



Reducing sarcopenia in older adults and improving wellbeing through targeted chair-based resistance exercises

PILOT - MAY TO DECEMBER 2016

In summary

Overall, the pilot, showed positive impacts for older people on:

- Physical function
- Happiness
- Anxiety
- Loneliness

The findings from this pilot suggest that targeted resistance based exercises are not only very effective for addressing sarcopenia/frailty but might be an effective intervention for also tackling loneliness/isolation and improving wellbeing. And, that such impact can be achieved in a relatively short period of time – 10 to 14 weeks.

1. Background

What is the problem we are trying to solve?

There is a growing body of research evidence which finds that targeted resistance based exercises can significantly reduce frailty in older adults. **Sarcopenia (eg loss of muscle mass and strength) is estimated to cost the National Health Service (NHS) £11.9 billion¹**; these costs are represented by increased hospitalisation, nursing home admissions, and home care expenditure. In addition, there are encouraging findings on the impact of exercise on those with cognitive impairment as well².

Such benefits relate to:

- 1) Improvements in strength and balance, hence reduction in falls,
- 2) Improvements in the ability to perform daily activities and remain independent,
- 3) Improvements in overall well-being and temperament, and
- 4) Reduction in frequency of visits to A & E and GPs.

Yet, the majority of social and physical activities provided in the community are for those who are more agile and mobile - such as Zumba gold, tai chi, yoga and tea dances. Those who might be frailer (eg following a period of illness, surgery or accident) and/or those with cognitive impairment (eg dementia) are largely **not well catered to in mainstream community activities**.

The solution – new partnership

The July 2016 report by Public Health England (Health Matters: getting every adult active every day) sets out the importance of more resistance based exercise for older people to address sarcopenia. Royal Voluntary Service, working in partnership with innovative experts in exercise for the over 60s - [Move it or Lose it!](#) (Founder Julie Robinson) - developed a bespoke chair-based resistance exercise programme for RVS staff and volunteers to deliver. All of the exercises are focused on tasks which help people maintain their independence in the home – such as washing, dressing, getting out of bed, off the toilet etc; each of the classes are also focused on creating a fun, interactive, and social environment – so what keeps people coming back are not only the exercises but socialising with friends/neighbours.

The pilot – areas and training

The pilot was launched in four areas – Banbury, Leicester, Oxford and Suffolk. The pilots in Banbury and Oxford started in May 2016 and the pilots in Leicester and Suffolk started in September 2016. The majority of sites delivered chair-based exercises involving groups of between 10 to 14 people. In Leicester we also delivered one-to-one exercise support to those on our *Home from Hospital service* following discharge from hospital. In total 18 - volunteers (6) and staff (12) - received two days of training in Move it or Lose it! chair-based resistance exercises.

2. Findings of Active Moves pilot

A total of 60 people were measured at baseline and 44 completed the follow-up assessment (average 10 to 14 weeks of exercises); attrition at assessment stage related to – infrequency of attendance/dropping out, continuing poor health, admission to nursing home or mortality. We had a 73% completion rate which is considered good for this client group.

Clients were assessed using the *Short Physical Performance Battery* (SPPB) – which is a well-recognised standardised tool used to assess lower extremity function amongst older adults. SPPB has been found to be a good tool for assessing future risk; for example: those scoring poorly on the SPPB were found to be at significant increased risk for falls, nursing home placement, and loss of independence at a 1 year follow up³. The pilot also looked at wellbeing – such as happiness and anxiety from the Office of National Statistics (ONS) Wellbeing questions and the three item UCLA Loneliness scale.

a. Sample characteristics

The majority of the sample was female – 68% - and the mean age was 81. There was little difference found in the sample of 44 who completed the assessment and those that dropped out (eg attrition n=16). The mean age of those who did not

complete the pilot was also 81 with an age range of 68 to 90. 63% were female and 38% male, and 4 (22%) had some form of cognitive impairment.

TABLE 1: Profile (of those with full physical assessments)

Total sample	Male	Female	Age (mean and range)	Known cognitive impairment
44	14	30	81 (63 to 96)	8 (19%)

b. Physical profile (using the Short Physical Performance Battery (SPPB); max 12 points)

The findings from the pilot show that **functional improvement was achieved in 61% of the sample** and that on average people improved by 20% (2.4 points out of a scale of 12). 27% of the sample declined and they declined on average by 14% (1.7 points out of a scale of 12). Those that declined were slightly older than those that improved – mean age was 84 versus 80. Three out of the 12 individuals that declined had dementia. It should be noted that because of the progression of their dementia it was difficult to assess their true level of physical function as some of the instructions appeared difficult for them to understand. Another 4 in the ‘declined category’ had continuing poor health so did not attend the classes on a regular basis.

TABLE 2: Functional capacity following - on average 10 to 14 weeks - Move it or Lose it! chair-based exercises

Outcome	Profile
27 improved	<ul style="list-style-type: none"> • Mean improvement was 2.4 points • Range was 1 to 5 • 9 people increased by 3 or more points; 8 people increased by 1 point
12 declined	<ul style="list-style-type: none"> • Mean decline was 1.7 points • Range was 1 to 3 • Majority (n=7) people declined by 1 point
5 remained the same	<ul style="list-style-type: none"> • 1 low functioning • 2 moderate functioning • 2 high functioning (1 achieved max score of 12)

The pilot primarily **helped to shift people in the lower functioning category**; 14 (32%) of the sample shifted a functional category upwards – the pilot predominately helped to shift people up one category from poor to moderate function. Only four (9%) shifted a functional category downwards.

TABLE 3: Functional categories⁴ (max score 12; n = 44)

Baseline		
Poor (0-4)	Moderate (5-8)	High (9-12)
21 (48%)	17 (39%)	6 (14%)
Final assessment		
Poor (0-4)	Moderate (5-8)	High (9-12)
11 (25%)	25 (57%)	8 (18%)

c. Wellbeing and loneliness measures

The pilot recorded complete wellbeing scores on 27 people. There were some missing values (eg incomplete, not collected because of other sensitivities - recently bereaved) which were excluded and we did not collect wellbeing data from those individuals with cognitive impairment.

- Office of National Statistics (ONS) wellbeing scores – happiness and anxiety

The ONS wellbeing questions on happiness and anxiety showed a slight improvement from baseline to assessment. Over one in four improved (26%) on happiness scores and fewer (over 10%) people reported being 'extremely' or 'very anxious'.

- UCLA Loneliness scale

The pilot appeared to have a **very positive impact on loneliness scores**; 22% less reported that they were lonely at assessment stage and those that remained lonely tended to be older in age. This compares to other findings. From the 2011 Census⁵ loneliness was found to increase with age - 14.5% of those 65-79 reported high levels of loneliness compared with 29.2% of those 80 and over.

TABLE 6: Loneliness scores (hardly ever, some of the time, often) (n=27)

Categories	Not lonely	Lonely	Not lonely by age: 60-79 (n=11) 80 & over (n=16)	Lonely by age: 60-79 80 & over
Baseline	16 (59%)	11 (41%)	7 (63%) 9 (56%)	4 (36%) 7 (44%)
Assessment	22 (81%)	5 (19%)	10 (91%) 12 (75%)	1 (9%) 4 (25%)

Analysing the data by each of the three UCLA questions reveals a bit more about which domains of loneliness this pilot had greatest impact on. Overall, the pilot appeared to reduce the number of people reporting 'often' – eg lacking companionship, feeling left out, feeling isolated. The pilot appeared to have **greatest impact** on reducing the number of people reporting that they '*often* lacked companionship' and increased the numbers of those reporting that they '*hardly ever* feel left out'.

TABLE 7: Score by each question

How often do you feel that you lack companionship ?	Hardly ever	Some of the time	Often
Baseline	8 (30%)	11 (41%)	8 (30%)
Assessment	11 (+3) (41%)	15 (+4) (56%)	1 (-7) (4%)
How often do you feel left out ?	Hardly ever	Some of the time	Often
Baseline	15 (56%)	9 (33%)	3 (11%)
Assessment	22 (+7) (81%)	3 (-6) (11%)	2 (-1) (7%)
How often do you feel isolated from others?	Hardly ever	Some of the time	Often
Baseline	13 (48%)	9 (33%)	5 (19%)
Assessment	16 (+3) (59%)	10 (+1) (37%)	1 (-4) (4%)

d. Physical function scores and wellbeing/loneliness

There appears to be a correlation between improvement in physical function and reported wellbeing/ loneliness:

- Those who were ‘extremely’ or ‘very anxious’ at baseline and ‘not at all’ or ‘slightly anxious’ at assessment stage tended to show substantial improvement in physical function: moving from low to moderate function.
- Those reporting that they were ‘lonely’ at baseline and ‘not lonely’ at assessment tended to show improvement in physical function and to show higher functional improvement scores – two or more.
- When looking at particular domains of loneliness; improvements in physical function appeared to have greatest impact on shifting people from reporting ‘*often or some of the time feel left out*’ to ‘*hardly ever*’.

3. Conclusion

The findings suggest that targeted resistance based exercise can have a significant impact on physical function of very frail older adults – by helping to reduce sarcopenia - and improve overall wellbeing. Also the reduction made in feelings of loneliness and isolation suggests this is an effective intervention for tackling loneliness/isolation. Lastly, such impacts can be achieved in a relatively short period of time.

PILOT SUPPORTED BY A GRANT FROM THE PLAYERS OF PEOPLE’S POSTCODE LOTTERY

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¹Beudart et al (2014) Sarcopenia: burden and challenge for public health. Arch Public Health, 72:45

²Forbes, D et al (2015) Exercise programs for people with dementia. Cochran Review.

³Fisher, S et al (2009) Short Physical Performance Battery in Hospitalized Older Adults. Aging Clin Exp Res; 21(6): 445.

⁴Corsonello et al (2012) Prognostic Significance of the Short Physical Performance Battery in Older Patients Discharged from Acute Care Hospitals, [Rejuvenation Res](#); 15(1): 41–48.

⁵ONS Loneliness analysis

(<http://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/2015-10-01>)