

Qualitative:

The Just Bowl programme is designed to be accessible to anyone so the programme will not exclude individuals with dementia. For the evaluation, the project team paid close attention to the participant experience and ensured minimal burden. To ensure minimal distress to the participant's, qualitative data was collected by observation of the Just Bowl sessions. Observations allowed the research team to check nonverbal expressions of feelings, determine who interacts with whom, grasp how participants communicate with each other and check how much time is spent on activities[10]. The researchers used a focused observation method. Focused observation emphasises observation supported by interviews. The observations gathered information on the following questions:

- What are people doing?
- What are they trying to accomplish?
- How do members of the team interact and communicate during the Just Bowl sessions?
- How much activity are the participants engaging in?

The research team also interviewed care home staff members. Semi-structured interviews were employed as they provide evidence-based structure, yet remain flexible, allowing time for the participant to discuss topics that naturally emerge through conversation which are important to them. The interviews lasted approximately 15 minutes.

## **Data analysis**

Quantitative data:

- Statistical analysis was performed using SPSS version 22 (IBM, New York, USA).
- Data were assessed for statistical assumptions including normality.
- Continuous normally distributed variables are displayed as mean with standard deviation ( $\pm$ ).
- Non-parametric data are shown as median, with inter-quartile range (IQR). Categorical data are reported as the number of cases and percentages.

- Significant differences between two sets of related variables were assessed using paired sample t-test (parametric data), or the Wilcoxon signed-rank test (non-parametric).
- Significant differences between non-parametric variables with data recorded over three or more time points were assessed using a Friedman repeated measures test.
- Statistical significance was set at  $P < 0.05$ .

#### Qualitative data:

- Framework Analysis was used to analyse the data that is generated from the interviews and observations[11].
- The approach consists of five inter-connected, but distinct stages for analysis: familiarisation, identifying a thematic framework, indexing, charting, and mapping and interpretation.
- NVivo Version 10 data analysis software was used as a tool to facilitate the framework analysis as this has been found to be a valid and reliable tool, which enhances the transparency of the data analysis procedure[12].

## Findings

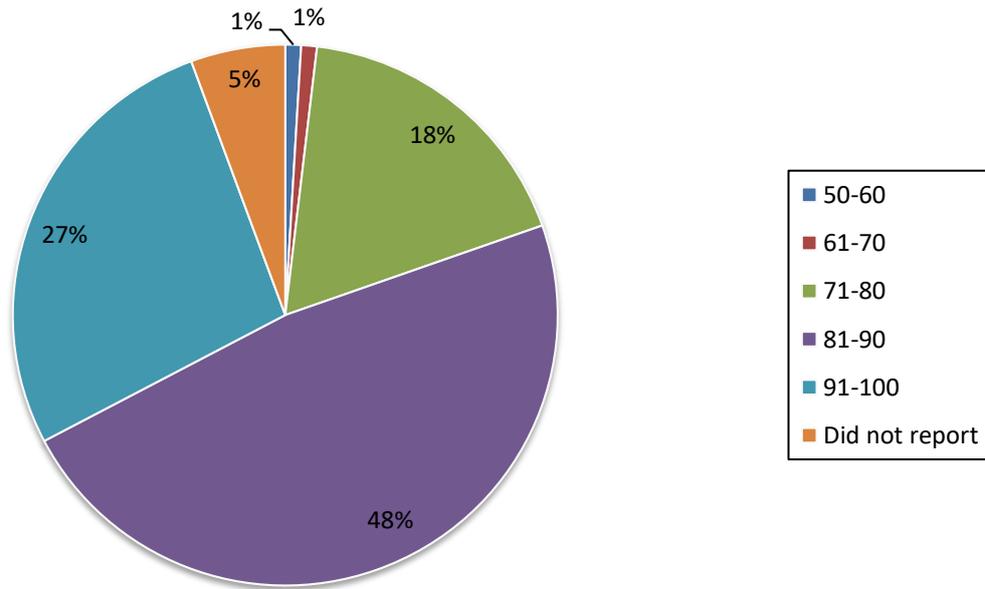
### Patient characteristics

- One hundred and seven nursing home residents ( $n = 107$ ) were recruited to the Just Bowl evaluation (Table 1).
- Participants were mostly female ( $n=90$ ; 96%) and had a mean age of  $86 \pm 8$ . Figure 1 illustrates the age range of participants which included 29 (27%) participants of 91-100 years of age.
- Eighty participants ( $n = 80$ ; 85.6%) remained in the evaluation at 12 week follow up. Thirty one ( $n= 31$ ; 33%).

**Table 1: Participant demographics**

Characteristic		
Participants (% female)	107 (96%)	
Age (years)	86 $\pm$ 8	
Ethnicity	All white British	
Disability	Yes:	103
	No:	1
	Prefer not to say:	13

**Figure 1: Participant age range**



- The Just Bowl team recruited ten care homes to be involved in the Just Bowl programme. Westbury Court enrolled the highest number of residents to the evaluation cohort (n = 15). Table 2 shows the numbers recruited by each site.

**Table 2: Participants recruited per Brighterkind site**

Care home	Number of residents
Avery Mews	13
Granby	8
Henleigh Hall	9
Hungerford	6
Scarborough	10
Hall Park	10
Ashbourne Court	13
Flowerdown	9
Meyrick Rise	14
Westbury Court	15

### Just Bowl Engagement

- Throughout the evaluation, the Brighterkind sites collected session registers to record the engagement in the Just Bowl sessions.

- Table 3 showcases the engagement in the sessions by the residents. Nine of the care homes provided the session registers. In total 150 people participated in the Just Bowl sessions. In total 1142 sessions were attended. The total mean session attended is 8.3 sessions (out of a possible 12). Avery Mews had the highest mean attendance of 10.4.
- In total (strand 1 and 2) 116 staff were trained in how to run Just Bowl sessions.
- The Just Bowl team also partnered with Guinness Care. Ten Guinness care sites engaged in the programme with 42 participants taking part and 14 members of staff attending the training. The Guinness Care participants were not included in the present evaluation.

**Table 3: Engagement in Just Bowl by Brighterkind site**

Location	Number attended	Total number of sessions attended	Mean sessions attended	Min	Max
Meyrick rise	18	130	7.2	1	12
Granby	8	55	6.9	5	10
Hall Park	16	141	8.8	5	11
Flowerdown	8	72	9	5	12
Ashbourne Court	16	192	12	12	12
Scarborough Hall	29	116	4	1	12
Westbury Court	28	171	6	1	11
Avery Mews	13	135	10.4	8	12
Hungerford	14	130	10	6	12
<b>Totals</b>	<b>150</b>	<b>1142</b>	<b>8.3</b>		

### *Outcome measures*

#### **Physical Activity**

Physical activity was measured using the Active Lives measure. The Active Lives measure reports on the amount of time an individual has spent walking, cycling or engaging in sport, fitness, or dance. Participants are also asked if each activity was sufficient to raise heart rate and breathing.

#### Walking

- At baseline 19 of the 107 participants reported that they had undertaken walking activities that week. Of the 19 people that had been walking (mean 3.5 days) nine reported that it had been sufficient to raise heart rate and breathing.

- At 12 weeks 25 of the 80 participants reported that they had been walking that week. In total 16 participants reported that their walking activities had been of moderate intensity.
- At six months follow up 15 of the 31 participants reported walking with 12 individuals reporting walking at a moderate intensity.

#### Cycling

- No participants reported cycling as an activity. This is likely due to the levels of disability of the participants

#### Sport, fitness, or dance

- At baseline 45 of the 107 participants reported engaging in sport, fitness, or dance (mean 3 days per week). Thirty seven participants reported that the activities increased their heart rate and breathing. The most popular activity was chair based fitness classes.
- At 12 week follow up 33 of the 80 participants reported engaging in sport, fitness, or dance. With 28 participants reporting that the activity was of moderate intensity.
- At six month follow up 25 of the 31 participants reported engaging in sport, fitness, or dance. Of the 25 participants, 20 reported that it was at a moderate intensity.

#### Total physical activity

- Participants did not report any significant increases in the number of minutes that moderate intensity physical activity was performed for.
- Tables 4, 5 and 6 illustrate the number of participants at each time point who were reported as inactive, fairly active, or active.

**Table 4: Baseline activity levels**

	Number	Percent
Active	17	15.9
Fairly Active	21	19.6
Inactive	69	64.5
Total	107	100

**Table 5: 12 week activity levels**

	Number	Percent
Active	12	15
Fairly Active	17	21.3
Inactive	51	63.8
Total	80	100

**Table 6: Six-month activity levels**

	Number	Percent
Active	5	16.1
Fairly Active	16	51.6
Inactive	10	32.3
Total	31	100

## **Mental health**

The mental health measure asks the participant to rate their mental health in four areas:

- Satisfaction with life
- How happy they felt yesterday
- How anxious they felt yesterday
- What extent they feel the things they do are worthwhile

The participant rated each question on a scale of 0-to-10, where 0 is "not at all" and 10 is "completely". Data will be presented in terms of proportions of people who rated each aspect within a particular range on the 0-to-10 scale. For life satisfaction, happiness and worthwhile questions, ratings are grouped in the following way:

- 0 to 4 (low)
- 5 to 6 (medium)
- 7 to 8 (high)
- 9 to 10 (very high)

For the anxiety question, ratings are grouped differently to reflect the fact that higher anxiety is associated with lower personal well-being. The ratings for anxiety are grouped as follows:

- 0 to 1 (very low)
- 2 to 3 (low)
- 4 to 5 (medium)
- 6 to 10 (high)

Tables 7 and 8 show the baseline groups for the four questions.

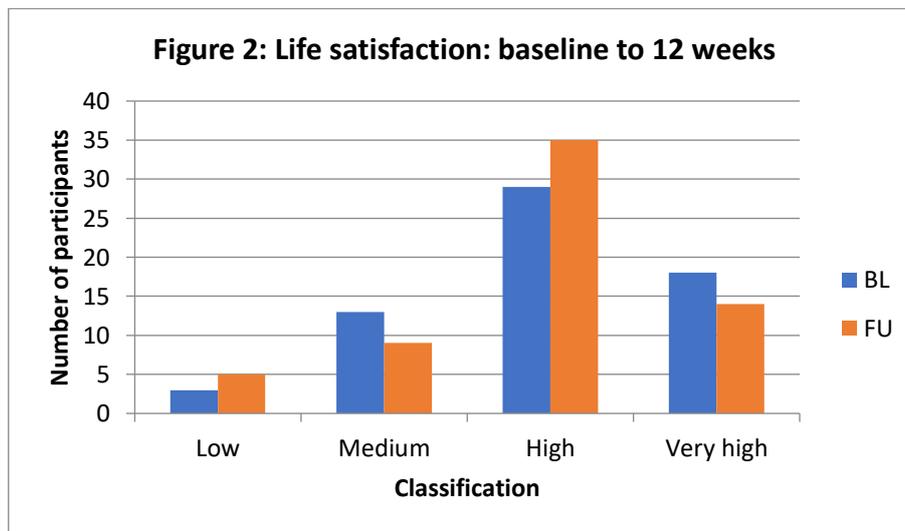
**Table 7: Baseline groups for mental health measures (life satisfaction, happiness, and worthwhile)**

	Life satisfaction	Happiness	Worthwhile
Low	4	4	7
medium	20	16	23
High	38	36	25
Very high	18	25	23

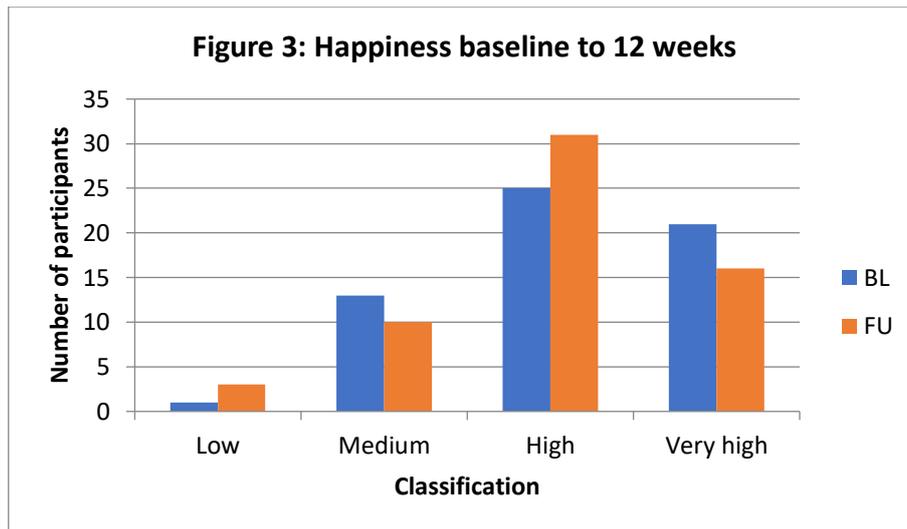
**Table 8: Baseline groups for mental health measures (anxiety)**

	Anxiety
Very low	31
Low	15
Medium	18
High	14

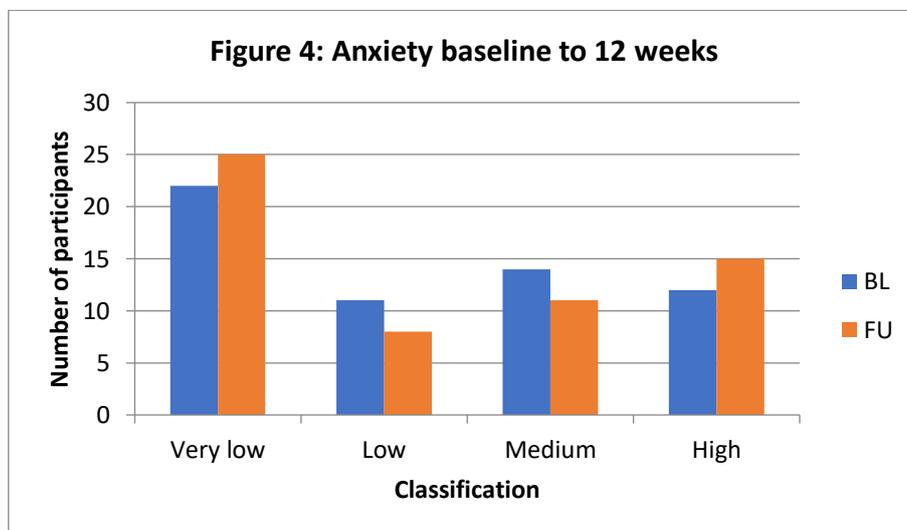
- A total of 63 participants completed the satisfaction question at baseline and 12 weeks follow up. There was no statistically significant change for levels of satisfaction.
- Figure 2 shows the change in group proportions from baseline to follow up.



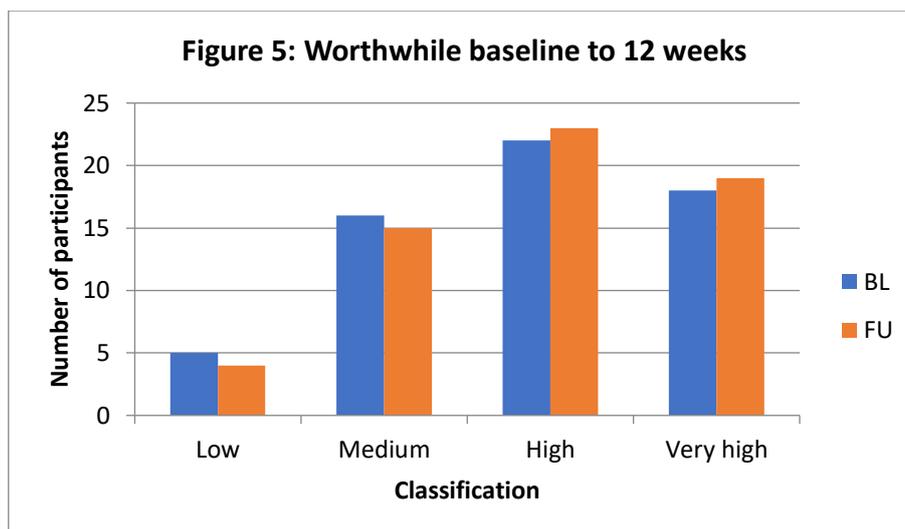
- A total of 60 participants completed the happiness question at baseline and 12 weeks follow up. There was no statistically significant change for levels of happiness.
- Figure 3 shows the change in group proportions from baseline to follow up.



- A total of 59 participants completed the anxiety question at baseline and 12 weeks follow up. There was no statistically significant change for levels of anxiety.
- Figure 4 shows the change in group proportions from baseline to follow up.



- A total of 61 participants completed the worthwhile question at baseline and 12 weeks follow up. There was no statistically significant change for levels of the worthwhile question.
- Figure 5 shows the change in group proportions from baseline to follow up.



### Self-efficacy

- Sixty nine participants completed the single item self-efficacy question at baseline and 12 weeks. Self-efficacy showed statistically significant changes from baseline to follow up ( $p < 0.01$ ).
- There was no statistically significant difference between baseline and six months follow up or 12 weeks and 6 months follow up.

### Session observations

The evaluation team observed six Just Bowl sessions. The observations enabled the team to describe existing situations using the five senses, providing a 'written photograph' of the situation under study[10]. Observation notes were entered into qualitative analysis software NVivo version 11 (QSR International Pty Ltd, 2015). NVivo enables data to be systematically organised, coded, and indexed.

### Themes from the observations

Table 9 presents the main themes and subthemes which emerged from the session observations. These are discussed in more detail below

**Table 9: Observation themes**

High order theme	Low order theme
Level of disability	Mobility issues Memory
Interaction	Social atmosphere Competition Relations
Activity	Intensity Sedentary time Autonomous activity

## **Level of disability**

### *Mobility issues*

- Care home residents tend to have issues with mobility. The majority of participants in the Just Bowl sessions were using walking aids or help from a carer or using a wheel chair.

### *Memory*

- Many of the participants involved in the sessions were unable to recollect the previous Just Bowl session. The carers facilitating the sessions would regularly have to remind participants of the purpose of the game and what they needed to do.

## **Interaction**

### *Social atmosphere*

- The carers at all sessions were able to create a social atmosphere. All sessions were conducted in a well-lit room with plenty of space. Music was played at each session and participants other residents were encouraged to sit in and watch the game. At four of the sessions, residents would watch the game but do not participate. All sessions included opportunities for refreshment breaks (tea and coffee).

### *Competition*

- Each observed session had participants split into two teams. This encouraged friendly competition which was well received by participants and enhanced the social atmosphere. Participants encouraged each other and also discourage the opposing team.

### *Relations*

- All sessions were led by dutiful carers whose main goal was to ensure the participants performed the sessions safely. Carers ensured that all participants were engaged in the sessions.

## **Activity**

### *Intensity*

- All sessions began with a warm up to ensure participants were ready for activity. Although, the intensity level of Just Bowl is low and not sufficient to increase a person's heart rate or breathing to a level of moderate intensity.

### *Sedentary time*

- However, the participants of the Just Bowl sessions would most likely be unable to perform exercise at a moderate intensity level. Due to the mobility issues the participants they are mostly sedentary. Whilst the participants are not bowling they

are inactive. The Just Bowl activities are able to break up participants time spent sedentary.

#### *Autonomous activity*

- Carers at all observed sessions fetched and handed the balls to the participants. This means participant's activity mostly involved rolling the ball.

#### *Care nurse perceptions*

Table 10 presents the main themes and sub-themes which emerged from the qualitative data. These are discussed in more detail below alongside key quotes to illustrate the theme.

**Table 10: Deliverer perceptions themes**

<b>High order theme</b>	<b>Low order theme</b>
Impact on the residents	Fun and enjoyment Social interaction Confidence Activity levels
Issues	Just Bowl equipment Evaluation

#### **Impact on the residents**

##### *Fun and enjoyment*

The carers that delivered the Just Bowl sessions discussed how residents who enjoyed the sessions. They described how the residents found the sessions fun and gave them a sense of achievement.

***"It gives them a sense of achievement, its great fun and although we play in teams, there is no losing team."***

***"A sense of accomplishment and great fun just being able to get a high score on the patch or in the holes."***

##### *Social interaction*

An important aspect of the Just Bowl sessions was how they encouraged the residents to interact with people that they otherwise would not have. The carers felt that the residents had been able to make new friends.

***"It's always nice to find something that will get a variety of personalities socializing together. And the Just Bowl has done that."***

***"Some new residents found this helpful to make friends with other residents."***

***"The residents are loving the social aspect of all being together as this is one of our bigger activities with more residents involved."***

### *Confidence*

The carers discussed how originally the residents were apprehensive about participating in the Just Bowl sessions. They felt that they were unable to participate. Participating in the sessions showed how they were able to do more than they realised and this subsequently improved their confidence.

***"The residents were a little dubious the first session but soon began to realise that they are capable of taking part and they started to look forward to it."***

***"It gives them a sense that they are capable of more than they think."***

***"Even residents who previously had a stroke and thought they could not participate made them more confident."***

### *Activity levels*

The carers believe that the Just Bowl sessions probably haven't made the residents fitter but it has helped them be more active and move more. The sessions have encouraged residents to bend and stretch and try and move without the use of walking aids. This suggests improvements in functional ability.

***"As time has gone by we now have a great session, we have residents that get up and go to bowl without the use of their walking stick"***

***"Just Bowl sessions have made our residents more active. They have had fun."***

***"It was good bending and stretching exercise practice for the wheelchair bound residents."***

### **Issues**

#### *Just Bowl Equipment*

The care home carers had some minor issues with a couple of pieces equipment provided; for example, they found the use of the large bowling matt to be too heavy to use regularly. They also had problems with the tubes required for wheelchair users to bowl.

***"We found the grass to be a bit too big and heavy for us to get out every session especially if there was only one of us running the activity."***

***"The bowls got stuck in the yellow tube which we used with the wheelchair residents."***

## Evaluation

The carers found completing the evaluation forms difficult due to the levels of impairment in the residents. They described how the majority of participants are not able to complete the forms on their own and therefore a carer had to go through the forms with them one-to-one. This was very time consuming for the carers and affects the validity of the questionnaire data.

***"The activities team had to complete the paperwork for the residents on a 1:1 basis which was time consuming as they needed the questions reading several times and some still did not understand the question and they were unable to complete the form themselves so the activities team did it for them in their presence."***

***"The activities team have to assist with the forms as not many of the residents have the capacity to do this independently."***

***"Most of our residents don't understand what it is we are asking, they are more interested in playing the game, some don't hear or speak so don't answer."***



" We have residents that get up and go to bowl without the use of their walking stick "

## Key learnings

- Just Bowl proved to be a popular activity within the care homes.
- Carers felt that the Just Bowl sessions increased resident's confidence and their functional ability.
- Initially residents were apprehensive about their ability to participate. But participating in the sessions showed how they were able to do more than they realised and this subsequently improved their confidence.
- The engagement in the Just Bowl sessions was high with a total of 150 residents participating and a mean of 8.3 sessions attended.
- The population group included in the evaluation are of advanced age; 75% of the participants were aged 81-100 (48% 81-90; 27% 91-100). Finding enjoyable activities for elderly people to engage in is a priority.
- The majority of participants have more than one disability with the most common being mobility issues. The levels of impairment of the residents make it unlikely they will exercise independently. The inclusive nature of Just Bowl means that people are not excluded because of their impairments.
- The level of participant impairment had implications for the collection of evaluation data. Collecting data was difficult due to participants not having the capacity to complete the forms or answer questions.
- The Just Bowl sessions created a social atmosphere in the care homes and provided residents with an opportunity to interact.
- The Just Bowl sessions are of light intensity which suits the population and provides an opportunity to break up time spent sedentary.
- The recently updated UK Chief Medical Office's Physical Activity Guidelines provide specific recommendations for people with dementia or advanced older age. The guidelines state that any increase in the volume and frequency of light activities, and any reduction in sedentary behaviour will contribute towards health.
- Participant self-efficacy improved from baseline to follow up.
- Carers discussed some minor issues with the equipment. Following the feedback Just Bowl have since developed a lighter bowling matt and improved tubes.

## Case study 2: Avery Mews - Brighterkind

BrighterKind care home 'Avery Mews' was one of 12 homes chosen to pilot the 12-week research project and with such positive feedback from the residents, the equipment was purchased, and they have continued sessions every Monday as part of their weekly activity programme.

Picture: Doreen participating in Just Bowl



Doreen is 94 years old and a resident at Avery Mews; she is a wheelchair user and a regular participant in Just Bowl.

"I love the Just Bowl sessions, I look forward to going, I'm not very good, but I really enjoy joining in"

Beryl is 79 years old and uses a walking stick when mobilising. Beryl is a regular, dedicated player of Just Bowl

*"Residents started by using walking sticks, frames and trolleys but as time has progressed they now get up out of their chairs, using their mobility aids, but once on the mat, the aids get tossed to one side and away they go. Seeing the transformation in their mobility has been fantastic"*

*"Their confidence has grown immensely, and it's been a fantastic opportunity to be a part of the process"*

Avery Mews Activity Coordinator

"I love the fun of playing Just Bowl and the cheek between the teams"

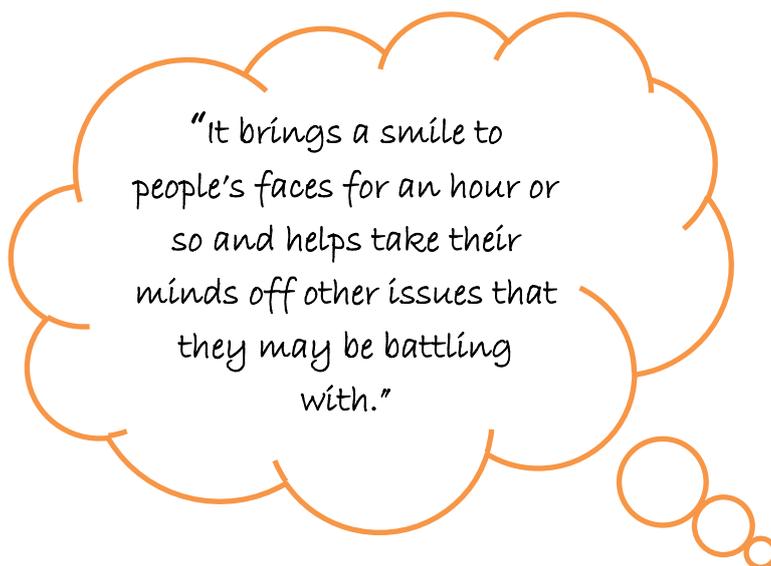


## Strand 2: Effect of the Just Bowl programme on the physical and mental health of people affected by cancer

### Background

There are over 2 million adults living with and beyond cancer in the UK. It is estimated that this figure will rise to 4 million by 2030[13]. Cancer and its treatment can negatively impact physical and psychological wellbeing; coping with diagnosis, cancer treatment, and making the transition into survivorship can be challenging[14]. The evidence is growing to support the role of a physically active lifestyle during and post treatment[15]. Regular participation in physical activity is associated with prolonged survival, and reduced treatment side effects, improved physical function[16], diminished cancer-related fatigue[17], and improved quality of life[18].

It is recommended people affected by cancer should aim for the Chief Medical Office recommendations of 150 minutes per week of moderate intensity or 75 minutes of vigorous intensity physical activity. Despite the benefits and the endorsements for PA people affected by cancer do not meet recommended targets of PA[18]. It is estimated that fewer than 10% of people affected by cancer will meet the recommended amount of activity during treatment and 20-to-30% will be meet the recommendations after treatment [19].



'Cancer' is an umbrella term for many conditions, therefore, it would be naïve to think a one-size-fits-all approach would suit all patients[20]. For example, Bourke and colleagues[16] recommend that PA prescription for prostate cancer patients should be tailored to individual capabilities to ensure a balance of safety and effectiveness. Just Bowl provided a new approach to supporting people's physical activity needs throughout their cancer journey.

### Methods

#### *Evaluation Approach*

*Primary outcomes:* Impact of the Just Bowl programme on physical activity behaviour on people affected by cancer.

*Secondary outcomes:* The impact of the programme will be explored on a number of secondary outcomes to provide greater insight into the effectiveness and scalability of the programme. These include;

- Mental wellbeing and exercise self-efficacy - using Sport England's suggested measures.
- The participant experience of the programme - via participant interviews.

### **Ethics**

Ethical approval was granted by the Sheffield Hallam University Sports Ethics Committee. Informed consent was attained from all patients and deliverers. All data generated within the report was anonymised and treated confidentially. All data has been stored in accordance with the Data Protection Act (2018) and in line with the General Data Protection Regulation (2018).

### **Outcome measures**

Quantitative:

- The Just Bowl participants were given questionnaires at three time points; baseline and at the end of the Just Bowl programme (12 weeks).
- Demographic information was collected including; Date of birth, gender, nationality, disabilities.
- Self-report physical activity, mental wellbeing, and exercise self-efficacy were measured using Sport England's suggested measures.

Qualitative:

- The project team conducted semi-structured interviews with participants (n=4).
- The interviews were carried out on the telephone.
- The interviews explored their experience of Just Bowl, including elements that worked well / less well.
- All qualitative interviews with participants lasted approximately 15 minutes.

### **Data analysis**

- Quantitative and qualitative data were analysed as described in Strand 1 (pages 9 and 10).

### **Findings**

- Thirty four people affected by cancer were recruited to the Just Bowl evaluation (table 11).
- Participants were mostly male (n=20; 59%) and had a mean age 71 ±8.6.
- Twenty two participants (n=22; 65%) remained in the evaluation at 12 weeks follow up.

- The Just Bowl team recruited three cancer groups to be involved in the Just Bowl programme.
- Bridport enrolled the highest number of people affected by cancer to the evaluation cohort (n=14).

**Table 11: Participant demographics - strand 2**

Characteristic	
Participants (%male)	34 (59%)
Age	71±8.6

### *Outcome measures*

#### **Physical activity**

##### Walking

- At baseline 32 of the 34 participants reported that they had undertaken walking activities in the past seven days. Of the 32 individuals that reporting walking (mean 5 days per week) 23 stated that it had been sufficient to increase their heart and breathing rate.
- Participants reported a high amount of moderate intensity walking at baseline (mean 245 minutes per week).
- At the 12 weeks follow up 21 of the 22 participants reported walking in the last seven days. Of the 21 participants, 15 reported that their walking (mean 5 days) was of moderate intensity (mean 254.3 minutes per week).

##### Cycling

- At baseline, four participants reported cycling as an activity (mean 2.25 days per week) with three stating it was of moderate intensity (mean 86 minutes per week).
- One person reported cycling at 12 weeks follow up but not at a moderate intensity.

##### Sport, fitness, or dance

- At baseline 17 of the 34 participants (50%) reported engaging in sport, fitness or, dance (mean 2.24 days per week). Thirteen reported that the activities were at a moderate intensity (mean 258 minutes per week).
- At 12 week follow up 13 of the 22 participants reported engaging in sport, fitness, or dance (mean 2 days per week). Of the 13 participants, 12 reported that activities were of moderate intensity (mean 139 minutes per week).

## Total physical activity

- Participants did not report any significant changes in the amount of moderate intensity physical activity performed.
- Table 12 and 13 illustrate the number of participants at baseline and follow up that were classified as inactive, fairly active, or active.

**Table 12: Baseline activity levels**

	<b>Number</b>	<b>Percent</b>
Active	18	52.9
Fairly Active	7	20.6
Inactive	9	26.5
<i>Total</i>	<i>34</i>	<i>100</i>

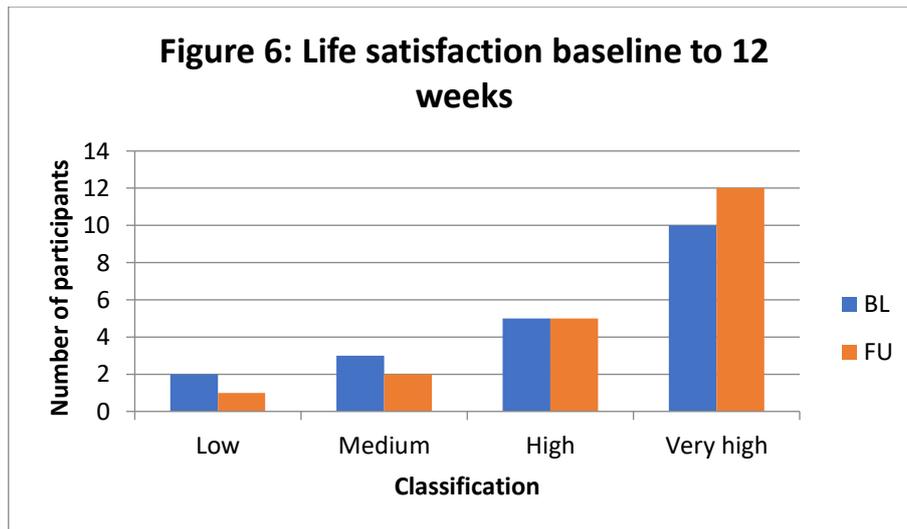
**Table 13: Follow up activity levels**

	<b>Number</b>	<b>Percent</b>
Active	16	72.7
Fairly Active	3	13.6
Inactive	3	13.6
<i>Total</i>	<i>22</i>	<i>100</i>

## Mental health

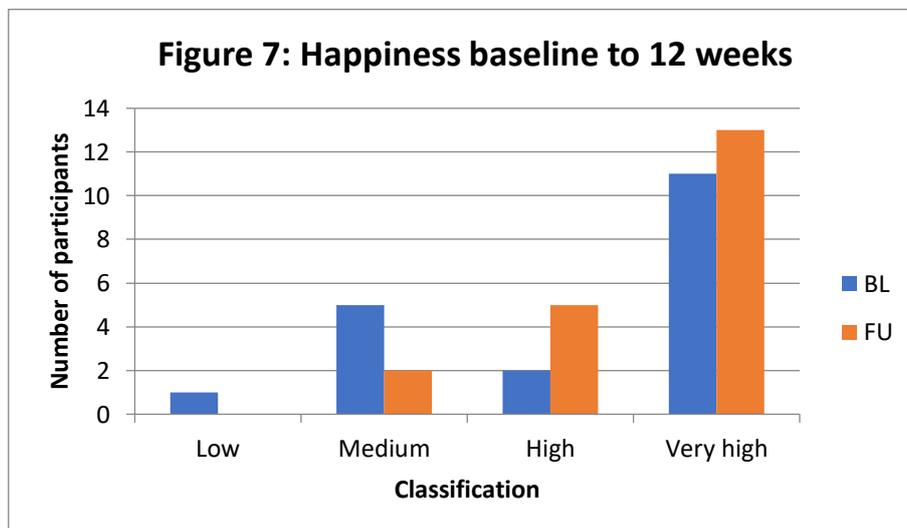
### Satisfaction

- Twenty participants completed the satisfaction question at baseline and 12 weeks follow up.
- There was no significant change for levels of satisfaction.
- Figure 6 shows the change in group proportions from baseline to follow up.



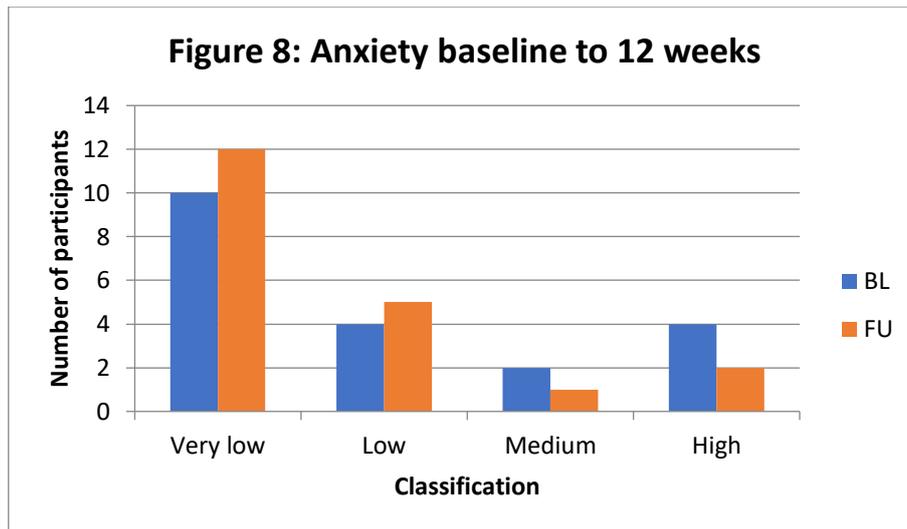
### Happiness

- A total of 20 participants completed the happiness question at baseline and follow up.
- There was no significant change from baseline to follow up.
- Figure 7 shows the change in group proportions from baseline to follow up.



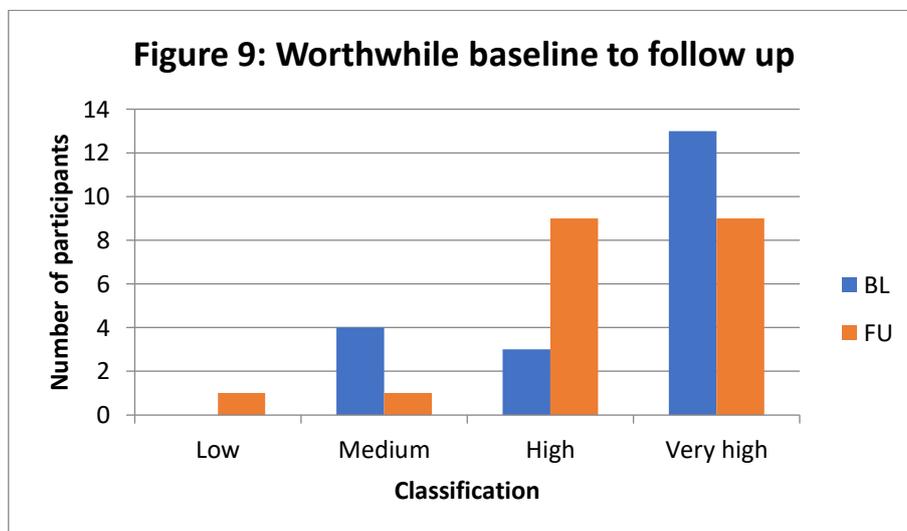
### Anxiety

- Twenty participants completed the anxiety question at baseline and follow up.
- Graph 7 shows the changes in group proportions from baseline to follow up.
- The results show fewer people with medium and high anxiety at follow up compared to baseline.
- There was no significant change from baseline to follow up.



### Worthwhile

- There was no significant change for the worthwhile question.
- Figure 9 shows the change in group proportions from baseline to follow up.



### *Participant experiences*

The evaluation team interviews four participants (two male; two female) from the Just Bowl cancer groups.

### Themes

Table 14 presents the main themes which emerged from the qualitative data. These are discussed in more detail below alongside key quotes to illustrate the theme.

Table 14: Participant experiences main themes

Themes
Enjoyment of Just Bowl sessions
The social aspect of the sessions
The intensity of the sessions

#### Enjoyment of Just Bowl sessions

- The participants discussed how they enjoyed the sessions and found them fun.
- Participants discussed how the game could be varied so they could change the session to ensure people stayed interested.

***"I think people come and enjoy it. We all have a good laugh."***

(P1; female)

***"The activity was varied so we could use different challenges."***

(P2; female)

#### The social aspect of the sessions

- One of the most important aspects of Just Bowl was the opportunity to meet people.
- One participant discussed how it was good to socialise with other cancer patients, even if they never actually talk about it.

***"I think it is quite enjoyable especially the social side of it. All the people in the group and although we don't talk about it we all know we are in the same boat"***

(P1; female)

***"We have a cup of tea in the middle so we can have a chat and a bit of social time."***

(P2; Female)

***"The main thing I got from attending the sessions was meeting other people."***

(P3; Male)

#### The intensity of the sessions

- Participants discussed how although they enjoyed the sessions but they did not find them particularly challenging.
- Participants felt the bowls were very light and heavier bowls would have increased the intensity.

***“It isn't very demanding you just need to be able to get up from your chair walk a dozen paces to the matt deliver the ball and then go back and sit down again.”***

(P4; male)

***“I think the bowls are a little bit light. We have a keen bowler who helps run the session. They would be good for people with special needs but not for adults.”***

(P1; female)

### **Key learnings**

- The participants in strand two reported enjoying the Just Bowl sessions. They discussed how the sessions were fun and being able to adjust the game ensured it remained challenging.
- An important positive of Just Bowl was the opportunity to socialise in a group. This is in agreement with Strand One. The opportunities Just Bowl generates for conversation, competition, and comradery is clearly important to participants.
- At follow up the participants reported improved mental health including a higher proportion of people reporting improved life satisfaction and lower anxiety.
- The participants found the intensity of Just Bowl to be low. This is due to participants in strand two reporting being highly physically active.

## Case study 3: Stepping Out - Cancer Support Group Bridport

Stepping Out, located in Bridport, Dorset, took part in Just Bowls' 12-week research project, which helps people with cancer or recovering from cancer to become more physically active and improve their mental wellbeing through the sport of bowls. They carried out the project in their local rugby club next to the sports centre. It was a lovely place to run Just Bowl sessions with plenty of room and a flat wooden floor to accommodate all the Just Bowl equipment.

**Picture: Just Bowl carried out training for five staff and volunteers.**



*"We signed up to the 12- week trial, and here we are, almost a year later still playing every Friday"*

*"Just Bowl has been suitable for everyone, which is really important when encouraging people to find appropriate level activities so they can adopt a more active lifestyle"*

Stepping Out Organiser

The 12-week project was a massive success, with 42 people having engaged and over 15 people taking part on a regular basis each week. Just Bowl was so popular, they have secured funding to purchase the equipment and have made it a permanent weekly activity. The participants love the competitive side Just Bowl offers and have created trophies and certificates for the sessions. For many participants Just Bowl has become a massive part of their week, being able to socialise and help with their confidence and overall improving their mental wellbeing.

**Picture: Participant taking part in their Friday morning Just Bowl session.**



*"It brings a smile to people's faces for an hour or so and helps take their minds off other issues that they may be battling with"*

*"Taking part in Just Bowl has encouraged me to join the local flat green bowls club"*

Participant

## Overall discussion and reflections

The aims of this project were to evaluate the impact of Just Bowl on the physical and mental health of two different populations. Strand one included care home residents and strand two included people affected by cancer.

Older adults living in a care home are a complex population characterised by high dependency in activities of daily living, and multi morbidity[21]. Despite this, the findings from the evaluation suggest that the format and content of the Just Bowl programme were acceptable for this population. High session attendance and engagement, and positive observations and discussions provide evidence of acceptability.



*"Some new residents found this helpful to make friends with other residents."*

### Impact of Just Bowl on physical activity

Maintaining an active lifestyle in to older age is of major importance to maintain physical function, mental health and a higher quality of life [22]. Furthermore, residents quality of life is positively influenced by their independence in their daily activities[22]. Despite these benefits, nursing home residents spend the majority of their day inactive[23]. The level of physical inactivity was supported by the self-report physical activity data and the session observations in the evaluation. As people age, they encounter many obstacles that undermine their ability and desire to be physically active[24]. For older adults living in care homes, their ability and resources for initiating and maintaining an active lifestyle are restricted[24].

Data from the session observations, deliverer interviews, and participant interviews (strand 2) agree that the Just Bowl sessions are of light intensity and are therefore not going to provide moderate intensity physical activity. That being said light intensity activities for care home residents, including encouraging patients to stand up and sit down, have been shown to increase resident's functional fitness [21]. Just Bowl sessions provide a significant opportunity to break up a person's sedentary time. For elderly people the CMO physical activity guidelines recommend activities that focus on reducing sedentary behaviour and engaging in regular sit-to-stand exercise and short walks, stair climbing, embedding strength and balance activities into everyday life tasks, and increasing the duration of walking, rather than concentrating on intensity[25]. The nursing home carers discussed how the Just Bowl sessions increased the resident's confidence. They discussed how residents were choosing not to use walking aids as their confidence grew. The increase in confidence is supported by the increase in reported exercise self-efficacy.

During the session observations, it was highlighted that nursing home staff would help the participant in to position and fetch and carry the bowls for them, therefore limiting the amount of activity required of the participant. Nursing home staff have a key role in increasing the activity levels of nursing home residents[22]. However, this can be challenging due to high demanding work and limited availability of staff[22]. If nurses do not encourage residents to be active but complete the activities for them instead, the residents will become more care dependant. Encouraging resident independence in activities should be a key role of nursing staff in order to decrease residents' inactivity and functional decline. It is important to reinforce the resident's autonomy, but also take into consideration any risk that may endanger the resident by analysing the pros and cons of undertaking an activity [26].

### **Impact of Just Bowl on Mental Health**

The qualitative aspects of the evaluation allow us to understand the participant's experience of the Just Bowl and how this can impact on mental health. The qualitative findings from strand one compare well with strand two. Results from the modes of data collection (observations and interviews) highlight the importance of social interaction in the enjoyment of activities. Research has shown that social interaction has an important role in cognitive function and successful aging[27]. Social support and enjoyment are important determinants of engaging in physical activity[28]. Previous research has demonstrated that group based activity can eliminate feelings of isolation and loneliness[28]. The social environment created by the Just Bowl programme allowed participants from both strands to feel more confident and engaged in the activity. Promoting fun rather than just health and fostering social interaction within activities can lead to greater enjoyment[29].

### **Limitations**

A number of methodological limitations should be considered when interpreting the findings of the Just Bowl evaluation.

- The sample size for strand two means there was limited opportunity to find significant differences between the outcomes of interest.
- Caution must be exercised when interpreting the questionnaire data collected from the care home residents in strand one. Few participants involved in the evaluation were able to complete the questionnaires independently. The nursing home staff would complete the forms for the participant.
- It is difficult to distinguish any changes that might have occurred during the Just Bowl programme, from changes that would occur during usual care. A control group would provide the most reliable evidence on the effectiveness of the Just Bowl programme; this was out of scope for this evaluation.

## Conclusions

This evaluation incorporated a number of methods to provide context and meaning to programme. We used a pragmatic mixed method approach to enable a multi-angled view of the Just Bowl programme. We incorporated a number of novel data collection methods, including session observations, and interviews with the nursing staff. These methods draw on perspectives which allowed the people involved to produce realistic but meaningful evaluation findings.

The Just Bowl programme has been successfully delivered in 12 Brighterkind care homes, 4 Cancer support groups and 10 Guinness Care assisted living home across England. Participants who took part in Just Bowl found it to be a positive and fun experience. The overwhelming positive of Just Bowl is the social interaction the game creates. The Just Bowl sessions proved to be a fun, enjoyable activity that created a friendly, competitive atmosphere wherever it was played. Although Just Bowl is a light intensity activity it was shown to be an ideal activity to break up the large amounts of time care home residents spend sedentary. This is in line with the recently updated CMO physical activity guidelines [25]. The Just Bowl sessions ultimately increased the resident's confidence in their ability to do activities. Support is needed to increase the care home resident's autonomous but safe participation in the sessions and general daily activities. More research is needed to investigate if Just Bowl can be a tool to increase functional capacity in disabled populations such as care home residents and stroke patients.

## Implications for research and practice

### Care Homes

- The CMO Physical activity guidelines recommend activities that focus on reducing sedentary behaviour and engaging in regular sit-to-stand exercise and short walks, stair climbing, embedding strength and balance activities into everyday life tasks, and increasing the duration of walking, rather than concentrating on intensity[25]. Just Bowls aligns with these recommendations.
- Just Bowl is an enjoyable exercise that encourages light intensity exercise in a sociable environment.
- Just Bowl has been shown to increase resident's confidence in their ability to participate in activities.
- Care nurses should encourage residents to undertake independent activities where appropriate.

### Public Health

- Care home residents spend the majority of their time in sedentary behaviour.
- Encouraging sociable activities is important to the wellbeing of elderly individuals.

### Just Bowl

- Just Bowl was identified as a useful activity for people with disabilities.
- Just Bowl could be a tool to help increase a person's functional capacity. More research is needed in this area

### Research

- More work is needed to collect data from participants with dementia.
- Collecting questionnaire data may not be appropriate for people with dementia.
- More research is needed to investigate if Just Bowl can be a tool to increase functional capacity in disabled populations such as care home residents and stroke patients.

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