

# Growing a Healthy Older Population in Wales (GHOP)

Project summary & key findings

## Background to the project

As the percentage of older people within the population is ever increasing, there is a need to better understand how we can protect against ill health in later life. An important outcome of the new phase of the Strategy for Older People in Wales<sup>1</sup> is for older people to "enjoy good physical, mental and emotional health and well-being with the aim of being able to live independently for longer, with a better quality of life and continue to work and participate in their communities" (p7). Research and government guidelines have focused on modifiable lifestyle factors as a means of promoting healthy ageing. Leisure time activities which provide exercise, social interaction, and lifelong learning are of particular importance to health and wellbeing in later life.

There is a growing interest in the potential role of physical activity conducted in the natural environment (aka 'green exercise') in enhancing individuals' psychological and physical health<sup>2</sup>. Gardening is a popular leisure activity with the older population and represents a form of green exercise that can provide recommended levels of physical activity intensity<sup>3</sup> as well as active involvement with nature.

Gardening on allotment plots and at community gardening projects may also offer further benefits. For example these forms of 'communal gardening' can provide social engagement opportunities which may also help to combat social isolation and loneliness. In Wales there is a high demand for allotment plots as well as a growing number of community garden projects which are supported by the Welsh Government-funded Tyfu Pobl programme. However, there is limited evidence demonstrating how and why gardening may be beneficial to health and well-being.

The Growing a Healthy Older Population in Wales (GHOP) project is a collaboration between researchers from Cardiff Metropolitan University's Schools of Sport and Health Sciences and Cardiff University's School of Planning and Geography. The project was funded by the National Institute for Social Care and Health Research (NISCHR) to explore the benefits of allotment and community gardening for health and well-being in later life. The aim of the research was to develop a methodology for evaluating the impact of community and allotment gardening for older people and their wider communities.

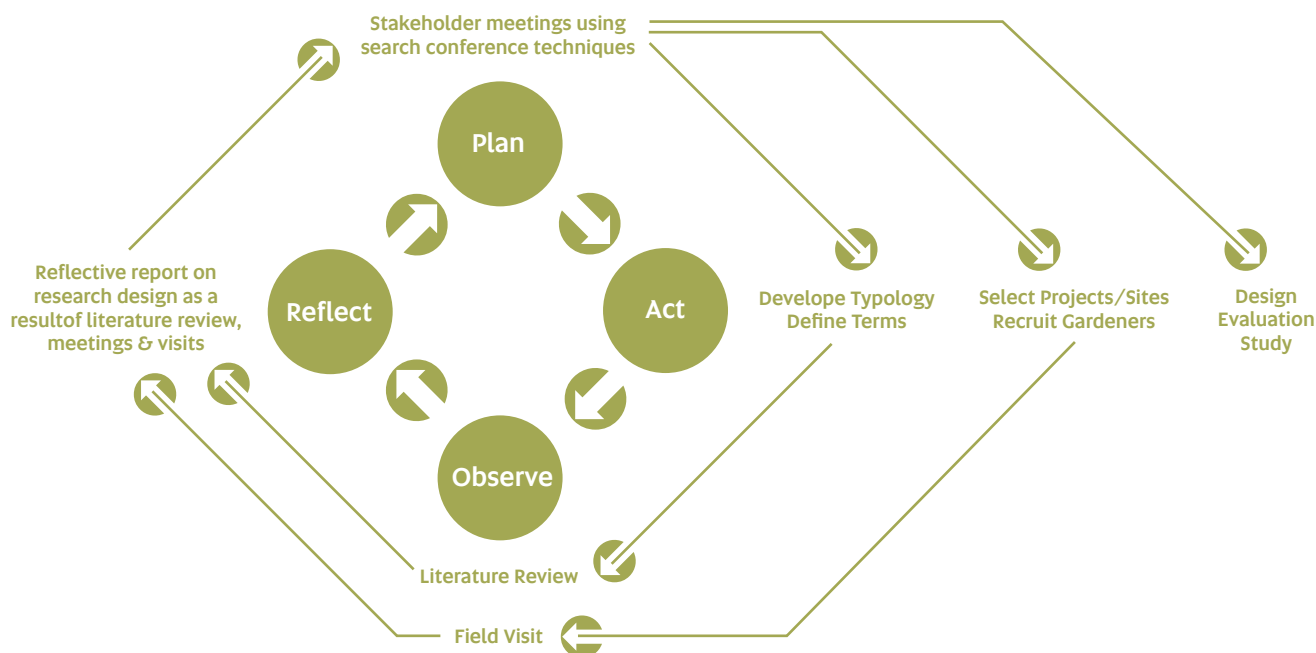


Cardiff  
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**Figure 1.**  
The Action Research Process



## The research design & methodology

Throughout this process we engaged with relevant stakeholders through a range of networking opportunities<sup>4</sup>. The design of the evaluation study was informed by a 12-month exploratory scoping and field study which made use of literature review, search conference and participatory research approaches. Figure 1 depicts the action research model process that was followed. Throughout this process we engaged with relevant stakeholders through a range of networking opportunities. The stakeholders involved in the study development and design process included local allotment officers and other council staff, co-ordinators and project managers of community gardens, and individuals from a range of governmental and voluntary organisations and their service users.

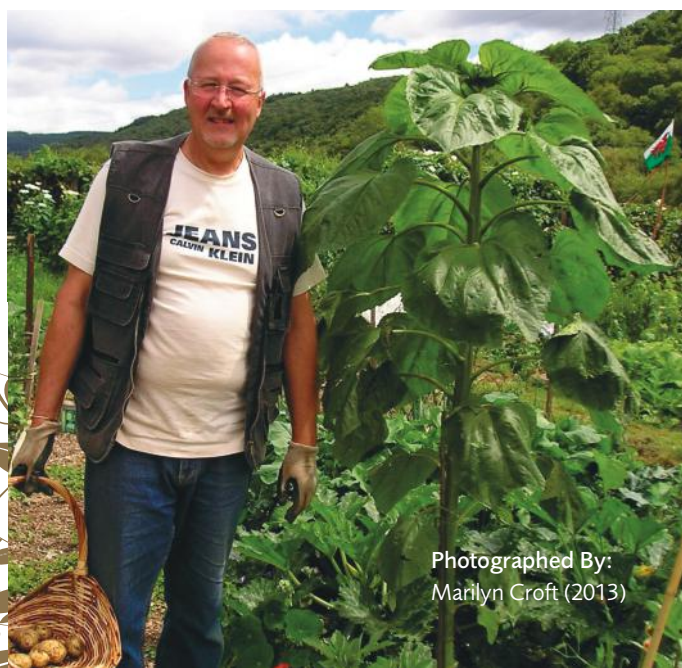
The resulting evaluation study measured the impact of being a gardener on an allotment plot or at a community gardening project on aspects of physical and psychological health and well-being over a 4-month period. Figure 2 outlines the full inventory of quantitative measures collected within the study. Gardening activity log books and semi-structured interviews were also employed to explore participants' gardening experiences during their time taking part in the study.

Participants were new and existing gardeners recruited from allotment sites and community garden projects across South Wales. A wait-list control was also recruited from allotment site waiting-lists and community garden project groups in development. In total 130 participants took part in the study; 60 allotment gardeners, 45 community gardeners and 28 people from waiting lists.

## The key findings

### Gardeners' Health and Activity

In order to determine how representative the sample was compared to the Welsh population in general, comparisons were made with the most recently available Welsh Health Survey<sup>5</sup>. In the GHOP project, 68% of the gardener participants reported exercise frequencies that met physical activity recommendations, compared to only 25% of adults of the same age group in the Welsh Health Survey. These higher activity levels were not reflected in the average body mass index values of the GHOP gardener sample, that is, there were no significant differences between the percentages of healthy weight gardeners and participants of the 2011 Welsh Health Survey. However, when comparing the mean scores of the SF-36 health-related quality of life scale, the GHOP gardeners were observed to have higher physical function scores than the Welsh Health Survey respondents. The mental well-being scores from the SF-36 were higher for the female gardeners of the GHOP study when compared to the Welsh Health Survey respondents; however this was not the case for males.



Photographed By:  
Marilyn Croft (2013)

## Time Spent Gardening

On the whole, participants who were allotment gardeners spent more time gardening than those who were community gardeners, as shown in Figure 3. As expected, the waiting list control group spent the least amount of time gardening. In addition, participants who were retired reported spending more time gardening than participants who were employed, particularly those in full-time employment. There were seasonal effects to time spent gardening as well, with allotment gardeners reporting spending less time gardening as the year progressed, whereas community gardeners' gardening time appeared to peak in the summer. It is possible that this was an effect of the poor weather having considerable impacts on the amount of gardening required. The log books kept by our participants revealed that the weather in 2012 had a detrimental effect on all aspects of gardening during the study. Many participants stated that they did not attend their allotment plot or community garden as much as they usually would, that they did not spend as much time there on occasions when they did attend, and that they had experienced many problems with their plants, flowers and crops as a result of the weather.

**Figure 2.**  
The measures used in the study

### Questionnaire Measures:

- ★ Physical Activity & Gardening Frequency
- ★ Health-related Quality of Life
- ★ Perceived Stress Levels
- ★ Self-Esteem
- ★ Life Satisfaction
- ★ Enjoyment
- ★ Perceived Social Support
- ★ Social Capital
- ★ Recent Fruit and Vegetable Consumption
- ★ Connection with Nature

### Objective Physiological Measures:

- ★ Height
- ★ Body Mass
- ★ Blood Pressure
- ★ Lung Function
- ★ Grip Strength
- ★ Fitness (6 minute Walk Test)
- ★ Balance (Standing from a chair)



## Improvement in Health Measures

Despite the poor weather, and the resulting atypical gardening activity, the analysis of the data from the 4-month prospective evaluation study has highlighted several improvements in the measures of health and well-being for both allotment and community gardeners. For example, on average, there was a significant decrease in body mass index for allotment gardeners over the course of the study and for male community gardeners. It appears that the amount of time spent gardening is important for this effect, as decreases in body mass index were not observed for gardeners who only had low levels of physical activity. Improvements in hand grip strength were also observed across the 4-month study for all groups.

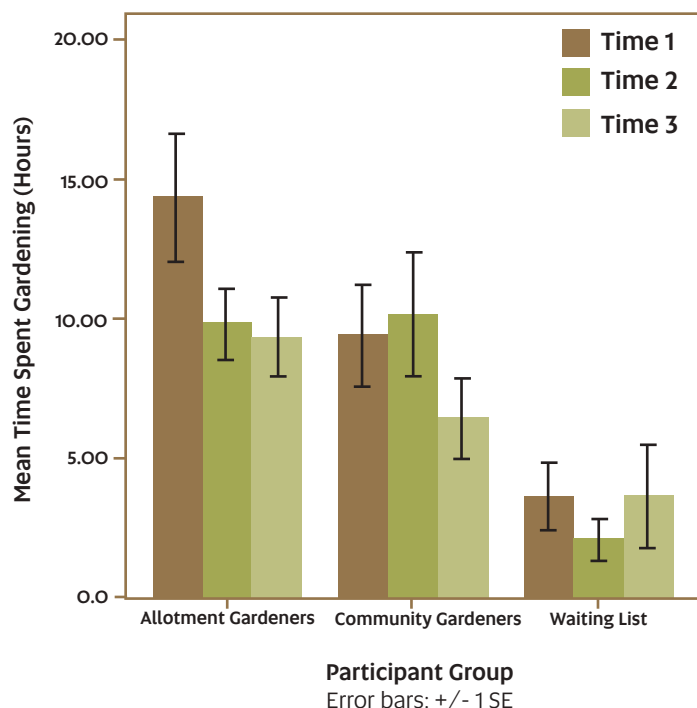
## Improvement in Well-being Measures

Our previous research has highlighted a link between allotment gardening activity and reduced stress levels in older adults. Figure 4 shows the change in perceived stress levels across the three time points in this study. Decreases in perceived stress were observed in the allotment gardener and community gardener groups and an increase was observed in the control group. Only the reduction in stress amongst community gardeners was statistically significant.

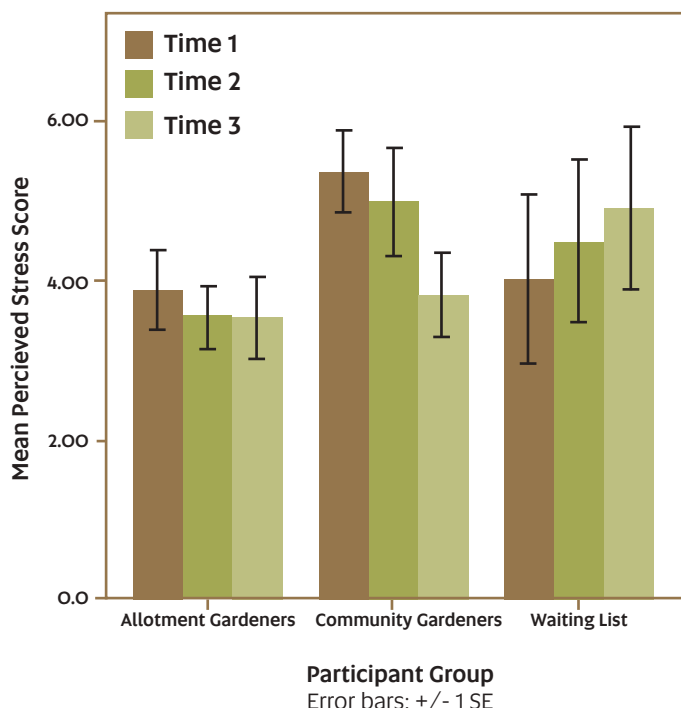
In keeping with previous research, levels of self-esteem increased in the allotment gardener and community gardener groups, whilst they decreased in the control group. These increases were shown to be statistically significant for female allotment gardeners only, the lack of significant findings may be due to small numbers in the other groups. We also observed other positive improvements specifically in female allotment gardeners including increases in levels of happiness and decreases in waist circumference.



**Figure 3.**  
Changes in time spent gardening throughout the study



**Figure 4.**  
Changes in perceived stress scores throughout the study



There were also some improvements observed only in males, for example on the SF-36 scale of health-related quality of life we observed a significant increase in levels of mental well-being in male allotment gardeners and a significant increase in self-reported physical health in male community gardeners. Why we saw improvements in only females or only males and in only one group of gardeners in some cases is not quite clear, and leaves us with further questions to attempt to answer. For example, why do the results from the quality of life scale highlight benefits of allotment gardening for improving men's well-being, but benefits of community gardening for improving men's physical health?

## Qualitative Findings

Data from the qualitative measures used in the project have further informed our understanding of some of these benefits. The experience of being a newcomer to allotment gardening was explored using a thematic analysis of semi-structured interviews and participants' activity diaries. The results, summarised in Table 1, suggest that even during the first couple of years of having an allotment, this leisure pursuit can bring significant benefits to health and well-being in a variety of ways. It is of particular interest to note the parallels with these results and some of the main indicators of the Strategy for Older People in Wales. These include the importance of regular social activities and building social networks, and participation in activities which promote a sense of purpose and the lifelong development of skills and knowledge. Whilst there is a high rate of turnover in new allotment gardeners, this was not the case for our participants who had been on their plot for less than 2 years. It may be that being involved in our research played a part in this, but the participants that we interviewed also talked about the importance of a committed and determined approach to their

gardening. Considering the impact of the weather on the growing season last year, a positive mental attitude towards dealing with crop failure, weeds and pests seemed to be paramount. In addition, many of the gardeners appeared prepared for the amount of work and time that is required for allotment gardening, suggesting that this appreciation is also a key factor to long-term participation in the activity.

## Lessons learned

Throughout the research project we have learned a lot about the benefits and challenges of conducting this kind of field research and evaluation. The importance of taking into account seasonal effects as well as type and frequency of gardening is crucial to the effective measurement of the benefits of gardening activity. These effects may interact differently for allotment and community gardeners at different times of the year and so it is important to design the research methods to fit the activity. During the data analysis it also became clear that some of the measures used had resulted in practice effects, the best example of this being the 'chair stands' technique used to measure balance. At each time point participants were eager to perform better than at their last attempt, resulting in significant increases in number of chair stands completed across all groups.



Higher order theme	Concepts	Indicative content	Quotes
<b>Affords Meaningful and Productive Activity</b>	Sense of Purpose Providing for Self and Others Hard Graft with Reward Sense of Achievement / Satisfaction Self-sufficiency	New sense of purpose in retirement, with a focus and goals Sense of attachment from nurturing crops, excitement to see them grow Providing own-grown food is important and gives a sense of pride Harvested produce is the reward for hard work Satisfaction from all gardening tasks	<i>"Actually being able to grow something, the satisfaction of doing that... The basic fact that I was able to actually produce something."</i> <i>"Definitely eating stuff that you've grown. The satisfaction of putting it in the ground, nurturing it in the ground, harvesting it, putting it on the table and eating it. There is nothing to equal that benefit."</i>
<b>Offers Escape into the Natural Environment</b>	At one with Nature Place of Retreat Grounding Experience	Being outdoors, working in fresh air Seeing wildlife, interacting with nature A space away from the everyday, a sanctuary, free to come and go A tranquil, peaceful place to unwind Sense of being alone despite social aspects	<i>"There's something about being outside with the soil and air and everything, it just makes you feel good before you've even done anything."</i> <i>"You get that peace, like a sense of harmony, you are sort of, away from the rest of the world."</i> <i>"The views from up there are lovely, so when it's peaceful, it's lovely."</i> <i>"You sit quietly, you visualise ... and the tranquillity is beyond this world."</i>
<b>Promotes Mental Well-being</b>	Well-being Enjoyment New Knowledge & Experience Lifelong Learning	Therapeutic benefits through de-stressing, re-balancing and re-focusing Feel good after completing gardening tasks Always learning new things Sharing and debating ideas	<i>"I just like digging, it's very calming"</i> <i>"You find your own bit of peace in whatever you're doing and just lose yourself in what you're doing."</i> <i>"By carrying out whatever work I've got to do ... it lifts whatever depressing mood I'm in. I feel a lot better in myself."</i> <i>"The learning curve is keeping me going ... I enjoy the challenges."</i> <i>"It's important to exercise my brain."</i>
<b>Creates a Sense of Community</b>	Social Interactions with Others Collaborative Working Shared Project	Sense of camaraderie, lots of joking Connecting with other local people Bringing friends/families together Team working, sharing the load Shared interest, common goal	<i>"It's been, getting to know the other boys, we have a laugh, you know."</i> <i>"I would find I would spend the whole week without speaking to anybody ... but going to the allotment, it's like a community. I've got so many friends now whom I can chat to ... I can learn from their experiences."</i>
<b>Provides Physical Activity</b>	Being Active Keeping Fit Physical Benefits	Changing a sedentary lifestyle, don't want to stagnate New source of regular physical activity Preferred exercise over going to a gym and a more physical workout Feel more physically able / fitter	<i>"I thought it's not so healthy to be so still, and I didn't fancy going to a gym."</i> <i>"Oh I'm a lot fitter than when I started."</i> <i>"The old waistline started to decrease a bit ... even though I was fairly active before. You're using totally different muscles, and doing things for longer."</i>
<b>Requires Resilience</b>	Commitment Perseverance Positive Mental Attitude	The hard work put in is an investment for the future / long term Requires dedicating a lot of time Carry on no matter what happens, the good outweighs the bad, focus on the positive don't dwell on things you can't control	<i>"You can be deceived by how easy it looks."</i> <i>"The hard work we put in will come to fruition."</i> <i>"I've been told Year 1 is heartbreak, Year 2 is 'I'm not going to bother anymore', and Year 3 is 'Hooray this is what I wanted!'"</i> <i>"If you think positively, you'll get results."</i>





## Future directions

Analysis of the data collected during the project is on-going and the research team will continue working on this; conference presentations, papers and reports will be disseminated via the project website. In order to understand more about the long-term benefits of allotment and community gardening activity for healthy ageing it will be extremely valuable to conduct future follow-ups of the measurements with the project participants. Additional funding will be sought for conducting such follow-ups. We also plan on developing a robust evaluation framework/toolkit that can be used for replication of this research based on what we have learned from appraisal of the methods employed in this study. We would be interested in hearing from any gardening groups or projects who would be interested in piloting this evaluation toolkit with their members.

## References:

- [1] Welsh Government (2013). The Strategy for Older People in Wales, 2013-2023. <http://wales.gov.uk/docs/dhss/publications/130521olderpeoplestrategyen.pdf>
- [2] Barton, J. & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environmental Science and Technology*, 44, 3947-3955.
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- [4] Sempik, J. (2007) *Researching Social and Therapeutic Horticulture for people with Mental Ill Health: A Study of Methodology*, Reading: Thrive and Loughborough: Centre for Child and Family Research.
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