

The mental health benefits of green exercise activities and green care

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Assessment of existing Mind green exercise activities

There are a wide range of very successful green exercise activities and projects already in existence amongst local Mind associations (LMAs). These activities include walking, gardening activities (especially on allotments), social and therapeutic horticulture, garden design, conservation activities, bush craft (exploring local woodlands and building fires etc) and dog walking.

A lot of the gardening activities encourage clients to grow and learn about the plants and flowers on local allotments in the community. Many conservation groups assist garden teams working at local formal gardens, woodlands and the open countryside. They always employ a socially inclusive approach, so the activities are open to staff, service users and volunteers alike.

Many of the walks take place regularly in the open countryside, at local parks or woodlands, along the beach or canal side, in all weathers. Whilst participants are walking they are often encouraged to engage in other activities such as bird watching, photography, admiring the wildlife and enjoying the scenery.

Therefore with this in mind, we designed a universal tool which could be used to evaluate this wide range of green exercise activities to illustrate what positive effects they were having on participants' physical and mental health.

A specifically designed questionnaire was sent out to all Mind members who were engaging in a selection of green exercise activities and 108 completed questionnaires were returned from 19 different Mind groups.

Mind groups included in the assessment of green exercise activities:

- Birmingham.
- Mid-Staffordshire.
- Brighton.
- Mid-Warwickshire.
- Dartford, Gravesham and Swanley.
- Redcar and Cleveland.
- East Berkshire.
- St Helens.
- Great Yarmouth.
- Tameside and Glossop.
- Havering.
- Taunton.
- Hull and East Yorkshire.
- Thurrock.
- Kensington and Chelsea.
- Wallingford.
- Lewes District and Wealden.
- West Cornwall.
- Maidstone.

Findings – green exercise activities.

The green exercise activities were predominantly made up of gardening projects, conservation activities and walking groups. Fifty-two per cent of the respondents were engaging in gardening activities on allotments or specific projects. These activities included weeding, digging, planting, grass mowing, watering, pruning and composting. A further seven per cent of participants were involved in specific conservation activities including scrub clearances and laurel thinning. Thirty-seven per cent of respondents were participating in regular walks around local gardens, along the river bank or 'cross country'. The remaining three per cent were running in greenspaces regularly and one per cent had been cycling.

The duration of a typical activity session varied considerably, ranging from a minimum of 15 minutes to a maximum of six hours. The average length of a session was two and three-quarter hours (163.2 ± 89.4 minutes) and the most common session duration was two hours. Twenty-nine per cent of the activities lasted over four hours.

Respondents attended sessions fairly frequently, with the majority of people engaging in these activities on a weekly basis (55 per cent). A total of 26 per cent of participants attended sessions at least twice a week or more frequently, whereas only six per cent engaged in the activities occasionally (Figure 1).

Key theme	Examples of comments from respondents
1. Becoming part of a group – enjoyment of socialising with likeminded people, having company and conversation and feeling refreshed.	<p>'Socialising and talking about your problems helps me a great deal'</p> <p>'It gives me company which I don't have where I live'</p> <p>'Being part of a team, getting out on a nice bright day, feeling refreshed. Often don't feel confident to be out alone. Don't have my own garden so would otherwise stay indoors'</p> <p>'Refreshed and feeling more like facing things. Having been with likeminded people and had company and conversation'</p> <p>'Like being part of the workforce in the community, feeling good'</p>
2. Sense of achievement – completing a task and achieving something worthwhile, feeling useful	<p>'Pleased and a sense of achievement that I have done a task that I have been asked to do and finished it'</p> <p>'Better about myself, feeling a sense of achievement'</p> <p>'Feel good about doing an activity that has definite results'</p> <p>'That I have achieved something worthwhile'</p> <p>'It makes me feel I am doing something useful'</p>
3. Feeling relaxed and less stressed	<p>'Before attending Mind I only went out if I had to, I now find it less stressful'</p> <p>'Relaxed, peace of mind'</p> <p>'Relaxed, more focus of mind and greater coordination, greater self-esteem'</p>
4. Feeling able to deal with problems and begin to cope	<p>'Improves my depression, helps me be more motivated and gives me satisfaction in doing things. Since starting the project I have been able to improve on my quality of life. Coming here has helped me overcome most of my problems'</p> <p>'Happier and able to cope again'</p> <p>'Less depressed, revitalised and more able to cope with my issues'</p> <p>'It takes me out of my depression for a while and gives me something to look forward to'</p> <p>'It takes my mind off my worries'</p>
5. Feeling healthier and fitter – both physically and psychologically	<p>'It improves my fitness and is very beneficial for my mental and physical health'</p> <p>'Healthier, more active, fitter'</p> <p>'Positive and healthy'</p> <p>'Healthier psychologically and physically'</p> <p>'Much fitter and I feel especially good immediately after a session. I feel able to chat to other runners easily and feel generally less anxious'</p>
6. Feeling good about myself – improving self-worth, confidence, self-esteem	<p>'It makes me feel good about myself and it improves my confidence'</p> <p>'A lot happier in myself, also there is a great sense of peacefulness here and the nature is wonderful'</p> <p>'More positive about myself, better for being with people and out in fresh air'</p> <p>'After being out in the fresh air and doing gardening I feel better in my self – eat well and sleep well'</p> <p>'It gives a feeling of self worth because you have made a difference / improvement no matter how small! Slowly builds confidence which in turn has a knock on effect and improves all aspects of life'</p>
7. Feeling great – more alive and confident. The word 'great' was used very frequently	<p>'Great – life's worth living, clears the mind'</p> <p>'Alive and confident'</p> <p>'More focused, feeling confident, much happier'</p> <p>'Makes me feel good, it is good, makes you get out of the house, look forward to all the activities'</p>

8. Feeling 'happy' – this word was also used very frequently	'It makes me feel good and happy and lifts my mood' 'I enjoy the fresh air and conversation, it makes me happy' 'It makes me happy'
9. A sense of escape – getting out of the house and having something to do	'Its nice to get out and go for a walk, to get out of the house' 'I love to get away from the hustle and noise of the town and out into the Chase wilderness, I feel great out there' 'It gives me something to do during the week which makes me happy to be out socialising. I don't tend to go out much so it gives me something to do' 'Sleeping better at night, gets me out of the house, socialising better, gaining new skills, coming to the project has given me new confidence and a belief in myself' 'I enjoy being in the countryside away from the stresses of the town, traffic, crowds, noise etc and the people are nice and friendly and good company'

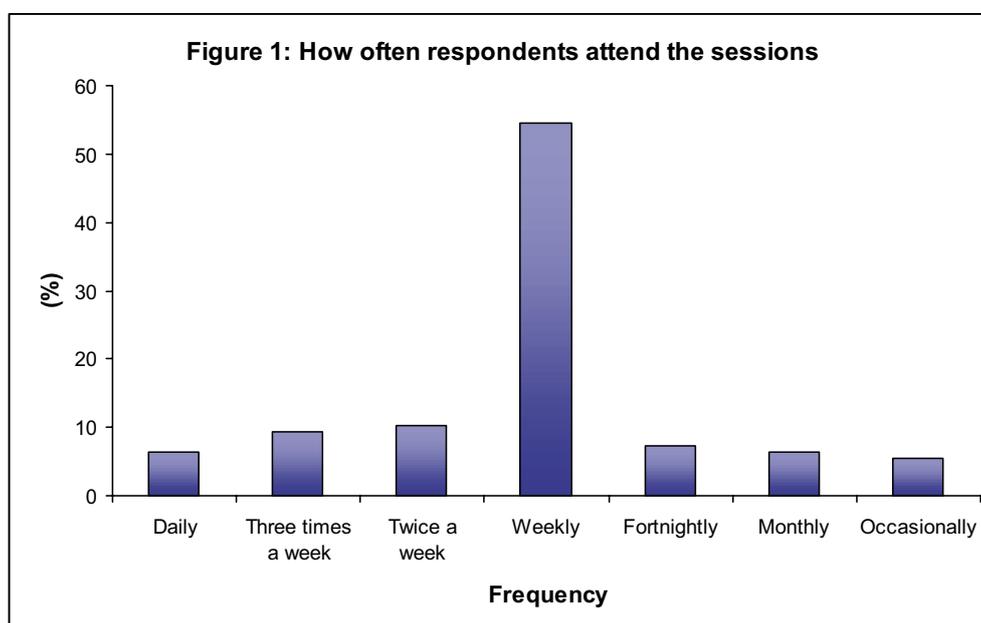
Respondents were asked how long they had been attending the green exercise activity sessions. Responses varied from a minimum of one month to a maximum of 16 years. The average time was just over two years (25.5 ± 35.7 months); with the most common answer also being reported as two years. Figure 2 categorises the answers into specific groups which highlight the percentages calculated for each time period.

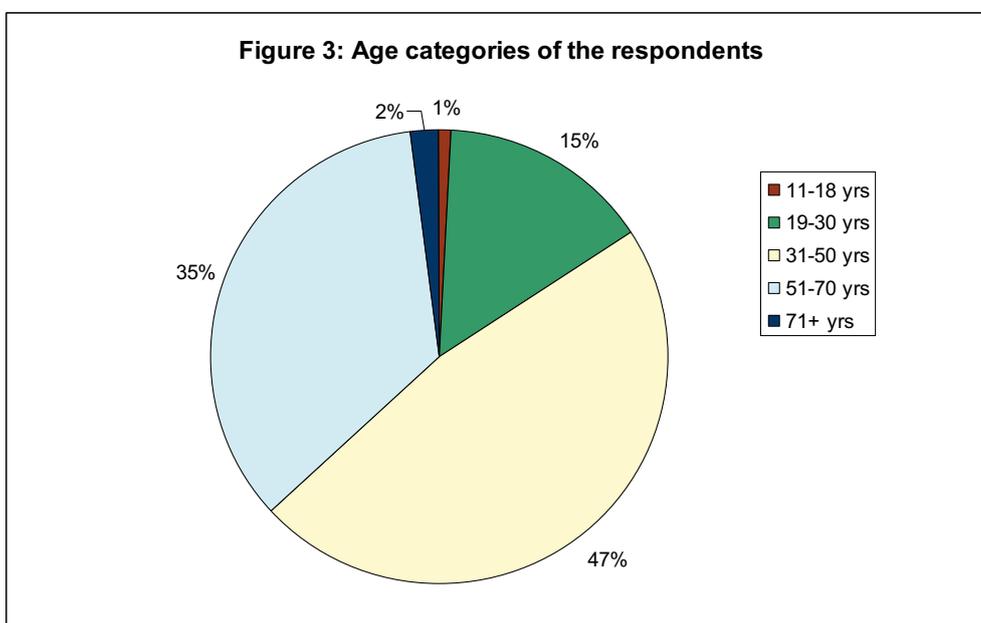
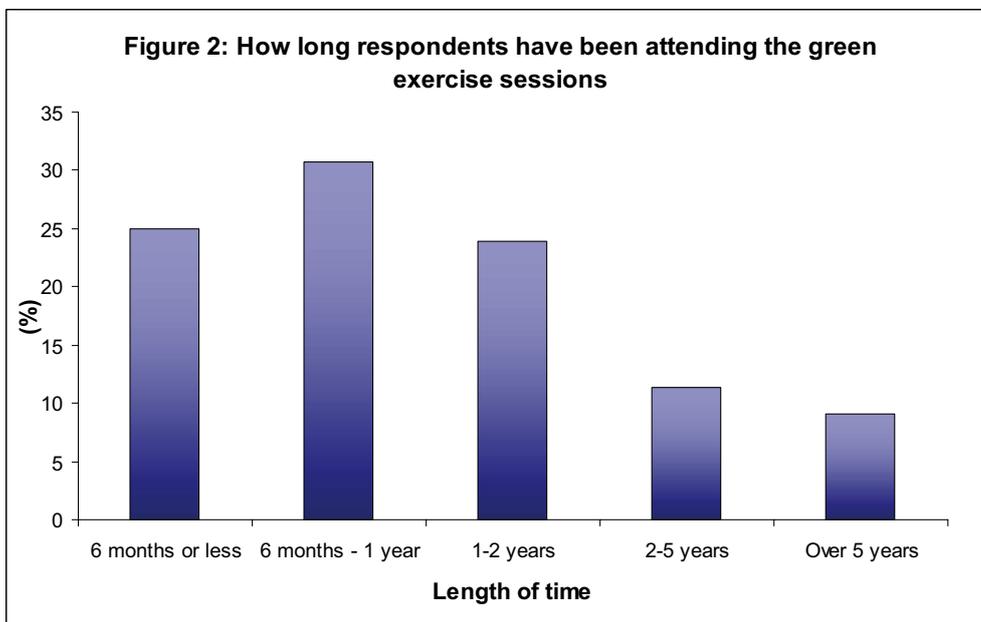
Findings – people involved in the activities

Out of the 108 completed questionnaires returned, 72 per cent of respondents were male and 28 per cent were female. Figure 3 reports the percentage of individuals within each age band. It is clear that the most common age group was the 31 to 50 years, closely followed by the 51 to 70 year age group. Together this made up 82 per cent of the sample population, with a further 15 per cent aged between 19 to 30 years.

Respondents were asked to reflect on the qualities they hoped to get out of participating in the activities before they started engaging in them and compare these to the qualities they actually get, now they have been participating in the activities on a regular basis (Figure 4). The most popular answer overall was to 'get out in the fresh air' (83 per cent), followed by 'meeting new people' (76 per cent) and 'getting fitter' (69 per cent). The percentage of respondents deriving pleasure out of the 4 aspects listed increased once they were engaging in the activities regularly in comparison to their initial expectations.

17 per cent of respondents stated 'other' hopes that they anticipated getting out of the activities, before they started participating in them. These included improving their concentration, enhancing their self-esteem, keeping them occupied, keeping them sane, building their confidence, keeping them motivated, building friendships and losing weight.





16 per cent of respondents listed 'other' qualities that they actually got out of participating in the activities, since engaging in them on a more regular basis. These included improving their confidence, helping with their depression, a sense of achievement, contributing to organic growing and biodiversity, immense enjoyment and fun, socialising, friendship and keeping them occupied.

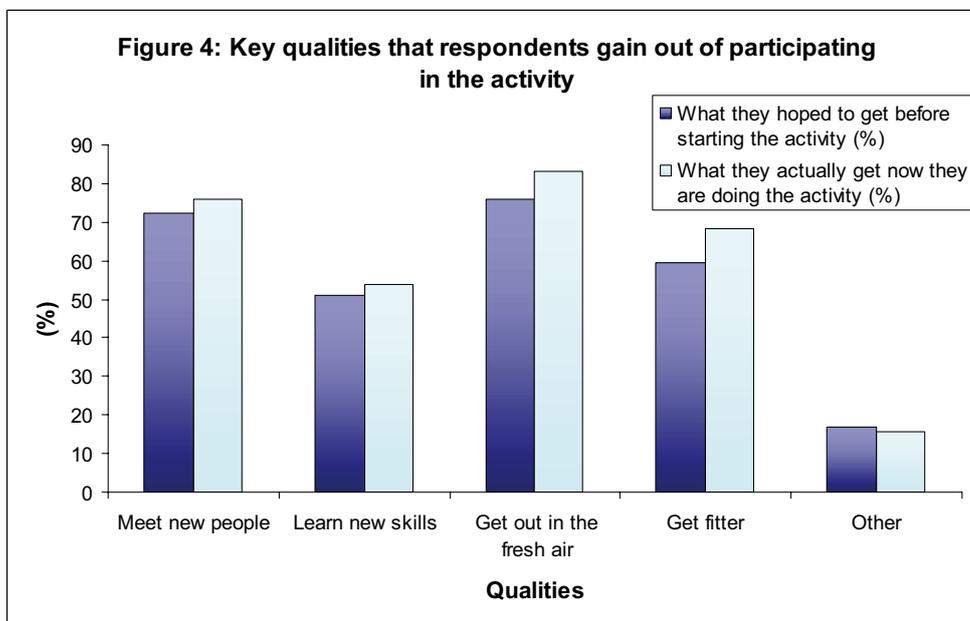
Participants were also asked the question 'how does taking part in these activities normally make you feel?' 103 respondents provided comments to address this question and their answers were grouped into nine key themes (see table opposite).

Other comments included feeling a sense of satisfaction, feeling refreshed, at peace with nature,

having a new lease of life and being set free and that it was a preferred option to sitting staring at the walls. It is clear that engaging in a range of green exercise activities generates a myriad of positive healthy feelings.

Respondents were then asked how important being outside with nature was in determining how they felt and 88.1 per cent stated that this was very important or important. Similarly, 88.8 per cent felt that participating in some form of exercise was very important or important in influencing how they felt. However, the combination of exercising outside in the presence of nature (i.e., green exercise) was even more influential, with 89.6 per cent of respondents stating that this was very important or important in determining

Key feature	Examples of comments from respondents
<p>1. Social benefits – meeting and socialising with people out in the fresh air, team work, companionship, camaraderie, being part of a group.</p>	<p>'Excellent teamwork, meeting new people to make friends, we are a family and look out for each other'</p> <p>'I think it is because I take part with people I know well, who enjoy doing the same things and nobody judges you or criticises you'</p> <p>'Everyone is friendly and I feel part of something collectively positive'</p> <p>'I have made new friends and am able to communicate better, staff members are very helpful and listen to my problems, everybody is very friendly towards me'</p> <p>'It gives me the opportunity to be active and social, team work, being outside with others, making friends, enjoying their company'</p> <p>'The chance to meet people, plus a chance to exchange news and views'</p> <p>N.B.: 44 per cent of respondents made comments concerning social benefits</p>
<p>2. Benefits of contact with nature – fresh air, wildlife, trees, plants, scenery 'Being with nature, out in the fresh air and the peace and quiet'</p>	<p>'Because I was out in the open air and was also interested in the birds and wildlife'</p> <p>'Being outside hearing and seeing wildlife watching your own plants grow. It gives me a good feeling'</p> <p>'Freedom, space, no one to judge you, view the scenes, keep fit, breathe in the fresh air. I love being in nature's garden, that's how I see it'</p> <p>'You see lots of wildlife, get a feeling of space and tranquillity and see places I wouldn't normally see if travelling by car'</p> <p>'A closeness to nature is the most special feeling and it gives you acceptance of yourself'</p> <p>N.B: 21 per cent of respondents made comments concerning social benefits</p>
<p>3. Benefits of the activity itself – growing vegetables, learning new skills, new experiences</p>	<p>'The activity is good to look back at when completed. We have all worked very hard on our allotment, the results have been very rewarding'</p> <p>'It gets people out into a different environment other than what they would usually do'</p> <p>'Learning new skills, growing vegetables from seed that you can eat'</p> <p>'Gardening is very therapeutic because it is stress free, outdoors, physical and you can see what you love achieved at the end'</p> <p>'Its fun, it costs nothing, no special equipment and the views are stunning'</p> <p>N.B.: 17 per cent of respondents made comments concerning social benefits</p>
<p>4. Psychological benefits – therapeutic, calming, sense of achievement.</p>	<p>'Open air activity is good for my mental health. My confidence has improved. Also meeting others who have similar mental health problems helps'</p> <p>'Takes my mind of the depression'</p> <p>'Its therapeutic and calms me'</p> <p>'It is special because it gives you a sense of achievement in all the jobs you do on the farm'</p> <p>N.B.: 10 per cent of respondents made comments concerning social benefits</p>
<p>5. Physical benefits</p>	<p>'Keeps you active and mobile'</p> <p>'Being close to nature and doing physical activities'</p> <p>'Its easy physically but all counts helping towards my fitness for the future'</p> <p>'The exercise with nature'</p> <p>N.B.: 8 per cent of respondents made comments concerning social benefits</p>



Participants' comments concerning what differences the activities made to how they felt mentally

"More stable, able to think for myself more."

"Less worried, coordination of body and mind, better sense of well being."

"It stimulates the mind and gives me something to concentrate my mind on."

"Memory has improved and I think clearer and more positively."

"I am more alert, less stressed."

"Helps me to relax and stop worrying."

"More relaxed and able to sleep at night."

"I always feel better - more relaxed, less tense after a good session of exercise, more able to talk to people."

"Lifts depression gives me a good feeling."

"They help me focus on positive things rather than negative."

"Makes you want to get out of bed and I'm not as low as I have been."

"It feels calm and satisfying on my allotment, I look forward to going."

"Improves my mood, more self-esteem and makes me feel good about myself."

"Feel more confident (alive) not looking at four walls."

how they felt. This supports the idea that it is the synergistic amalgamation of the exercise in a green environment that produces added health benefits, rather than either one alone.

The next question in the questionnaire asked respondents to identify the differences that participating in these green activities made to how they felt and they were asked to distinguish between the mental and physical aspects. One hundred and two comments were received concerning the mental health benefits and once again familiar messages emerged. Many respondents talked about the positive effect on their minds and how it helped them to think more clearly, provided a focus for concentration and offered overall peace of mind. They felt less stressed, more alert and alive, happier and more relaxed.

Many people stated that they felt mentally healthier and a lot more motivated and positive. They felt that the activities helped to lift their depression levels and instil a feeling of calm and peacefulness. Their overall mood improved as did their confidence levels and self-esteem and some of the key comments are listed in the box opposite.

Ninety-seven comments were received concerning the physical health benefits of engaging in green exercise activities. Overall, respondents felt a lot healthier, more alive and refreshed. Many spoke of the benefits to their fitness levels and how they felt stronger, less lethargic and more energetic. Others commented on the changes to their body profile

Participants' comments concerning what differences the activities made to how they felt physically

"I feel a lot stronger and fitter."

"My fitness has improved, I feel refreshed and alive."

"I feel fitter for getting out more often."

"Feel lifted and less lethargic."

"More energetic and less lifeless."

"I feel as though I can do things without being tired. I am more active, less lethargic, I want to join in things and my body is looser and more agile."

"More stamina and less physically restless."

"I use my hands so it helps my hands to move better as they are painful and stiff due to arthritis."

"Stops the stiffness in the joints, that I get when I just sit around doing nothing."

"Lost weight, more agile, helps to keep my body moving."

"Becoming involved in outdoor activities, also good therapy for body and soul."

through losing weight, easing stiffness in their joints and becoming more agile.

Finally, participants were asked to comment on what they felt was special about the activity and 102 responses were received. It was clear from the collated narratives that there were five main aspects which were special about the green activities. These were the: 1) Social benefits; 2) Benefits from contact with nature; 3) Benefits from the activity itself; 4) Psychological benefits and 5) Physical benefits. These findings clearly support the green exercise model and the following tables illustrate some of the key comments supporting each feature.

The findings from this assessment clearly show that participating in a range of green exercise activities provides substantial social, health and wellbeing benefits. The contact with nature and greenspace is a necessity in enriching the experience and creates a restorative environment which people can seek pleasure in escaping to. A lot of enjoyment is

derived from getting out into the fresh air, admiring the scenery and taking pleasure in the wildlife, plants and trees.

Participating in these activities is often perceived as therapeutic and engenders feelings of relaxation and peacefulness. The whole process is very calming; it reduces stress levels and encourages people to feel good about themselves by improving their self-worth, confidence and self-esteem. It inspires people to embrace their problems and start to deal with them and learn how to cope. Participants feel healthier and fitter, more alive, refreshed and a lot happier. There is a great sense of achievement when an activity is completed, as participants feel they have achieved something worthwhile and therefore feel useful.

Comments from a participant engaging in gardening activities at a local allotment

"I enjoy gardening, seeing things grow and then picking, cooking and eating them and I feel a sense of achievement. I'm interested in learning about gardening and about nature conservation and I love watching wildlife, birds, etc. If I arrive at the allotments feeling low or preoccupied I feel my mood lift and I find a sense of wellbeing."

"I have been interested in 'green' activities all my life – gardening, walking, conservation, being close to nature, but the 'extra' benefit of this is the sense of sharing and co-operating with other people. Also our allotment site is very beautiful and peaceful so I feel in harmony with the world there."

"I enjoy the physical movement and effort and I appreciate the experience of all my senses – sight, sound, smell, taste and touch and I like working with the earth."

"It's very creative – especially so since our allotment leader is not only a great gardener but also an artist so as well as producing great fresh food through working physically in the open air we're also involved in making a beautiful place. Some would say a place of healing too, and everyone is kind and supportive of one another."

Engaging in green activities in groups also inspires new friendships to develop and enhances social capital, which supplements the range of health benefits experienced. Participants enjoy becoming part of a group, socialising with likeminded people and having companionship, camaraderie and conversation. Therefore, meeting and socialising with people out in the fresh air is a key ingredient in the activities success.

A woman aged between 51 and 70 years has been working on a local allotment regularly for the past 11 years. She attends the sessions most weeks and typically spends around six hours on the allotment per session. Before she started helping out at the allotment she hoped that this would provide her with an opportunity to learn some new skills and get out in the fresh air. Since she has been attending regular sessions, she finds that not only does she learn new skills and get out in the fresh air, but she's also enhanced her fitness, met new people and contributed to organic growing and biodiversity.

A study to compare a green outdoor walk and an indoor walk

Background and methodology

Another major gap in the evidence base is the comparison of indoor exercise to equivalent outdoor green exercise activities. This would enable us to identify what extra health benefits are derived from the contribution of the green elements. When comparing innovative outdoor voluntary activities, such as the green gyms to indoor sports, the adherence rates are a lot more successful in the long term. Nearly half of the participants of indoor sports drop out within the first six months, whereas walking outside seems to be the most preferred form of exercise to maintain adherence (Hilldsdon and Thorogood, 1996). Research analysing joggers also reported that running in a stimulating green environment detracted the mind from the physical discomfort of exertion and fatigue. This enabled participants to continue jogging for longer periods of time (Pennebaker and Lightner, 1980). However, there is a shortage of compelling evidence in this area, especially in the UK.

To date the University of Essex has been involved in a series of studies and research programmes that have analysed the physical and mental health benefits of participating in green exercise activities. However, a key question which is yet to be addressed is: how does green exercise compare to exercising indoors? If the type, intensity and duration of the exercise remains the same, but it is conducted in two very distinct environments (indoors, with no green natural elements and outdoors in a natural green space), we would be able to establish what additional benefits the 'green' engenders. Therefore Mind approached the University of Essex for advice and guidance to enable them to undertake some innovative research. This research involved local Mind group members engaging in a green outdoor walk and a comparable indoor walk and results were analysed by the University of Essex. This short study addressed the research question: 'Will exercising outdoors in a green environment significantly improve participant's mental health and wellbeing (using standardised and well recognised mood and self-esteem measures) compared to the equivalent exercise indoors?'

The locations for the indoor and outdoor walks were initially identified and then the walks took place in early January 2007. They occurred one

week apart, at a similar time of day and both lasted for an hour. Minibuses were used to transport participants to the locations. The outdoor green exercise walk involved walking around Belhus Woods Country Park, which has a diverse landscape of woodlands, grasslands and lakes. In contrast the indoor walk involved walking around Lakeside shopping centre. In both conditions continuous walking was preferred, although participants were allowed to stop briefly to admire the scenery or shop windows and a certain level of social interaction was also encouraged.

Both of the group walks were led by the same Mind organiser and they were equivalent in duration and intensity. The same leader was present at both walks to ensure consistency of personality. The study was a repeated measures design, as the same group of subjects participated in both walks to eliminate their diverse health states as confounding variables. Twenty members of various local LMA groups volunteered to take part in the research and they all attended both of the organised trips.

A mixed method design incorporating both quantitative data and qualitative narrative was utilised to collect data using a composite questionnaire. The questionnaires were administered immediately before and immediately after both of the walks to allow direct comparisons to be made and to identify any changes in health parameters as a direct result of exposure to the environment. The questionnaires included standardised tools which measured participants' levels of self-esteem and mood and other qualitative questions were asked to allow us to capture some detailed narrative. Participants were asked to complete the questionnaires individually and not to compare or discuss their answers. Questions were answered according to how the participant felt at that particular moment in time.

The standardised tools incorporated in order to determine any changes in psychological states derived from the walks, measured self-esteem and mood. Self-esteem was measured before and after the walks using the one-page Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1989), which is a widely used measure of self-esteem in health psychology. Mood change was measured before and after the walks using the (McNair et al., 1984) Profile of Mood State questionnaire (POMS). This is a short form one-page version of the POMS test which has a background of successful use for

mood change post-exercise. The POMS subscales measured were anger, confusion, depression, fatigue, tension and vigour. In addition, a Total Mood Disturbance (TMD) score was calculated to denote an overall assessment of emotional state. This method is regularly used as it provides an indicator of overall mood. It involved summing the POMS subscale T-scores of anger, confusion, depression, fatigue and tension and then subtracting the T-score for vigour (McNair et al. 1992, p.6).

Results

A total of 20 participants took part in both walks, of which 7 (35 per cent) were male and 13 (65 per cent) were female. Forty-seven per cent of the participants were aged between 31 and 50 years and the remaining 53 per cent were aged between 51 and 70 years.

Initially, a paired samples t-test was conducted to identify if there were any significant differences in the participants' preliminary mood and self-esteem scores between the two walks. This did not reveal any significant findings, indicating that prior to both the walks participants' levels of self-esteem and mood were comparable.

Secondly, paired samples t-tests were conducted to identify any significant changes in starting self-esteem and mood levels and those reported after each walk. Each walk was initially analysed separately to distinguish any differences between the two walks.

i) Outdoor Walk

Figure 5 highlights the statistically significant improvement in self-esteem from 21.3 to 19.0 ($p < 0.01$) (Note – the lower the value, the higher the self-esteem). Scores ranged from a high of 12 to a low of 37 prior to the walk. After the green outdoor walk, they ranged from the highest possible self-esteem score of 10 to a low of 35.

The change in the six subscale mood factors were also analysed following participation in the green outdoor walk. Figure 6 illustrates the significant reductions in feelings of anger (from 42.6 to 39.2, $p < 0.05$); confusion (from 39.5 to 36.5, $p < 0.01$); depression (from 42.1 to 39.4, $p < 0.01$); fatigue (from 43.4 to 37.1, $p < 0.0005$) and tension (from 39.5 to 34.4, $p < 0.01$), so participants were feeling less angry, confused, depressed and tense after

Figure 5: The change in self-esteem following participation in the green outdoor walk

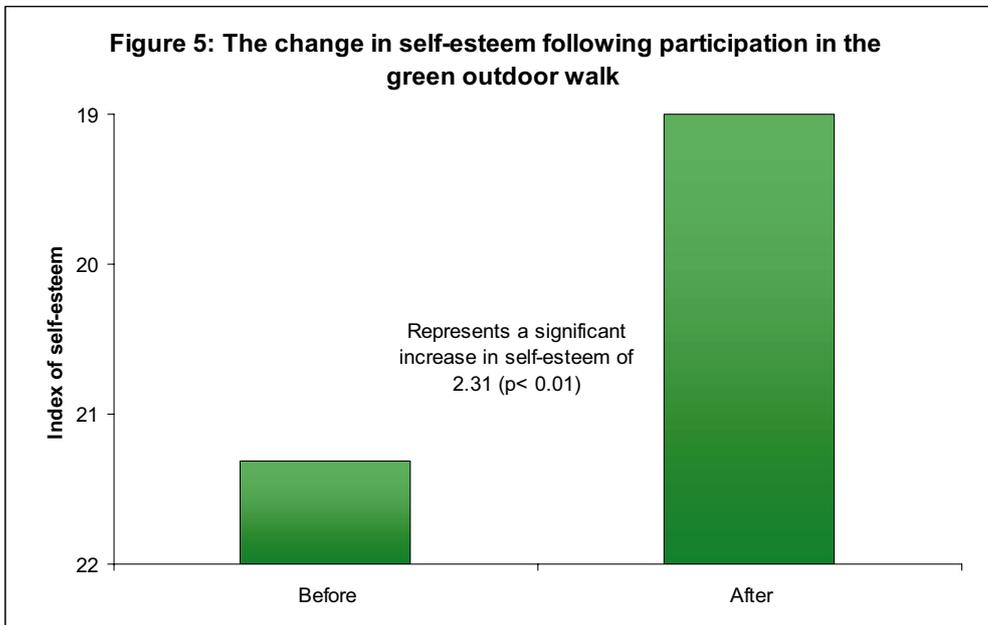


Figure 6: The change in the subscale mood measurements following participation in the green outdoor walk

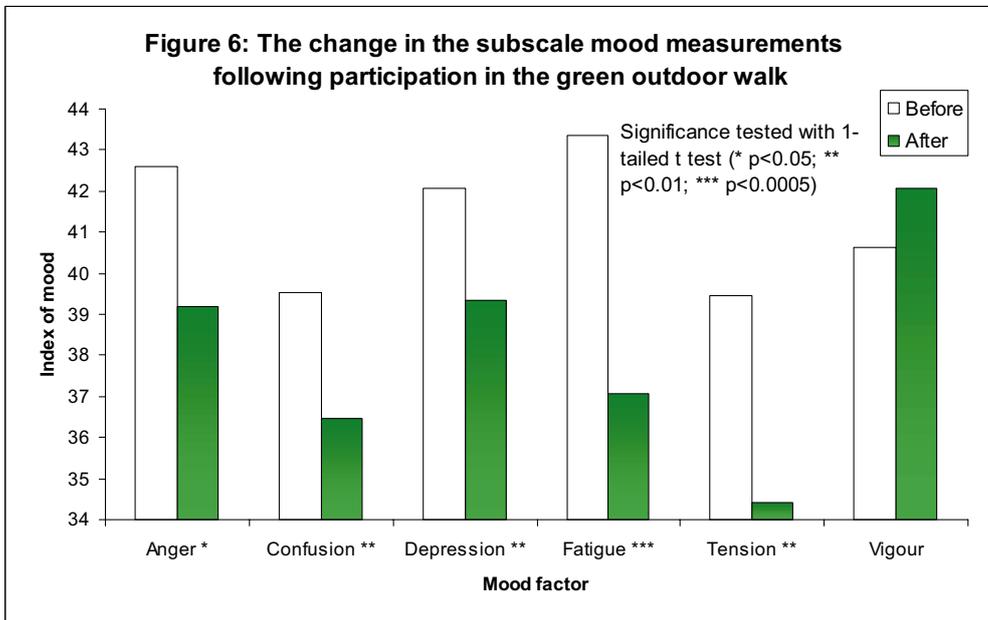
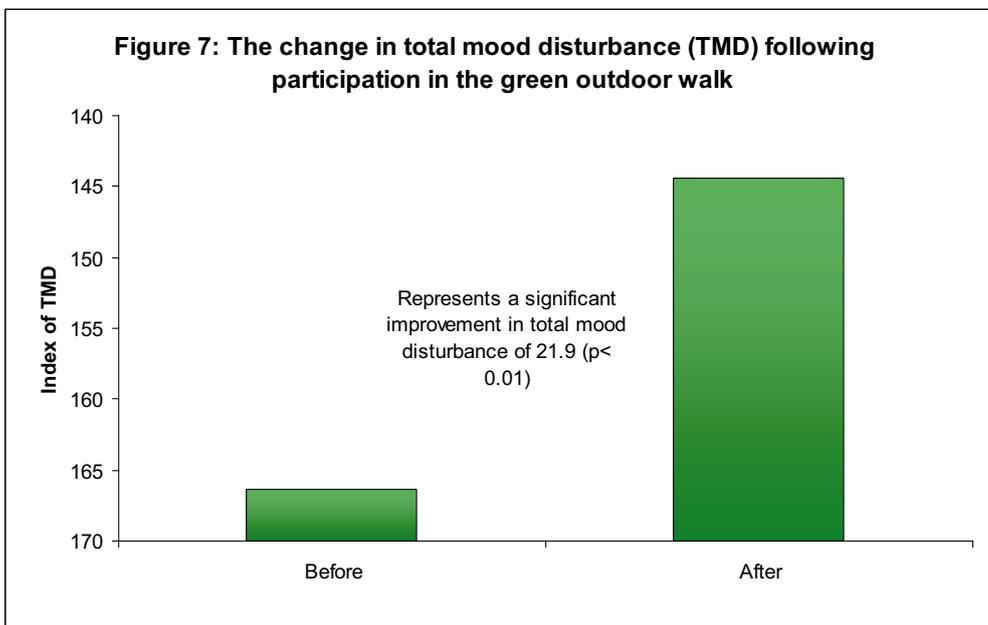


Figure 7: The change in total mood disturbance (TMD) following participation in the green outdoor walk



the outdoor walk. Feelings of vigour increased from 40.7 to 42.1, so even though they had been walking for an hour, participants felt less fatigued and more active and energetic.

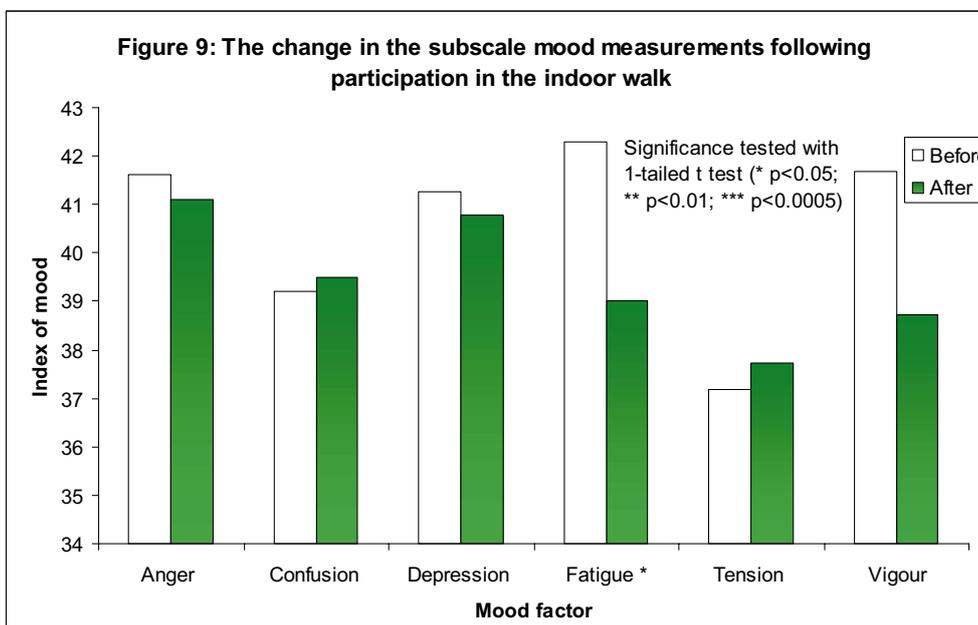
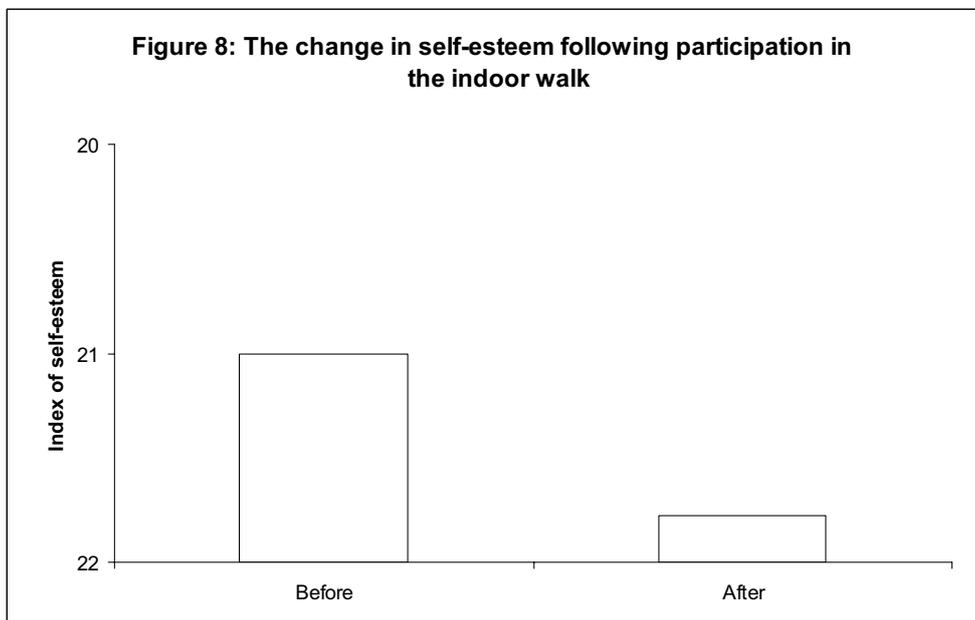
Therefore, Figure 7 shows that the total mood disturbance (TMD) significantly improved after participating in the outdoors green walk from 166.4 to 144.4 ($p < 0.01$) (Note – the lower the score, the better the overall mood).

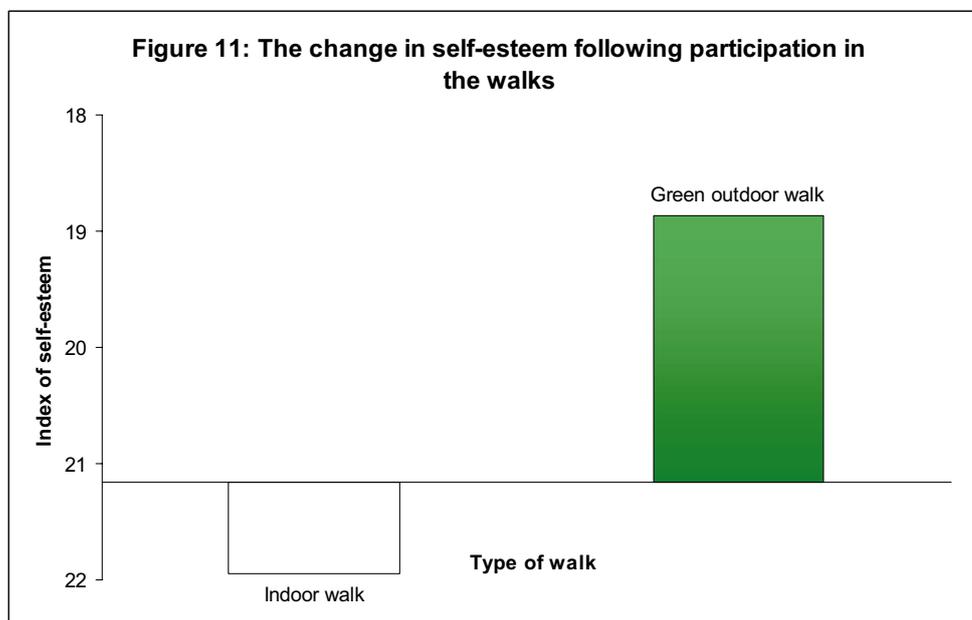
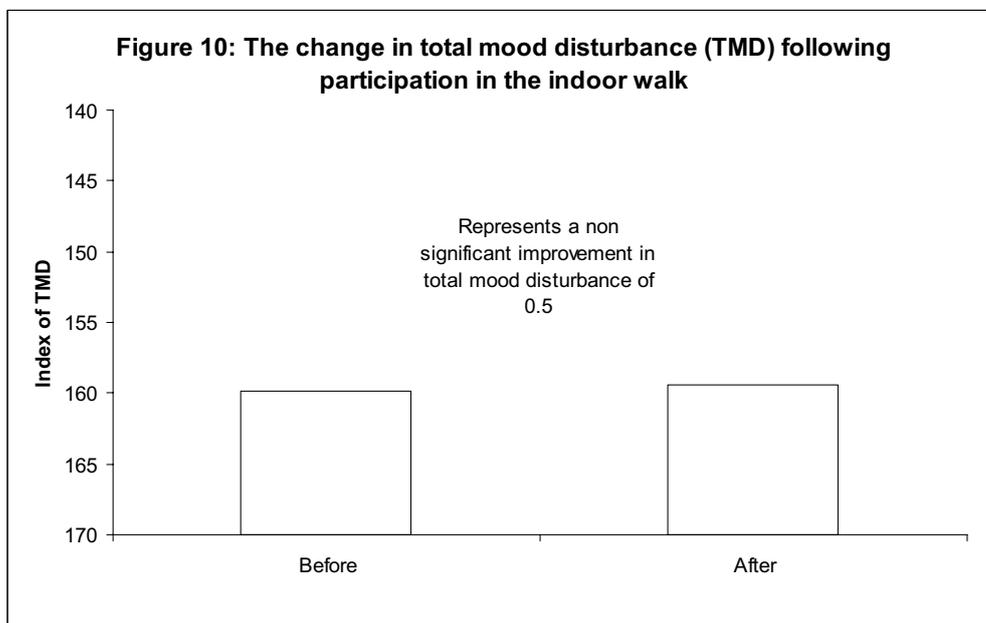
ii) Indoor walk.

Figure 8 highlights the non-significant decrease in self-esteem from 21.0 to 21.8 (Note – the lower the value, the higher the self-esteem). Scores ranged from the highest possible self-esteem score of 10

to the lowest possible score of 40, both before and after the indoor walk.

The change in the six subscale mood factors were also analysed following participation in the indoor walk. Figure 9 illustrates the only mood factor to be significantly reduced, which was fatigue (from 42.3 to 39.0, $p < 0.05$). Feelings of anger reduced slightly (from 41.6 to 41.1) and depression levels also reduced slightly (from 41.3 to 40.8, $p < 0.01$). However, in contrast to the green outdoor walk, feelings of tension slightly increased (from 37.2 to 37.7) and confusion levels also slightly increased (from 39.2 to 39.5). Feelings of vigour decreased from 41.7 to 38.7, so after this walk, participants were feeling less active and energetic and more tense and confused.





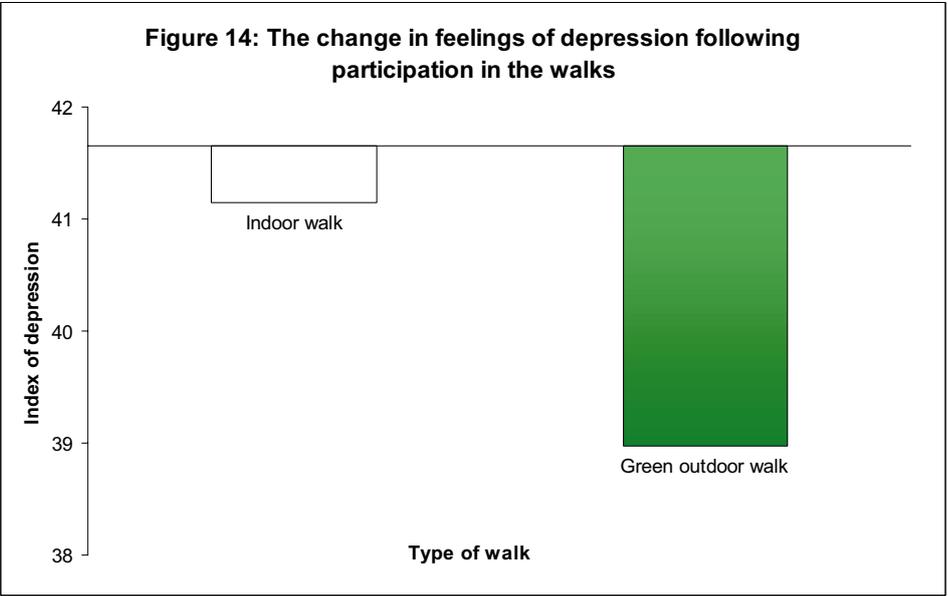
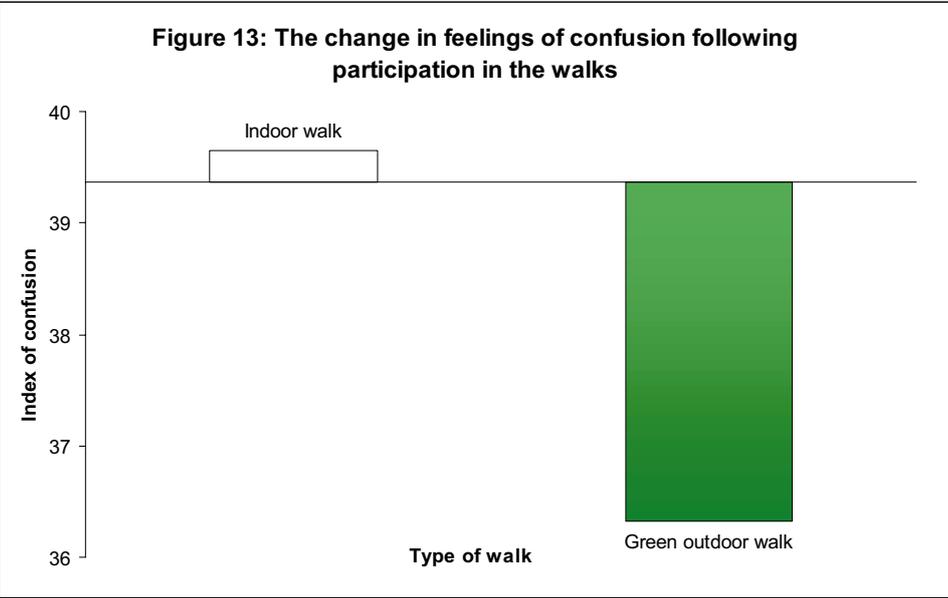
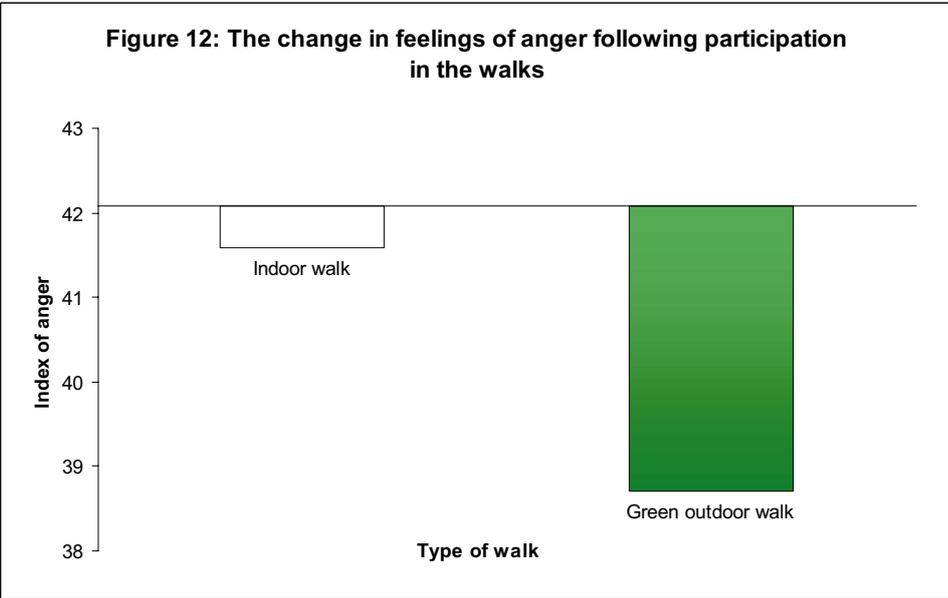
Therefore, Figure 10 shows that the total mood disturbance (TMD) hardly changed after participating in the indoor walk from 159.9 to 159.4 ($p < 0.01$) (Note – the lower the score, the better the overall mood).

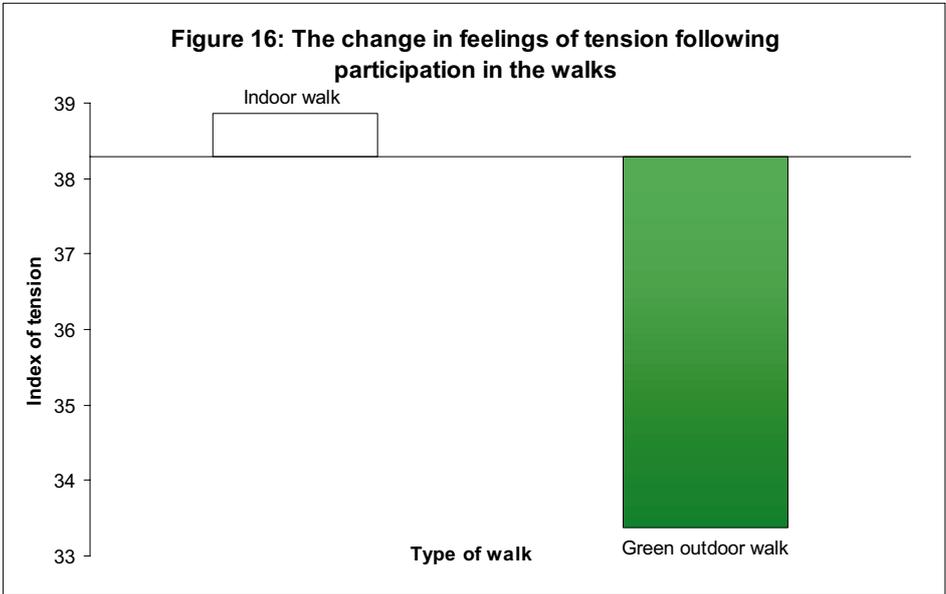
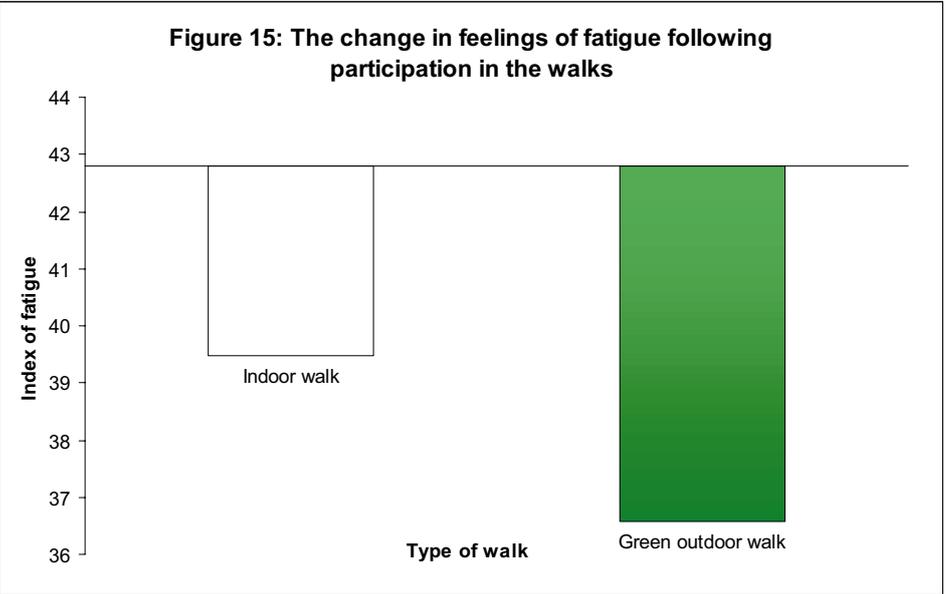
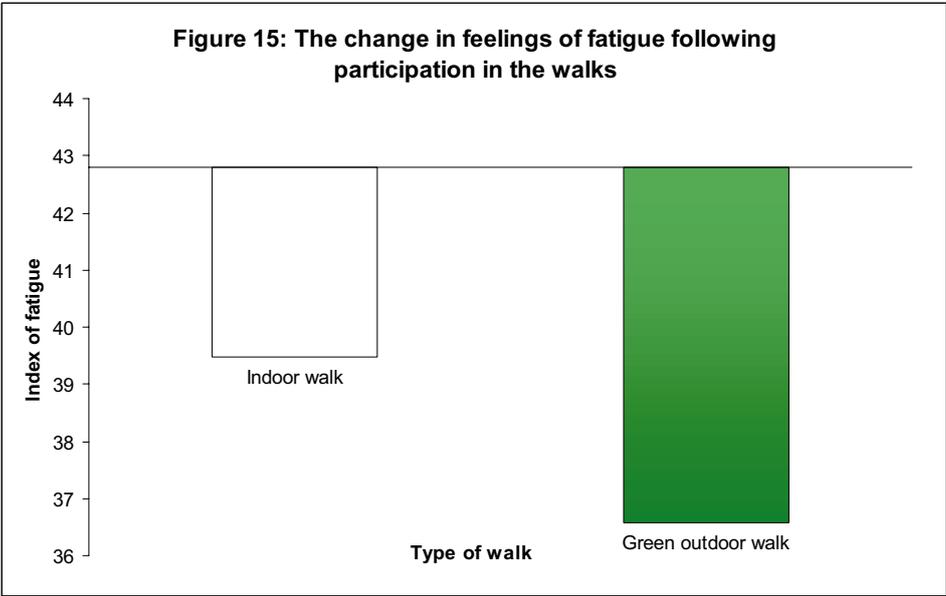
Finally, we used a mixed between-within ANOVA test to compare the change in self-esteem and mood levels between the two walks. This would enable us to establish and confirm which walk was having the most beneficial effect on their psychological health status.

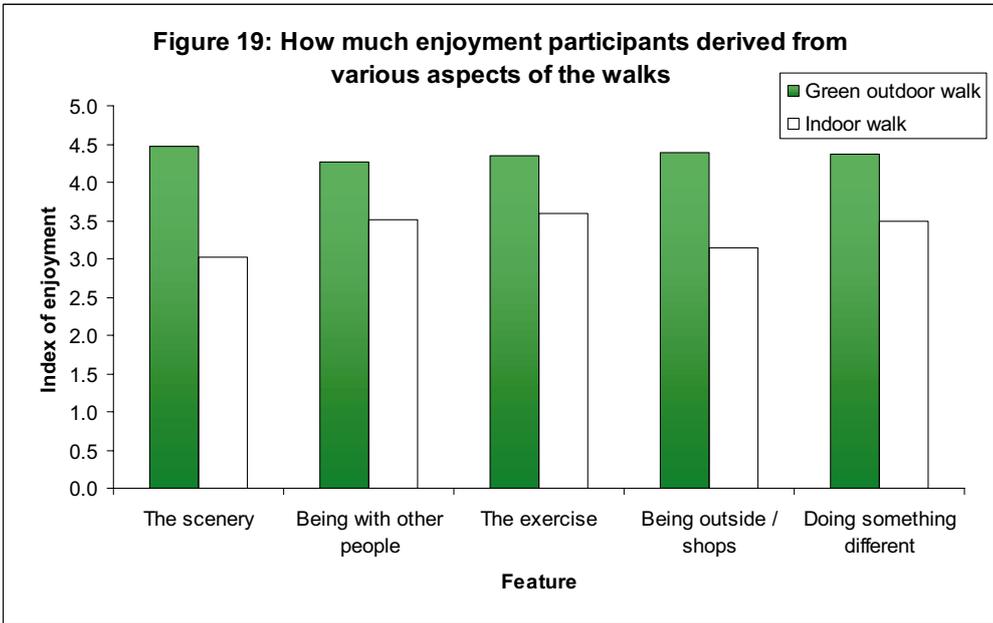
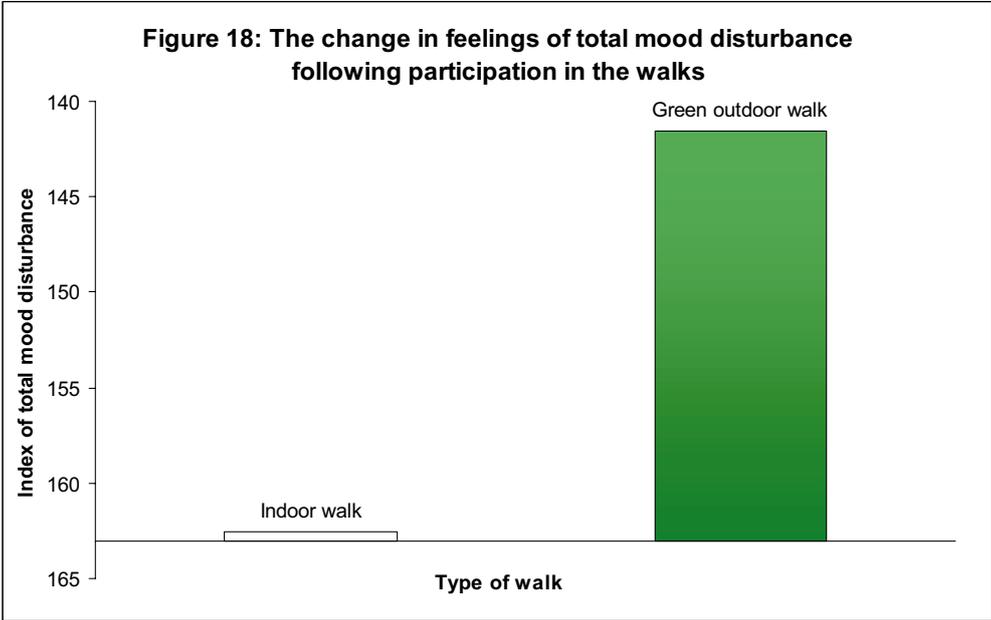
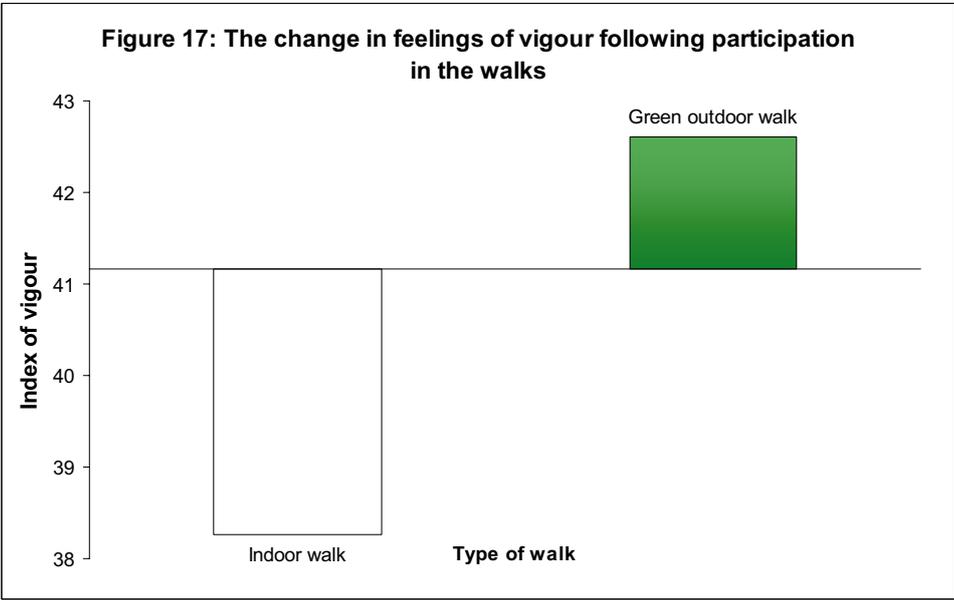
Figure 11 shows the changes in self-esteem after both walks, with starting self-esteem scores averaged for both conditions. This graph illustrates

the positive improvement in self-esteem following the green outdoor walk and the negative effect after the indoor walk. Therefore, there was a statistically significant difference between the two groups ($F = 6.3$; $p < 0.05$).

Figures 12 to 17 illustrate the changes in the six subscale mood factors after both of the walks. Once again starting mood scores have been averaged for both conditions, to allow direct comparisons to be made. There was a statistically significant difference between the two groups for anger ($F = 4.2$; $p < 0.05$); confusion ($F = 5.8$; $p < 0.05$); depression ($F = 4.7$; $p < 0.05$) and tension ($F = 8.0$; $p < 0.01$). There were no significant differences between the groups in feelings of fatigue or vigour.







'What did you feel was special about the walk?' Comments from participants

Green outdoor walk (12 comments received out of the 20 completed questionnaires).

"It makes you feel good in the fresh air, looking at the water makes you feel relaxed. Joining in with other people. I like walking in the countryside."

"Apart from meeting other Mind members, it was extremely good to take part and involve my members."

"Good exercise and meeting up with other groups."

"Very good exercise' "All different Mind groups getting together."

"Meeting others, visiting different places, fresh air, exercise and talking to others."

"Getting close to god's beautiful creation."

"Scenery."

"Made me forget how down I felt, whilst on the walk."

"Being able to do something different."

"Getting out of doors."

"Meeting others in similar circumstances, fresh air, nice views, other people's company."

Indoor walk (11 comments received out of the 20 completed questionnaires) .

"It was not as good as the open air' .

"It is a good exercise and walking with other people makes you feel better in yourself."

"Enjoyed being with people and getting to know other people from Mind groups."

"Very good exercise and meeting other people."

"Meeting with other Minds."

"Very worthwhile."

"Did see this as exercise."

"It was better than being outside."

"If it helps others it's all worth it."

"Great but on benefits so cannot enjoy fully the experience."

"Being part of a group that seeks to counter problems engendered by mental health, the exercise."

Therefore, when combining all of the six subscale mood factors to calculate the change in TMD (Figure 18), there was a significant difference between the two groups ($F=8.6$, $p<0.01$) (Note – the lower the score, the better the overall mood).

The findings clearly show that exercising outdoors in a green environment is a lot more effective in enhancing your mood and improving your self-esteem compared to the equivalent amount of exercise indoors. Participating in a green outdoor walk can significantly reduce feelings of anger, depression, tension and fatigue, whilst also making you feel more active and energetic, so it offers an ideal way of getting rid of those blues.

In addition to analysing changes in psychological health states, we also asked participants to use an enjoyment scale to rate how much enjoyment they got out of various aspects of the walks. The short scale ranged from 'did not enjoy at all' (1) to 'enjoyed a lot' (5) and the mean answers are displayed in Figure 19. It is clear that participants enjoyed the scenery and the exercise more in the green outdoor walk. They also enjoyed being in

the company of other people and doing something different more in the green environment. Spending time outside in the fresh air was more enjoyable than walking around the indoor shopping centre.

Participants were also asked to comment on what they thought was special about both of the walks (see box above).

The comments were very focused on the enjoyment derived from spending time with other people, especially during the indoor walk. However, narrative relating to the green outdoor walk did mention the enjoyment gained from getting out into the fresh air, the scenery and participating in the exercise itself.

The results from this small study support previous green exercise research findings reported by the University of Essex, which refer to significant improvements in self-esteem, total mood disturbance and enhanced social capital. Although there was no control condition to compare the findings to (eg., what activities members usually engage in, such as meeting for a coffee, art classes

etc), the significant findings generate some thought provoking questions.

Participating in the green outdoor walk was a lot more effective in reducing feelings of anger, depression, tension and confusion, in comparison to the indoor walk. It also increased feelings of vigour and left participants feeling more active and energetic. The enjoyment of engaging in green exercise activities in groups is a valuable part of the experience, as well as the opportunity to breathe in fresh air, admire the scenery and enjoy the wildlife. Therefore, exercising outdoors within a green environment has to be a preferred option to engaging in comparable exercise indoors. The findings add significant value to the ever expanding green exercise research programme as it focuses on individuals experiencing mental health issues and separates the elements that constitute the green exercise experience.

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