UCL NATIONAL COLLABORATING CENTRE FOR MENTAL HEALTH

Increasing Physical Activity in Psychological Treatment

An evaluation of the impact on treatment outcomes for anxiety and depression

Report

THE NATIONAL LOTTERY
SPORT ENGLAND
NHS Camden and Islington Talking Therapies
NHS Buckinghamshire Talking Therapies

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Sport England and Transformation Partners in Health Care. Exploring how Physical Activity can be Better Utilised within IAPT Services to Help Improve Mental Health Outcomes. Findings and Recommendations Report. 2022

Annex B. Toolkit

Cane J & Landsberg J. Incorporating Physical Activity Interventions into NHS Talking Therapies: A Toolkit. 2024

The appendices to this report can be found at:

https://drive.google.com/drive/folders/1Ey0Oeb2cH6BWnGSaoOA67iz3a0JnQbsx

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1. Introduction

1.1. Physical activity and common mental health problems

Evidence suggests that higher levels of physical inactivity are associated with mental health problems[1] and that increasing physical activity[a] can improve outcomes for mental health problems. This is the case for common mental health problems, in particular depression,[1,2] and the National Institute of Health and Care Excellence (NICE)[3] recommends physical activity for the treatment of depression.[4]

Other research[5,6] has shown that physical activity interventions combined with psychological therapies may be effective at improving outcomes for mental health problems and that practitioners find these interventions acceptable to deliver.[7]

However, uptake of physical activity in people with depression is poor[8] and there are multiple barriers to engaging with it.[9] The Transformation Partners in Health and Care report (Annex A, discussed in the next section) found that not enough support is offered to service users to increase their physical activity as part of treatment in NHS Talking Therapies for anxiety and depression services.[4,b]

1.2. Physical activity in NHS Talking Therapies

Transformation Partners in Health and Care was funded by Sport England (as part of an addition to this project) to carry out a survey of NHS Talking Therapies services to understand their views about the opportunities and challenges involved in increasing physical activity to improve health outcomes. Views were sought from NHS Talking Therapies staff, service users and a range of stakeholders.

In their report (Annex A), the findings showed wide recognition of the importance of supporting service users to be more physically active, but this was not reflected in the programmes routinely offered by NHS Talking Therapies services. However, there were examples of innovative practice in this area, some of which are outlined below.

The report made four recommendations to help shift the culture within NHS Talking Therapies services: (1) reviewing national NHS Talking Therapies guidance and incentives to make physical activity a priority; (2) providing training for staff; (3) facilitating collaboration with local partners; and (4) promoting and supporting best practice.

[a] Physical activity is defined in the Glossary.

[b] Formerly known as Increasing Access to Psychological Therapies (IAPT) services.

The report showed that some of the NHS Talking Therapies services that have incorporated physical activity into some of their psychological treatments have had positive service user outcomes. For example, Ealing NHS Talking Therapies service introduced Running to Better Health, based on the NHS Couch to 5k programme. This eight-session group intervention incorporated a local community parkrun.[10] Another example is the Living Well Consortium UK, which offers low-intensity cognitive behavioural therapy (CBT) with personal training, as well as therapy delivered while walking.[11] They received positive feedback, good recovery rates and higher than average session attendance (see Annex A).

1.3. Long-term physical health conditions

The relationship between mental and physical health problems is bi-directional: around 40% of people with depression and anxiety disorders also have a long-term condition (LTC),[c] and around 30% of people with LTCs have a comorbid mental health problem.[12] People with chronic health conditions are more at risk for a chronic course of depression or worse recovery rates.[13]

From 2016, NHS Talking Therapies services offered interventions integrated with physical healthcare pathways to support people with LTCs.

1.3.1. Physical activity and long-term physical health conditions

The physical symptoms experienced by people with LTCs can impact on whether and how individuals engage with physical activity. For people with depression and LTCs, the symptoms of the LTC could be a barrier to engagement,[14] particularly if there is an impact on mobility and motivation.[15] Also, there may be a lack of awareness about the effectiveness of physical activity among people with LTCs.[16] Low expectations to be physically active, or a lack of social support when they are active,[17] might also prevent people with depression and LTCs taking part in physical activity.

People with LTCs may worry about making their symptoms worse or that they will be more likely to experience pain, fatigue and shortness of breath, and have an increased risk of falling. However, it's safe for people with LTC to be physically active (with medical guidance, in some instances) and the risk of adverse events is very low.[18]

[c] LTC is defined in the Glossary.

1.4. Sport England and this project

In the Uniting the Movement Strategy, Sport England committed to strengthening collaboration between the physical activity sector and health systems to support the prevention and management of LTCs.

Given the potential for incorporating physical activity into psychological treatment in NHS Talking Therapies services, as well as the completeness of routine outcome measurement data in NHS Talking Therapies services,[19] Sport England commissioned Camden and Islington NHS Foundation Trust to undertake a study to assess the effectiveness of these interventions. iCope, Camden and Islington's NHS Talking Therapies service, partnered with Buckinghamshire Talking Therapies at Oxford Health NHS Foundation Trust to deliver this study.

The National Collaborating Centre for Mental Health, which is a partnership between the Royal College of Psychiatrists and University College London, has evaluated the study.

1.5. Aims of the evaluation

Building on the work already taking place in NHS Talking Therapies services, the primary question addressed was:

- Does the incorporation of a physical activity component into psychological treatments in NHS Talking Therapies services improve mental health outcomes for people with depression or anxiety disorders, including those with LTCs?

Secondary questions were:

- Are different models for the delivery of physical activity interventions in NHS Talking Therapies services associated with
    - different levels of feasibility and engagement
    - increased levels of physical activity?
- What are service users' experiences of these different models of delivery in NHS Talking Therapies services?
- What are staff members' experience of, engagement with and support for the use of physical activity interventions in NHS Talking Therapies services?

To address these questions, quantitative and qualitative analyses of data from several physical activity interventions were carried out in Camden and Islington NHS Foundation Trust (Camden and Islington iCope NHS Talking Therapies Service) and Oxford Health NHS Foundation Trust (NHS Buckinghamshire Talking Therapies).

This evaluation was produced alongside a toolkit that provides practical guidance for incorporating physical activity into NHS Talking Therapies. The toolkit was written by staff at iCope (Camden and Islington NHS Foundation Trust) and Buckinghamshire Talking Therapies (Oxford Health NHS Foundation Trust), and can be viewed in Annex B.

2. Methods

2.1. The study interventions

The main interventions included in the study were:

- Physical activity incorporated into group-based CBT for depression (referred to as **CBT groups**). The CBT groups were delivered as a stand-alone intervention.
- **LTC workshops** for people with LTCs and depression or anxiety disorders; these workshops were undertaken alongside other psychological interventions.

A wellbeing app, Koa Foundations by Koa Health, was also evaluated. The app has a self-help module to support people to increase their physical activity.

Two other interventions, Animal Antiks at Buckinghamshire Talking Therapies and Walk and Talk at iCope, were introduced later in the study. Due to limited data they were not included in the main outcome analysis.

2.1.1. Impact of COVID-19

The CBT groups and LTC workshops were planned and first delivered during the COVID-19 pandemic. Because of the restrictions on in-person gatherings during this time they were delivered online, and this continued after the restrictions eased.

Animal Antiks and Walk and Talk were delivered in person after the easing of COVID-19 restrictions, allowing staff and service users to engage in physical activity together.

2.1.2. Main interventions

All intervention protocols and resources can be found in the toolkit (Annex B).

CBT groups for depression

About the CBT groups:

- In Buckinghamshire Talking Therapies, the CBT group intervention was called 'Move Your Mood'.
- In iCope, it was called 'CBT + Physical Activity for Depression'.
- These CBT groups were designed to be delivered to groups of up to 12 people.

Physical activity incorporated into NICE-recommended CBT groups was delivered by both Buckinghamshire Talking Therapies and iCope. It was a Step 3[d] intervention, comprising 10 weekly 2-hour sessions. The groups took place over videoconferencing platforms.

[d] Step 3 treatment is defined in the Glossary.

The groups were for people with depression, which is defined for the purpose of this study as a score of at least 12 on the nine-item Patient Health Questionnaire (PHQ-9).[20]

The sessions delivered the core components of CBT for depression. People were encouraged to engage in a physical activity of their choice for 15–20 minutes of each group session, starting with small and achievable amounts of activity based on their current level of activity. The physical activity could be done as a group (for example, following instructional videos of low-intensity exercise) or individually (for example, going for a walk).

Table 1 shows the number of people attending at least six sessions[e] of the CBT groups at each site.

LTC workshops

About the LTC workshops:

- In Buckinghamshire Talking Therapies (labelled BTT in tables), the LTC workshop intervention was called 'Moving Forward with a Long Term Condition'.
- In iCope, it was called 'Getting Active with a Health Condition'.
- The LTC workshops were designed to be delivered to groups of up to 15 people.

The LTC workshops consisted of three 2-hour group sessions, held at 4-week intervals, as an adjunct to other Step 2 or Step 3 psychological interventions for depression or anxiety disorders. The workshops took place online over videoconferencing platforms. The workshops were for people with LTCs that impacted their daily life[f] and had common mental health problems.

The LTC workshops supported people to engage in physical activity in a way that felt appropriate to them given the nature and severity of their LTC. This was a psychoeducational intervention in which participants learned techniques to help increase their level of physical activity.

The number of people attending the first session of LTC workshops at each site can be found in Table 1.

[e] Six sessions was an adequate treatment dose to enable an accurate picture of outcomes of the groups to be obtained.

[f] People with certain LTCs, including long COVID, needed to get sign-off for the physical activity from a medical professional or long COVID-19 pathway team.

Table 1: Number of groups and participants that completed all CBT groups and LTC workshops[g]

	BTT		iCope	
	CBT groups	LTC workshops	CBT groups	LTC workshops
Completed* groups (n)	9	19	7	7
Participants who completed* the groups (n)	54**	108†	46**	36†

Note: * Individuals needed to attend at least six CBT sessions or at least one LTC session to be recorded as completing the intervention; ** Attended at least six sessions; † Attended first workshop.

Koa Foundations app

About the Koa Foundations app:

The Koa Foundations app was a mental wellbeing app with a range of modules. A physical activity module, 'Move More – Feel Better', was developed by Koa with input from NHS Talking Therapies staff and service users and used in this study.

The aim of the 'Move More – Feel Better' module was to increase physical activity levels. It provided psychoeducational information, including the relationship between mental and physical health, identified strategies to build physical activity into people's day and helped make a plan to support them to do this. It allowed people to identify their motivation for wanting to increase their physical activity, generated ideas for physical activity and helped people to identify and plan how to overcome potential barriers.

A link to the app was offered to people who were due to start Step 2 or Step 3 treatment. The app was downloaded by 280 people, 72% of whom completed onboarding.

2.2. Additional interventions introduced during the course of the study

As the COVID-19 pandemic eased and services became more comfortable with in-person contact, two additional components were introduced that incorporated in-person physical activity in different ways (an individual intervention and a group intervention).

[g] Definitions of the abbreviations used in the tables can be found in Abbreviations.

The individual intervention, called Walk and Talk, was introduced in iCope to integrate walking into individual Step 3 CBT sessions. Practitioners conducted a proportion of their Step 3 CBT therapy sessions with suitable clients outside while walking. Interested practitioners were given training in the delivery of the intervention. This intervention was attended by seven individuals.

The group component was called Animal Antiks. It was introduced by Buckinghamshire Talking Therapies, took place at a local farm and was funded by a local charity. It provided 16 participants with the opportunity to walk with alpacas, be around other people and be outside. It involved six group sessions with around six participants in a group. People took part in this group at the same time as engaging with psychological interventions at Buckinghamshire Talking Therapies.

2.3. Overview of the evaluation methods

This is a mixed methods evaluation using an observational design. This allows for an assessment of change before and after the interventions and an understanding of feasibility and engagement with physical activity, from the perspective of those receiving or delivering the interventions.

Table 2 shows the methods of evaluation used for the main interventions (CBT groups and LTC workshops), the Koa app, and the additional interventions (Walk and Talk and Animal Antiks), and further detail about the evaluation methods follows.

Table 2: Evaluation methods used for the interventions

	CBT groups	LTC workshops	Koa app	Walk and Talk	Animal Antiks
Within-group comparison	✓	✓			
Propensity score matching	✓	✓			
IPAQ-SF	✓	✓	✓		
Single-item measure	✓	✓			
NoMAD	✓	✓	✓	✓	✓
Qualitative Interviews	✓	✓			
Staff questionnaire				✓	✓
Service user feedback form					✓

2.3.1. Quantitative evaluation

The quantitative evaluation aimed to assess change following interventions and included:

- **Within-group comparison and propensity score matching**[h] for the CBT groups and LTC workshops. This analysis used data from the nationally mandated symptom measures the PHQ-9[20] and the seven-item Generalized Anxiety Disorder scale (GAD-7),[21] and from NHS Talking Therapies' prescribed metrics (recovery, reliable recovery and reliable improvement[h]). See also Sections 3.1.1, 3.1.2 and 3.1.5.
- **Analysis of measures assessing physical activity** using the International Physical Activity Questionnaire – Short Form (IPAQ-SF)[22] and, for some participants, a single-item measure developed for the study. These measures and the rationale for their use is described in Section 3.1.6.
- **Analysis of the Normalisation MeAsure Development questionnaire (NoMAD)**,[h,23] from a sample of NHS Talking Therapies staff who were involved in any of the interventions. The NoMAD questionnaire explored organisational and individual factors that impacted on the uptake and delivery of the physical activity component. See also Section 3.2.
- **Analysis of usage data** from the Koa Foundations app. See also Section 3.3.

2.3.2. Qualitative evaluation

The qualitative evaluation aimed to gain a better understanding of engagement with and experience of treatments incorporating physical activity in NHS Talking Therapies services.

For the CBT groups and LTC workshops, engagement and experience were assessed using semi-structured interviews with service users (a purposive sample of participants to ensure diversity in demographics and attendance).

For Animal Antiks and Walk and Talk, a staff questionnaire and service user feedback form were used to understand the experience of delivering and receiving these additional interventions.

See Section 4 for further details about the qualitative methods.

2.4. Ethical approval

Ethical approval for this research was obtained via the Integrated Research Approval System (Study Registration Number: 303061).

[h] The following terms are defined in the Glossary: within-group comparison, propensity score matching; recovery, reliable recovery, reliable improvement; and NoMAD.

3. Quantitative analyses

This section presents the results from the quantitative analyses. First, an analysis of outcome data from the CBT groups and LTC workshops is presented. This is followed by an analysis of data from the NoMAD questionnaire. Finally, data about use of the Koa Foundations app are presented.

3.1. CBT groups and LTC workshops

3.1.1. Introduction

The quantitative analysis of the CBT groups and LTC workshops comprised:

- Within-group comparison, which assessed change on standard NHS Talking Therapies metrics[4] for the CBT groups and LTC workshops; recovery rates were compared with the services' overall rate and those for Step 3 interventions or people with LTCs.
- Comparative outcomes using propensity score matching, comparing those who received the CBT groups and LTC workshops with individuals using participating services who did not receive the interventions.

The results, summary and limitations of these analyses are presented below.

Given the different populations and the other interventions received by people in the LTC workshops, a comparison of CBT groups versus LTC workshops would not be meaningful.

The number of CBT groups and LTC workshops, and the total number of people who attended them at each site, can be found in Table 2.

3.1.2. Participants

Sample sizes used for the analyses, as well as demographic information, are outlined inTable 3.[i] Most of the sample used in the quantitative analysis had a diagnosis of depression, some had LTCs (including in the CBT groups) and on average had moderate-to-severe GAD-7 and PHQ-9 scores at baseline.

[i] For the propensity score matching analysis, one participant from Buckinghamshire Talking Therapies CBT groups could not be matched, and therefore N=43. Demographics for the propensity score matching analysis can be found in Appendices A.1.2.

Table 3: Participant demographics for CBT groups and LTC workshops included in the analyses

	CBT groups (N=77)		LTC workshops (N=80)	
	BTT (n=44)	iCope (n=33)	BTT (n=63)	iCope (n=17)
Age (mean [SD])	43 (11.8)	32.8 (10.4)	49 (13.3)	41.8 (13.5)
Sex (n [%])				
Female	29 (65.9)	18 (54.5)	19 (30.2)	15 (88.2)
Male	15 (34.1)	15 (45.5)	44 (69.8)	2 (11.8)
Ethnicity (n [%])				
White	38 (86.4)	20 (60.6)	47 (73)	11 (64.7)
Ethnic minority	4 (9.1)	11 (33.3)	11 (17.5)	5 (29.4)
Missing	2 (4.5)	2 (6.1)	6 (9.5)	1 (5.9)
Diagnosis of depression or anxiety (n [%])				
Depression	37 (84.1)	29 (87.9)	41 (65.1)	11 (64.7)
Anxiety disorders	6 (13.6)	13 (39.4)	19 (30.2)	2 (11.8)
Missing	1 (2.3)	4 (12.1)	3 (4.8)	4 (23.5)
LTC (N [%])				
No	22 (50)	1 (3)	1 (1.6)	1 (5.9)
Yes	13 (29.5)	13 (39.4)	39 (61.9)	15 (88.2)
Missing	9 (20.5)	19 (57.6)	23 (36.5)	1 (5.9)
GAD-7 and PHQ-9 scores (mean [SD])				
PHQ-9 (pre-treatment)	18.3 (4.7)	18.6 (4.1)	16.8 (4.3)	18 (5.2)
PHQ-9 (post-treatment)	13 (5.3)	10.5 (7)	10.3 (6.1)	11.4 (6.1)
GAD-7 (pre-treatment)	13.5 (4.4)	14.1 (5.1)	12.6 (5.1)	15.1 (4.8)
GAD-7 (post-treatment)	9.9 (5.8)	9.4 (6.1)	7.8 (5.6)	10.1 (6.3)

3.1.3. Within-group comparison

Primary analyses examined pre–post change (at baseline [time point 1] and at end of treatment [time point 2]), in PHQ-9 and GAD-7 scores for those receiving treatment in the interventions. Paired t-tests were used to compare the differences in mean scores. Rates of recovery, reliable recovery and reliable improvement were also analysed.[j]

Changes on routine outcome measures

CBT group and LTC workshop data were analysed separately. Data were separated by site, and combined across sites. Across the analyses, there were statistically significant reductions on the PHQ-9 and GAD-7 scores at pre- and post-treatment. Table 4 and Table 5 show these changes.

Table 4: CBT group PHQ-9 and GAD-7 scores at baseline (T1) and end of treatment (T2)

CBT		T1 mean score (SD)	T2 mean score (SD)	Mean difference*
Overall (N=77)	**PHQ-9**	18.42 (4.43)	11.94 (6.17)	6.48
	GAD-7	13.72 (4.68)	9.67 (5.89)	4.05
BTT (N=44)	**PHQ-9**	18.27 (4.71)	12.98 (5.33)	5.29
	GAD-7	13.48 (4.36)	9.86 (5.81)	3.62
iCope (N=33)	**PHQ-9**	18.64 (4.09)	10.55 (6.98)	8.09
	GAD-7	14.06 (5.13)	9.42 (6.07)	4.64

Note: * p<0.001.

Table 5: LTC workshop PHQ-9 and GAD-7 scores at baseline (T1) and end of treatment (T2)

LTC		T1 mean score (SD)	T2 mean score (SD)	Mean difference*
Overall (N=80)	**PHQ-9**	17.08 (4.52)	10.56 (6.06)	6.52
	GAD-7	13.14 (5.14)	8.29 (5.81)	4.85
BTT (N=63)	**PHQ-9**	16.83 (4.32)	10.33 (6.08)	6.50
	GAD-7	12.60 (5.13)	7.79 (5.61)	4.81
iCope (N=17)	**PHQ-9**	18.00 (5.23)	11.41 (6.11)	6.59
	GAD-7	15.12 (4.85)	10.12 (6.34)	5.00**

Note: * p<0.001; ** p=0.001.

[j] Recovery, reliable recovery and reliable improvement are defined in the Glossary.

Agreed measures of effectiveness for NHS Talking Therapies are shown for the CBT groups and the LTC workshops in Table 6, showing the recovery, reliable recovery and reliable improvement rates and site level rates.

Table 6: CBT group, LTC workshop and overall service rates of recovery, reliable recovery and reliable improvement

		Recovery	Reliable recovery	Reliable improvement
This study				
CBT groups	**BTT (%)**	29.55	25.00	63.64
	iCope (%)	39.39	36.36	63.64
	Overall (%)	33.80	29.9	63.6
LTC workshops	**BTT (%)**	42.86	38.1	71.43
	iCope (%)	41.48	41.18	70.59
	Overall (%)	42.50	38.75	71.25
Services overall*				
Step 3 groups	**BTT (%)**	38.26	35.10	56.84
	iCope (%)	42.4	39.5	65.3
Service users with LTCs	**BTT (%)**	52.90	49.99	65.48
	iCope (%)	45.20	41.5	66.00

Note: * For full details of site level rates, see Appendix A.1.1.

Rates for recovery and reliable recovery (but not reliable improvement) in the CBT groups and LTC workshops were around 30–40%. Rates were slightly higher for recovery and reliable recovery in the CBT groups at iCope compared with CBT overall and at Buckinghamshire Talking Therapies.

Rates of reliable improvement for the CBT groups (63.6%), and for recovery (41–43%), reliable recovery (38–41.2%) and reliable improvement (70.5–71.5%) across the LTC workshops, were similar across both sites. Reliable improvement for the LTC workshops was high, at over 70% overall and at each site.

While participants' symptoms remained above the diagnostic threshold on outcome measures, reliable improvement of over 70% suggests that the interventions contributed to significant reduction in symptoms.

Comparisons of recovery rates at each site

When comparing the recovery rates from the within-group comparison with national rates, the results from the CBT groups and LTC workshops were lower and did not meet the 50% national target for recovery. However, it is worth noting that recovery rates for Step 3 groups and people with LTCs tends to be lower than the services' overall recovery rates.

This may be because these groups of people present with more complex difficulties that are harder to recover from, which could decrease the likelihood of treatments being effective. Therefore, recovery rates for the CBT groups were compared with Step 3 group rates at their service, and recovery rates for the LTC workshops were compared with recovery rates for people who had LTCs at each service (outlined above in Table 6).

At the two sites, when comparing recovery rates in the CBT groups with Step 3 groups:

- Recovery rates in the iCope CBT groups were similar to those experienced in Step 3 groups in general in the iCope service.
- Recovery and reliable recovery rates in the Buckinghamshire Talking Therapies CBT groups were lower than Step 3 groups overall for the service, but reliable improvement was higher for the CBT groups.

When comparing recovery rates in the LTC workshops with people with LTCs in iCope and Buckinghamshire Talking Therapies services:

- Recovery was slightly lower in the iCope LTC workshops compared with people in the service who had LTCs. Reliable recovery was very similar, and reliable improvement was higher in the LTC workshops compared with people with LTCs in the service.
- People in the Buckinghamshire Talking Therapies LTC workshops had lower recovery and reliable recovery rates, but higher reliable improvement rates, compared with people with LTCs in the service.

This analysis suggests that comparing recovery rates following the CBT groups and LTC workshops with people who have received a similar type of treatment or also have an LTC elsewhere in the service is more meaningful than comparing recovery rates with national rates or targets.

The comparisons show that people in the LTC workshops were more likely to achieve reliable improvement in mental health outcomes following treatment, with the largest comparative changes for the LTC groups. This highlights the benefit of supplementing treatment with LTC-specific workshops.

Differences in treatment pathways

Recovery rates in the CBT groups at Buckinghamshire Talking Therapies appear to be lower than in iCope. One factor that may have contributed to this is the differences in treatment pathways at each of these services. In iCope, people can be referred to the CBT groups immediately after assessment, whereas in Buckinghamshire Talking Therapies people referred to the CBT groups received a Step 2 treatment but did not recover. This suggests that the population attending the groups in Buckinghamshire Talking Therapies may have had more complex mental health problems. It also means that people who might have benefitted from the physical activity interventions may have already benefited from alternative Step 2 treatments, so would not have had the opportunity to take part in a physical activity intervention.

3.1.4. Propensity score matching

Propensity score matching[24] is a method used in the analysis of treatment effects when data from sources such as randomised controlled trials (RCTs) are not available. It is a statistical matching technique that attempts to estimate the effect of an intervention by accounting for the covariates that predict receiving the treatment.

In this evaluation, a comparator group of NHS Talking Therapies service users was obtained from a large NHS Talking Therapies group from the same service. This generated groups of participants with similar clinical and demographic characteristics, and who had received standard NHS Talking Therapies interventions for their presenting problems.

Propensity score matching supports comparisons of routine outcome measures and recovery rates between individuals in the CBT groups and LTC workshops with matched individuals. Data were split into the CBT groups and LTC workshops and analysed overall (both groups combined), and at each site. Effect sizes (Cohen's d) were calculated to show the size of change in scores in different measures over time. Participants were excluded from the analysis if they were: (1) still open to the service (on a waiting list for treatment or receiving another treatment); (2) did not provide pre–post outcome measures; or (3) received fewer than four CBT sessions.

Further details of the propensity score matching analysis, including the demographic information for the CBT groups, LTC workshops and matched controls, can be found in Appendix A.1.2. In summary, it showed that there were no significant differences on PHQ-9, GAD-7 and the odds of recovery, reliable recovery or reliable improvement between any of the physical activity groups and the control sample. This finding was the same when data were analysed overall, and split into sites, for both CBT groups and LTC workshops. This means that the physical activity interventions were as effective as standard interventions offered in NHS Talking Therapies services.

3.1.5. Summary and limitations of the within-group comparison and propensity score matching analyses

There were improvements in PHQ-9 and GAD-7 outcome measures for both interventions across both services. Reliable recovery rates were just over 63% in the CBT groups and just over 70% in the LTC groups. Rates of recovery and reliable recovery in both the CBT groups and LTC workshops were lower compared with national targets.

Recovery rates for the CBT groups were compared with the Step 3 groups, and recovery rates for the LTC workshops were compared with people in the service with an LTC. In iCope, recovery rates for the CBT groups were similar to Step 3 groups. In Buckinghamshire Talking Therapies, for recovery and reliable recovery, compared with Step 3 groups overall, recovery rates for the CBT groups were lower and the LTC workshops were slightly higher. Reliable improvement was higher in the CBT groups and LTC workshops at Buckinghamshire Talking Therapies compared with the Step 3 groups overall. Reliable improvement rates were higher than service norms for LTC workshops in both services.

The propensity score matching showed that the improvements in mental health outcomes and recovery rates were broadly comparable with matched controls. However, it should be noted that in the Buckinghamshire Talking Therapies sample some people had not benefited from previous treatment, and this requires some caution when making comparisons with the iCope group.

It should also be noted that PHQ-9 scores pre-treatment (outlined above in Table 4 and Table 5) were high for both the CBT and LTC groups. The majority of similar treatment trials in the past have focused on individuals with less severe depression. However, the results of this study suggest that treatments that incorporate physical activity can be effective for service users with more severe depression, as NICE guidance recommends.[3]

Limitations

While propensity score matching is an alternative when RCT data are not available, the analysis for this project was not able to take into account the intervention that the matched controls received, including whether the intervention was for individuals or groups.

The recovery rates outlined in Section 3.1.3 show that there are differences in rates between services overall and Step 3 groups, indicating that the type of intervention can affect recovery rates. Not controlling for this in the propensity score matching analysis is therefore a limitation, and could explain why no differences are seen between these Step 3 group interventions and the data from the matched samples. Future studies using propensity score matching may benefit from controlling for the type of intervention that matched controls have received.

3.1.6. Physical activity data

The aim of this analysis was to ascertain whether there were changes in physical activity in people having the interventions. Service user data from measures of physical activity were analysed. Further detail about the data analysis and the measures used can be found in Appendix A.1.3 and Appendix A.1.4.

IPAQ-SF

The IPAQ-SF[22] is a widely used measure of physical activity. It measures the amount of time per day and the number of days over the previous 7 days that physical activities were engaged in, including walking, moderate-intensity activities (for example, cycling) and vigorous activities (for example, running or aerobics). The IPAQ-SF was used to explore changes in physical activity between the start and end of the interventions.

Over the course of the study, the IPAQ-SF proved difficult for people to complete, with service users struggling to understand the form and fill it in accurately. This meant the measure was often not completed or contained incorrect information. Therefore, only a small number of people completed an IPAQ at two time points in a way that could be included in the analysis. Of those who did fill the form in, overall the IPAQ-SF data showed that three-fifths (60.6%) of people scored higher at the second time point (T2), suggesting that physical activity levels increased over the course of the CBT groups and LTC workshops. Table 7 shows the IPAQ-SF results at both sites and the overall scores.

Table 7: Results of people scoring higher (increased activity) or lower (decreased activity) on the IPAQ at the end of treatment (T2)

	BTT (n [%])	iCope (n [%])	Overall (n [%])
IPAQ-SF indicating increase in physical activity at T2	35 (66.04%)	5 (31.25%)	40 (60.6%)
IPAQ-SF indicating decrease in physical activity at T2	15 (33.96%)	11 (68.75%)	26 (39.4%)

Staff also reported that the IPAQ-SF was not appropriate for everyone, in particular for people in the LTC workshops who were not able to complete longer periods of sustained[k] physical activity. On the IPAQ-SF, when people are physically active for less than 10 minutes at a time it cannot be recorded as activity.

Single-item measure of physical activity

Because of difficulties completing the IPAQ-SF, staff at both sites introduced a single-item measure to assess people's perceived changes in their physical activity. From the CBT groups at both sites and the LTC workshops at Buckinghamshire Talking Therapies, 56 people responded to the single-item question outlined in Table 8.

Table 8: Results of the single-item measure of physical activity

Since the start of the group how have your levels of physical activity changed?	iCope CBT (n [%])	BTT CBT (n [%])	BTT LTC (n [%])	Total (n [%])
I'm **more active** than when the group started	23 (82.1%)	6 (75.0%)	10 (50.0%)	39 (69.6%)
There has been **no change** in my levels of activity since the group started	5 (17.9%)	2 (25.0%)	7 (35.0%)	14 (25.0%)
I'm **less active** than when the group started	0 (0%)	0 (0%)	3 (15.0%)	3 (5.4%)

The results show that two-thirds (69.6%) of people reported that they were more active than when the group started. This was particularly the case for the CBT groups, with over four-fifths (82.1%) at iCope and three-quarters (75.0%) of people who attended the groups indicating that they were more active since the groups started. However, of those who attended the LTC groups, only half (50%) indicated that they were more active since the groups started.

[k] For example, more than 10 minutes.

3.1.7. Summary of results and limitations of the physical activity data

Both physical activity measures, the IPAQ-SF and the single-item measure, showed that almost two-thirds of people's physical activity had increased over the course of the interventions.

Around 30% of people in the interventions, mainly from the LTC group, showed decreases in physical activity on the IPAQ-SF. However, it should be noted that it was a small sample of people. Also, there was no allocated time to engage in physical activity within the LTC workshops, so it was up to the individual to put techniques into practice and engage in physical activity outside of the sessions.

The single-item measure indicated that the physical activity of people in the CBT groups was more likely to increase than those in the LTC workshops. It may be that including physical activity within the CBT groups contributed to the increase, so it could be beneficial to include a period of activity within future LTC workshops.

Limitations

Problems with completion of the IPAQ-SF limited the data that could be included in the analysis. This means that the IPAQ data must be interpreted with caution.

3.2. The NoMAD questionnaire

3.2.1. Introduction

Staff at the two sites were asked to complete a NoMAD questionnaire to explore how effectively the interventions were implemented and integrated into the workplace. The staff were either involved in delivering the physical activity interventions, or were managing or supervising the services in which the interventions were delivered.

The NoMAD comprises 20 items that measure the four constructs of Normalization Process Theory,[25] and can be used to understand the dynamics of implementing and integrating complex interventions into the workplace.

The four constructs assessed in the questionnaire are:

- coherence (making sense of a new intervention)
- cognitive participation (engaging with a new intervention)
- collective action (putting an intervention into place)
- reflexive monitoring (appraising the intervention effects).

Full NoMAD data tables and the questionnaire can be found in Appendix A.2.

3.2.2. Demographics

Thirteen staff from iCope and 20 staff from Buckinghamshire Talking Therapies completed the NoMAD. A breakdown of their demographics is in Table 9.

Table 9: Information about people who completed the NoMAD

Demographics		n (%)
Job role	High-intensity therapist	14 (42)
	Psychological wellbeing practitioner (including trainee or senior)	13 (39)
	Other*	6 (18)
Years worked in service	Less than 1 year	3 (9)
	1–2 years	13 (39)
	3–5 years	10 (30)
	6–10 years	4 (12)
	11–15 years	0 (0)
	More than 15 years	3 (9)
Role in the interventions	Delivering an intervention	22 (66)
	Managing or supervisory role**	11 (33)

Note: * The category 'other' was used when a job title was reported by only one staff member, to protect anonymity. ** Respondents were categorised as 'manager' if they indicated that they managed or oversaw at least one intervention, even if they were also involved in the delivery.

3.2.3. Results

Data from staff at both sites were analysed together. The sample size was n=33 unless stated.

Overall implementation of the interventions

Staff were asked how they found the implementation of the physical activity interventions, overall. The answers indicated that they were moderately familiar with the interventions. The ratings indicated that the interventions felt like a normal part of people's work, and they believed that the interventions could become a normal part of their work in the future.

See Table 10 for the mean and standard deviation responses. The mean responses to each of the three questions can be found in Appendix A.2.1.

Table 10: Staff NoMAD responses* on normalisation of the interventions

Aspect of normalisation	M (SD)
Familiarity	6.18 (2.71)
Currently a normal part of work	5.58 (2.84)
Will become a normal part of work	7.15 (2.39)

Note: * NoMAD scoring was from 0 (not at all) to 10 (completely).

Constructs

The NoMAD asks respondents questions on four constructs: coherence, cognitive participation, collective action and reflexive monitoring. Mean scores for constructs were calculated where participants had answered all questions in the construct (see Table 11, and Appendix A.2.1 contains a box plot showing agreement with the four constructs).

Respondents had high agreement across all four constructs. The highest score was for cognitive participation (mean [M] = 4.55, SD = 0.48) and the lowest was for collective action (M=3.48, SD=0.58). A breakdown of scores for each question are outlined below.

Table 11: Staff NoMAD construct scores (scored 1–5) across sites

Construct	M (SD)
Coherence (n=33)	4.07 (0.74)
Cognitive participation (n=32)	4.55 (0.48)
Collective action (n=29)	3.48 (0.58)
Reflexive monitoring (n=30)	4.15 (0.55)

Coherence

About coherence:

Coherence is about making sense of a new intervention, and includes building a shared understanding of the aims, objectives, expected benefits and value of the intervention, what staff need to do to understand their tasks/ responsibilities in the intervention and understanding how elements of the intervention differ from each other.

Agreement with the coherence questions was generally high, with over three-quarters (77%) of respondents agreeing or strongly agreeing with them. More specifically:

- Over two-thirds (69%) of respondents agreed or strongly agreed that they could see that the physical activity interventions differed from their usual way of working.
- Almost two-thirds (61%) of respondents agreed or strongly agreed that staff in the organisation had a shared sense of purpose of the interventions; however, just over one-fifth (21%) disagreed.

- The highest level of agreement was for the statement about potential value, with almost all (91%) respondents agreeing that they could see the potential value of the interventions for their work.
- Most (84%) of respondents agreed or strongly agreed that they understood how the interventions affected the nature of their work.

See Appendix A.2.1 for a breakdown of responses.

The results indicate that the success of implementing new interventions in practice may be facilitated by staff having a good understanding of the purpose of the interventions. The results also suggest, albeit to a lesser extent, that it is important for staff to have a shared sense of purpose about the interventions, and to be able to identify how the interventions differ from their usual practice. This means that building in time to help staff develop these skills and understanding may help with the implementation of the interventions.

Cognitive participation

About cognitive participation:

Cognitive participation can be defined as the work done to build and sustain a community of practice around a new intervention, including who is driving the intervention forward, any changes individuals need to make so that they can contribute to the intervention, feeling that it is right for individuals to be involved in the intervention, and actions that need to be taken to sustain practice.

Cognitive participation had the highest scores of the constructs, on average most (92%) of respondents strongly agreed or agreed with each statement. Specifically, the questions within the construct showed that:

- Almost all (94%) of respondents agreed or strongly agreed that there were key people who drove the interventions forwards.
- 82% agreed or strongly agreed that participating in the interventions was a legitimate part of their role.
- The highest agreement with a statement was with enrolment, with almost all (97%) respondents agreeing or strongly agreeing that they were open to working with colleagues in new ways to use the interventions and that they would continue to support the interventions.

See Appendix A.2.1 for a breakdown of the responses.

The results suggest that having key people to drive new interventions forward in services is important. This may have led to almost all people feeling open to working with colleagues in new ways, which could have facilitated their continued support for the interventions. It is also important for individuals to feel that new interventions are a legitimate part of their job role, so taking the time to integrate them into their workloads and providing ample allocated time to support the interventions could also support the effective implementation of new interventions.

Collective action

About collective action:

This is defined as the actions taken to put an intervention into practice. It includes integrating the intervention into practice, gaining knowledge to increase confidence and accountability, agreeing work allocation and ensuring there are adequate resources to support the intervention.

On average three-quarters of respondents agreed or strongly agreed with the statements about collective action. More specifically:

- Over two-thirds (73%) agreed or strongly agreed that the interventions could be integrated into their work.
- 80% agreed that the interventions did not disrupt working relationships.
- Half (51%) agreed or strongly agreed that they had the confidence in other people's ability to deliver or use the interventions – the lowest levels of agreement within this construct. Almost one-third (27%) of people answered that they did not agree or disagree with this question.
- Almost two-thirds (64%) agreed or strongly agreed that that people have sufficient skills and training to implement the interventions, with three-quarters of people agreeing or strongly agreeing that management adequately supported the interventions.
- 61% agreed or strongly agreed that there was enough resource to support the interventions, and almost one-third (29%) did not agree or disagree.

See Appendix A.2.1 for a breakdown of the responses.

The results would suggest that when implementing the interventions, staff need to believe that they can be integrated into their workload, which may be enabled when the interventions are supported by management. This construct also shows that the provision of training to develop specific skills and adequate resources can lead to confidence that both the individual staff member and their colleagues are well equipped to deliver the interventions. When implementing a physical activity intervention, these provisions should therefore be in place to facilitate its success.

Reflexive monitoring

About reflexive monitoring:

This is defined as the way people understand how a new intervention can affect them or their colleagues. It includes determining how worthwhile they perceive it to be, how people in the team work together to evaluate it, and how the intervention could be changed post-feedback.

Reflexive monitoring was also good among respondents, with high levels of agreement with the statements:

- Over three-quarters (77%) agreed or strongly agreed that staff thought the interventions were worthwhile, with 84% agreeing or strongly agreeing that they valued the effects that the interventions had on their work.
- Almost three-quarters (74%) agreed or strongly agreed that they were aware of reports about the effects of the interventions.
- Almost all (93%) agreed or strongly agreed that feedback could be used to improve the interventions in the future, with 77% agreeing or strongly agreeing that they could modify how they work with the interventions.

See Appendix A.2.1 for a breakdown of the responses.

The results suggest that it is important for staff to believe that the interventions are worthwhile and that they value the effects on their work. Having a good understanding of the interventions and their effects so that they could modify the interventions in the future, and receiving feedback so that the intervention could be improved and refined, are also important factors to consider for the long-term sustainability of the interventions, following implementation.

3.2.4. Summary of results of the NoMAD questionnaire

The results of the NoMAD analysis suggest that the physical activity interventions had strong support and buy-in from staff. The overall normalisation questions suggest good familiarity with the interventions. They suggest that although the interventions may not always feel like a routine part of work at first, staff believed that they would become so.

Cognitive participation (the construct about sustaining a community of practice around a new intervention, including who drives it and changes that individuals need to make) had the highest level of agreement out of the constructs.

The NoMAD items that most people agreed or strongly agreed with (over 90%) were:

- there being key people driving the interventions forward
- being open to working with colleagues in new ways to use the interventions
- seeing the potential value of the interventions
- that they would continue to support the interventions in the future
- that feedback could be used to improve the interventions in the future.

The results suggest that there several things that services can do while implementing a new intervention to support staff to deliver it, including:

- developing a good understanding of the interventions and how to deliver or support them within their services
- putting in place feedback mechanisms to improve the interventions in the future
- identifying how the interventions differ from and affect their normal practice
- helping to build a sense of legitimacy and potential value around the interventions, to increase motivation to implement and deliver them
- identifying specific staff or key people early on to drive the intervention forward, including having support from management, delivering training and speaking about the benefits.

The toolkit – training staff to achieve a culture shift

The toolkit (see Annex B) describes in detail the work that went into providing training to staff to help achieve a culture shift to enable the physical activity interventions to be embedded in the services. This preparatory work may have contributed to the successful implementation of the interventions, as seen in the positive results from the NoMAD, showing that staff supported the interventions, which would have helped facilitate their implementation.

3.3. The Koa Foundations app[l]

3.3.1. Introduction

The use of this intervention (see Section 2.1.2 for further details) was not facilitated by staff. Users independently downloaded, completed onboarding and navigated the app. Anonymised aggregated app usage data were collated by Koa Health, and a summary is provided below.

3.3.2. Usage

A link to download the app was sent to 466 people using Buckinghamshire Talking Therapies and 988 people using iCope NHS Talking Therapies. Of these, 280 people who were informed about the app as part of this study downloaded it. Almost three-quarters (72%) continued to activate their accounts and start using the app (that is, they completed onboarding). This is higher than the Koa Foundations app's general client pool, of whom just over half (58%) activated their accounts.

[l] Intervention development was not funded by Sport England. The Koa Foundations app has since been rebranded and is now called Koa Care 360.

Table 12 shows the percentage of retention of Koa Foundation app users from this study compared with all users. The data show that users involved in the study had greater retention compared with all users over the first 6 months.

Table 12: Comparison of user retention on the Koa Foundations app

Retention	Month 1	Month 3	Month 6
Users from this study (%)	39.4	29.2	19.5
All users (%)	27.6	17.0	12.7

3.3.3. Programme choices

The app had around 30 programmes for people to choose from, including 'Move More – Feel Better'. This module was intended for use in this study and was the top choice of programme by people in the study, being chosen more by this population than the app's general users. It was followed by 'Managing Worry' and 'Balancing Thoughts that Make Us Feel Down'. The other parts of the 'Move More – Feel Better' programme were the seventh and fifteenth choices of this group.

3.3.4. Summary of results and limitations of the Koa Foundations app

Over the course of the project, 280 people downloaded the Koa Foundations app, and people used the physical activity modules that had been designed as part of this project.

The study was not able to determine whether use of the app correlated with changes in mental health or physical activity because it was not possible to link individual data to app usage. Future research could collect minimum data set and physical activity measures routinely for people using the app.

The findings show that it is possible to use digital interventions such as apps to engage people within NHS Talking Therapies. However, people must be willing and able to use them independently. It should also be noted that although retention to this app in this study was higher than for app users overall, retention over 6 months decreased quite significantly. This indicates that digital interventions cannot be relied on to engage people over a long period.

Limitations

The research team needed to obtain consent to link people's app usage data to their clinical records. However, as consent was sought retrospectively, the number of people giving consent was very low (less than 1%), and it was not possible to carry out analysis of the relationship between app usage and clinical outcomes.

3.4. Overall summary of findings from the quantitative analyses

The quantitative evaluation suggests that implementing new interventions that incorporate physical activity into psychological treatments is feasible and, as the NoMAD questionnaire bears out, was supported by most staff who were surveyed.

The within-group comparison highlighted that the CBT groups and LTC workshops have positive effects on mental health outcomes, recovery rates and increased physical activity.

The propensity score matching showed that changes in routine outcome measures and recovery rates reported in this study are in line with other treatments within NHS Talking Therapies services. Physical activity data showed that most people increased their physical activity in the study. Limitations with use of the physical activity measures suggest that measures suitable for routine use should be developed and the use of accelerometers[m] should be considered in future studies, so that activity can be monitored and recorded more accurately.

[m] Accelerometer is defined in the Glossary.

4. Qualitative analyses

In this section, first, the themes from the analysis of interviews with service users about the CBT groups and LTC workshops are presented. A copy of the interview topic guide can be found in Appendix B.1.

Second, responses from staff and service user questionnaires/feedback forms on the two interventions that emerged during the development of this project (Walk and Talk, and Animal Antiks) are summarised. The full analysis can be found in Appendix B.2, along with copies of the staff questionnaire and service user feedback form in Appendix B.3 and Appendix B.4, respectively.

4.1. CBT groups and LTC workshops

4.1.1. Interviews

To explore service user experience of the CBT groups and LTC workshops, 16 structured qualitative interviews were conducted by researchers. Participants were recruited from both sites. An iterative topic guide (Appendix B.1) was used, which was updated by the researchers as necessary. The main points raised in the interviews were summarised and confirmed with interviewees at the end of the interview.

The interviews explored: (1) people's experiences overall; (2) what they liked or disliked about the interventions; (3) ideas for change or improvements; (4) how the interventions impacted their mental health problem, LTC or other physical health problem; and (5) any changes in their physical activity levels.

Transcripts were transcribed, and a directed content analysis[37] was used to analyse the transcripts in NVivo. A proportion of transcripts were double coded to check for interrater reliability, and a discussion between two researchers took place after this to discuss the codes.

4.1.2. Themes emerging from the interviews

From the interviews with people from the CBT groups and LTC workshops, themes emerged under broad categories of: (1) physical activity; (2) experience of the groups/workshops; (3) ideas for change and improvements to the interventions; and (4) practical considerations. Most themes emerged across both interventions, but when a theme applies to one intervention only it is specified.

4.1.3. Physical activity

Several themes related to the broad area of physical activity emerged from the interviews, which are described under the subheadings in this section.

The impact of mental health problems and LTCs on physical activity

Some people described the episodic nature of their mental health problem and/or LTC. For some, their symptoms fluctuated, meaning they felt more able to engage in physical activity on some days than others:

‘Sometimes low mood or the tiredness would win and I would be like, “Come on, do something”, and then, “Actually, no”. So it really did depend on the day or the mood.’

– CBT group participant

Variety of physical activity and engagement

When interviewees described the range of physical activity that they engaged with, they mentioned walking, cycling, chair exercises, gardening, housework and manual labour. People often chose low-intensity activities that didn’t need much equipment:

‘I walk where I can. I run, and I do little home workouts sometimes. I don’t want to pay for a gym membership. So, I’ll do abs [abdominal muscles] or arms or legs. I don’t know if it actually changes anything, but whatever, it’s still movement. So, it’s good enough for me.’

– CBT group participant

Some people felt that they were already physically active in their daily lives:

‘I’m bricklaying at the minute [...] I’m out there putting bricks down [...]. I’m really being active, I’m really knackered.’

– CBT group participant

Changes in physical activity levels

People discussed changes in their physical activity levels during the groups. Most participants' level of physical activity increased during the groups and workshops. Many people attributed this increase to the groups, noting that the groups prompted them to be physically active, reinforced prior knowledge, and gave them new knowledge either about physical activity or about how to increase physical activity.

Some people described how increasing their physical activity had improved their mental and physical health. This was attributed to either the physical activity itself, or changes in their relationship with and thoughts around physical activity:

'Considering that my mood improves a lot when I have done a workout or something, it is nice feeling that. And I want to feel like that more often. So that encourages me to go more and to stick to it, because it is like, "Look how you feel after you have finished? You can feel like that more often, every time you go and even do a little bit of exercise, that is how good you can feel". So, that is encouraging me to continue.'

– CBT group participant

People spoke about their motivations for increasing physical activity, including because they enjoyed it, it improved their mood and it improved their physical health. Controlling or losing weight was commonly cited as a motivating factor:

'At the gym, I have more motivation than just improving my mood to go, because obviously I want to lose weight and feel a bit healthier, which I am hoping will improve – actually, that will improve my mood because a big chunk of my low mood is because of how I look, and how insecure I am about how I look, so I think sticking to this will help that in the long run.'

– CBT group participant

Some people's physical activity levels remained the same for a variety of reasons (because they were already fairly physically active, were physically unable to increase their physical activity or didn't like the physical activity suggested in the groups). For a minority, physical activity decreased; the reasons for this were attributed to low mood, lack of motivation and factors beyond the groups/workshops, including changes to routines such as starting a new job.

Physical activity within the CBT group context

Interviewees spoke about the physical activity component of the CBT groups, which some people reported enjoying. Reasons for this included having protected time when they were encouraged to be physically active. Although interviewees often reported knowing the benefits of physical activity for health, some needed protected time and encouragement, reporting that without this they might not have done any activity at all.

The groups also gave interviewees ideas for new types of physical activity to engage in. For some people, this led to an increase in physical activity outside of the sessions:

> ‘[During the sessions] I definitely made sure I was getting a bit of exercise, doing a bit of walking around, or doing a lap or something. And for a while after, it encouraged me to get out of the house more. So I really think it was helpful because during the group, once I was seeing that getting out, even just for a few minutes, was making me feel better, even for just a little while, I think my physical activity did improve for a bit.’
>
> – CBT group participant

A few people reported not engaging with physical activity in the allocated session time, though most of these said that they used the time to do an alternative activity, such as making tea, or doing something that they enjoyed or was useful, such as tidying up:

> ‘It was an opportunity to manage some pain points. I get very bad at domestic chores when I’m not well, so…it was like, “Oh, well I’ll just spend five minutes doing the washing up, or I’ll hang some washing away”.’
>
> – CBT group participant

Enabling factors that facilitate engagement with physical activity

A range of enabling factors that facilitate engagement with physical activity were raised in the interviews, as described in the four following sections.

Enabling factor 1: Routines and sustaining physical activity

The interventions helped some people develop routines that incorporated physical activity. People were more likely to form routines when physical activity was gradually increased through techniques such as: (1) ‘pacing’;[n] (2) having set days or times when they did physical activity; (3) identifying times within their day when they could be more physically active, such as using active travel (for example, walking instead of driving to the shops); (4) acknowledging that strenuous daily chores can count as physical activity; (5) setting activity goals; and (6) having devices such as smart watches to motivate them to move more.

[n] Pacing is defined in the Glossary.

These factors helped people increase their physical activity, and enabled some to sustain it after the groups/workshops had finished:

'I just built it up over time, so I do three times around the block in the morning, and when I did the long-term condition workshop I was still having problems with my ankle... so, I sort of challenged myself to do all of the stairs in my block every morning. And that was at the beginning of the year, and I am still doing it now... The main thing that helps me do that is routine – I have got my morning routine... and it is very, very rare that I don't do it. Even though I would say that I probably never want to do it, but I have got to be really poorly or really had a terrible night's sleep for me to not do it. I have seen the benefits...physically and mentally too.'

– LTC workshop participant

In the LTC workshops, participants focused on making smaller changes or doing what they felt capable of because of their LTC symptoms, which was the aim of the workshops:

'Before I would park the car here, and I would go to the few shops here, and then I would move it and go up – I have got a blue badge, so I can move it up and go there. Now obviously if it is on a day that I can, I will leave the car, I will do what I need to do here, put the shopping in so I am not carrying it all, but then walk to the other shops and then walk back, just to give myself that little bit more exercise – but again, being mindful not to push myself too much. But just increasing it, get those natural [endorphins] jumping around.'

– LTC workshop participant

Enabling factor 2: Cognitive changes around physical activity

People discussed how the workshops helped them to think about physical activity in the context of their conditions, and noted that learning to understand their LTC and energy levels better was useful. Learning techniques also enabled some interviewees to reframe how they thought about physical activity, such as: (1) gradually increasing activity through pacing (see above, about enabling factor 1); (2) resting without feeling guilty; (3) not putting pressure on themselves; (4) taking things slowly; (5) setting goals; and (6) accepting their own needs and the constraints of their conditions. This reframing led them to feel better about themselves, and more satisfied with their physical activity levels:

'[Understanding the need to rest] has helped in a huge way. So, you don't feel guilty about sitting and resting, or sitting and listening to an audio book or music, because that is what you have to do to get through the next few hours ... And you don't feel guilty about doing that.'

– LTC workshop participant

Enabling factor 3: Social factors

Social factors (such as meeting up with friends to exercise, having the support of others including within the groups, and feeling motivated when their peers increased their physical activity levels) were seen by some interviewees as enabling physical activity. Part of this is that being in a group means that one is accountable to other group members:

'It [physical activity] improved. It did increase during them [the groups]. I do think that's probably... because of the group as well, but if everyone's doing it, I'm not going to be the miserable guy sat in the corner not doing it. ... There's another benefit of group therapy – that you don't want to be the only guy sat in the corner not doing anything, you feel a bit left out.'

– CBT group participant

Enabling factor 4: Condition-related factors

Enabling factors related to improvements in interviewees' mental health or LTC symptoms were discussed. For some people, physical activity was seen as having benefits by improving LTC symptoms, such as pain or fatigue, or by preventing their LTC from worsening, as well as improving their mental health (mood and anxiety):

'I think some of it [improvement in mental health] has been the talking therapy, but I think the physical activity has changed the low mood and ... the anxiety as well actually, because sometimes when I was feeling anxious, I tended to shut myself away and not do anything, especially if I could feel a panic attack coming on. But I think moving around a bit more was something to distract me and something a bit more grounding than just sitting there, trying to think of grounding techniques and think of anything else other than the thing that was making me anxious.'

– CBT group participant

Taking medication for the mental health problem was also cited as an enabling factor by participants, as it helped them feel better and thus feel more able to engage in physical activity.

Barriers that hinder engagement with physical activity

People mentioned several barriers to physical activity that hindered their engagement, as described below.

Barrier 1: Symptom-related factors

For some people, symptom-related factors such as pain or fatigue prevented them from engaging with physical activity. People often worried that they would make their condition worse by exercising:

'I was scared of [making] myself worse, if I tripped when I went out and pulled a muscle again... I was very stressed about what I could do, and I didn't really trust myself to stretch myself. I was very anxious, and my anxiety really hindered everything.'

– LTC workshop participant

Some individuals mentioned external factors (such as cold weather) that could affect their LTC symptoms and make it more difficult to be active:

'The summer is much better for me than the winter. The condition that I have is similar in some ways to arthritis, so the cold and the wet really affect it. So, I try and do as much as I can in the summer months or the warmer months, and then I don't do that much over the winter anyway, because it affects my joints.'

– LTC workshop participant

Barrier 2: Factors related to mood and motivation

Factors related to mood and motivation included participants believing that they could not or would not change their physical activity levels, lack of motivation and holding themselves back:

'There are a million barriers that I would put in my own way to do that [walking]. I would love to say that could change, but I'm 60 – that isn't going to change now.'

– CBT group participant

Some people did not enjoy physical activity (based on previous experience outside of the sessions) or felt that it was a chore. Others found that getting out of a routine made it harder to get back into it:

'It's always that the cycle is easy to drop out of. I was doing loads every week, like this high impact dance and stuff like that, and then I got COVID so then the next thing you know it's 3 months later and you still don't feel up to getting back to something high impact.'

– CBT group participant

Barrier 3: Personal circumstances

Lack of time was cited as a barrier, including being busy with commitments, work being time-consuming or tiring, or being away on holiday. Lack of money or space for physical activity were also raised as barriers:

> 'If you're in a bad mood, you're waking up late – you're probably going to bed relatively late. You come home, you don't have any energy to do anything. So, you go out, get up, go to work, come back from work, and then sit on the sofa and watch TV. That was happening a bit when I wasn't working from home.'
>
> – CBT group participant

Summary and discussion of physical activity themes

Analysis of the interviews suggests that when introducing physical activity interventions for people with mental health problems and LTCs, it is important to be mindful of the impact of both types of condition and the potentially complex interaction between them. Services should consider whether the types of activities covered in the sessions are accessible for people with different LTCs, and consider using a broad definition of physical activity that includes different forms of movement. It should include a range, from lower-intensity activities (such as walking or strenuous household tasks) to higher-intensity activities (jogging, swimming, cycling, aerobics, weights and so on). The lower-intensity activities were accessible and commonly engaged with by interviewees.

Factors that enable people to engage with physical activity include making small, manageable increases to physical activity, or supporting people to incorporate physical activity into their daily life and routines. These changes could lead to more sustained physical activity in the longer term. Framing physical activity around people's motivations or around factors that matter to them (for example, increasing their energy, or managing the symptoms of their conditions) could enable engagement in physical activity. Following up with participants after the physical activity interventions have finished may help them sustain their increases in physical activity.

The interviewees reported several barriers to engaging with physical activity, such as symptom-related factors (such as pain and fatigue), factors related to mood and motivation, and personal circumstances (time, work and financial constraints, and so on).

Some people in the LTC workshops expressed concerns that engaging in physical activity would make their LTC worse.[o] Therefore, it is important to reassure individuals that they can be physically active in a personalised and appropriate way. This can be done using techniques such as pacing and by suggesting different types of activity or settings in which activity can take place (such as at the gym or at home during cold weather, or active travel by walking instead of driving). Though it was not discussed in the workshops, it is useful to note that building muscle strength could be a helpful starting point for people who have been inactive or sedentary for long periods. Once strength has been built up gradually (for example, with Stronger My Way), it can enable individuals to engage with other types of aerobic physical activity.

[o]Evidence has shown that physical activity can have a positive effect on LTCs.[18]

4.1.4. Experience of the groups/workshops

Several themes related to the broad area of people's experiences of the CBT groups and LTC workshops emerged, and are described below. The theme of 'impact of the severity of mental health problems' came out mainly in the interviews with CBT group participants, but the theme of 'shared experiences and group cohesion' emerged from both the CBT groups and LTC workshops.

Impact of the severity of mental health problems

There was variation in how much people were able to engage with the CBT groups due to their mental health problem. Sometimes the severity of people's mental health problems had an impact on engagement with and attitudes towards the groups and physical activity:

'It's just for my own issues, you know, it just didn't mesh, but that's OK. I'm happy that I did it and now I know that it's not for me.'

– CBT group participant

Shared experiences and group cohesion

Sharing experiences with other participants gave them a feeling of closeness and cohesion with each other. People expressed that they did not feel alone, and felt supported, comforted or empowered by hearing other people's experiences of the interventions. This included how they engaged with physical activity and coped with their mental health problem or LTC:

'We would discuss an element of it, and then we would all have a bit of a discussion, and we would all pitch in and help each other out. It was really nice … I know it is probably going to sound a bit weird, but socially as well, to have a chat with people who understand the situation, understand the long-term effects that you are having, and you can sit down and have a discussion with them without feeling that someone is going to go, ''Well, you don't look like you are unwell''.'

– LTC workshop participant

Some people found it hard to relate to group or workshop members who had different or more severe mental health problems or LTCs than them, which is something that can generally occur in group therapy formats.

Summary and discussion of themes from experience of the groups/workshops

Some people found that sharing experiences with other group members was positive, while others had reservations about the groups/workshops based on people having different or more severe mental health problems or LTCs.

People's engagement with CBT groups and physical activity may depend on the severity of mental health problems. Considering who is most appropriate for interventions that incorporate physical activity, or the time at which they are delivered (for example, based on the severity of people's conditions) may be important when delivering similar interventions in future.

4.1.5. Suggestions of changes to format of delivery

There were suggestions from interviewees about changes and improvements to the format of the delivery of the interventions, as set out below.

Online versus in-person delivery

There was discussion about whether the groups would be better delivered online[p] or in person. People spoke about the benefits of online sessions, mentioning the convenience, being able to take breaks and feeling more comfortable than in face-to-face sessions:

> 'There was more connection than I expected. It was nice to know that you could make yourself a cup of tea, to take a breath. Coming straight out of the session I was at home, so I had creature comforts here immediately if I'd got very upset … You didn't have to traipse out and get the tube in a state. Certainly, I think there were people who would have struggled to physically get to a session… I got a lot out of face-to-face one-to-one therapy, but then my most recent set was online, and it didn't feel to me like that impacted the success of the therapy in any way.'
>
> – CBT group participant

Some people made the point that having the group or workshop in person might have been helpful, as they could have done the physical activity component together. Others liked the online sessions because they could turn their camera off and engage in physical activity in the way that they wanted to. Some people mentioned that when cameras were not on, there was less connection between group members.

[p] Interventions were held online via video conferring platforms during COVID-19 restrictions.

Group versus individual therapy

Interviewees often compared experiences of group therapy with individual therapy. Some stated that they thought that the physical activity interventions worked better in a group, noting that other group members motivated them to engage in physical activity and that they could learn from other group members (this point also emerged under the broad area of 'Physical activity', in Section 4.1.3):

> 'I think [group rather than one-to-one] is better. There are some instances where one-to-one works brilliantly. I have had PTSD [post-traumatic stress disorder] and bereavement counselling – something like that is definitely a one-to-one situation. But something like this, where you have like-minded people who can pop in and go, "I experienced that and I had...". I think one of the ladies said, "I put some heat on or I have a bath, that really helps me". And somebody else might go, "Oh, I have not thought of that or tried that".'
>
> – LTC workshop participant

Others said that they did not feel able to share as much as they would have been able to in individual therapy, and others reported feeling burdened by hearing other group members' problems. People dominating the conversations was consistently seen to negatively impact participants' experiences. These experiences could have led to individuals feeling less able to contribute or share their experiences or feel less supported by the group. This could have extended to sharing their experiences or struggles with physical activity during the groups, and thus potentially negatively impact their engagement with physical activity.

Some interviewees suggested that a hybrid approach might have worked well, such as an individual check-in (a short one-to-one discussion with a facilitator) at some point during the sessions. This could have allowed individuals to receive an element of individualised care, such as discussions around their physical activity and how to personalise it to help integrate it into their lives.

Summary and discussion of themes related to changes to format of delivery

There were different views about how the physical activity interventions were delivered, whether it be online or in person or in an individual or group session. Therefore it is important to consider individual preference for the format of delivery of interventions and offer a choice where possible.

4.1.6. Practical considerations

Under this broad area, several themes emerged as set out below.

Session times and scheduling: length and time of day

Aspects to do with length of the CBT groups and LTC workshops were discussed by some people, including suggestions that the length of CBT group sessions could be halved, from 90–120 to 45–60 minutes. Some people struggled with holding their attention for longer periods:

'45 minutes, max. an hour, for me giving 100 per cent is enough. And then having that little break, for me personally, even if it's just getting up and having a little bit of a wobble, like shaking it off, because a lot of my stuff was quite heavy...just going out after an hour, for me personally, was enough.'

– CBT group participant

The number of sessions were also discussed; for example, there were suggestions to run more than three LTC workshops. Ideas about the spacing between the sessions were discussed, for example shortening the time between workshops.

In terms of the scheduling of the groups and workshops, some people commented that having sessions in the middle of the day made it difficult for people who were working during those hours. This led to some people working or checking emails during sessions, which may have decreased their engagement with – and thus the potential effectiveness of – the groups and workshops:

'I didn't participate [in the exercise within the CBT groups]. I think some people went for a walk in that time, but I was very conscious that it was two hours, and I was out of work, and I'd got a lot of work coming in, so I was sort of distracted with using the work laptop and looking at my emails.'

– CBT group participant

Access to resources

Some considerations about how people in the interventions accessed resources were brought up in the interviews. This included how people accessed the sessions, such as the devices they used or where they were when they joined the session. When people joined on their phones for example, session materials were often too small to read. Some people were not able to print the session resources if they wanted to:

'I didn't have access to a printer, so I wasn't able to print the stuff out. And I understand you have got to save money and things, but it would have been helpful to me to be able to have the option of having it all sent out to me because I work from home now and I just don't have, I can't afford to have a printer.'

– LTC workshop participant

Addressing pre-session anxieties or reluctance

Some people said that they were sceptical about the groups/workshops before they started. This often related to practical consideration, such as worries about the group setting, such as the number of people or the group members themselves, the groups/workshops being online, or the content and whether it would be helpful to them. Often, these people spoke of their expectations being exceeded, and that the groups and workshops were often helpful for them:

'I was very reluctant at first when my counsellor was telling me about it, and it was a group. So, it was the group I was nervous about and reluctant, really. And it was online which also I wasn't … I didn't really like that, but it was the circumstances with COVID I'm assuming, that's why it was online at the time. So, I wasn't comfortable with either, but I went ahead with it and then I did actually enjoy it.'

– LTC workshop participant

Summary and discussion of themes related to practical considerations

Views about the duration, scheduling and format (online or face-to-face) of the groups and workshops varied, with benefits and disadvantages of different options being discussed. Considerations about how people accessed the sessions and the resources (for example, worksheets) in the sessions were articulated. Some people were nervous before the groups/workshops, but once they had attended their expectations were often exceeded.[q]

[q] Buckinghamshire Talking Therapies had a phone call with people before they started the CBT groups. This was to set out expectations of the groups and answer any questions people might have to address any fears about the group itself and the level of physical activity.

4.1.7. Summary of findings and limitations of the qualitative analysis of the interviews

The interviews highlighted the way in which people engage in different types of physical activity. There are several enabling factors that can facilitate engagement with physical activity, which include building it up gradually and integrating physical activity into routines to help sustain it, changing attitudes about physical activity (for example, having a better understanding of how to safely engage in physical activity while considering LTCs), having a group of similar others to promote sustained engagement in physical activity and reinforcing the benefits of physical activity for LTCs and wellbeing.

It may be helpful to focus on identifying and finding solutions to barriers that can hinder engagement with physical activity. Discussing solutions in groups of people with similar conditions and shared experiences was beneficial, and helped the group to feel more cohesive.

Participants' experiences of the interventions were sometimes impacted by the nature of their LTCs. However, for some, their experience changed over time, for example improving as they felt more comfortable or got to know group members.

There was discussion about changes to the format of delivery, including online versus in-person and group versus individual. Practical considerations were also discussed, including session times and access to resources such as printed handouts. What was clear was that everyone's circumstances differed, and this was reflected in their reasoning behind certain preferences expressed.

Finally, it is important to bear in mind that the group format may not work for everyone.

Limitations

Some people had participated in the physical activity groups up to 1 year before they were interviewed about them, which could have affected the accuracy of their recollections.

4.2. Additional interventions

Walk and Talk and Animal Antiks were evaluated using a staff questionnaire to assess experience delivering or being trained to deliver the interventions. A copy of the questionnaire can be found in Appendix B.3.

At Buckinghamshire Talking Therapies, a service user feedback form was also used to evaluate the experience of people who took part in Animal Antiks. A copy of the form can be found in Appendix B.4.

A summary of the results is presented here, and the full analysis and findings can be found in Appendix B.2.

Walk and Talk – iCope

The intervention: Walk and Talk was introduced in iCope to incorporate walking into individual Step 3 CBT sessions. Practitioners conducted a proportion of their CBT therapy sessions with suitable clients outside while walking. Interested practitioners were given training to deliver the intervention.

Participants: Ten staff members responded to the questionnaire.

Findings: Staff found that the intervention helped facilitate interactions with service users through building more rapport, reducing the hierarchy between service users and staff and making sessions feel more comfortable and collaborative.

> I think it [Walk and Talk] was very helpful for getting the patient to do some exercise and seeing the benefits of this in his life, also getting some fresh air and overcoming some anxieties about going out.
>
> – Staff member

Despite the intervention being novel and different from usual practice, staff were able to deliver it and also utilise techniques within it that are already used in NHS Talking Therapies. For example, staff found that Walk and Talk was particularly helpful when using behavioural experiments or helping people to learn new skills such as attention training. Engaging in physical activity together enabled service users to walk in a safe and supported environment. In some cases, the sessions were reported as serving as a catalyst, enabling people to go outside by themselves following the intervention. Staff members indicated some positive effects on their own mood, wellbeing and stress levels from being outside and talking during sessions.

Animal Antiks – Buckinghamshire Talking Therapies

The intervention: A six-session group intervention that took place on a local farm, involving people walking with alpacas. People took part in this group at the same time as engaging with psychological interventions at Buckinghamshire Talking Therapies.

Participants: Four service users and three staff members responded to the feedback form/ questionnaire.

Findings (staff): The intervention received positive feedback from staff, who described how Animal Antiks helped them to build therapeutic relationships with participants and discuss the benefits of being outside and walking. Physical activity coordinators and

> I notice massive improvements in my own mood and wellbeing after attending the walks. I love animals so that automatically improves my mood but also as most of our jobs are behind a desk, being able to get out, go for a walk, get fresh air and chat to new people is so beneficial to me. I hope that my enthusiasm and love for this group is translated to clients as well.
>
> – Staff member

psychological wellbeing practitioners being present at sessions to provide support and having time outside of the sessions, to coordinate attendance and follow up with people, were highlighted as being important. The farm setting was also seen as an enabling factor as it was accommodating for people with mental health problems. Staff reported that the intervention and being outside had a positive effect on their own wellbeing and mood.

Findings (service users): People enjoyed the interventions, and found it relaxing to be outside in fresh air and nature and helpful walking the animals. They reported the intervention having a positive impact on mood and it gave them something to look forward to.

> It's such a relaxing way to spend an hour or so out in the fresh air and nature. I miss it!
>
> – Service user

5. Conclusions and recommendations

5.1. Conclusions

Outcomes from the psychological treatments incorporating physical activity that were evaluated in this report were broadly equivalent to those of routinely delivered NHS Talking Therapies. Therefore, this evaluation demonstrates that physical activity can be incorporated into psychological treatments and effectively delivered in NHS Talking Therapies services. Doing so will increase the range of effective treatment options available to people using NHS Talking Therapies services.

Although outcomes were broadly equivalent, there was no indication of any additional benefit from incorporating physical activity into psychological treatment over standard care in the propensity score matching analysis. However, it should be noted that some factors (such as whether the matched controls received group or individual intervention) could not be controlled for in the analysis.[r] In the within-group comparisons, the interventions showed high rates of reliable improvement (CBT groups just over 63%; LTC workshops just over 70%), suggesting that the interventions did contribute to reductions in presenting symptoms.

There was very good staff engagement with, and ownership of, the various aspects of the interventions. This further supports the conclusion that such interventions can be successfully incorporated into routine NHS Talking Therapies services. The toolkit (see Annex B) that accompanies this evaluation report outlines what services did to incorporate these interventions.

Service users reported engaging in a range of physical activities. Services were able to make adjustments to the CBT groups and LTC workshops, to ensure that they were accessible and suited the needs of individuals. This supported individuals to engage in physical activity, increase it in manageable amounts and incorporate it into their daily routines.

The measurement of physical activity was challenging, as existing measures were not well suited to routine use in NHS Talking Therapies services. Therefore, it is advised that self-report measures of physical activity (1) include a variety of activities, (2) include how long is spent engaging in physical activity, and (3) are simple to understand and complete. Consideration should also be given to the use of accelerometers in future research studies.

[r] Participants in Buckinghamshire Talking Therapies CBT groups had not previously benefitted from an NHS Talking Therapies treatment, which may not have been the case for the comparator sample in the propensity score matching analysis.

In addition, NHS Talking Therapies services should consider what training is required, and then provide the training to staff, to enable physical activity interventions to be embedded in services.

Supporting the planning and delivery of interventions that incorporate physical activity into psychological treatments in NHS Talking Therapies: Two documents support the shift in culture required for the delivery of these interventions: a findings and recommendations report published by Sport England and Transformation Partners in Health and Care in December 2022 (see Annex A) and the toolkit that accompanies this evaluation report (see Annex B).

5.2. Recommendations

5.2.1. Delivery of physical activity interventions

Level and type of physical activity

1. At assessment, ascertain a person's current physical activity level and explore whether they would be interested in incorporating physical activity into their psychological treatment.
2. Ensure that physical activities are within people's capabilities:
    a. Offer a range of physical activity options that include lower-intensity activities (such as walking and strenuous household tasks) and higher-intensity activities (such as jogging, swimming, cycling, aerobics and weights)
    b. If people have previously had positive experiences of certain types of physical activity, encourage them to engage with those again
    c. Ensure that the types of activity incorporated into psychological treatment are:
        - appropriate (so that people can engage with them within the available time and space), and
        - accessible (so that people are physically able to engage with them, and the activity is adapted to meet their needs, including any LTC) for the needs and requirements of all participants.

Supporting uptake of and engagement with physical activity

3. Ensure that there are opportunities for individuals to be physically active, and:

a. Consider the environment (for example, in the home, in a gym or outdoors), so that individuals feel comfortable engaging with and sustaining the physical activity.

b. Identify and develop solutions to overcome barriers to engaging with physical activity, and consider:
    - incorporating physical activity into daily routines, for example walking to work or taking the stairs instead of an escalator
    - starting with small amounts of physical activity and increasing gradually in a way that feels achievable, enables engagement in the activity and manages symptoms (called 'pacing').

c. Encourage people to embed socialising into physical activity, such as meeting up with friends, to increase motivation.

d. Create opportunities for being active in groups, such as walking groups.

Measures of physical activity

4. When using a self-report measure of physical activity, ensure that:
    a. it is inclusive of the variety of activities and length of time spent engaging with physical activity
    b. it is simple to comprehend and complete
    c. adaptations are made where appropriate.
5. NHS England should consider establishing a routine outcome measure of physical activity that would be of value across a range of healthcare settings. The measure would determine whether physical activity is part of a treatment plan and whether that part of the plan is adhered to.
6. Consider the use of accelerometers in future research studies so that physical activity can be monitored and recorded more accurately.

Embedding the interventions in services

7. NHS Talking Therapies services should provide training to staff about incorporating physical activity interventions into psychological treatment to support the embedding of physical activity interventions in the services. See Incorporating Physical Activity Interventions into NHS Talking Therapies: A Toolkit (Annex B) for advice about how this can be achieved.

5.2.2. Future research recommendations

8. Evaluations are needed to ascertain whether incorporating physical activity into NHS Talking Therapies psychological treatment has more impact on improving clinical outcomes and physical activity levels for mild-to-moderate presentations than for moderate-to-severe presentations.
9. Further studies, including RCTs, of psychological treatments that incorporate physical activity should:
    a. include measures of long-term effects and cost effectiveness
    b. evaluate how different methods for the delivery of psychological therapies that incorporate physical activity (such as Walk and Talk; see Annex B for a description of this intervention) impact on mental health outcomes and physical activity levels
    c. focus on the impact of physical activity on anxiety disorders, such as generalised anxiety disorders (GAD) or the anxiety associated with comorbid LTCs, as research in this area is less well developed than for depression.
10. An RCT should be conducted to determine the effectiveness of physical activity interventions incorporated into a psychological treatment provided in NHS Talking Therapies services. The groups should:
    a. be randomly allocated to either psychological treatment that incorporates physical activity or psychological treatment alone
    b. provide the same psychological treatment for both groups.
11. Research is needed to establish a simple validated measure of physical activity, that is inclusive of a range of physical activities, carried out in a variety of settings over different lengths of time. This measure should be easy to comprehend and fill in.
12. Further research is needed to identify:
    a. what kind of physical activity intervention might be of most benefit for specific presentations (for example, psychological treatments that incorporate physical activity or physical activity interventions as an adjunct to another treatment)
    b. at what point in a person's treatment pathway it would be most beneficial to introduce or suggest an intervention that incorporates physical activity.

Glossary

Accelerometer	A small electronic wearable device that monitors acceleration associated with body movement and the intensity of physical activity.
LTC (long-term condition)	Long-term/chronic physical health conditions (such as arthritis, asthma, chronic obstructive pulmonary disease, diabetes, epilepsy and high blood pressure) that are managed medically.
NoMAD (Normalization MeAsure Development questionnaire)	A 23-item survey instrument for assessing implementation processes, from the perspective of professionals working to implement complex interventions in healthcare.
Pacing	When a person with an LTC determines a level of physical activity that does not lead to increased fatigue and other symptoms. This typically involves starting with small amounts of physical activity and increasing gradually in a way that feels achievable, enables engagement in the activity and manages symptoms. This technique was discussed in the LTC workshops.
Physical activity	Any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity refers to all movement, including during leisure time, travel or work. Both moderate- and vigorous-intensity physical activity improve health. Popular ways to be active include walking, cycling, wheeling, sports, active recreation and play, and can be done at any level of skill and for enjoyment by everybody.[26]
Propensity score matching	A method that can compare data between two groups so that data from a group of people who receive a certain treatment can be compared with another group with similar (matched) characteristics who did not receive the treatment. Propensity score matching can be used to analyse data where an RCT is not possible.[24]

Recovery	In this evaluation this is defined as moving from scoring above the clinical threshold on the PHQ-9 (>=10) or/and the GAD-7 (>=8) pre-treatment, to scoring below the thresholds on both measures at the end of treatment. This is the primary outcome adopted by the NHS Talking Therapies programme with data collected at each session. The data are routinely reported by NHS Digital.[27]
Reliable improvement	In this evaluation this is defined as someone reporting a reduction in symptoms scores above the error of measurement on either the PHQ-9 (6 or more points) or the GAD-7 (4 or more points).
Reliable recovery	When someone meets the criteria for both the recovery and reliable improvement measures. There would have been a significant improvement in their condition, and they would have moved from being a clinical case at the start of treatment to not being a clinical case at the end of treatment.[28]
Step 3 (treatment)	High-intensity interventions for less severe anxiety and depression for people who have not responded to initial low-intensity (Step 1 and Step 2) interventions, or where these low-intensity interventions are not suitable.[4]
Within-group comparison	A type of analysis that compares data within the same group of people, for example at two different time points, to highlight any differences.

Abbreviations

BTT	Buckinghamshire Talking Therapies
CBT	Cognitive behavioural therapy
d	Cohen's d effect size
GAD-7	Seven-item Generalized Anxiety Disorder scale
IPAQ-SF	International Physical Activity Questionnaire – Short Form
LTC	Long-term condition
M	Mean
n	Number of participants
N	Total number of participants
NICE	National Institute of Health and Care Excellence
NoMAD	Normalization MeAsure Development
p	Probability value
PHQ-9	Nine-item Patient Health Questionnaire
RCT	Randomised controlled trial
SD	Standard deviation
T1	Time point 1 (baseline)
T2	Time point 2 (end of treatment)
UCL	University College London

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