FULL/LONG TITLE OF THE TRIAL

Evaluating the Occupation-Based Complex Intervention for living well with anxiety and Parkinson's Disease (OBtAIN-PD): a feasibility cluster randomised controlled trial

SHORT TRIAL TITLE / ACRONYM

Evaluating the Occupation-Based Complex Intervention for living well with Anxiety and Parkinson's Disease (OBtAIN-PD)

IRAS Number: 318175

ISRCTN Number:

SPONSORS Number:

FUNDERS Number: NIHR301565

This protocol has regard for the HRA guidance and order of content

SIGNATURE PAGE

The undersigned confirm that the following protocol has been agreed and accepted and that the Chief Investigator agrees to conduct the trial in compliance with the approved protocol and in accordance with the UK Policy Framework for Health and Social Care Research (Data Protection Act 2018), the principles of Good Clinical Practice (GCP) and the Sponsor's (and any other relevant) SOPs.

I agree to ensure that the confidential information contained in this document will not be used for any other purpose other than the evaluation or conduct of the clinical investigation without the prior written consent of the Sponsor.

I also confirm that I will make the findings of the trial publicly available through publication or other dissemination tools without any unnecessary delay and that an honest, accurate and transparent account of the trial will be given; and that any discrepancies and serious breaches of GCP from the trial as planned in this protocol will be explained.

For and on behalf of the Trial Sponsor:

Signature: Date:
.....
......./...../.....

Name:

Position:

Chief Investigator:

Signature:  Date:
04/10/2022

Name: Chris Lovegrove

Statistician:

Signature: Date: xx/xx/xxxx

Name: Joanne Hosking

Position: Senior Research Fellow in Medical Statistics

KEY TRIAL CONTACTS

Chief Investigator	Chris Lovegrove NIHR Clinical Doctoral Research Fellow University of Plymouth Faculty of Health Peninsula Allied Health Centre (PAHC) Derriford Road Plymouth PL6 8BH Tel: Email: Christopher.lovegrove@postgrad.plymouth.ac.uk
Sponsor	Mrs Sarah C. Jones Research Governance Specialist/ University Sponsor Representative Research& Innovation, University of Plymouth, Level 2, Marine Building, Drake Circus, Plymouth PL4 8AA Tel: 01752 588959 Email: Plymouth.sponsor@plymouth.ac.uk
Funder	NIHR Academy 21 Queen Street Leeds LS1 2TW Tel: 0113 532 8444 Email: academy-awards@nihr.ac.uk Named contact: Mal Palin, Senior Programme Manager, Mal.palin@nihr.ac.uk 0113 532 8403
Key Protocol Contributors	Mr Chris Lovegrove, NIHR Clinical Doctoral Research Fellow (Faculty of Health) University of Plymouth Prof Jonathan Marsden, Professorship and chair of rehabilitation (Faculty of Health) University of Plymouth Prof Katrina Bannigan, Head of Occupational Therapy and Human Nutrition & Dietetics, Glasgow Caledonian University Dr Ingrid Sturkenboom, Occupational Therapy Researcher, Radboud UMC (Nijmegen, The Netherlands) Peninsula Parkinson's Research Interest Group (PenPRIG), PPI representatives Mr Chris Hayward, QA Manager, Peninsula Clinical Trials Unit, University of Plymouth Dr Joanne Hosking, Senior Research Fellow- Medical Statistics, Peninsula Medical School, University of Plymouth
Trial Statisticians	Dr Joanne Hosking (Senior Research Fellow - Medical Statistics) Peninsula Medical School University of Plymouth Email: joanne.hosking@plymouth.ac.uk

Trial Steering Committee – Independent members	Independent Chair: Prof Frederike Van Wijck, Professor of Neurological Rehabilitation, Glasgow Caledonian University, Cowcaddens Road, Glasgow, G4 0BA, Scotland Email: Frederike.vanWijck@gcu.ac.uk Independent Statistician: Samir Mehta Senior Medical Statistician, University of Birmingham Email: s.mehta.1@bham.ac.uk Independent Occupational Therapist: Hannah Luggar, Royal Devon University Healthcare NHS Foundation Trust Email: Hannah.luggar1@nhs.net Independent PPI rep: Mr Christopher Maycock Peninsula Parkinson's Research Interest Group (PenPRIG) Email: caemaycock@gmail.com

i. LIST of CONTENTS

SIGNATURE PAGE 2
KEY TRIAL CONTACTS 3
i. LIST of CONTENTS 5
ii. LIST OF ABBREVIATIONS 9
iii. TRIAL SUMMARY 11
iv. FUNDING AND SUPPORT IN KIND 12
v. ROLE OF TRIAL SPONSOR AND FUNDER 12
vi. ROLE OF THE CLINICAL TRIALS UNIT (CTU) 12
vii. ROLES OF TRIAL MANAGEMENT COMMITTEES AND GROUPS 12
viii. KEY WORDS: 12
ix. TRIAL FLOW CHART 13
1. BACKGROUND AND RATIONALE 14
1.1. Background 14
1.2. Rationale 14
1.3. Justification 15
2. OBJECTIVES AND OUTCOME MEASURES / ENDPOINTS 15
2.1. Study aims and objectives 15
2.2. Study Outcomes Measures (Table 1) 16
2.2.1. Feasibility trial operational outcome measures (objectives II, III, V, VIII) 16
2.2.2. Participant reported and other clinical outcomes (objectives XII, XIII) 16
Demographic and diagnostic Information 16
2.2.3. Patient Reported Outcome measures 16
2.2.4. Clinical Measures 17
2.2.5. Intervention Fidelity (objectives VI, VIII) 18
2.2.6. Intervention costing (objectives XII-XIV) 18
2.2.7. Table 1 summarising the objectives and outcomes 19
3. THE INTERVENTIONS 19
3.1. Usual Care 19
3.2. OBtAIN-PD 20
4. TRIAL DESIGN 20
5. TRIAL SETTINGS 21
6. PARTICIPANT ELIGIBILITY CRITERIA 21
6.1. Inclusion criteria 21
6.2. Exclusion criteria 21
7. RECRUITMENT STRATEGY 21

8. SCREENING AND CONSENT 22
8.1. Eligibility screening process 22
8.1.1. Initial telephone screen 22
8.2. Consent 22
Figure 1. Summary of recruitment process 24
...24
8.3. Recording screening and recruitment information 25
9. TREAMENT GROUP ALLOCATION 25
9.1. Blinding 25
10. TRIAL SCHEDULE 26
10.1. Trial Assessments 26
10.2. Baseline 28
10.3. Follow-up assessments (12 and 24 weeks from baseline assessment) 28
10.4. “Other” assessments 28
10.5. Qualitative assessments 28
10.5.1. Participant interviews 29
10.5.2. Participating Clinicians 29
10.5.3. Decliners and Informal Exit Interviews: 29
11. INTERVENTION DELIVERY 29
11.1. Usual Care 29
11.2. Intervention Group (OBtAIN-PD) 30
12. WITHDRAWALS 30
12.1. Discontinuation of occupational therapy intervention 30
12.2. Withdrawal from the trial 31
13. END OF TRIAL DEFINITION 31
14. SAFETY AND MANAGEMENT OF RISK 31
14.1. Participant safety 31
14.2. Possible worsening of symptoms associated with the intervention 31
14.3. Potential burden for the participants 32
14.4. Researcher safety 32
15. SAFETY REPORTING 32
15.1. Definitions 32
15.2. Adverse Event reporting in the OBtAIN-PD trial 33
15.3. Detecting and recording adverse reactions and serious adverse events 33
15.4. Reporting Serious Adverse Events and Serious Adverse Reactions 33
15.5. Onward reporting of SAEs / SARs / SUSARs 34
15.6. Unblinding for SUSAR reporting purposes 35

15.7. Recording of adverse events 35
15.8. Safety oversight 35
16. STATISTICS AND DATA ANALYSIS: 35
16.1. QUANTITATIVE 35
16.1.1. Target sample size and justification 35
16.1.2. Progression criteria 36
16.1.3. Summary of baseline data and flow of patients 37
16.1.4. Outline of statistical analyses 37
16.1.5. Procedure(s) to account for missing or spurious data 37
16.2. QUALITATIVE ANALYSIS 37
16.3. Economic evaluation 37
17. DATA MANAGEMENT 38
17.1. Data collection tools and source document identification 38
17.2. Data handling and record keeping 38
17.3. Data quality and completeness 38
17.4. Access to Data 38
18. ARCHIVING 38
19. MONITORING, AUDIT & INSPECTION 39
19.1. Trial Management Group (TMG) 39
19.2. Trial Steering Committee (TSC) 39
20. ETHICAL AND REGULATORY CONSIDERATIONS 40
20.1. Research Ethics Committee (REC) review & reports 40
20.2. Peer review 40
20.3. Public and Patient Involvement 40
20.4. Regulatory Compliance 40
20.5. Protocol compliance 40
20.6. Notification of Serious Breaches to GCP and/or the protocol 41
20.7. Data protection and patient confidentiality 41
20.8. Financial and other competing interests 41
20.9. Indemnity 41
20.10. Amendments 42
20.11. Post-trial care 42
20.12. Access to the final trial dataset 42
21. DISSEMINATION POLICY 42
21.1. Authorship eligibility guidelines and any intended use of professional writers 42
22. REFERENCES 43
1. APPENDICES 46

ii. LIST OF ABBREVIATIONS

Define all unusual or 'technical' terms related to the trial. Add or delete as appropriate to your trial. Maintain alphabetical order for ease of reference.

ACT	Acceptance and Commitment Therapy
AE	Adverse Event
AR	Adverse Reaction
CI	Chief Investigator
COPM	Canadian Occupational Performance Measure
CRF	Case Report Form
CRN	Clinical Research Network
CTU	Clinical Trials Unit
DMC	Data Monitoring Committee
EQ-5D-5L	European Quality of Life – 5 Domains
GAD-7	Generalised Anxiety Disorder questionnaire
ICF	Informed Consent Form
ISF	Investigator Site File (This forms part of the TMF)
ISRCTN	International Standard Randomised Controlled Trials Number
NHS R&D	National Health Service Research & Development
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health and Care Research
OBtAIN-PD	Occupation-based Complex Interventions for living well with Anxiety and Parkinson's Disease
PAG	Patient Advisory Group
PenCTU	Peninsula Clinical Trials Unit
PDQ-39	Parkinson's Disease Questionnaire
PI	Principal Investigator
PIC	Participant Identification Centre
PIS	Participant Information Sheet
PROMS	Patient Reported Outcome Measures
PWPs	People with Parkinson's
QA	Quality Assurance
QC	Quality Control
RCT	Randomised Controlled Trial
RCOT	Royal College of Occupational Therapists
RDE	Royal Devon & Exeter Hospital
REC	Research Ethics Committee
RTT	Referral To Treat
SAE	Serious Adverse Event
SAR	Serious Adverse Reaction
SDV	Source Data Verification

SOP	Standard Operating Procedure
SSI	Site Specific Information
SUSAR	Suspected Unexpected Serious Adverse Reaction
TMF	Trial Master File
TMG	Trial Management Group
TSC	Trial Steering Committee
UKCRC	UK Clinical Research Collaboration
UoP	University of Plymouth

iii. TRIAL SUMMARY

Full Title	Evaluating the Occupation-Based Complex Intervention for living well with anxiety and Parkinson's Disease (OBtAIN-PD): a feasibility cluster randomised controlled trial
Short Title	Evaluating the Occupation-Based Complex Intervention for living well with Anxiety and Parkinson's Disease (OBtAIN-PD)
Trial Acronym	OBtAIN-PD
Trial Design	Feasibility cluster randomised controlled trial
Trial Participants	People with Parkinson's (male and female), aged 18 and over, experiencing anxiety measured as ≥10 on the GAD-7
Planned Sample Size	50
Treatment duration	All participants will receive approximately eight occupational therapy sessions over 10 weeks as per usual care. Those allocated to the intervention group will take part in a lifestyle modification intervention focused on meaningful occupation.
Follow up duration	Outcomes assessed at 24 weeks
Planned Trial Period	22 months duration Trial set up: Months 1-3 Participant recruitment: Months 3-10 Outcome data collection: Months 5-14 Qualitative interviews: Months 9-14 Data analysis and reporting: Months 15-18 Feedback to sites, participants /PPI: Months 18-22
Trial Aim	This feasibility trial aims to obtain the data and operational experience necessary to inform the conduct and finalise the design of the definitive trial.
Trial objectives	Estimate the recruitment and attrition rate. Establish participant willingness to be randomised. Establish potential participating organisations willingness to be randomised. Ascertain the suitability of the randomisation procedure. Determine intervention fidelity as outlined in the protocol. Determine if the intervention content is appropriate, feasible, and acceptable. Establish feasibility of collecting required outcome data. Determine the type and rate of any adverse events resulting in additional service utilisation. Ascertain what outcome measures are most appropriate.
Intervention	Occupation-based lifestyle modification + occupational therapy usual care (x8 sessions approximately)
Usual Care	Occupational therapy usual care (x8 sessions approximately)

iv. FUNDING AND SUPPORT IN KIND

FUNDER(S)	FINANCIAL SUPPORT GIVEN
NIHR	£388,471

v. ROLE OF TRIAL SPONSOR AND FUNDER

The sponsor for this study, University of Plymouth (UoP), assumes overall responsibility for the initiation and management of the trial.

The sponsor and funder will not have direct involvement in trial design, conduct, data analysis and interpretation, manuscript writing, and dissemination of results.

vi. ROLE OF THE CLINICAL TRIALS UNIT (CTU)

The sponsor of the study has allocated tasks associated with project management support, data management and statistical support to the Peninsula Clinical Trials Unit (PenCTU) by way of formal written agreement.

vii. ROLES OF TRIAL MANAGEMENT COMMITTEES AND GROUPS

The Trial Steering Committee (TSC) has an independent chair (Prof Van Wjick). It has an independent clinician and statistician and one patient representative. The TSC will meet at least every 6 months to review the progress of the trial and any serious adverse events and will report to the sponsor. Detailed role and remit of the TSC is described in a separate TSC Charter.

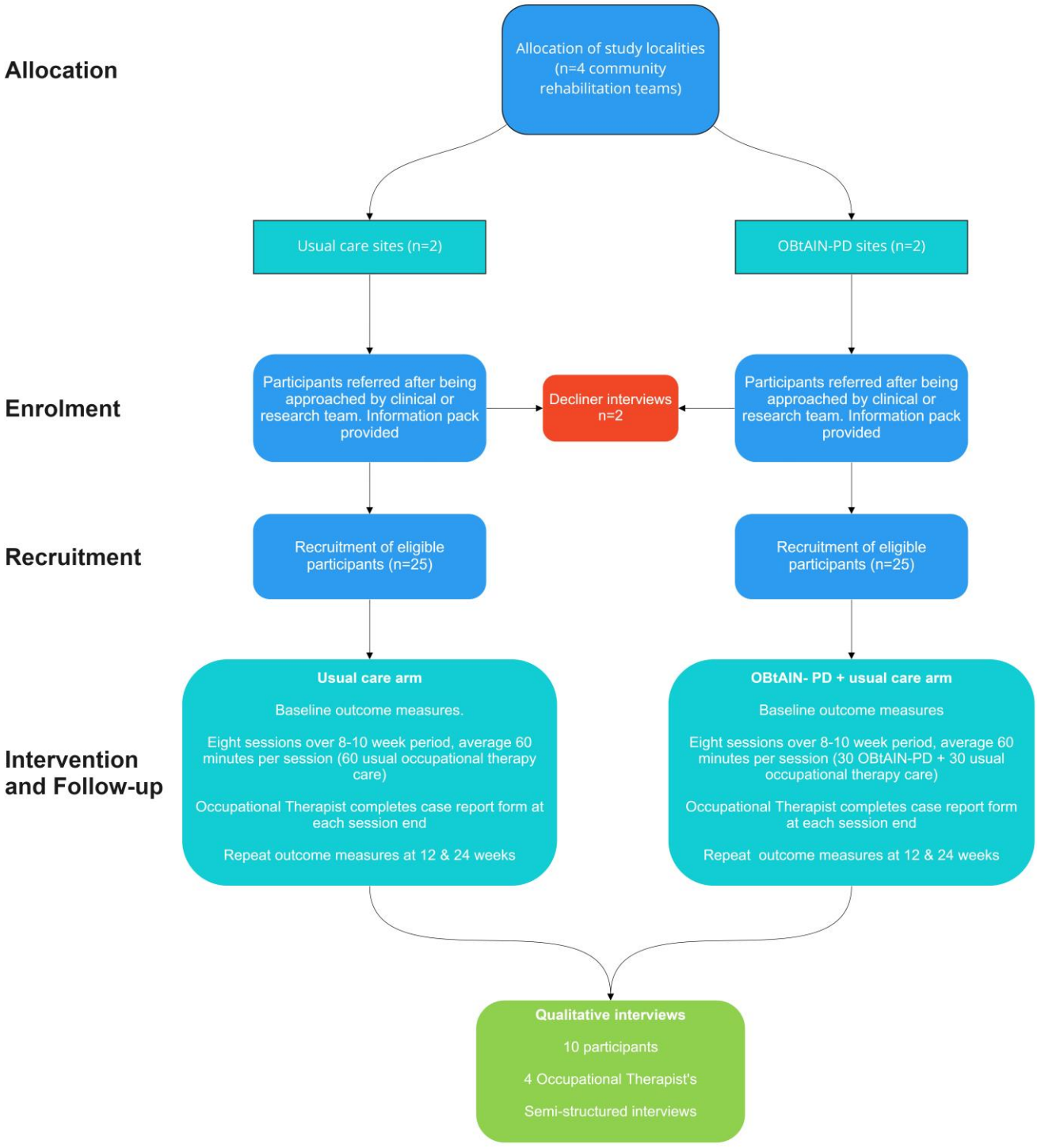
The Trial Management Group (TMG) is chaired by the Chief Investigator and includes a representative from the sponsor and PenCTU as well as the trial statistician and patient representative. It also has representation from co-investigators and leads for the qualitative and health economic components. The TMG will meet monthly to review trial progress and to ensure appropriate management of the trial.

A Data Monitoring and Ethics Committee will not be convened for this trial which is considered low risk of harm to participants.

viii. KEY WORDS:

People with Parkinson’s (PWPs), anxiety, occupational therapy

ix. TRIAL FLOW CHART



1. BACKGROUND AND RATIONALE

1.1. Background

Parkinson's disease, commonly referred to as Parkinson's, is the second-most common neurodegenerative condition in the UK, affecting approximately 145,000 people (1). The main symptoms include tremor, loss of automatic movement, and slowed movement (2). Parkinson's also results in sensory, cognitive, and psychological impairments that cause significant disability and impede participation in everyday roles and activities (3, 4), resulting in reduced life quality (5). Households affected by Parkinson's lose on average £16,582 annually due to higher health and social care costs and reduced income (6). Annual care costs per individual in the UK are estimated at £5,993, resulting in estimated direct costs of £761.1m per annum (7).

1.2. Rationale

Anxiety affects around 56% of People with Parkinson's (PWPs) (8). Higher anxiety makes PWPs more prone than age-matched controls to falling and losing independence; it reduces life-quality, leads to social role dysfunction, reduced participation and increases health-burden (9, 10).

Psychological stressors associated with long-term conditions that PWPs experience can increase anxiety (11). Furthermore, PWPs may be more susceptible to anxiety than other long-term conditions due to Parkinson's associated dopamine deficiency (12). Dopamine is a modulator in the amygdala, a brain structure involved in fear and anxiety (13). When dopamine is deficient, this produces neuronal hyper-excitability and exaggerated responses to perceived threats (13, 14)**.** Although PWPs can be treated with dopamine-replacement medication they often experience a marked increase in symptoms as the medication wears off throughout the day (15). Primary (or type-1) worry can in turn rapidly progress to type-2 worry (meta-worry, or 'worry about worry') (16). This can further increase anxiety symptoms which contributes to the maintenance of the hyper-excited neuronal anxiety circuit (17). Thus, as highlighted by the research team's previous research, living with anxiety in Parkinson's is a complex experience shaped by neurobiology, individual experiences, and life-context (18).

Anxiety is the second-highest research priority identified by the charity Parkinson's UK in collaboration with the James Lind Alliance (19). This proposed project also aligns with the Royal College of Occupational Therapists' (RCOT) 'Research and Development Strategy 2019-2024', RCOT top ten research priorities for occupational therapy in the UK, and the NIHR research priorities (20, 21).

Previous research has highlighted that PWPs living with anxiety place less value on group work (the common format for many anxiety treatments), with more importance being placed on participation in meaningful roles and activities (22). To address the lack of effective pharmacological interventions, the low evidence base for psychological and occupational therapy interventions, coupled with the clinical psychologist shortage in the UK (23), and the central role of restricted participation in contributing to heightened chronic anxiety (11, 24), a participation-focused approach to managing anxiety in PWPs is warranted. In response to these issues, a novel occupation-based complex intervention to help people with Parkinson's to live well with anxiety (OBtAIN-PD) has been co-developed with PWPs, care partners, and occupational therapists. This intervention provides a standardised treatment package targeting modifying lifestyle to remove barriers to engaging in activities that are important for the PWPs that is delivered on a one-to-one basis. This intervention has been supported by several research studies conducted by the research team (18) (GCM study & scoping review due to be submitted for peer review). The intervention is underpinned by concepts of Acceptance and Commitment Therapy (ACT) to support behavioural activation and move towards valued health behaviours whilst living with an incurable condition.

As this is a new intervention, there are no current studies examining the clinical or cost effectiveness, feasibility, or acceptability of the OBtAIN-PD intervention in PWPs.

1.3. Justification

Before considering a definitive trial to assess the clinical and cost-effectiveness of the OBtAIN-PD intervention alongside usual occupational therapy care with PWPs living with anxiety, the research team first need to test the feasibility of running such a trial. This study aims to collect the information necessary for the planning of a future trial including participant willingness to take part, the likely rate of participant recruitment and retention, and the acceptability of outcome data collection methods. A qualitative study component will explore participant experiences of the OBtAIN-PD intervention and trial design and explore the occupational therapists' experiences of intervention delivery and trial participation.

2. OBJECTIVES AND OUTCOME MEASURES / ENDPOINTS

The long-term aim is to undertake a definitive, multi-centre, assessor-blinded cluster RCT asking the research question "What is the clinical and cost-effectiveness of the OBtAIN-PD intervention alongside usual Occupational Therapy care compared to usual Occupational Therapy care alone in people with Parkinson's experiencing anxiety?" Before the definitive trial there are several uncertainties that need addressing in this study, by meeting the following objectives.

2.1. Study aims and objectives

Our aim is to conduct a cluster randomised feasibility trial of the OBtAIN-PD in a real-world practice setting. We aim to provide high quality data to facilitate the design and planning of a future definitive trial by answering the below feasibility study questions.

Our study **objectives** are to estimate:

Feasibility and acceptability of trial procedures

I. Suitability of eligibility criteria
II. Numbers of eligible and interested participants from the target population: specifically, conversion rates by recruitment method (invitation letter, personal contact with clinician)
III. Ability of clinicians to recruit participants, and understand any differences between this for different referral pathways (for example GP vs Community Rehabilitation Teams vs Consultant outpatient clinics vs Self-referral)
IV. Willingness of community rehabilitation teams to be randomised
V. Retention rates as participants move through the trial
VI. Intervention fidelity between sites
VII. Feasibility and acceptability of the OBtAIN-PD intervention (adherence)
VIII. Completion and performance of self-report outcome measures, including completion rates, baseline scores, distributional properties and standard deviations, responsiveness to refine selection of the primary and secondary outcome measures for the definitive trial
IX. Facilitate a definition of occupational therapy treatment as usual
X. Baseline factors associated with outcomes
XI. Estimates of the correlation between baseline and follow up outcome measures to inform future sample size calculation
XII. Feasibility of collecting data to estimate intervention resource requirements and costs.
XIII. Feasibility of collecting data to estimate health, social care, and broader societal resource use and costs.
XIV. The feasibility of aligning the trial with existing clinical services I.e., referral date, first treatment date

XV. Total resource required for the full trial

Our feasibility study questions are:

1. What is the recruitment and attrition rate?
2. Are the participating community rehabilitation teams willing to be randomised?
3. What is the suitability of the randomisation procedure?
4. Do people undertake the OBtAIN-PD as outlined in the protocol?
5. Is the content of the OBtAIN-PD appropriate, feasible, and acceptable?
6. Are the outcome measures feasible and assessed at each time point?
7. What is the type and rate of adverse events?
8. What outcome measures are most appropriate?

To meet these aims and objectives, a pragmatic multi-centre feasibility cluster RCT with assessor blinded outcome assessment will be conducted.

2.2. Study Outcomes Measures (Table 1)

2.2.1. Feasibility trial operational outcome measures (objectives II, III, V, VIII)

We will gather the following data relating to operational activities:

- Recruitment rate (overall and by site)- the average number of participants recruited per month
- Retention rate at 12 and 24 weeks (overall and by site)
- Completeness of data collection
- Identification of how participants are ‘lost to follow-up’: The research team will identify participants lost to follow-up and investigate the reasons as to why they have been lost.

2.2.2. Participant reported and other clinical outcomes (objectives XII, XIII)

Demographic and diagnostic Information

Following informed consent, the following self-report data will be collected:

- Screening: age, sex/gender, years since PD diagnosis
- Baseline: ethnicity, employment status (as an indicator of socio-economic status), educational level, medication, co-morbid status, societal costs

2.2.3. Patient Reported Outcome measures

All participants will be requested to complete standardised, validated patient self-reported questionnaires. Electronic, web-based delivery will be utilised where possible, but paper versions of the questionnaires will be provided with stamped addressed envelopes to return these by post for participants who do not have internet access. Reminders will be used, and online forms will use appropriate completion rules to ensure data completeness.

All measures will be undertaken at baseline, post-intervention (12 weeks following baseline assessment) and 24 weeks after the first scheduled intervention session. The follow-up assessments will be anchored to baseline as it is anticipated that this time frame will be adequate for delivery intervention inclusive of potential wait times.

Baseline outcome measures will be completed in the week prior to treatment sessions commencing to allow for relevant therapy goal-related information to be transferred to the treating clinician. If the GAD-7 has been repeated at this point and the participant scores is ≤6, indicating a minimal clinically important change (25) of four points from the inclusion criteria score, the participant will be informed of

this and withdrawn from the study. Due to the nature of anxiety in Parkinson's, (12, 13) it is anticipated that this will be a rare occurrence.

Patient reported outcome measures will be sent to the participant once informed consent has been gained, and an online session with the lead researcher (CL) will be booked to complete the COPM and Activity Card Sort at a date and time convenient to the participant (if not completed at the screening call). The clinical outcome measures will be completed online using secure web-based apps to preserve assessor blinding; participants will be instructed to not give the lead researcher any details about their geographical location or treatment received prior to and at the start of sessions. The first occupational therapy session should be scheduled no more than 28 days following informed consent being gained. This aligns with locally set referral-to-treat targets.

In addition, at monthly intervals throughout the trial, participants will record any freezing of gait episodes and falls that they have had using a prospective falls diary (online or paper-based depending on participant requirements). The monthly serial collection of data enables the impact of the OBtAIN-PD on these areas to be identified and to assess the suitability of this method of data collection. The 12- and 24-week follow-ups are important to comprehensively assess potential benefits and the maintenance of any observed effect. All patient reported outcome measures included within this study are validated for use in Parkinson's Disease clinical care and research.

1. *GAD-7*
   A valid and reliable 7-item instrument used to assess the severity of generalised anxiety disorder (26, 27). The GAD-7 is commonly used in the 'Improving Access to Psychological Therapies' pathway and will provide a viable way of comparing the OBtAIN-PD against other interventions in the future. A score of ≥10 identifies a level of anxiety that has a direct impact on the quality of life and is a recommended cut-off that identifies a need for further clinical evaluation (28).

2. *PDQ-39*
   This condition-specific questionnaire, a patient reported measure of health status and quality of life, has been psychometrically evaluated in this population. It comprises 39 questions related to activities and symptoms. It takes ~ three minutes to complete. Minimally important changes are available [>25-point change total score, > 20-point change symptom subscale (29).

3. *European Quality of Life-5 dimensions (EQ-5D-5L)*
   Evaluation of health related QOL. This measure has been used within clinical trials with PWPs and has been psychometrically validated for this population (30). The EQ-5D-5L can be used to calculate quality adjusted life-years (QALYs), enabling cost-utility analyses.

4. *Prospective Falls and Cost Diary*
   A commonly used tool in research for measuring falls frequency and freezing of gait in PWPs, and that will be used to measure adverse event (AE) rates in this study including AEs that are not falls such as panic attacks. Data regarding societal costs will be collected, such as unplanned loss of workdays for the PWPs and carers, and personal expenditure on support services.

2.2.4. Clinical Measures

1. *The Canadian Occupational Performance Measure (COPM)*
   The standard Canadian Occupational Performance Measure (COPM) is a valid measure of a person's self-perception of performance in everyday living (31-33) and has been recommended for PWPs (34). The COPM is a client-centred outcome measure for individuals

to identify and prioritise everyday issues that restrict their participation in everyday living. This measure focuses on occupational performance in all areas of life, including self-care, leisure, and productivity, and is measured using performance and satisfaction scores. The COPM has been used as a primary outcome in clinical trials of people with neurological conditions including Parkinson's (35-37). An improvement of 0.9 for performance and 1.9 for satisfaction is regarded as clinically significant (33). This outcome measure will be delivered via a secure web-based application, or by CRN research teams if the participant does not have internet access. The COPM is the proposed primary outcome for the future definitive trial.

2. *Activity Card Sort*
   An assessment of a person's perceived level of participation with demonstrated applications in clinical practice and research (38). This outcome measure will be delivered via a secure web-based application, or by CRN research teams if the participant does not have internet access.

3. *Barthel Index*
   A self-reported scale used to measure a person's performance in activities of daily living and a widely used measure in research (39, 40).

2.2.5. Intervention Fidelity (objectives VI, VIII)

The number and duration of treatment sessions in both groups will be recorded and assessed via standardised treatment notes. Additionally, 20% of intervention and usual care sessions will be observed by a member of the supervisory team (JM), either face-to-face or online depending on how the session is delivered. A fidelity record sheet with essential components will be used for scoring. This will allow the fidelity of the delivered usual care and OBtAIN-PD to be compared to the standard operating procedure manuals and the participant goals to assess the session content. An assessment will be made of interactions/interventions that directly address anxiety in both groups to allow the level of anxiety-related interventions in usual care to be determined. This will be achieved using a fidelity document with the essential components for the two study arms interventions. Potential contamination issues will be further explored during interviews with the participants and clinicians delivering OBtAIN-PD.

2.2.6. Intervention costing (objectives XII-XIV)

Resource use and costs associated with delivery of both groups will be estimated.

Data on cost of intervention delivery (including preparation) will be collected in the form of resource use associated with the taking of outcome measures and delivery of trial components (exclusive of time spent on research elements, e.g., reading the protocol and SOPS) via within-trial reporting, including participant-level contact and non-contact time for staffing input on delivery, equipment and consumable costs, training, and supervision for delivery staff. Additional healthcare costs, such as A&E attendance, will be recorded. Furthermore, societal costs for the participants, such as loss of workdays or additional demands on care partners.

NHS treating occupational therapists will complete contact case report forms to capture time spent on each participant contact.

2.2.7. Table 1 summarising the objectives and outcomes

Objectives	Outcome Measures	Objectives met
Operational: Rates of recruitment	Number of patients screened and recruited	I, II, III, IV,
Rates of retention	Number of recruited patients attending follow-up visits	V
Data completeness	Completeness of data capture and outcome measures (to include number of completed questionnaires, number of missing items within a questionnaire by time point)	VIII
Patient reported/Clinical Performance and satisfaction in everyday living Anxiety Quality of life Health-related quality of life Participation Activities of daily living Adverse events	Canadian Occupational Performance Measure (COPM) GAD-7 PDQ-39 EQ-5D-5l Activity Card Sort Barthel Index Falls diary	VIII, IX, X, XI
Adherence Fidelity assessment	Research team member observations	VI, VII
Resource Use	Therapist completed case report forms Resource Use Questionnaire	XII, XIII, XIV

Table of objectives and outcome measures. Refer to tabulated schedule of events (Table 2) for timings of outcome measures.

3. THE INTERVENTIONS

All treatment will be provided by community-based NHS occupational therapists. Based on the patient's need (as assessed by the clinician), face to face treatment sessions can be undertaken in place of video–based consultations. The booking of both treatment sessions will be the responsibility of the NHS therapy department local to the participant (section 10.2.3).

3.1. Usual Care

The usual care group will receive 'treatment as usual' occupational therapy care based on that delivered in previous pragmatic trials of occupational therapy for PWPs (55, 56) and guided by both NICE guidelines (41) and the Royal College of Occupational Therapists 'Occupational Therapy for

People with Parkinson's' (42) guidelines. Usual care will be delivered by a community-based occupational therapist at each site (n=2). The site file will provide descriptions of a selection of areas that could be targeted, and approaches used. This will include equipment provision, personal care practice, and addressing falls. The exact approaches used will be flexible to provide therapist autonomy and based on patient need. The usual care therapy input received by the participants will be recorded to further facilitate a definition of treatment as usual for a future study via intervention logs as part of the case report form.

Treatment as usual duration will last 60-minutes per session with an estimated eight sessions over a 10-week period based on patient need.

3.2. OBtAIN-PD

OBtAIN-PD is an intervention that focuses on re-establishing and maintaining engagement in meaningful social and habitual roles, like attending a club or engaging in a hobby that PWPs value (18, 22)**.** In contrast, traditional NHS occupational therapy interventions, that form the usual care group, tends to focus on compensatory techniques (e.g., equipment to maintain personal care), that PWPs with anxiety have identified as less of a priority (18, 22, 43). OBtAIN-PD will include lifestyle modification underpinned by ACT concepts to help PWPs to engage in the meaningful activities that they want to, and to live well with their anxiety.

OBtAIN-PD will be delivered by a community-based occupational therapist at each site (N=2). The intervention will be delivered in community settings, and the clinicians delivering OBtAIN-PD will receive specific training in its use. The occupational therapists in both trial arms will be based in separate teams and will not share a supervisor to reduce contamination risk. It is estimated that OBtAIN-PD will last 30-minutes per session, with eight sessions over a 10-week period (n=8) (35, 44-46). The intervention will include additional 30-minutes of usual care i.e., 60-minutes total. The usual care component will include (but is not limited to) the ordering and provision of aids/adaptations to support participation in care and follow-up contact after delivery to ensure safe use of the equipment (35). In summary, OBtAIN-PD will run alongside usual care and provides a novel means of delivering occupational therapy targeting anxiety-related issues in performance. To minimise inter-therapist contamination, therapists will be advised to not discuss details of OBtAIN-PD with colleagues.

Participants in both groups will continue to receive usual medical and therapy management e.g., physiotherapy. This will be monitored via a health, social care, and personal resource-use questionnaire.

4. TRIAL DESIGN

This is a pragmatic feasibility cluster randomised controlled trial, with assessor blinded outcome assessment, cluster randomising Community Rehabilitation Teams within two sites to implement either the OBtAIN-PD and usual occupational therapy care (intervention) or usual occupational therapy care alone (usual care).

Community Rehabilitation Teams will be allocated on a 1:1 basis to implement the OBtAIN-PD intervention + usual care, or usual occupational therapy care alone, stratified by site (geographical location – Royal Devon University Healthcare NHS Foundation Trust serving North, East, and Mid Devon, and LiveWell Southwest serving South Hams, West Devon, and Plymouth). This will provide logistical convenience and accommodate the current pressures on NHS services, whilst providing a control for contamination. Group allocation will be stratified by site.

5. TRIAL SETTINGS

The trial will be conducted in two NHS Trusts; LiveWell Southwest and Royal Devon University Healthcare NHS Foundation Trust. A Principal Investigator at each Trust will oversee and be responsible for research activity in their respective Trust.

Each of the two Trusts has two Community Rehabilitation Teams (CRTs), covering distinct regions within the Trust catchment area. All CRTs will implement the protocol in the same manner, apart from the treatment they provide, depending on allocation. Occupational therapists within these teams will deliver either standard care, as part of their routine NHS role, or the OBtAIN-PD intervention in addition to standard care, depending on treatment allocation.

The unit of allocation, or cluster, is therefore at the CRT level; two of the four CRTs will be allocated to the intervention group (OBtAIN-PD plus standard care), and two will be allocated to the usual care group (standard care alone).

6. PARTICIPANT ELIGIBILITY CRITERIA

6.1. Inclusion criteria

Patients must satisfy all the following criteria to be enrolled in the study:

- PWPs: diagnosis of idiopathic Parkinson's (47), as diagnosed by a neurologist or movement disorder consultant
- Experiences anxiety measured as 'moderate' (≥10) by the Generalised Anxiety Disorder Assessment (GAD-7) as part of the screening process
- Willing and able to undertake eight intervention sessions over 10 weeks
- Able to give informed consent

6.2. Exclusion criteria

Patients who meet any of the following criteria will be excluded from study participation:

- Participants unable to give informed consent
- People who are unable to physically complete self-report forms and do not have someone to assist them
- PWPs experiencing anxiety measured as 'mild' (9 or less) by the generalised Anxiety Disorder Assessment (GAD-7)
- PWPs with a severe cognitive deficit that affects their ability to follow instructions assessed using the Montreal Cognitive Assessment (<23) (48)
- 'End-of-life stage' Parkinson's or other potentially life-limiting condition which is likely to be the main source for anxiety e.g., cancer, heart failure, advanced lung disease
- PWPs currently participating in a research study testing an intervention for anxiety or receiving another clinician-delivered non-pharmacological intervention for anxiety that has started within the last six months.

7. RECRUITMENT STRATEGY

This feasibility trial will only recruit from the Southwest Region (to sites which have received ethical approval).

The target sample size is 50. Participants will be recruited from two sites in the Southwest region of UK (RDE and LiveWell Southwest) over ten months. Initial contact will be made by consultants and therapists who will see PWPs as part of their clinical workload within the two sites; they will not be aware of group allocation. Research practitioners based in the CRN at each site (not members of the main research team) will screen their databases for potential participants and make contact. In addition, initial contact might be made by specialist Parkinson's nurses as part of their clinical

workload at the two sites. These clinicians will be acting as gatekeepers in keeping with Health Research Authority recommendations (49). This will help to mitigate any potential issues of coercion when the applicant is approached by the research team to gain consent. The number of potential participants directly referred by CRN staff and clinicians will be recorded.

Recruitment will be supported by a trial manual and training informed by the study teams' experience. Training (provided by the research team to the occupational therapists taking part in the trial) will include trial information (rationale, aims, and methods) and governance issues (e.g., confidentiality, record keeping). It will highlight the issues of unconscious bias and protectionism that can occur when therapists are involved in trial recruitment. Recruitment training will be supported by a manual, video exemplars, and role-play to aid those who are naive to the recruitment process.

Potential participants will be provided with an information pack by the clinician who has made contact. The information pack will contain an introductory letter, participant information sheet (PIS), GAD-7 for screening purposes, a reply slip (including consent to contact form), a stamped addressed envelope, and the telephone and email contact details for the lead researcher. This information can be emailed to participants also at their request. The PIS and reply slip will encourage those who do not want to take part to return the reply slip stating their reasons for non-interest, but it will be emphasised that there is no obligation to do so. This will provide valuable information for designing the main trial. Information packs that are sent out will be followed up by CRN research teams one week later via telephone to encourage responses.

8. SCREENING AND CONSENT

8.1. Eligibility screening process

8.1.1. Initial telephone screen

On receipt of the completed reply form and GAD-7, the OBtAIN-PD research team (CL) will telephone the potential participant to answer any questions and, following verbal consent, to undertake an initial phone screen for eligibility using a pre-formatted screening checklist based on the eligibility criteria. Eligibility will be confirmed during this call. This data can be collected directly from participants, and the core research team will not need to access patient records.

All screen failures will be recorded and inputted into the database as required for the purpose of monitoring and reporting recruitment performance.

Following the screening procedures, an initial online session to complete the consent and baseline procedures will be arranged at a time convenient for the participant (within normal working hours). If the participant feels that they need no extra time to consider their participation, the baseline assessments (see section 10.2) can be completed in the initial phone screen to reduce the burden on the participant's time.

8.2. Consent

The OBtAIN-PD lead researcher will be responsible for ensuring informed consent has been obtained and for the collection of baseline data. They will be suitably trained in the relevant principles of GCP and the requirements of the trial protocol.

At the online consent session, the study will be discussed to ensure full understanding. Fully informed consent of participants will be gained. If consent is taken over the telephone, a script will be followed outlining what is involved for all participants and the potential risks/ burdens of taking part. If the participant wishes to continue to give their consent, the researcher will read out the clauses from a local copy of the informed consent for and complete this form with the participant. The participant must consent to each clause to be eligible to take part. Once completed, the researcher will sign, date, and

name the form and email this to the participant for their records. The completed form will then be uploaded by the researcher to the “Completed ICFs” folder in the specific site folder. They will then immediately update the research trial database on the study management system (designed by PenCTU).

In all other scenarios, written consent will be gained if the person is deemed to have capacity or capacity is not doubted under the Mental Capacity Act (50). If doubted, the lead researcher (CL) will conduct a capacity assessment using a standard NHS tool at the initial consultation. This can be conducted over the telephone if required. If a participant lacks capacity, they will be excluded from the study. Participants have the right to withdraw from the study at any time for any reason without affecting their ongoing care. Consent will also be sought to contact the PWPs GP to inform them of the person’s participation in the trial. The COPM and Activity Card Sort will be completed with the participant in the first session, separate to the first intervention session. The other PROMs will then be sent to the participant for completion.

The process of obtaining informed consent will include:

- discussion with the potential participant about the nature and objectives of the study and risks associated with their participation
- the opportunity for potential participants to ask questions
- an assessment of capacity to consent
- advising the potential participant that they have the right to refuse participation without giving reasons and that they are free to withdraw at any time without giving reasons and without prejudicing his/her further treatment
- advising the potential participant on how their data will be used and signposting to further information about data used for research purposes

All PWPs participating in the study will be informed of the post-trial qualitative interview within the PIS, and consent will be included within the pre-baseline informed consent processes. Prior to the final trial assessment at 24 weeks, consent to participate in the interviews will be reviewed and confirmed by the lead researcher. Verbal confirmation of ongoing consent will be obtained by the lead researcher immediately prior to the interview taking place.

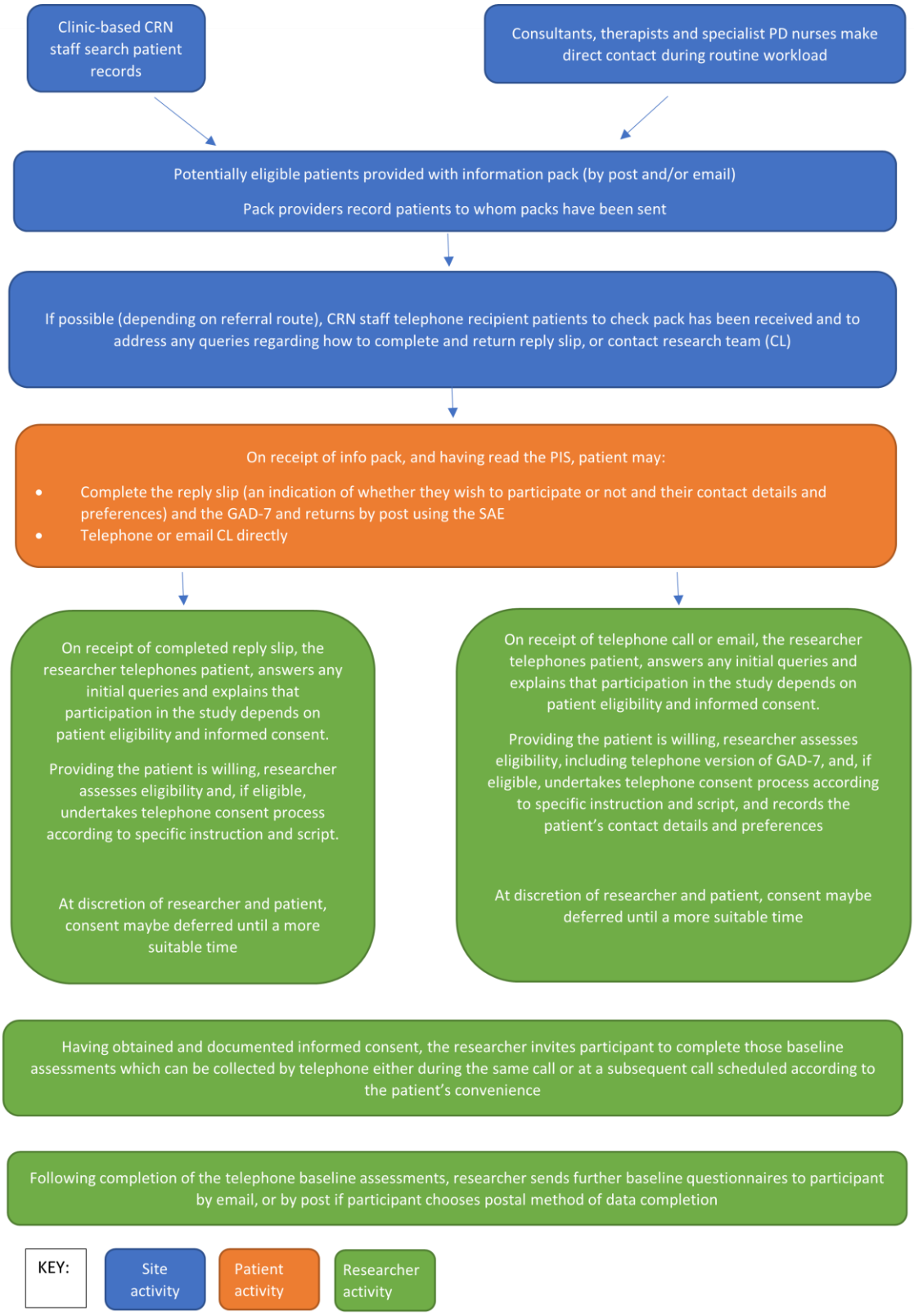
The PI takes responsibility for ensuring that all vulnerable participants are protected and participate voluntarily in an environment free from coercion or undue influence.

Original versions of completed informed consent forms will be stored in the Investigator Site File (ISF). One copy will be provided to the participant for them to retain. A copy will be filed in the hospital notes/electronic health record.

After consent has been completed, the baseline COPM and Activity Card Sort measures will be completed with the participant in the same session if possible. Other baseline assessments will be provided to the participant for them to complete remotely. The GAD-7 completed at during screening will be used as the baseline assessment unless this was completed more than days ago. In this situation, a repeat GAD-7 will be taken.

The recruitment process is summarised in figure 1.

Figure 1. Summary of recruitment process



8.3. Recording screening and recruitment information

CRN staff and the OBtAIN-PD research team will keep accurate records of:

- The number of potential participants sent a trial information pack.
- The number of potential participants directly referred to the research team by the CRN staff / site investigators
- The number of potential participants who contacted the research team (from any source), and how they heard about the trial (e.g., CRN, therapist letter / personal contact, Parkinson's nurses, consultant, or other healthcare professional)
- The number of patients screened for eligibility by the research team
- The number and characteristics of patients deemed ineligible (with reasons where available)

Anonymised data from the screening log will be inputted into the PenCTU database for the purpose of monitoring recruitment. These data will be used to determine the proportion of people who expressed an interest in the trial, those who were ineligible (with reasons), and which recruitment methods might be the most effective for a future trial.

9. TREAMENT GROUP ALLOCATION

Randomisation will be undertaken by the Plymouth Clinical Trials Unit (CTU) to allow the lead researcher to remain blinded to group allocation. The Community Rehabilitation Teams will be provided with a unique, anonymous code. Within each site, the CRTs will be randomly allocated (1:1) into the usual care [60-minutes usual occupational therapy management only per session] or intervention [30-minutes OBtAIN-PD plus 30-minutes usual occupational therapy management per session]. The online CTU system will generate emails to the relevant treating therapist team and JM (Prof Jon Marsden, co-investigator and Director of Studies) about their arm allocation (code and group allocation only). Recruitment will commence within one to two weeks of cluster allocation. Participants will then be booked in, and treatment provided as per arm allocation.
The randomisation list and the program that generated it will be stored in a secure network location within the PenCTU, accessible only to those responsible for its provision. PenCTU staff independent of the trial will verify the integrity of the randomisation system throughout the trial according to established written protocols.

Access to the code/list will be confined to the PenCTU data programmer. No-one else in the trial team will be aware of allocated trial arms until randomisation is completed, hence maintaining effective concealment. Following randomisation, only the individuals described above will be aware of the allocations to intervention or usual care arm; the blinded lead OBtAIN-PD researcher will NOT have access to treatment allocation.

Data will be collected on the following to aid in developing potential minimisation factors for a future definitive trial:

- Referral to Treat (RTT) length of time
- Access to specialist Parkinson's rehabilitation services such as home-based care pathways, access to specialist Parkinson's therapists
- Organisation size
- Size of population served

9.1. Blinding

The trial participants are unable to be blinded in this trial due to the nature of the intervention they are receiving. Similarly, the NHS treating occupational therapists are unable to be blinded. The occupational therapists will be aware of their allocation following randomisation of their CRT.

Participants will be aware of the treatment that they receive from their first treatment session with the occupational therapist.

The OBtAIN-PD lead researcher conducting eligibility checks, screening assessments, and communicating with participant's completion of the self-reported outcome assessments, will be blinded to participants' allocated group. Wherever possible, clinical outcomes will be taken remotely, and participants will be asked to not reveal their geographic location or the treatment they have received to preserve assessor blinding.

All outcome measures, at each time-point, are patient reported assessments, thereby minimising the opportunity for the researcher to influence the outcome assessment. Every effort will be made throughout the trial to maintain blinding of the OBtAIN-PD lead researcher, for example by reminding participants not to discuss their treatment with them.

Assessor blinding will be monitored and tested by recording 'guess' participation group allocation at each time point. The blinded OBtAIN-PD researcher will be asked to record on an electronic CRF any cases of inadvertent unblinding to group allocation at the end of the trial. If this occurs, they will be asked to provide details as to how this un-blinding happened.

Final unblinding of the research team (including the trial statistician) will be after the creation of a locked analysis data set and analysis has been undertaken.

10. TRIAL SCHEDULE

This section describes the conduct of the trial in chronological order, detailing procedures for data collection at each of the time points. A summary flow chart is provided in **Error! Reference source not found.**. A tabulated summary of the trial schedule is given in Table 2.

10.1. Trial Assessments

The trial involves a screening process undertaken by the researcher.

Following recruitment all participants will complete a comprehensive battery of PROMS and clinical outcome measures at three time-points: baseline, 12 weeks (post-baseline), and 24 weeks (post-baseline). All PROMS assessments will be reported via web-based forms (with stops and reminders to promote data completeness). Paper-based forms will be used where required to prevent exclusion due to the digital divide (51). Participants will be provided with stamped addressed envelope to return paper documents. Any non-compliances will be noted.

Table 2: Tabulated summary of trial schedule

TIMEPOINT	***Screening***	**Randomisation**	***Baseline (prior to disclosure of allocation to participant)***	***+12 weeks***	***+24 weeks***
ENROLMENT:					
Eligibility screen (inclusion/exclusion criteria)	X				
Telephone screening (eligibility check, GAD-7, MCA if needed)	X				
Informed consent to enter trial	X				
Allocation		X			
INTERVENTIONS:				Follow up session	24 Weeks t_3
Intervention group: ***OBtAIN-PD (approx. 10 weeks)***		——	——	——	
Usual OT care		——	——	——	
Usual care Group: ***Usual OT care (approx. 10 weeks)***		——	——	——	
ASSESSMENTS:			***Baseline T0***	***12 weeks T12***	***24 weeks T24***
Demographics, birth details, PD history, medications			X		
Assessments (anchored to initial appointment)					
COPM (proposed primary outcome)			X	X	X
Activity Card Sort			X	X	X
GAD-7	X		X	X	X
EQ-5D-5L			X	X	X
PDQ-39			X	X	X
Barthel Index			X	X	X
Falls and Costs Diary			X	X	X
SAFETY MONITORING:					
Adverse events			X	X	X

10.2. Baseline

After informed consent has been obtained, an email/text link will be sent to the participant to request them to complete the baseline questionnaire booklet battery of measures. The following information will be collected:

Demographic data: age, gender, ethnicity, employment status (as an indicator of socio-economic status), marital status

Parkinson's Disease related data: Hoehn & Yahr score (collected through discussion with participant and used for qualitative interviewing purposes only)

Medications: all current prescribed medications and their dose will be listed.

Outcome measures: COPM, Activity Card Sort, GAD-7, EQ-5D-5L, PDQ-39, Barthel Index will be completed.

Societal costs: Collected via a falls diary and will collect data societal cost data such as unplanned loss of workdays for the PWPs and carers, unplanned utilisation of health and social care services, and personal expenditure on support services.

10.3. Follow-up assessments (12 and 24 weeks from baseline assessment)

At 12 and 24 weeks:

i) All participants will be sent a physical pack via post, or an online web-based pack, requesting them to complete the battery of patient reported outcome measures, and to return these to the research team.
ii) The lead researcher will book a session to repeat the clinical outcome measures at each time point

10.4. "Other" assessments

i) *Identification of how participants are 'lost to follow-up'*

The blinded researcher will identify participants lost to follow up and the reasons as to why they have been lost to follow-up.

ii) *Outcome data that will be recorded from protocol non-adherers*

As far as is possible, all outcome data will be collected for all participants, regardless as to whether they have adhered to the protocol.

10.5. Qualitative assessments

An embedded qualitative research study will examine the whole of the intervention to explore mechanisms and components for subsequent testing. Ten PWPs and the four trial clinicians will be interviewed. The participants will be asked if they want to take part in an interview at their final 24-week outcome measure session. If the participant wants to take part in an interview, a separate PIS for the qualitative interviews and consent form will be provided. A provisional time and date for the interview will be set with the participant. The informed consent form will be completed with the participant immediately prior to the interview. The interview will be conducted online or on the telephone. Purposeful sampling will ensure demographic representation of PWPs.

The qualitative component of this trial will aim to meet objectives (I, II, V & VI).

The specific aims of this will be to investigate:

- acceptability of trial methods across both trial arms

- acceptability of the OBtAIN-PD
- impact that the OBtAIN-PD had on the lives of PWPs
- potential recruitment and retention barriers
- outcome measure suitability and burden

10.5.1. Participant interviews

Ten purposively (using the Hoehn & Yar score) sampled participants from the trial will include 5 trial participants randomised to the usual care group and 5 participants from the intervention group. This will be run through individual one-off semi-structured interviews using an interview schedule (Appendix 4). The interviews will be conducted at the end of the trial period at a time, date, and method (face-to-face or remote) convenient for the participant. Interviews will be recorded using a secure digital recorded or web application (Microsoft Teams) to support transcription. Once the interviews have been transcribed and anonymised using pseudonyms, the recordings will be securely deleted.

10.5.2. Participating Clinicians

The four NHS occupational therapists involved within the trial will be interviewed to provide information on the acceptability of the trial methods across both trial arms and the delivery of the OBtAIN-PD

10.5.3. Decliners and Informal Exit Interviews:

Up to two people who declined to participate or withdrew will be invited to interview to explore their feelings about this study and identify their reasons for declining/withdrawing. Understanding the experiences of those who decline to participate in the feasibility study is critical for developing solutions for the future trial (52). This will be completed by the recruiting clinician using a short three-question tick box questionnaire.

Should any participant either withdraw from the trial or discontinue their involvement during the trial, the OBtAIN-PD researcher will be informed. The researcher will telephone the participant to ask them to share their reasons for stopping the trial. This telephone interview will be informal in nature and will take place within approximately one week of discontinuation. It will ask participants about their experience of participating in the trial. These interviews are informal and entirely optional. If the participant does not wish to pursue the interview, then there is no requirement of them to do so. The “interview” will not be recorded or transcribed, and field notes will be taken of the participant’s responses.

11. INTERVENTION DELIVERY

The interventions will be provided by NHS occupational therapists based in local community rehabilitation teams.

The NHS occupational therapists will be responsible for booking the treatment sessions (as described in section 3), following recruitment. The first occupational therapy session should be scheduled within 28 days, following referral to the CRT. This aligns with locally set referral-to-treat targets and applies to both the usual care and intervention groups. The NHS occupational therapists must record on paper or electronic 'Therapist Contact Sheets’ on completion of each session.

11.1. Usual Care

The usual care group will receive ‘treatment as usual’ occupational therapy care based on that delivered in previous pragmatic trials of occupational therapy for PWPs (35, 44). Descriptions will provide a selection of areas that could be targeted, and approaches used. This will include (but is not exclusive to):

- equipment provision
- personal care practice
- addressing falls

The exact approaches used will be flexible to provide therapist autonomy and based on individual patient need. The therapy input received by the participants will be recorded to further facilitate a definition of treatment as usual for a future study via intervention logs.

Treatment as usual duration will last 60-minutes per session with an estimated eight sessions over a 10-week period (n=8) based on individual patient need. To minimise intra-therapist contamination, therapists will be advised to not discuss details of OBtAIN-PD with colleagues. One occupational therapist at each site will deliver the usual care arm and will be based in a separate geographical team to the intervention arm therapist.

11.2. Intervention Group (OBtAIN-PD)

The OBtAIN-PD will focus on re-establishing and maintaining engagement in social and habitual roles, like attending a club or engaging in a hobby that PWPs value (18, 22)**.** In contrast, traditional NHS occupational therapy interventions, that form the usual care group, tend to focus on compensatory techniques (e.g., equipment to maintain personal care), that PWPs with anxiety have identified as less of a priority (18, 22, 43). The specific issues experienced by the participant that restrict participation in their chosen meaningful occupations will be discussed and explored by the occupational therapist. Based on this discussion, an overall goal for the treatment will be negotiated and agreed, with SMART goals set to work towards this. This approach is based on the concepts of Acceptance & Commitment Therapy and behavioural activation to promote engagement and adherence with the OBtAIN-PD. Participants will be provided with a copy of their goals to promote engagement and adherence. Depending on the individual's goal, they may be provided with education in the form of information sheets to help manage their condition and support engagement in the OBtAIN-PD programme.

OBtAIN-PD will be delivered by a community based occupational therapist at each site, in a geographical cluster separate to the usual care therapist. The occupational therapists will be based in separate teams and will not share a supervisor to reduce contamination risk. It is estimated that OBtAIN-PD will last 30-minutes per session, with eight sessions over a 10-week period (n=8) (35, 44-46). The intervention will include additional 30-minutes of usual care i.e., 60-minutes total. The usual care component will include (but is not limited to) the ordering and provision of aids/adaptations to support participation in care and follow-up contact after delivery to ensure safe use of the equipment (35). OBtAIN-PD will run alongside usual care and provide a novel means of delivering occupational therapy targeting anxiety-related issues in performance.

The trial therapists do not need to be specialists in Parkinson’s care. This will serve to replicate national provision, as not all areas have access to Parkinson’s specialist occupational therapists.

12. WITHDRAWALS

Each participant has the right to voluntarily withdraw from the trial at any time, without repercussions. This is separate from participants terminating their involvement in the occupational therapy interventions.

12.1. Discontinuation of occupational therapy intervention

Participants in the intervention group may choose not to attend the occupational therapy sessions, or they may wish to discontinue intervention on the recommendation of a health professional, for example following an adverse event caused by the intervention, or a new health condition. Withdrawal

from engagement in any element of the intervention does not preclude the participant from remaining in follow-up, and all participants will be encouraged to continue with study assessments as per protocol.

12.2. Withdrawal from the trial

All participants will be encouraged to complete study follow-up, however, any participant may at any time decide that they no longer wish to be part of the trial. This may be through personal choice (i.e., they withdraw their consent) or in consultation with a health professional, for example where it becomes impossible to provide outcome data or comply with any other trial procedures for whatever reason. If there is concern that a participant has lost mental capacity during the trial, this will be assessed using a standardised NHS tool and the participant withdrawn if they lack capacity.

If participants choose to withdraw from follow-up, they will be asked to provide a reason for withdrawal (see section 10.1.9). Participants will be made aware that they are not obliged to give a reason and that their decision to withdraw will not affect their ongoing involvement in trials or in accessing NHS treatment. In line with CONSORT Guidelines, if reasons for withdrawal are known then these will be recorded. Participants that withdraw will not be replaced.

Withdrawal from trial follow-up and the reason, if known, will be clearly documented in an electronic withdrawal form, and inputted into the trial database. Data collected prior to withdrawal from follow-up will be included in the study analysis. Participants will be provided with a contact point where he/she may obtain further information about the study.

13. END OF TRIAL DEFINITION

The end of trial is the date of the last assessment/data item collected of the last participant (including the qualitative interviews).

There are no formal stopping criteria. The trial will be prematurely stopped if a decision is made by the TSC and TMG on the grounds of safety issues, such as an unacceptable number of adverse events.

14. SAFETY AND MANAGEMENT OF RISK

14.1. Participant safety

Whilst participants are highly unlikely to experience any harm as a direct result of participating in the trial, processes will be implemented to ensure such harms are detected and monitored appropriately.

Throughout the trial, all possible precautions will be taken to ensure participant safety and wellbeing, and protocol-defined adverse events (see section 15) reported to NHS occupational therapists, PI's or the research team will be managed according to a standard operating procedure (SOP).

14.2. Possible worsening of symptoms associated with the intervention

Whilst the proposed interventions are intended to reduce anxiety and improve wellbeing, it is theoretically possible that participant's symptoms may worsen when they participate in treatment (usual care or OBtAIN-PD). Participant's GPs will be informed to provide a safety net for this issue, and the participants will be in regular contact with their occupational therapist. Additionally, the participant will have contact with the research team at multiple time points.

Should worsening of symptoms occur the participants will be advised that, if they feel this is related to intervention, to stop participating. This will be addressed during follow-up sessions. Their right to withdraw from the trial will be fully respected, however they will be encouraged to continue completing the self-report trial assessments, to inform the trial results.

14.3. Potential burden for the participants

This trial has been designed to run in line with NHS services and minimise the research burden on both participants and NHS clinicians.

14.4. Researcher safety

A distance-based screening to confirm participant eligibility for entry into the trial is required. This will allow the lead researcher to identify any potential risks before an online session to complete the baseline outcome measures is booked. The researcher will be lone working in the participants' own homes. A procedure based on the University of Plymouth Lone Working Code of Practice (2018) will be used to maintain safety. When the main researcher is collecting data away from their place of work, the participant's contact details, and the mobile phone number of the researcher will be emailed as a password-protected document to the other core research team members in the UK (KB, JM). The password will be emailed separately. The researcher will contact the other team members upon completion of each session. If there is no contact from the researcher within three hours, the research team will open the document and seek to locate them. If the researcher was not located, the team will then try to locate them by calling through a list of three contacts. If this remained unsuccessful the police will then be contacted.

15. SAFETY REPORTING

The safety of participants will be monitored throughout the trial, from the time that consent is obtained until the end of trial visit, via collection of adverse events.

15.1. Definitions

An **Adverse Event (AE)** is any unfavourable sign, symptom, or disease in a participant, regardless of severity and regardless of cause.

An **Adverse Reaction (AR)** is an adverse event which is considered to have been definitely, probably, or possibly caused by the OBtAIN-PD intervention or any other aspect of trial participation.

A **Serious** Adverse Event (SAE) or **Serious** Adverse Reaction (SAR):

- results in death
- is life-threatening*
- requires inpatient hospitalisation or prolongation of existing hospitalisation**
- results in persistent or significant disability/incapacity
- is a significant or important medical event

*The term "life-threatening" in this context refers to an event in which the participant was at risk of death at the time of the event; it does not refer to an event which hypothetically might have caused death if it were more severe.

Hospital admissions for elective procedures **will not be reported as SAEs. All unplanned hospital admissions will be reported as SAEs, regardless of duration of hospital stay. This includes visits to ED departments.

A **Suspected Unexpected Serious Adverse Reaction (SUSAR)** is an event which:

- is serious, as defined above, **and**
- is considered to have been definitely, probably, or possibly caused by either the intervention or the trial procedures, **and**
- is deemed 'unexpected' i.e., the reaction is one which has not been foreseen by the Chief Investigator.

Guidance on assessing events against these definitions is described later in this section.

15.2. Adverse Event reporting in the OBtAIN-PD trial

The likelihood of participants being harmed by the interventions in either arm is very low. As such, the collection and reporting of adverse events in the OBtAIN-PD trial is restricted to only those events which are classified as an “Adverse Reaction” (AR), or which are classified as a “Serious Adverse Event” (SAE) or “Severe Adverse Reaction” (SAR), as defined above (section 15.1). In the context of clinical care and in accordance with local practice, AEs should be recorded by investigator site staff (i.e., the treating Occupational Therapist) in the participants’ medical records. For the purposes of the trial, only ARs and SAEs (including SARs) will be collected and entered into the CRF.

15.3. Detecting and recording adverse reactions and serious adverse events

Detailed instructions for the recording and reporting of adverse events will be provided to Investigator Sites by the trial manager.

Adverse events will be detected primarily through review of the data provided by trial participants themselves, via the web-based app, at four-weekly intervals (including the 12 and 24 week timepoints). At these timepoints, participants are asked to report the following:

- unplanned hospital attendances*
- any discomfort or symptoms caused by participation in the research study**
- occurrence of / changes in the frequencies of injurious falls
- occurrence of / changes in the frequencies of freezing of gait episodes,
- occurrence of / changes in the frequencies of panic attacks

* inpatient hospitalisations will be processed as SAEs (see section **Error! Reference source not found.**)

** events reported by participants as being potentially related to trial participation will be followed up by the research team and will be processed as adverse reactions.

Adverse events may also be detected by occupational therapists delivering treatment (in either treatment arm). Adverse events (e.g., injurious falls) which occur during treatment sessions will be reported by occupational therapists to the research team.

All reported events will be recorded in the eCRF. Events which meet the criteria for seriousness (defined in section 15.1) will be subjected to onward expedited reporting i as described in section 15.5.

15.4. Reporting Serious Adverse Events and Serious Adverse Reactions

All SAEs and SARs must be reported to PenCTU and the sponsor within 24 hours of the research staff becoming aware of the event, according to instructions provided by PenCTU.

For each SAE/SAR the following information will be collected:

- full details in medical terms and case description
- event duration (start and end dates, if applicable)
- action taken
- outcome
- seriousness criteria
- causal relationship

PenCTU will immediately notify OBtAIN-PD researcher and CI supervisor (Professor Jon Marsden) of any reported SAEs / SARs. The CI Supervisor will record a second assessment of causal relationship,

according to the guidance given in table 3 below. The CI supervisor may upgrade the causality assessment (e.g., from not related to related) but may not downgrade the assessment (e.g., related to not related).

Table 3: Guidelines for assessing causal relationship

Relationship	***Description***
Definitely related	*There is clear evidence to suggest the event was caused by trial procedures and/or the trial intervention, and no other contributory factors are evident.*
Probably related	*There is evidence to suggest the event was caused by trial procedures and/or the trial intervention, and other contributory factors such as the participant's underlying health condition or concomitant treatments do not reasonably explain the occurrence of the event by themselves.*
Possibly related	*There is some evidence to suggest the event was caused by trial procedures and/or the trial intervention, and factors such as the participant's underlying health condition or concomitant treatments are less likely to be contributory factors.*
Unlikely to be related	*There is little evidence to suggest the event was caused by trial procedures and/or the trial intervention, and other contributory factors such as the participant's underlying health condition or concomitant treatments are more likely to be the cause of the event.*
Unrelated	*There is no evidence of any causal relationship (e.g., because the event did not occur within a reasonable time after administration of the trial treatment/procedure).*

Where a causal relationship is suggested, the CI supervisor will record an assessment of expectedness. Expectedness will be judged on a case-by-case basis. An event deemed to be unexpected will be regarded as a SUSAR and will be subject to expedited onward reporting as described in section 15.5.

Events will be followed up until the event has resolved or a final outcome is achieved.

15.5. Onward reporting of SAEs / SARs / SUSARs

Table 4 Serious event reporting requirements

Event	Reported by	Reported to	Reported when	Reported how
SUSARs	OBtAIN-PD researcher	Sponsor	Within 24 hours*	Email to plymouth.sponsor@plymouth.ac.uk Sponsor representative
SUSARs	OBtAIN-PD researcher	REC† & TSC‡	Within 7 or 15 days*¶	Using non-CTIMP safety report form (available on HRA website), by email Sponsor representative (plymouth.sponsor@plymouth.ac.uk)

All SAEs/SARs	OBtAIN-PD researcher	Sponsor & TSC	Quarterly	Line listing, by email plymouth.sponsor@plymouth.ac.uk, Sponsor representative
All ARs (including SARs)	OBtAIN-PD researcher	REC	Annually	Using annual progress report form (available on HRA website), by email to REC/ HRA contact

**of the CTU becoming aware of the event; †REC - Research Ethics Committee; ‡TSC - Trial Steering Committee*
¶7 days for fatal or life-threatening events. 15 days for others

15.6. Unblinding for SUSAR reporting purposes

SUSARs will be unblinded before onward reporting to the REC. Unblinding will be performed by designated member(s) of PenCTU.

15.7. Recording of adverse events

PenCTU will maintain a register of all recorded adverse events.

15.8. Safety oversight

The Trial Management Group (TMG) will discuss any SUSARs and any emerging safety concerns at monthly TMG meetings. Line listings of SAEs/SARs, produced by the OBtAIN-PD research team, will be reviewed periodically by the Trial Steering Committee (TSC) in accordance with the details set out in the agreed TSC Charter.

16. STATISTICS AND DATA ANALYSIS:

16.1. QUANTITATIVE

16.1.1. Target sample size and justification

As this protocol is for a feasibility trial, the more usual sample size calculation, based on considerations of power for detecting a between-group clinically meaningful difference in a primary clinical outcome, is not appropriate. Instead, the aim is to provide robust estimates of the likely rates of recruitment and follow-up, as well as provide estimates of the variability of the proposed primary and secondary outcomes to inform sample size calculations for the planned definitive trial. Results will be reported descriptively as this is not a fully powered RCT. Recruitment/retention and data completeness will be reported following the CONSORT extension for pilot and feasibility trials (53). SPSS software will be used for all statistical analysis (54). All statistical analysis will be completed by the lead researcher (CL) with the support of a CTU statistician as part of my ongoing training and development.

Different data collection methods have been chosen to gather process data, including comparing intervention logs with case notes to assess fidelity, subjective opinion, and attrition rates to assess intervention acceptability. This is consistent with the pragmatic study approach. This triangulation contributes to minimizing research bias and enhances the validity of the results (85). Staff drop-out will be recorded to monitor the sustainability of the OBtAIN-PD.

The target sample size is 50. Participants will be recruited from two sites in the Southwest region of UK (RDE and LiveWell Southwest) over ten months. The number of PWPs in the Exeter and Plymouth catchment areas are estimated as 1800 with 70% (1300) known to the PD services. Of these, 50% are estimated to have anxiety (8, 55) n=650. The presence of a severe cognitive impairment in Parkinson's that is likely to impair mental capacity has an estimated point prevalence of 5-10% (56-

58). Thus, the estimated participant pool is ~615. If we can identify at least 585 eligible participants, the overall recruitment rate to be estimated with precision of at least ±4% (i.e., width of 95% confidence interval). Assuming a retention rate of 80% at follow-up, this sample size would allow estimation of the overall retention rate with precision of ±11%. Assuming a non-differential follow-up rate of 80%, it is anticipated to follow-up a minimum of 20 participants in each of the two treatment groups, which would provide data to help inform indicative sample size calculations for the definitive RCT.

Given the total sessions in the intervention an usual care group (8 sessions in 10-weeks- see below) this recruitment rate results in a maximum estimated 2-2.5 hrs/week of occupational therapy per site for each occupational therapist dedicated to this project (n=2 per site). This reflects the current workload allocation (<5%) for PWPs for community occupational therapists.

16.1.2. Progression criteria

Progression to a full RCT will be determined in advance of recruitment and in consultation with the trials management group and steering committee and will be based on a traffic light system of green (go), amber (amend), and red (stop) (59). Failure to achieve these criteria will indicate that a full trial is not feasible unless the qualitative study indicates clear ways for improvement. A recommendation list will be generated to enable refinement of the full RCT. Possible criteria to consider are:

PROGESSION CRITERION	NOTES	RED %	AMBER %	GREEN %
Participant recruitment feasibility	Proportion of approached patients providing consent within the 10-month recruitment window	≤ 50%	51-69%	≥ 70%
Participant recruitment rate (overall)	Actual total recruitment compared to target total recruitment	≤ 50%	51-69%	≥ 70%
Participant recruitment rate (monthly)	Actual maximum achieved monthly recruitment rate compared to target monthly recruitment rate	≤ 50%	51-69%	≥ 70%
Participant retention rate	Proportion of randomised participants providing final study follow up visit data	≤ 40%	41-79%	≥ 80%
Intervention fidelity	Proportion of interventions delivered as per protocol	≤ 60%	61-74%	≥ 75%
Primary outcome data completeness	Proportion of randomised participants providing sufficient data at <primary outcome assessment timepoint> to support analysis*	≤ 60%	61-79%	≥ 80%
Interview completion	Proportion of interviews completed with participants and trial occupational therapists	≤ 50%	62-75%	≥ 75%
Site willingness	Willingness of the four individual CRTs to participate in the full cluster RCT	≤ 25%	50%	≥ 75%

Progression criteria will be monitored with the Trial Steering Committee.

16.1.3. Summary of baseline data and flow of patients

The analysis and reporting of this feasibility trial will follow the CONSORT guidance for feasibility trials (53). The flow of participants throughout the trial will be presented in a CONSORT style diagram with reasons for discontinuation or withdrawal given where available. Descriptive statistics of participants demographic and baselines characteristics will be presented by allocated groups and overall.

16.1.4. Outline of statistical analyses

A detailed statistical analysis plan will be finalised ahead of trial database locking.

A CONSORT diagram will display data from screening, recruitment and follow-up logs and be used to generate estimates of eligibility, recruitment, consent, and follow-up rates. Completion rates will be estimated for outcome measures at each time-point, including the health, social and wider care resource-use data. Recruitment and retention rates will be accompanied by 95% confidence intervals, to inform assumptions for planning the definitive trial. Adherence data will contribute to evaluation of intervention acceptability/feasibility.

All outcomes will be summarized by allocated group at each follow-up with appropriate descriptive statistics. Between-group differences will also be reported with 95% confidence intervals. Estimates of the correlation between baseline and follow-up outcome measures will be used to inform a future sample size calculation for a definitive RCT.

16.1.5. Procedure(s) to account for missing or spurious data

Reasons for being unable to collect data during an assessment will be recorded on the electronic case report form (eCRF) where appropriate. Case report forms will be assessed for missing data by the CTU. No imputation of missing data will be undertaken.

16.2. QUALITATIVE ANALYSIS

The qualitative analysis will be undertaken collaboratively by members of the OBtAIN-PD research team and led by Mr Chris Lovegrove. See section 10.1.7 for details on content for the qualitative analysis.

The qualitative data for analysis will include verbatim transcripts from the one-to-one interviews of participants and NHS occupational therapy staff. The anonymised transcribed data will be uploaded into NVivo 12 software for organisation and analysis (QSR International, Southport, UK). Data will be analysed using thematic analysis adopting Braun and Clarke's six-phase process of (i) data familiarisation; (ii) coding; (iii) generation of initial themes; (iv) reviewing themes; (v) defining and naming themes and (vi) writing up to identify patterns of meaning within the data sources. Initial themes will be refined by two researchers to maximise credibility and dependability.

Interviewees will be invited to review a draft of the analysis to ensure accurate representation of their experiences as part of a member checking process.

16.3. Economic evaluation

The resources required to provide the intervention will be assessed and a framework will be established for a future cost-effectiveness analysis alongside a full RCT. Methods for the collection of resource use and outcome data will be developed and tested. Data on intervention resources will be collected via within-trial reporting, including participant-level contact and non-contact time, and training for delivery staff. Participants will self-report health, social and wider care resource use, using the Resource Use Questionnaire adapted for this trial. Participants will complete the EQ-5D-5L (the anticipated primary economic outcome measure in a full trial), and the feasibility of estimating QALYs over the follow-up period will be assessed. The economic evaluation methods will be developed to

provide a future policy-relevant cost-effectiveness analysis of the intervention in the context of the UK NHS/Personal Social Services.

17. DATA MANAGEMENT

Data management activities are summarised in this section. Detailed data management activities are described in a separate Data Management Plan (DMP).

17.1. Data collection tools and source document identification

A web-based system developed by PenCTU will be used for the recording of all trial data as recorded in table 2 and in section 2.2.2. Each participant will be allocated a unique trial number when they are registered on the data collection website by the CRN staff/ OBtAIN-PD Research team.

17.2. Data handling and record keeping

Electronic data captured in PenCTU's bespoke web-based system will be stored on Microsoft Azure servers located in the North Europe data centre (located in Dublin). The servers are certified to Cyber Essentials PLUS standards. PenCTU staff develop applications in the Azure environment according to the requirements of the UK NHS Health and Social Care Cloud Security - Good Practice Guide.

The eCRF is built in REDCap Cloud. eCRF data is stored in the REDCap Cloud production infrastructure, hosted in Amazon Web Server (AWS) datacentres located in the European Union. AWS datacentres are Service Organization Control (SOC) type 1 and type 2 compliant. Data will be stored on hardware dedicated to REDCap Cloud.

In both systems, all electronic data are backed up and stored with a full audit trail.

17.3. Data quality and completeness

PenCTU Data Management staff will monitor the completeness and quality of data recorded in eCRFs and will correspond regularly with OBtAIN-PD research team with the aim of capturing any missing data where possible and ensuring continuous high quality of data. Data quality and completeness checks will be defined by the Data Manager through consultation with the CI, trial statistician, OBtAIN-PD researchers and other members of the Trial Management Group as required. Checks will be described in the Data Management Plan. Throughout the trial, the Data Manager will report on the quality and completeness of accumulating data to the Trial Management Group.

17.4. Access to Data

Direct access to investigator site records will be granted to authorised representatives from the Sponsor (including PenCTU staff) to permit trial-related monitoring, audits, and inspections in line with participant consent.

18. ARCHIVING

Following completion of trial data analysis, the CI and CTU will be responsible for archiving the study data and Trial Master File in a secure location for at least 10 years after the end of the trial. The OBtAIN-PD research team will prepare the Trial Master File for archiving in accordance with the requirements of the Sponsor's SOP. PenCTU will prepare a copy of the final dataset for archiving according to the requirements of the CTU's SOP. The sponsor will be provided with details of and access to where the data is stored.

Principal Investigators at sites will be responsible for archiving Investigator Site Files and trial data generated at the site according to local policy. No trial-related records should be destroyed unless or until the Sponsor gives authorisation to do so.

19. MONITORING, AUDIT & INSPECTION

A trial monitoring plan will be developed and agreed by the Trial Management Group (TMG) and Trial Steering Committee (TSC). The TMG will meet monthly. The TSC will meet three times over the 24-month period of the project, with the first meeting taking place prior to the start of study recruitment. The TSC will include member's independent from the trial and include an independent chair and statistician (see below for details)

19.1. Trial Management Group (TMG)

Make up: Most members of the TMG were involved in the development of the grant application. It includes representation from the CTU (trial management), the sponsor, and a person with Parkinson's.

Frequency of meetings: The TMG will meet approximately monthly (via face-to-face, webinar or telephone conference) over the course of the trial.

Responsibilities: Development of the protocol and other essential documentation, monitor progress, troubleshoot problems, report to TSC, funder, REC. The responsibility of this group is to ensure all practical details of the trial are progressing well and working well, and everyone within the trial understands them. This will include, for instance, monitoring adverse events, recruitment and attrition rates, the project timeline, and finances. It will also include responsibility for the release of the trial results and publications.

Degree of independence from Sponsor and Investigators: the sponsor is represented on this group Minutes of meetings will be sent to all members and the sponsor and retained in the trial master file.

19.2. Trial Steering Committee (TSC)

Make up: the TSC comprises a group of experienced trialists and clinicians with majority independent representation: chair (independent), external statistician (independent), lay member (independent), occupational therapist (independent), CI, trial statistician, representative from the CTU (for observation), representative from the sponsor.

Frequency of meetings: the TSC will meet before the start of the trial and subsequently at least annually during the trial. In addition, the TSC will receive a quarterly report of adverse events, and a telephone conference/additional face-to-face meeting will be instigated by the chair, or the CI should any issues need to be discussed.

Responsibilities: The responsibility for calling and organising the TSC meetings lies with the OBtAIN-PD team

Degree of independence from Sponsor and Investigators: Confirmation that independent members of the TSC are unconnected to either the trial sponsor or investigators will be made through the completion of Conflict of Interests documents by all TSC members.

Minutes of meetings will be sent to all members, the sponsor, and the funder and be retained in the trial master file.

20. ETHICAL AND REGULATORY CONSIDERATIONS

20.1. Research Ethics Committee (REC) review & reports

The trial will not be initiated before the protocol, informed consent forms, participant information sheets and other relevant documents (e.g., advertisements and GP information letters) have received approval from the Research Ethics Committee (REC), and the respective NHS R&D department. The Investigator will ensure that this study is conducted in full conformity with relevant regulations and with the UK Policy Framework for Health and Social Care Research (2017) , which have their basis in the Declaration of Helsinki

20.2. Peer review

This study was funded by the NIHR Clinical Doctoral Research Fellowship scheme (NIHR 301565) through submission and review of the proposed study undergoing 2 rounds of review prior to awarding of funding.

20.3. Public and Patient Involvement

PPI input has been provided by the lay members, including PWPs and occupational therapists. Our PPI has provided input into key aspects of study design. Discussion with our PPI representatives has led the trial to; implement the recording of self-report measures via a web-based app to minimise burden, and interviewing decliners. They will be involved with topic guide development for the qualitative component of the trial. An options appraisal was conducted at the 2022 Royal College of Occupational Therapists annual conference and was attended by 124 occupational therapists from a variety of clinical backgrounds including (but not exclusively) acute, community, mental health, and academic services. Recommendations from this appraisal have been incorporated into this protocol and include; the flexibility of treatment session delivery method, competency assessment for the clinicians involved in the trial, and regular contact/ support for the trial clinicians in addition to the provided training. A PAG (patient advisory group) has been recruited to support the research team with patient-relevant advice and guidance on the delivery and progression of the study. The research team has worked with the PAG to review and refine the content and materials used in this study.

20.4. Regulatory Compliance

The trial will not commence until a favourable REC opinion and HRA approval has been obtained.

Before any site can enrol patients into the study, the CI/PI or designee will ensure that appropriate approvals from participating organisations are in place.

For any amendment to the study, the CI, in agreement with the sponsor, will submit information to the appropriate body for them to issue approval for the amendment. The CI will work with sites (R&D departments at NHS sites as well as the study delivery team) so they can put the necessary arrangements in place to implement the amendment to confirm their support for the study as amended.

20.5. Protocol compliance

Any deviation from or non-compliance with the study protocol or GCP will be documented on the relevant study specific form and will be reported by the OBtAIN-PD research team to the TMG and TSC. Non-compliance with outcome measures or data capture will be identified by the CTU and reported to the OBtAIN-PD research team who will report to the wider TMG (including sponsor) and TSC.

Deviations from the protocol which are found to recur frequently are not acceptable, will require immediate action and could potentially be classified as a serious breach.

The OBtAIN-PD research team will review episodes of non-compliance with the CI/TMG (and Sponsor if appropriate) and every effort will be made to address any recurrent problems, including amendment of the study protocol if appropriate.

20.6. Notification of Serious Breaches to GCP and/or the protocol

A “serious breach” is a breach which is likely to effect to a significant degree –

(a) the safety or physical or mental integrity of the participants of the trial; or
(b) the scientific value of the trial

The sponsor will be notified immediately of any case where the above definition applies during the trial conduct phase. The sponsor of a clinical trial will notify the ethics committee in writing of any serious breach of

(a) the conditions and principles of GCP in connection with that trial; or
(b) the protocol relating to that trial, as amended from time to time, within 7 days of becoming aware of that breach

20.7. Data protection and patient confidentiality

All investigators and trial site staff will comply with the requirements of the Data Protection Act 2018 with regards to the collection, storage, processing, and disclosure of personal information and will uphold the Act’s core principles.

Personal information will be collected, kept secure, and maintained so that:

- all CRF’s (source data) will be pseudo-anonymised using unique participant identifying numbers
- the ID coded data and the linking code will be securely stored in separate locations using encrypted digital files within password protected folders and storage media
- only the research team will have access to the data

20.8. Financial and other competing interests

No members of the research team or the PI’s or trial management committee members have any financial or other competing interests.

20.9. Indemnity

The University of Plymouth indemnity scheme will meet the potential legal liability of the Sponsor(s): -

for harm to participants arising from the management of the research

for harm to participants arising from the design of the research

arising from harm to participants in the conduct of the research

NHS indemnity scheme or professional indemnity will apply for participants recruited at NHS sites only.

This is a University of Plymouth -sponsored research trial. If an individual suffers negligent harm as a result of participating in the trial, the University indemnity scheme covers those people conducting the trial who have contracts for the research project.

For the management and design of this research, the University of Plymouth has in force a Public Liability Policy and the activities in this study are included within that coverage. Details of insurance

can be found at https://www.plymouth.ac.uk/about-us/university-structure/service-areas/procurement/insurance-certificates

20.10. Amendments

The sponsor may make a non-substantial amendment at any time during a trial. If the sponsor wishes to make a substantial amendment to the REC application or the supporting documents, the sponsor must submit a valid notice of amendment to the REC for consideration. It is the sponsor's responsibility to decide whether an amendment is substantial or non-substantial for the purposes of submission to the REC.

Amended documents will be allocated a new sequential version number. Once approved by REC, this version will supersede any previous versions.

20.11. Post-trial care

The Declaration of Helsinki 2013 states that "In advance of a clinical trial, sponsors, researchers and host country governments should make provisions for post-trial access for all participants who still need an intervention identified as beneficial in the trial". This information will be disclosed to participants during the trial. Inclusion within the trial will not affect the ability for participants to seek further care after the trial has concluded.

20.12. Access to the final trial dataset

Data generated as a result of this trial will be available for inspection on request by the OBtAIN-PD research team, University of Plymouth representatives, the REC, local R&D Departments and regulatory authorities.

21. DISSEMINATION POLICY

Results of this feasibility trial will inform the design of the anticipated definitive trial, rather than directly inform clinical decision making since clinical and cost effectiveness cannot be determined at this level. Hence dissemination, regardless of outcome, will focus on publication of the trial protocol, and related methodological issues in a peer reviewed journal.
Other means of dissemination will include:

- Funding proposal for a full-scale effectiveness trial to be submitted to an appropriate NINR programme or funding scheme, such as the Advanced Clinical and Practitioner Academic Fellowship scheme, if the trial meets our criteria for progression to a definitive trial.
- Lay oriented research feedback events (in localities of participating study sites) at the end of the trial for participants, staff, and the general public
- All participants who wish will receive a lay summary of the results. A clinically oriented trial summary will be posted on websites/newsletters of organisations involved in recruitment.
- Regular updates via our study website and social forums (e.g., twitter) regarding progress of the study (note - results will not be shared until study completion), and newsletters will be emailed to participating services to provide transparency and raise study awareness.
- Conference presentations of results in grass root level occupational therapy meetings and research conferences and to generate enthusiasm for the potential definitive trial.

21.1. Authorship eligibility guidelines and any intended use of professional writers

Professional writers will not be used in the preparation of any material for publication at the end of the trial.

22. REFERENCES

1. Parkinson's UK. Parkinson's and You Online2014 [Available from: https://s3-eu-west-1.amazonaws.com/puk-live-1-d8-ie/2017-03/Parkinson%27s%20and%20you.pdf.
2. Kalia LV, Lang AE. Parkinson's disease. The Lancet. 2015;386(9996):896-912.
3. Hultqvist J, Sahlström T, Timpka J, Henriksen T, Nyholm D, Odin P, et al. Everyday Occupations and Other Factors in Relation to Mental Well-Being among Persons with Advanced Parkinson's Disease. Occupational Therapy in Health Care. 2020;34(1):1-18.
4. Sjodahl Hammarlund C, Westergren A, Astrom I, Edberg AK, Hagell P. The Impact of Living with Parkinson's Disease: Balancing within a Web of Needs and Demands. Parkinsons Dis. 2018;2018:4598651.
5. Duncan GW, Khoo TK, Yarnall AJ, O'Brien JT, Coleman SY, Brooks DJ, et al. Health-related quality of life in early Parkinson's disease: The impact of nonmotor symptoms. Movement Disorders. 2014;29(2):195-202.
6. Parkinson's UK. The Cost of Parkinson's. 2017.
7. Fineberg NA, Haddad PM, Carpenter L, Gannon B, Sharpe R, Young AH, et al. The size, burden and cost of disorders of the brain in the UK. Journal of Psychopharmacology. 2013;27(9):761-70.
8. Barone P, Antonini A, Colosimo C, Marconi R, Morgante L, Avarello TP, et al. The PRIAMO study: A multicenter assessment of nonmotor symptoms and their impact on quality of life in Parkinson's disease. Movement Disorders. 2009;24(11):1641-9.
9. Dissanayaka NN, White E, O'Sullivan JD, Marsh R, Pachana NA, Byrne GJ. The clinical spectrum of anxiety in Parkinson's disease. Movement Disorders. 2014;29(8):967-75.
10. Pontone GM, Dissanayka N, Apostolova L, Brown RG, Dobkin R, Dujardin K, et al. Report from a multidisciplinary meeting on anxiety as a non-motor manifestation of Parkinson's disease. NPJ Parkinsons Dis. 2019;5:30.
11. Coventry PA, Dickens C, Todd C. How does mental-physical multimorbidity express itself in lived time and space? A phenomenological analysis of encounters with depression and chronic physical illness. Social Science and Medicine. 2014;118(C):108-18.
12. Kano O, Ikeda K, Cridebring D, Takazawa T, Yoshii Y, Iwasaki Y. Neurobiology of depression and anxiety in Parkinson's disease. Parkinson's disease. 2011;2011:143547-.
13. Kienast T, Hariri AR, Schlagenhauf F, Wrase J, Sterzer P, Buchholz HG, et al. Dopamine in amygdala gates limbic processing of aversive stimuli in humans. Nature neuroscience. 2008;11(12):1381-2.
14. Rosen JB, Schulkin J. From normal fear to pathological anxiety. Psychological Review. 1998;105(2):325-50.
15. Richard IH, Frank S, McDermott MP, Wang H, Justus AW, LaDonna KA, et al. The ups and downs of Parkinson disease: a prospective study of mood and anxiety fluctuations. Cogn Behav Neurol. 2004;17(4):201-7.
16. Wells A. A Cognitive Model of Generalized Anxiety Disorder. Behavior Modification. 1999;23(4):526-55.
17. Hofmann SG, Ellard KK, Siegle GJ. Neurobiological correlates of cognitions in fear and anxiety: a cognitive-neurobiological information-processing model. Cognition & Emotion. 2012;26(2):282-99.
18. Lovegrove CJ, Bannigan K. What is the lived experience of anxiety for people with Parkinson's? A phenomenological study. PLoS One. 2021;16(4):e0249390.
19. Deane KHO, Flaherty H, Daley DJ, Pascoe R, Penhale B, Clarke CE, et al. Priority setting partnership to identify the top 10 research priorities for the management of Parkinson's disease. BMJ Open. 2014;4(12):e006434-e.
20. Royal College of Occupational Therapists. Royal College of Occupational Therapists' Research and Development Strategy 2019-2024. 2019.
21. National Institute of Health Research. Research Priorities 2020 [Available from: https://www.nihr.ac.uk/explore-nihr/funding-programmes/themed-calls.htm.
22. Lovegrove CJ, Bannigan K, Cheeseman D, Latour JM. The involvement of people with Parkinson's in designing a study of the lived experience of anxiety. British Journal of Occupational Therapy. 2017:1-8.
23. The King's Fund. Mental Health Under Pressure. 2015.
24. CSDH. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. 2008.
25. Toussaint A, Hüsing P, Gumz A, Wingenfeld K, Härter M, Schramm E, et al. Sensitivity to change and minimal clinically important difference of the 7-item Generalized Anxiety Disorder Questionnaire (GAD-7). J Affect Disord. 2020;265:395-401.

26. Ruiz MA, Zamorano E, Garcia-Campayo J, Pardo A, Freire O, Rejas J. Validity of the GAD-7 scale as an outcome measure of disability in patients with generalized anxiety disorders in primary care. J Affect Disord. 2011;128(3):277-86.
27. Spitzer R, Kroenke K, Williams J, Lowe B. A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. JAMA Internal Medicine. 2006;166(10):1092-7.
28. Locke A, Kirst N, Shultz C. Diagnosis and Management of Generalized Anxiety Disorder and Panic Disorder in Adults. American Family Physician. 2015;91(9):617-24.
29. Horváth K, Aschermann Z, Kovács M, Makkos A, Harmat M, Janszky J, et al. Changes in Quality of Life in Parkinson's Disease: How Large Must They Be to Be Relevant? Neuroepidemiology. 2017;48(1-2):1-8.
30. Alvarado-Bolaños A, Cervantes-Arriaga A, Rodríguez-Violante M, Llorens-Arenas R, Calderón-Fajardo H, Millán-Cepeda R, et al. Convergent validation of EQ-5D-5L in patients with Parkinson's disease. Journal of the Neurological Sciences. 2015;358(1):53-7.
31. Cup EHC, Scholte Op Reimer WJM, Thijssen MCE, van Kuyk-Minis MAH. Reliability and validity of the Canadian Occupational Performance Measure in stroke patients. Clinical rehabilitation. 2003;17(4):402.
32. Dedding C, Cardol M, Eyssen ICJM, Dekker J, Beelen A. Validity of the Canadian Occupational Performance Measure: a client-centred outcome measurement. Clinical rehabilitation. 2004;18(6):660.
33. Eyssen ICJM, Beelen A, Dedding C, Cardol M, Dekker J. The reproducibility of the Canadian Occupational Performance Measure. Clinical Rehabilitation. 2005;19(8):888-94.
34. Gaudet P. Measuring the impact of Parkinson's disease: an occupational therapy perspective. Canadian Journal of Occupational Therapy. 2002;69(2):104-13.
35. Sturkenboom IHWM, Graff MJL, Hendriks JCM, Veenhuizen Y, Munneke M, Bloem BR, et al. Efficacy of occupational therapy for patients with Parkinson's disease: a randomised controlled trial. Lancet Neurology. 2014;13(6):557-66.
36. Veenhuizen Y, Cup EHC, Jonker MA, Voet NBM, van Keulen BJ, Maas DM, et al. Self-management program improves participation in patients with neuromuscular disease A randomized controlled trial. Neurology. 2019;93(18):E1720-E31.
37. Sturkenboom IH, Graff MJ, Borm GF, Veenhuizen Y, Bloem BR, Munneke M, et al. The impact of occupational therapy in Parkinson's disease: a randomized controlled feasibility study. Clin Rehabil. 2013;27(2):99-112.
38. Duncan RP, Earhart GM. Measuring participation in individuals with Parkinson disease: relationships with disease severity, quality of life, and mobility. Disability and Rehabilitation. 2011;33(15-16):1440-6.
39. Morley D, Selai C, Thompson A. The self-report Barthel Index: preliminary validation in people with Parkinson's disease. Eur J Neurol. 2012;19(6):927-9.
40. Sainsbury A, Seebass G, Bansal A, Young JB. Reliability of the Barthel Index when used with older people. Age and Ageing. 2005;34(3):228-32.
41. National Institute for Health and Care Excellence. Parkinson’s disease Quality standard. NICE guidelines (QS164). 2018 09 Feb 2018.
42. Royal College of Occupational Therapists. Occupational therapy for people with Parkinson's - best practice guide. 2018 1.
43. Fox J, Erlandsson L-K, Shiel A. A systematic review and narrative synthesis of occupational therapy-led interventions for individuals with anxiety and stress-related disorders. Occupational Therapy in Mental Health. 2019;35(2):179-204.
44. Clarke CE, Patel S, Ives N, Rick CE, Dowling F, Woollet R, et al. Physiotherapy and Occupational Therapy vs No Therapy in Mild to Moderate Parkinson Disease: A Randomized Clinical Trial. JAMA Neurology. 2016;73(3):291-.
45. Ghielen I, van Wegen EEH, Rutten S, de Goede CJT, Houniet-de Gier M, Collette EH, et al. Body awareness training in the treatment of wearing-off related anxiety in patients with Parkinson's disease: Results from a pilot randomized controlled trial. J Psychosom Res. 2017;103:1-8.
46. Pickut B, Vanneste S, Hirsch MA, Van Hecke W, Kerckhofs E, Marien P, et al. Mindfulness Training among Individuals with Parkinson's Disease: Neurobehavioral Effects. Parkinson's Disease. 2015;2015:1-6.
47. Fletcher B, Gheorghe A, Moore D, Wilson S, Damery S. Improving the recruitment activity of clinicians in randomised controlled trials: a systematic review. BMJ Open. 2012;2(1):e000496-e.
48. Carson N, Leach L, Murphy KJ. A re-examination of Montreal Cognitive Assessment (MoCA) cutoff scores. Int J Geriatr Psychiatry. 2018;33(2):379-88.
49. Health Research Authority. Public Dialogue on Recruiting Participants for Health Research, HRA. 2016.

50. Mental Capacity Act. London: The Stationery Office; 2005.
51. Office for National Statistics. Exploring the UK's digital divide. 2019.
52. Hughes-Morley A, Young B, Hempel RJ, Russell IT, Waheed W, Bower P. What can we learn from trial decliners about improving recruitment? Qualitative study. Trials. 2016;17(1):494.
53. Eldridge S, Chan C, Campbell M, Bond C, Hopewell S, Thabane L, et al. CONSORT 2010 statement: extension to randomised pilot and feasibility trials. BMJ. 2016:355:i5239.
54. IBM Corp. IBM SPSS Statistics for Windows and Macintosh. 25.0 ed. Armonk, NY: IBM Corp.; 2017.
55. Pontone GM, Williams JR, Anderson K, Chase G, Goldstein S, Grill S, et al. Prevalence of Anxiety Disorders and Anxiety Subtypes in Patients With Parkinson's Disease. Movement Disorders. 2009;24(9):1333-8.
56. Aarsland D, Kurz MW. The epidemiology of dementia associated with Parkinson disease. Journal of the Neurological Sciences. 2010;289(1-2):18-22.
57. Garcia-Ptacek S, Kramberger MG. Parkinson Disease and Dementia. J Geriatr Psychiatry Neurol. 2016;29(5):261-70.
58. Hanagasi HA, Tufekcioglu Z, Emre M. Dementia in Parkinson's disease. J Neurol Sci. 2017;374:26-31.
59. Avery KN, Williamson PR, Gamble C, O'Connell Francischetto E, Metcalfe C, Davidson P, et al. Informing efficient randomised controlled trials: exploration of challenges in developing progression criteria for internal pilot studies. BMJ Open. 2017;7(2):e013537.

1. APPENDICES

Appendix 1: Gantt chart