

Appendix 1 Focus group guide

Activity 1: Discussion of suitable activities for people affected by cancer

- One of the aims is help plan physical activities, what physical activities do you or would you like to undertake?
- What are the benefits of physical activity?
- What are your concerns/the barriers to physical activity?
- What resources do you use, to know about and do about physical activity/what is helpful?

Activity: 2 Feedback on the existing PAT-Tool and how it can be adapted for people affected by cancer

- Thinking about the PAT-HD-Tool How could this be adapted for use in people affected by cancer
- What changes are needed?
- “What did you like best?”, “What did you like least?”,
- Looking at the page does anything need to be added or removed
- Layout: is there anything you would change about graphics/ colour/ font
- Should the Format be paper/electronic

Activity 3: Use and further development of the CAN-PAL tool

- How could using CAN-PAL make a difference to you?
- How could we measure the impact on people affected by cancer?
- Where should this tool be made available e.g. GP, hospital, charity website, other
- How could it be developed further?
- Who is the best person to help you plan activity and goals?
- What would help you achieve physical activity goals?

Appendix 2 CAN-PAL user survey

1) Please choose a value for 1-5 to indicate how strongly you agree or disagree with the following statements (1= strongly disagree: 5 = strongly agree)

- I think that I would like to use CAN-PAL frequently.
- I found CAN-PAL unnecessarily complex.
- I thought CAN-PAL was easy to use.
- I think that I would need the support of another person to be able to use CAN-PAL.
- I found the various parts of CAN-PAL were well integrated.
- I thought there was too much inconsistency in CAN-PAL.
- I would imagine that most people would learn to use CAN-PAL very quickly.
- I found CAN-PAL very cumbersome to use.
- I felt very confident using CAN-PAL.
- I needed to learn a lot of things before I could get going with CAN-PAL.

2) How useful could CAN-PAL be to help people affected by cancer? Please choose a value of 1-5 to indicate your choice with the following statements (1= not at all useful: 5 = very useful)

- Plan personalised activity?
- Set personalised activity goals?

- a. What is it that makes CAN-PAL useful/not useful to plan activity?
b. What is it that makes CAN-PAL useful/not useful to set goals?

3) What do you consider could be the potential benefits of using CAN-PAL?

4) What do you consider could be the potential risks of using CAN-PAL?

5) How could CAN-PAL (page 1 and 2) be improved?

6) How could the physical activity diary (page 3) be improved?

7) How could the user guide be improved?

Appendix 3

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:

Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

YOU MUST PROVIDE A RESPONSE FOR ALL ITEMS. ENTER N/A IF NOT APPLICABLE

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
<i>Personal Characteristics</i>		
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	Methods Page 3
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	Methods Page 3
3. Occupation	What was their occupation at the time of the study?	Methods Page 3
4. Gender	Was the researcher male or female?	N/A
5. Experience and training	What experience or training did the researcher have?	Methods Page 3
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	Methods Page 3
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Methods Page 3
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Limitations Page 11
Domain 2: study design		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Methods Page 4
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Methods Page 3
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Methods Page 3


12. Sample size	How many participants were in the study?	Results Page 4 & 7
13. Non-participation	How many people refused to participate or dropped out? Reasons?	N/A
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	Methods Page 3
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	Methods page 3
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	Results page 4 & 8
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Appendix 1
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Methods Page 4
20. Field notes	Were field notes made during and/or after the inter view or focus group?	Methods Page 4
21. Duration	What was the duration of the inter views or focus group?	Results Page 4
22. Data saturation	Was data saturation discussed?	Limitations page 11
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	Limitations page 11
Domain 3: analysis and findings		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	Methods Page 4
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A
26. Derivation of themes	Were themes identified in advance or derived from the data?	Methods Page 4
27. Software	What software, if applicable, was used to manage the data?	N/A
28. Participant checking	Did participants provide feedback on the findings?	Page 11
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Results Page 5-8
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Results Page 5-8-
31. Clarity of major themes	Were major themes clearly presented in the findings?	Results Page 5-8
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	N/A

Appendix 4 Cancer: Personalised Activity and Lifestyle tool


Cancer: Personalised activity and lifestyle (CAN-PAL)

Physical activity includes a daily activity such as dressing, housework, sport and exercise. Examples below:


Fitness




Strength





Flexibility





Balance























Light

Moderate

Vigorous

Known benefits of physical activity for people with Cancer

- Improved Fatigue
- Improved Quality of life
- Improved function and independence
- Improved Anxiety and depression
- Reduced risk of cancer recurrence

People with cancer have said:

- 'Listen to your body'
- 'Do different things at different stages'
- 'It should help build confidence'
- 'It really helps me cope mentally'

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My physical activity plan Name: _____

Date: / /

Review Date: / /

What's important to me... and I like doing?

Which physical activity/exercise do I do now?

My Activity Goal

What will I do? e.g. use the stairs more, walk more regularly, exercise class online / in a group / in a gym

What support do I need? e.g. Family, friends, support network or group, healthcare professional

How often will I do it and where? e.g. at home, outdoors, in the gym, with friends

What concerns about activity, do I need to discuss with a healthcare worker? e.g. pain, fatigue, medications, recent surgery, medications, weak bones, risk of falls, lymphoedema

Contact details for help: _____

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CAN-PAL: Physical Activity Diary

Guidelines advise aiming for 30 mins of moderate activities 5 times a week, including strength and balance exercise twice a week. Activities can be in 5-10 minute intervals. It's OK to work towards this, starting small, as any activity is beneficial. Progress may be variable so be guided by your treatment, symptoms, sleep and fatigue.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Example
How do you feel today?								
Light Able to sing during the activity								
Moderate Able to talk during the activity								Did the laundry (10mins). Walked to the shops alone (15mins).
Vigorous Breathing hard, during the activity								
Goals achieved								25 mins activity.

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Activity Resources

- **Maggie's** offers support free to anyone with cancer and their families <https://www.maggies.org>
- **Macmillan Cancer Support** include resources designed for people with cancer <https://www.macmillan.org.uk/cancer-information-and-support/treatment/preparing-for-treatment/eating-well-and-keeping-active> <https://www.macmillan.org.uk/documents/cancerinfo/physicalactivity/movemore.pdf>
- **Tenovus Cancer Care** support anyone affected by cancer <https://www.tenovuscancer.org.uk>
- **Cancer Research UK** has Exercise guidelines for cancer patients <https://www.cancerresearchuk.org/about-cancer/coping/physicalactivity/exercise-guidelines>
- **World Cancer Research Fund International** examines how diet, weight and physical activity affect your risk of developing and surviving cancer. <https://www.wcrf.org>
- The **NHS website** has information about new ways and places to exercise for free: <https://www.nhs.uk/better-health/get-active>
- The **Chartered Society for Physiotherapists** has a guide for being active with cancer along with other long-term conditions <https://www.csp.org.uk/public-patient/keeping-active-healthy/love-activity-hate-exercise-campaign/being-active-long-term>
- **National Exercise Referral Scheme** (referral from GP's and healthcare professionals) <https://www.wlga.wales/wales-national-exercise-referral-schemers>
- **Moving Medicine** is a resource to help healthcare professionals integrate physical activity conversations into routine clinical care and includes a workbook. <https://www.movingmedicine.ac.uk> <https://www.nhs.uk/live-well/exercise/free-fitness-ideas/>
- **American College of Sports Medicine** has physical activity guidelines for chronic condition including cancer <https://www.acsm.org/education-resources/trending-topics-resources/physical-activity-guidelines>
- **5k Your Way** is a community-based initiative to encourage those living with and beyond cancer, families, friends, and those working in cancer services to walk, jog, run, cheer or volunteer at a local 5k Your Way parkrun event on the last Saturday of every month. <https://5kyourway.org>
- **Ramblers** organise walks of varying distance across the UK, including health walks: Let's Walk Cymru in Wales, Walking for Health in England; and Take30 in Scotland. <http://www.ramblers.org.uk/Ramblers>
- **Conservation Volunteers Green Gym**: provides opportunities to exercise outdoors and benefit local green spaces <https://www.tcv.org.uk/greengym>
- **Men's Sheds**: Supports community spaces for men to connect, converse and create. <https://menssheds.org.uk>
- **Activity Alliance** provides information on facilities that support the inclusive fitness initiative: <http://www.activityalliance.org.uk/get-active/inclusive-gyms>

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Appendix 5 User guide

Cancer: Personalised activity and lifestyle tool (CAN-PAL) User Guide

The cancer: personalised activity and lifestyle tool (CAN-PAL), has been developed by researchers at Cardiff University in collaboration with people affected by cancer. It was based on a tool co-designed with people another long-term condition, their families and healthcare professionals (Jones et al 2021). The purpose of CAN-PAL is:

- To provide a tool for people working in cancer care to encourage conversations with people affected by cancer about planning and participating in physical activity.
- To facilitate the development of personalised activity and lifestyle plans and goals

The completed CAN-PAL should be given to the person affected by cancer and if possible, a copy kept for their medical notes. It can be reviewed and adapted over time as needed. It may be useful to use alongside the Holistic Needs Assessment (NHA).

Physical activity is safe for many people affected by cancer and conversations to promote physically activity should ideally happen as soon as possible. However, there are some precautions which should be checked before commencing physical activity (see table 1, Page 3). As many patients with cancer have variable health due to the cancer or cancer treatments, progression is likely to be nonlinear (as shown by the winding road) and it is important for patients to consider side effects from treatment and symptoms such as fatigue, breathlessness and pain. The *American College of Sports Medicine (ACSM)* recommends moderate activity for 30mins, 3 times a week and resistance activities 2 sets of 8-15 repetitions twice a week. Patients may need to start with much less and can accumulate activities of shorter duration. The intensity of activities can be guided as light: able to sing, moderate: able to talk, vigorous: breathing hard, unable to talk.

How to use CAN-PAL

Page 1 provides prompts for people to discuss the benefits of physical activity specifically for people with cancer. The discussion can then progress to explore different types of physical activity i.e. to improve fitness, strength, flexibility and balance with examples of different types of activities and where they could be carried out. The winding road is included to show that activities can be variable based on an individual's symptoms and wellbeing.

Page 2 focuses on developing an activity plan for the person affected by cancer. The questions are designed to ask and record the person's preferences, what is important to them and why, what they do now, support they may need to make the changes and concerns about changing their physical activity which can be discussed with a healthcare worker. Activities can include general interests and activities they enjoy alone or with others.

Page 3 is a diary for individuals to record their health, activities and milestones reached.

Page 4 includes resources to support activity to signpost people to appropriate activities and support networks.

If you have any questions or comments about CAN-PAL please contact Nichola Gale: galens@cardiff.ac.uk

We would like to capture the use and feedback of CAN-PAL
Please scan the QR code below which will link to a brief questionnaire on the use of CAN-PAL



Reference

Jones, U., Hamana, K., O'Hara, F. and Busse, M., 2021. The development of PAT-HD: A co-designed tool to promote physical activity in people with Huntington's disease. *Health Expectations*, 24(2), pp.638-647

Physical Activity Precautions

Table 1 Physical activity precautions adapted from Macmillan's 'interventions to promote physical activity for people living with and beyond cancer'

https://www.macmillan.org.uk/documents/aboutus/health_professionals/physicalactivityevidencebasedguidance.pdf

Potential risk	Considerations
Exacerbation of symptoms (e.g., pain, fatigue, nausea, dyspnea)	Avoid high-intensity exercise; monitor symptoms; modify exercise type based on site of treatment (e.g., avoid exercise bike after prostate/rectal surgery). Sudden, unexplained shortness of breath may indicate a pulmonary embolism requiring urgent medical treatment
Recent surgery	After certain types of surgery, patients might have to wait before being as active as before. The consultant, Healthcare professional or specialist nurse can advise on activities and risks.
Immunosuppression	If a patient has low white blood cell counts, avoid high intensity/volume of exercise (keep to light –moderate intensity).
Falls	If a patient has dizziness, frailty, peripheral sensory neuropathy, incorporate balance and co-ordination exercises (e.g., tai chi) and avoid activities needing considerable balance/coordination (e.g., treadmill).
Bone fracture	If a patient has bone metastases/osteoporosis risk avoid high impact or contact activities.
Lymphoedema	To minimise the risk of lymphoedema, progress resistance exercises in small and gradual increments. To avoid exacerbation of lymphoedema, avoid strenuous repetitive exercise with affected limb; wear compression garment.
Cardiovascular instability: unusual heart rate or rhythm, abnormal blood pressure, chest or arm pain, dizziness or nausea	<i>These symptoms may indicate cardiovascular emergency which requires immediate medical assistance by calling 999</i> Advise the patient to reduce duration and intensity of activity until assessed further
Unexplained pain, sudden weight loss, loss of sensation, loss of bladder and bowel control, sudden muscle weakness, fever, sudden swelling redness and pain.	<i>These symptoms may indicate disease progression or an oncological or neurological emergency which require referral to the cancer care team.</i> Advise the patient to reduce duration and intensity of activity until assessed further