

This article summarises the findings of the evaluation of the Green Gym, a project pioneered by the British Trust for Conservation Volunteers (BTCV) to encourage sedentary people to become more active by taking part in conservation activities. The research found that taking part in the Green Gym benefited the health and well-being of participants and confirmed that conservation activities can be used to promote fitness. The Green Gym has attracted a new breed of conservation volunteers and the research into this pilot project indicates that volunteering may have the potential to reduce social isolation, to alleviate stress, depression and anxiety, and more generally to lead to improvements in health. It concludes that more research is needed to explore the implications of promoting volunteering in this way.

The Green Gym

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Introduction

An innovative pilot project in Oxfordshire has attracted people who have never before undertaken voluntary work, let alone conservation volunteering. The project, entitled the Green Gym, is being pioneered by the British Trust for Conservation Volunteers (BTCV) as a way of encouraging people to improve their health as well as their environment by taking part in practical conservation activities. The pilot project in Sonning Common, Oxfordshire, was the subject of an evaluation by the author, under the auspices of the Oxford Centre for Healthcare Research and

Development at Oxford Brookes University, and the findings of the research have recently been published. The research reveals that taking part in the Green Gym can benefit physical and mental health and provide an enjoyable and safe alternative to more traditional exercise schemes. Furthermore, it has introduced a whole new breed of volunteer to conservation work, who have joined with the initial motive of improving their health, but stayed because they derive great pleasure from being out in the countryside and helping to improve their environment.

The countryside as a health resource

The Green Gym started as a collaborative venture between the Sonning Common Health Centre and BTCV. It is supported by the Countryside Agency and Shell UK. The object of the pilot project was to evaluate whether conservation work can be a realistic form of exercise to which patients can be referred.

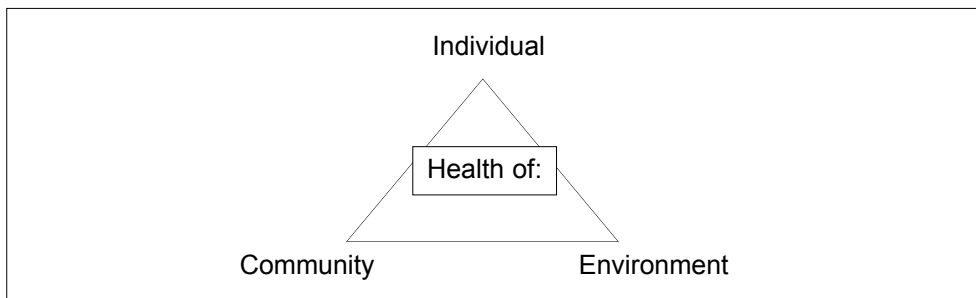
The idea of using the countryside as a health resource for the local community was originally conceived in the context of 'Health Walks'. These were pioneered locally by Dr William Bird, a general practitioner at the Sonning Common Health Centre, who set up a series of volunteer-led walks aimed at encouraging sedentary people to become more active. BTCV and the Sonning Common Health Centre were brought together by the Countryside Agency with a view to setting up a Green Gym project that linked in with the Health Walks. The idea was that the health walkers could benefit from conservation work carried out by conservation volunteers working as part of the Green Gym. The participants

would be members of the community who could improve their health by taking part in conservation activities which, in turn, would benefit the health walkers by upgrading footpaths to encourage safe and easier walking. The Green Gym concept epitomises Dr William Bird's philosophy of a three-way relationship between the health of the individual, the community and the environment (Figure 1). Where the health of the community as a whole or of the environment is poor, individual health will suffer.

Getting more people more active more often

Since the publication of *Our Healthier Nation* (1998), it has become apparent that many health issues require a multi-agency approach. Consequently, partnerships between local authorities, local councils, environment agencies and transport bodies are now being forged in an effort to improve the nation's health. The Green Gym is one such initiative, involving partners as diverse as health promotion agencies, environmental groups and corporate sponsors. This new approach to getting

Figure 1: The three-way relationship



Bird (1997)

people active recognises that being healthy is not just about being 'fit' but also encompasses psychological and social health and well-being.

Health benefits of an active lifestyle

It is now widely recognised that, alongside the physiological benefits of being physically active, there are mental health benefits associated with exercise. The widespread benefits to the individual from physical activity have been the subject of much research, and some degree of consensus has now been reached on the need to encourage individuals to adopt more active lifestyles. Recent research supports the notion that it is not just vigorous activity that brings cardiovascular health benefits, but that moderate and even low intensity exercise, performed regularly, is beneficial (MacAuley, 1999).

Physical activity has consistently been shown to be associated with lowered levels of stress and anxiety, and in general sedentary people are twice as likely to have symptoms of depression as more active people (Biddle, 1996). Furthermore, being physically active leads to improvements in health-related quality of life which includes social, physical and emotional functioning. Physical activity appears to have a direct effect on these dimensions by improving self-esteem, mood and perceived ability to perform daily activities (Rejeski, 1996).

Reduced muscle strength is one of the risk factors for falls in older people. Exercise can increase muscle strength and thereby increase coping ability and independence in later life. Furthermore, exercise can help to prevent osteoporosis

and decrease the pain associated with osteoarthritis (MacAuley, 1999).

Adherence to exercise

One of the greatest challenges in encouraging sedentary people to keep fit is maintaining their interest in and enjoyment of an exercise programme. The success of any programme is dependent upon adherence to it. The benefits to cardiovascular fitness and strength are soon lost if exercise levels are not maintained. Evaluations of exercise programmes indicate that, on average, only about half of those who initiate a voluntary exercise programme are still participants after six months (Dishman, 1994).

Much research has been done to identify what will encourage adherence to exercise programmes. A number of factors have been found consistently to promote adherence. These include easy, convenient, accessible and inexpensive exercise settings, frequent professional contact and exercise that is of a moderate intensity (Hillsdon, Thorogood, Antiss and Morris, 1995). The New Zealand National Health Committee report (1998) contains a comprehensive review of the issues surrounding physical activity, and it emphasises the need to provide a range of opportunities and alternative forms of exercise. Other factors may also lead to increased adherence, including programmes with a high level of social contact.

Social benefits of the Green Gym

In addition to providing an alternative form of exercise, the Green Gym offers the opportunity for participants to improve their psychological and social well-being

by interacting with a group and meeting new friends. The social health of an individual has been defined as 'that dimension of an individual's well-being that concerns how he gets along with other people, how other people react to him and how he interacts with social institutions and societal mores'. In defining 'health', the WHO emphasises the need to treat individuals as social beings who live in a complex social context. Individuals who are well integrated into their communities tend to live longer and may have increased capacity to recover from disease. Social isolation has been found to be a risk factor for disease (Sarason, Levine and Basham, 1983). There is some evidence from community-based health initiatives in the USA that they can promote community coalitions and help bring together a variety of community organisations (Dishman, 1994). In this way, group exercise projects can widen the social networks of both the individual and the community, and can lead to an increase in social support, with a consequent reduction in social isolation and an enhanced quality of life.

The Biophilia effect

In addition to the ameliorative effects that physical activity per se may have on mental health, the Green Gym may offer another dimension to improving well-being by increasing exposure to the natural environment. The concept of 'biophilia' has been proposed (Kellert, 1993): the idea that humans possess a biologically based attraction to nature. Kellert (1993) states that quality of life in the widest sense is dependent upon the richness of our connections with nature. A study in a US hospital (Ulrich, 1984) has shown that a view of nature from a patient's bed as compared with a view of a wall had a significant influence on the patient's recovery from surgery. Walking in the natural environment has been shown to increase mental restoration more significantly than walking in the city or relaxing at home. Activities related to nature have been found to alleviate depression in cancer patients and there is mounting evidence to suggest that just being out in the countryside and in contact with nature may have restorative effects on psychological health (Hartig, 1991).

Table 1: Pilot study objectives

Measure Green Gym participants' fitness levels and perceived health status at the start and upon completion of a six-month period of conservation work.
Estimate an individual's work rate, based on the heart rate response, associated with each conservation task and grade the tasks accordingly.
Explore participants' motivation, perceptions and experiences of the Green Gym.
Determine the type and rate of injuries reported following each session.
Monitor participants' adherence levels.

Objectives of the study

Recognising the potential benefits to health of participating in the Green Gym, we designed our study to measure changes in the health and fitness of a sedentary adult population participating in the project, to assess its potential as a health-promoting venture and to explore the motivations and perceptions of the participants.

The Green Gym programme

A dedicated Project Leader was appointed by BTCV to co-ordinate the Green Gym project and put together a programme of tasks. Following four trial sessions to test practical aspects such as timing and duration, twice-weekly sessions were run on Thursday and Saturday mornings between 9 am and 12 noon.

The programme was designed to offer participants a variety of tasks and sites. They included clearing overgrown vegetation to make room for rare species of flora or fauna, building stiles, erecting fences, coppicing, planting trees and wildflowers, hedge laying and even building dry-stone walls. Each session offered a variety of tasks in order to accommodate the differing fitness and ability levels of participants. Up to fifteen participants could be accommodated at each session. Sites were chosen which, wherever possible, were easily accessible from Sonning Common. Transport, in the form of a minibus, was offered to sites further afield.

Because of the emphasis on the exercise component of the Green Gym, participants were encouraged to warm

up prior to starting work on their tasks and to use safe techniques for lifting, carrying and digging. Training sessions were held for task leaders, instructing them in basic exercise physiology including warm-up and cool-down stretches. Task leaders were also told to encourage participants to work at a rate appropriate to their level of fitness and ability. At the beginning of each session, participants were briefed on tool safety and personal safety, given advice about executing unfamiliar tasks and told about the value of the work to be done.

Recruitment of volunteers

Volunteers were recruited through leaflets and posters in the health centre and through public meetings. Some volunteers came along to the project because of a recommendation by their GP. Volunteers were given the opportunity to take part in the research study and told that this would involve a fitness assessment, questionnaire completion and interviews at baseline and then again after a period of six months. They were advised that involvement in the research was not dependent upon their attending each and every session and that they were free to drop out at any time.

Between March and May 1998, twenty-three people were assessed. Of these, only fifteen came forward for reassessment, some of whom had dropped out of the project. Of the fifteen participants, eight were male and seven were female. The age range of the subjects was between 40 and 73 years old; the average age of the sample was 59.6.

Physical and psychological tests

A battery of tests was administered to a sample of participants on joining the project and again after a period of six months. Aerobic capacity of participants was estimated from the Rockport one-mile walking test (Kline, 1984). The other aspects of fitness measured included flexibility, grip strength and blood pressure. In addition, measurements such as height, weight and waist and hip size were taken. Health and quality of life were measured by the Medical Outcomes Trust Short Form 36 (SF-36) questionnaire which contains thirty-six items that measure eight multi-item dimensions of health: physical functioning (ten items), social functioning (two items), role limitations due to physical problems (four items), role limitations due to emotional problems (three items), mental health (five items), energy/vitality (four items), pain (two items) and general health perception (five items). The questionnaire also contains a single item that asks subjects about the changes in their health over the past year. The SF-36 has been widely validated and tested as an instrument to measure health-related quality of life in both the USA and the UK (Jenkinson, 1996).

Survey and interviews

To examine motivations, perceptions and satisfaction with the various organisational aspects of the Green Gym project, participants were asked to complete a questionnaire devised specifically for this project. It was devised following interviews with a

sample of participants to identify a range of opinions and attitudes relating to the Green Gym. The information generated by these interviews, together with literature and input from the Project Leader, was used to determine the questions used.

The questionnaires were posted in July 1998 to thirty-nine participants who had taken part in at least one Green Gym session. In addition, forty-nine questionnaires were posted to individuals who had expressed an interest in the project but who had not, up to that point, taken part in any sessions. The information provided by these non-participants was deemed to be potentially relevant since 67 per cent of them indicated that they were interested in taking part in future sessions. The response rate to the questionnaires was 69 per cent in the participant group and 49 per cent in the non-participant group.

Seven Green Gym participants were interviewed. They were asked a series of open-ended questions about their experiences of the Green Gym. Interviews were recorded, with the permission of participants, and the tapes were fully transcribed. The textual data were analysed and coded into categories relating to mental, emotional and social well-being.

Analysis

The data from the fitness tests were entered into Al-Stats (Fearnley, 1990) and paired t-tests were used to compare the results of the fifteen individuals who took part in both the

assessments. The study used a within-subjects design. The data from the questionnaires were coded and entered into SPSS for statistical analysis. Frequencies and percentages were calculated. The data from the SF-36 was also analysed using SPSS. Wilcoxon matched pairs tests were carried out on the data collected at the beginning and at the end of the six-month intervention period.

Adherence

Attendance data was collected for the duration of the research period: of the twenty-three participants who agreed to take part in the research, sixteen remained active by the end of the study. This is an adherence rate of 72 per cent, which demonstrates a high level of commitment from these participants. A number of factors may have accounted for this. These individuals may have benefited from an increased level of professional input or may have adhered because they made a commitment to be involved in the research project. However, a follow-up survey conducted in November 1999, eighteen months after the start of the pilot research, indicated that nearly all of these participants still continue to attend Green Gym sessions on a regular basis, despite the fact that they are no longer being monitored.

Demographics

The survey revealed that a large proportion of the participants were retired (44 per cent) and that there were slightly more female participants (57 per cent) than males. More than half of the participants indicated that they did not take part in any other

regular, structured fitness activities. The remainder regularly walked, swam or played badminton, and three participants took part in regular keep fit classes.

Other voluntary activities

Many of the participants (63 per cent) had at some time taken part in some form of voluntary activity, including fundraising and caring for disabled or elderly people. However, the majority of participants (82 per cent) had never taken part in any practical conservation activities.

Motivations

I went to the Health Centre at Sonning Common and saw it advertised and thought, 'Wow! Two things with one stone – getting a bit fitter and conserving the countryside as well.' It seemed like a good idea to me, so I joined up. (Green Gym participant, female, 54)

Many participants (52 per cent) indicated that, although they had originally joined because of the fitness aspect and a desire to improve their activity levels, their motivations for continued attendance included 'being out in the countryside', 'doing something worthwhile' and 'meeting other people'. The few other schemes studied that have reported high adherence levels are those where motivations to take part are intrinsic rather than extrinsic (Dishman, 1994). Intrinsic motivation – doing something entirely for the pleasure of doing it – is commonly reported in relation to leisure activities (Hills et al, 1999). The

extrinsic motivation – ‘my wife told me to get fit’ – is thus less likely to promote adherence than the intrinsically motivating ‘I really enjoy the company’ or ‘I really enjoy being out in the countryside’. The continuing high attendance rates enjoyed by the Green Gym may in part be accounted for by this change in motivations.

In addition, a large proportion of participants indicated that the Green Gym had a positive impact on their awareness of conservation issues (93 per cent), their knowledge of the local area (74 per cent) and their enjoyment of exercise (63 per cent).

Quality of life

I like being out in the woods and the fields . . . meeting other people, working as a team, coffee breaks and a shared joke . . . it makes you feel good . . . (Green Gym participant, male, 62)

The analysis of the quality of life data was limited by the size of the groups. There was a significant improvement in the scores for General Health Perception ($p < 0.05$) and Role Limitations due to Physical Functioning ($p < 0.01$). The qualitative data from the interviews revealed that volunteers experienced various social and mental health benefits.

The qualitative data collected during the course of this study suggests that even participants who do not attend regularly derive some benefits in terms of improved social networks and psychological well-being.

Results of physiological tests

Although most of the participants report feeling fitter and more flexible and having more stamina, the only significant change detected in the physiological measurements was grip strength ($p < 0.05$). Grip strength has been found to be a predictor of functional limitations in later life (Rantanen et al, 1999). There may be several reasons why the study failed to show significant changes in the other dimensions of physiological fitness. These include the small size of the sample, the limitations of field measures of aerobic capacity (MacAuley, 1999) and perhaps the fact that participants, although they reported being more active since joining the Green Gym, still did not take part frequently enough to show a benefit. Further research, using a larger sample and tests that measure metabolic changes in fitness, is needed to establish the potential of the Green Gym to increase fitness.

The heart rate data collected during this study revealed that many of the Green Gym activities, if performed regularly, were of a sufficient intensity to make a real difference to fitness levels. The American College of Sports Medicine (ACSM, 1996) recommends working at a level equivalent to 60-75 per cent of estimated maximum heart rate to elicit a ‘training response’ which will strengthen the cardiovascular system. Studies have also indicated (Blair, 1992) that accumulating 2000 kcal of ‘activity calories’ every week will lead to a 20 per cent reduction in the risk of cardiovascular disease. The heart rate

Table 2: Average, maximum and minimum heart rates and percentages of estimated maximum heart rates for six different Green Gym tasks

TASK	n=	Average heart rate perceived	% of estimated heart rate	Average maximum heart rate	% of estimated heart rate (max)	Average minimum heart rate	% of estimated heart rate (min)	Average rating exertion
Weeding	2	96 (13)	56 (3.2)	117 (2.8)	69 (4.1)	85 (7.8)	43 (0.5)	11
Planting hedge	5	106 (11)	63 (6.6)	131 (13)	77 (7.8)	89 (9.5)	53 (5)	14 (1)
Digging	2	119 (1.4)	70 (4.4)	142 (4.2)	83 (8.7)	100 (0.7)	58 (3.9)	17 (0.7)
Fencing	5	100 (7.1)	58 (3.2)	141 (14)	82 (12)	85 (4.2)	49 (2.8)	15 (1.1)
Tree felling	1	92	57	137	85	92	57	15
Raking	14	112 (15)	64 (6.2)	132 (17)	75 (6.1)	105 (16)	60 (7.1)	15 (1.1)

(Standard deviations shown in brackets)

response measured during various Green Gym tasks is shown in Table 2.

Injuries

Despite the arduous nature of some of the work, no significant injuries were reported during the intervention period of the study. The Project Leader was careful to screen volunteers for any health problems or injuries that could have been aggravated by the work, and where necessary participants were encouraged to avoid potentially hazardous tasks.

A self-sustaining conservation group

The Sonning Common project was set up with a view to it becoming a self-sustaining local conservation group, retaining the concept of the Green Gym. Despite concerns voiced by the volunteers about their ability to co-

ordinate and manage the group without the input from BTCV's dedicated Project Leader, the Sonning Common Green Gym members have succeeded in maintaining interest in the project, and attendance at the sessions is still high. They have organised themselves into a group of committed volunteers and shared out the various administrative tasks between them. The group continues to attract new members whilst retaining original members who attend at least once a week.

Future research

Despite its exploratory nature, this evaluation has provided valuable insights into how the Green Gym can move forward and form the subject of future research. The lessons learnt from the Sonning Common pilot project have been used to set up the next

phase of the Green Gym project, based in Portslade, near Brighton. This project, also supported by Shell UK and the Countryside Agency, has been set up as a result of a partnership between BTCV and the East Sussex, Brighton and Hove Health Authority. It is also being evaluated by Oxford Brookes University, with the emphasis on examining changes in the psychosocial determinants of health of participants.

When is a volunteer not a volunteer?

The study of the Portslade Green Gym will also look at participants' perceptions of volunteering. It was not clear from the Sonning Common project whether the Green Gym is viewed by participants in a similar way to other conservation projects and voluntary work, in so far as it is a 'voluntary activity', or whether participants see it more as a leisure activity with benefits to health, the community and the environment. The motivations for volunteering have been the subject of a number of surveys, looking in particular at why people volunteer in the first place. The reasons reported vary from an altruistic desire to help others in need to social motives, such as the company to be found in the group, and to more instrumental needs such as acquiring skills (Argyle, 1996).

Some or all of these motivations may account for the involvement of many of the Green Gym participants, but the Sonning Common study's findings

indicate that pure altruism is unlikely to be a motivating factor in this group. It may be that many of the participants do not consider themselves to be 'volunteers' at all, but are taking part merely to benefit their own health. The answer to this and other questions about volunteering may be potentially important in determining future recruitment strategies in the voluntary sector. In an age when 'lack of free time' is cited as the main reason for not taking part in voluntary activities (Institute of Volunteering Research, 1997), the Green Gym may have found a way of addressing this problem by combining volunteering with health promotion and leisure. If taking part in voluntary activities can be shown to be beneficial to the volunteer's mental and physical health, such activities have the potential to attract a whole new generation of volunteers.

The Green Gym has aroused a considerable amount of interest and is seen as having the potential to encourage large sections of the population not only to take more exercise, but also to become involved in voluntary activities. The Green Gym promotes the 'joined-up' approach to health, environment and community which is so favoured by policy makers today. BTCV is keen to expand the number of Green Gym projects over the coming months and to train more Project Leaders. In this sense, alongside its role in encouraging volunteering, BTCV is likely to make a significant contribution towards improving the health of communities.

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