

ENJOYING LIFE



Physical activity and cancer: the underrated wonder drug

The case for integrating physical activity into cancer care

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CANCER SUPPORT



LOTTERY FUNDED

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This guide is designed to be read in conjunction with the Macmillan document *[Integrating Physical activity into cancer care: evidence and guidance.](#)*

Authors: Jo Foster, Rhian Horlock, Sarah Worbey

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Foreword

One in two of us will have a cancer diagnosis during our lifetime. Differences in our type of cancer and when we are diagnosed will mean our outcomes will be different.

Cancer diagnosis and treatments are improving, meaning many people are living longer. But those that are, are not necessarily living well. And many people are living with disabling consequences of cancer treatment and multiple health conditions.

Supporting people to be physically active from diagnosis through to end of life has been called a 'wonder drug'. It has a crucial role to play in both 'pre-habilitation' (before treatment) and rehabilitation afterwards. Not only does moving more help improve clinical outcomes, it can also help people take control of their lives, reduce social isolation, and enable people to live independently.

Macmillan has worked in partnership across the UK with the NHS and local and national governments in a variety of settings to design and test services and interventions to support people facing significant barriers to being active. The interventions are based on the latest behaviour-change evidence, and we believe our work can be used to improve not just the lives of people who have had a cancer diagnosis, but also benefit those at risk of or living with other long term conditions.

This document sets out to share the insight and evidence on the benefits of physical activity in cancer care, to inform and inspire people living with cancer; professionals; service providers and commissioners; and healthcare partnerships. Our hope is that this evidence is used to encourage greater commissioning of physical activity services and increase support for people to access physical activity opportunities, ensuring physical activity is seen as an integral part of cancer care.

I hope you will join us in our mission to help people with cancer enjoy the benefits of moving more

James Austin, Director of Specialist Advisory and Fay Scullion, Director of UK Partnership Services, Macmillan Cancer Support 2018

Healthcare professional, Shelagh,
offering behaviour change support



The cancer journey

The number of people living with cancer is growing. By 2040 it is estimated that a total of 5.3 million adults in the United Kingdom will be living with or beyond a cancer diagnosis: 6.2% of the male and 8.5% of the female population. This is due to a combination of more effective cancer treatment, and a growing and ageing population¹.

People with cancer go through many different 'journeys', depending on factors such as the tumour type and the stage at diagnosis. Some cancers, such as lung cancer, are linked to limited survival, while a higher proportion of breast and prostate cancer patients are classified as on-going survival².

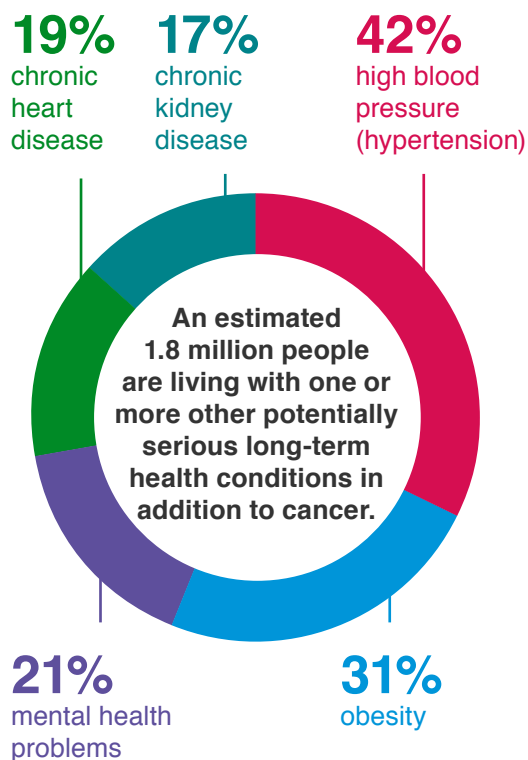
Some people may live longer, but they are not necessarily living well. One in four people struggle with the consequences of treatment including heart damage, arthritis, depression and chronic fatigue³.

An estimated 1.8 million people are living with one or more other potentially serious long-term health conditions in addition to cancer.

Additionally, around 2 in 3 people living with cancer (64%) have practical or personal support needs, and 4 in 5 (78%) have emotional support needs. Around 2 in 5 people living with cancer (42%) have social care needs that are estimated as serious enough to be eligible for formal support from local authorities or health and social care trusts⁴.

This burden of disease places significant pressure on the NHS, social care systems and the economy. For example, in 2009–2010, the NHS spent £5.86 billion on cancer care; 5.6% of the UK's total health spend⁵.

Across the cancer population, no matter their diagnosis, stage of cancer diagnosis and expected outcome, people want the same thing during their treatment. They want the best possible quality of life, to live as well as possible, for as long as possible and to have control over the symptoms or side-effects of their treatment.





Denton, diagnosed with prostate cancer in 1997

Physical activity helps people with cancer

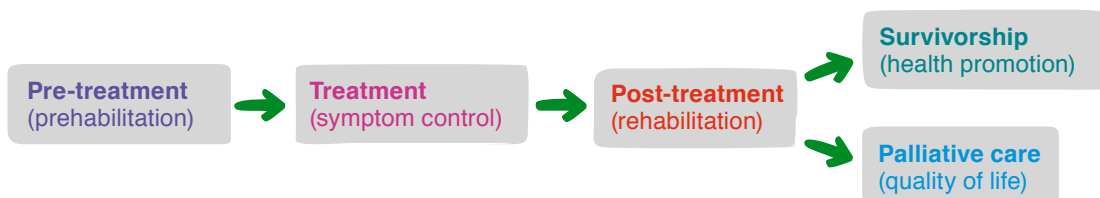
People with cancer used to be advised to rest during their cancer treatment. However, this advice has now been shown to be outdated. Being physically active helps people with cancer deal with their symptoms and improve their quality of life, with the potential benefits far greater than any risks.

Enabling people to be physically active at all stages of their cancer journey can improve both clinical and quality of life outcomes including preventing and managing treatment side effects; and reducing the relative risk of recurrence and disease progression for some cancers.⁶

Physical activity can have positive impacts at every stage of cancer treatment:

Stage	Outcomes
Pre-treatment	Increased cardiorespiratory fitness, fewer post-operative complications and shorter hospital admissions
Treatment	Helps to preserve cardiorespiratory and muscular fitness, and to control cancer-related fatigue
Post-treatment	Increased cardiorespiratory and muscular fitness, reduced fatigue, and improved body composition and wellbeing outcomes
Palliative	Exercise is feasible, and may help maintain physical function, control fatigue, and improve bone health
Survivorship	Associated with longer survival and a lower risk of recurrence or disease progression

Figure 1: Key stages of the cancer care pathway where physical activity has potential benefit



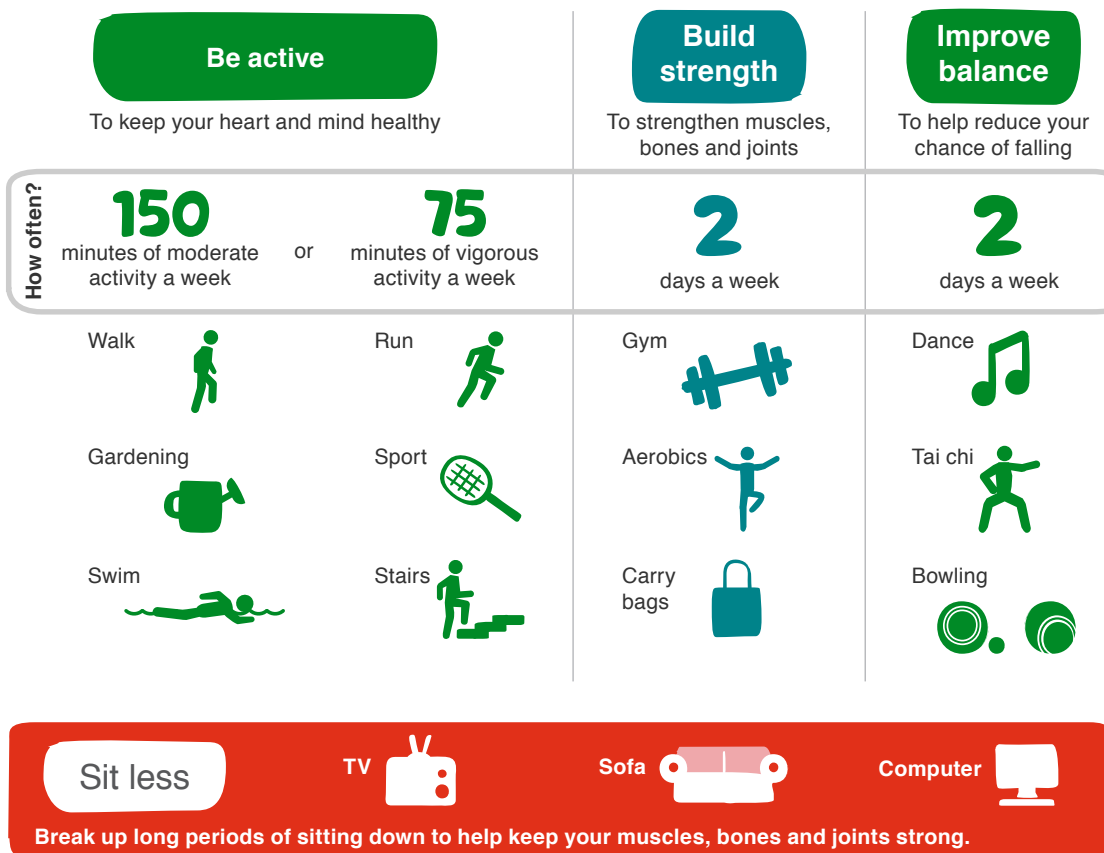
A review of evidence-based physical activity guidelines for cancer populations in Australia, Europe, and the United States now concludes that physical activity is safe and should be an integral and continuous part of care for all individuals⁷.

In addition, many cancer patients have co-morbidities, with the most common being cardiovascular, metabolic, musculoskeletal and psychological disorders⁸. Physical activity also has a potential role in the prevention and management of other long-term conditions, and is an increasingly important aspect of both ‘prehabilitation’ (taking place before treatment) and rehabilitation after any treatment.

General recommendations common to all published guidelines⁹ include:

- Avoid inactivity and return to usual activities as soon as possible after surgery.
- Aim to continue physical activity as far as possible while undergoing treatment.
- Build up to age-appropriate guidelines for health-enhancing physical activity after treatment (typically aerobic exercise for two and a half hours per week, resistance exercise twice a week, and balance/coordination exercises twice a week), heeding key safety principles.

Fig 2: Summary of UK Chief Medical Officers’ guidelines¹⁰



The evidence for physical activity in cancer is summarised in the document *Physical activity and cancer: a concise evidence review*¹¹ www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf

Priti, diagnosed with ovarian cancer in 2014



People with cancer become less active after diagnosis

Evidence also shows that people's physical activity levels tend to reduce significantly during cancer treatment, and do not increase again without support. This is most likely due to a combination of the impact of cancer related fatigue and concerns about safety and a traditional message of rest.

Only 33% of people¹² living with and beyond cancer in England are active at recommended levels (defined as at least 150 minutes of moderate intensity physical activity per week).

This is significantly lower than the general population in England and Scotland: 67% of men and 55% of women in England and Scotland report physical activity at this level¹³.

Macmillan has carried out research to understand the barriers and motivators for people of all backgrounds, types of cancer and stages of the cancer journey¹⁴. This found four core predictors of whether someone is likely to become active during and after their cancer diagnosis. These are:

- **Individual drivers:** the person's emotional state including their level of confidence, response to cancer, mental wellbeing, and their self-identity.
- **Social drivers:** the strength of a person's social network and the support of family and friends.
- **Physical symptoms:** the side effects of the cancer and its treatments. These were identified as barriers to physical activity, notably fatigue and pain, incontinence (for bowel and prostate cancers), scars from surgery affecting certain muscle groups and breathlessness in those suffering from lung cancer. People may not know what type or level of exercise is safe for their particular cancer type or treatment stage. People with cancer want to know what is safe and appropriate for their situation, cancer type and treatment stage.

- **Physical environment:** the availability of facilities and opportunities for physical activity. Proximity of facilities is important, as is the potential for social stigma: some people might feel uncomfortable in public places.

If an individual is motivated, confident, focusing on positive achievements and regaining control, with a social network in place, then they are likely to find ways to become active and overcome any physical symptoms and limitations in their physical environment.

Conversely, if they are not motivated, confident or suffering from anxiety or depression with no social network, even with few physical symptoms and plenty of opportunities within their physical environment, they are unlikely to become active.

People living with and beyond cancer need to know it is safe to become and stay active, at a level that is right for them, listening to their body, starting slowly, building gradually, and planning around treatment cycles and physical limitations.

These messages need to come from trusted health and social care professionals, who have the power to cut across all barriers to change¹⁵.

A cancer diagnosis is a ‘teachable moment’

A cancer diagnosis provides a ‘teachable moment’: a time when an individual is more inclined to change their behaviour. Cancer patients have been shown to demonstrate an enhanced motivation to change lifestyle behaviours, especially within the year after diagnosis. Behaviour-change support should be person-centred.

Evidence shows a healthcare professional can trigger this teachable moment and help motivate people to understand the importance of moving more and inspire them to make a change, no matter their circumstances and barriers to change.

Better targeting is needed to ensure people joining the service are genuinely inactive or face challenges to remaining active, and that health inequality in local areas is narrowed as a result.

The Recovery Package is a Macmillan UK-wide national policy embedded within the cancer strategy that provides an excellent opportunity for health and care professionals to raise awareness of the importance of being active during and after cancer treatment. Physical activity is an integral part of any prehabilitation or rehabilitation strategy.

Trusted health and social care professionals are in a unique position to explain to people that it is safe to become and stay active, at a level that is right for them, listening to their body, starting slowly, building gradually, and planning around treatment cycles and physical limitations.

Helpful resources

Raising the importance of physical activity, training for health and social care professionals

Macmillan has developed accredited training to help health care professionals deliver brief advice. This has been accredited by the royal medical colleges, available from www.learnzone.org.uk/vbatraining

“The very brief advice training was invaluable for being able to compose an education package as part of our cancer rehabilitation service on the NHS. It helped us to give other non-cancer specialists the skills to have essential conversations about the importance of physical activity ensuring more people had the opportunity to be active post cancer diagnosis.”

Clare Lait – Specialist Macmillan Physiotherapist, Macmillan Next Steps Cancer Rehabilitation Team Gloucestershire

‘The very brief advice training was invaluable for being able to compose an education package as part of our cancer rehabilitation service on the NHS.’

Clare Lait, Specialist Macmillan Physiotherapist

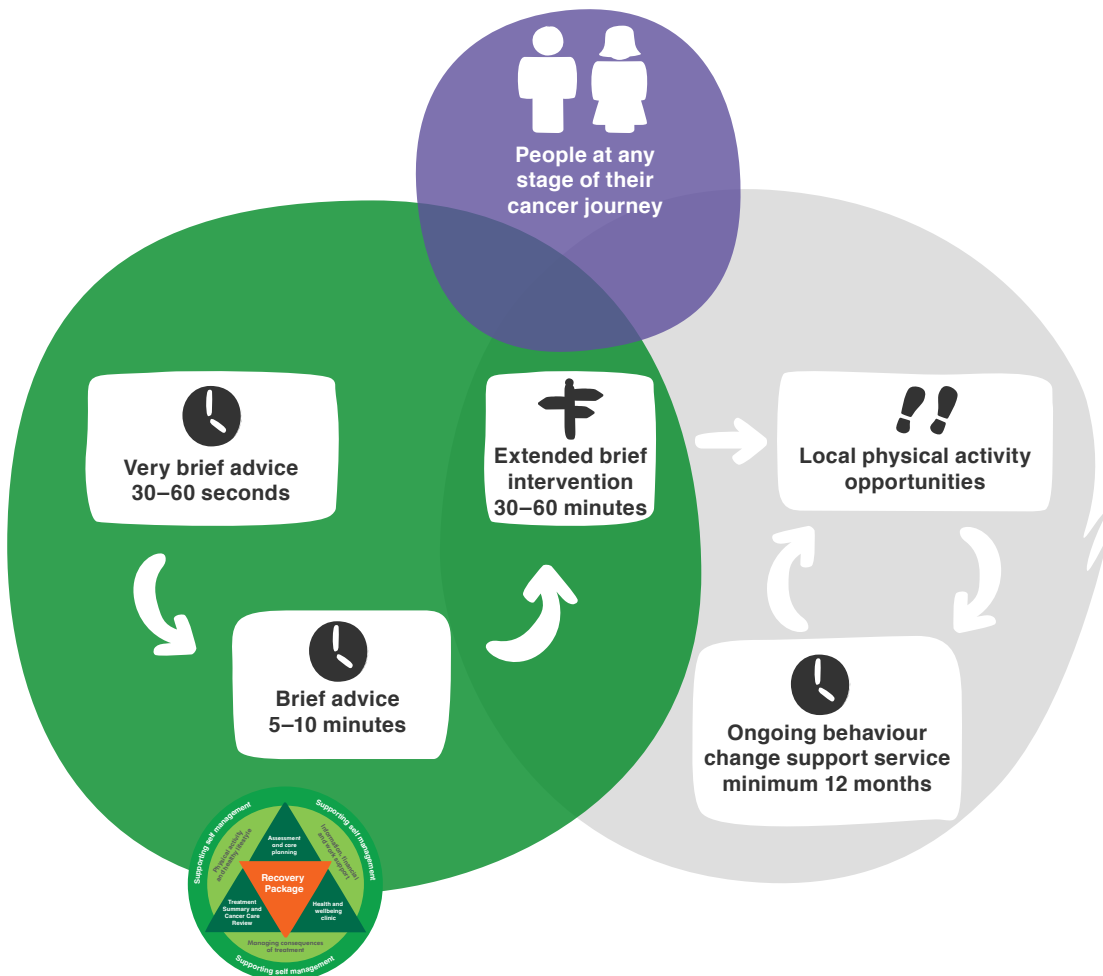


Macmillan's *Move More Service* approach was developed using evidence and best practice

Macmillan worked with clinicians, service users, local decision makers, service providers and academics to develop an intervention based on evidence, including:

- learning from the NHS adult physical activity care pathway *Let's Get Moving*
- NICE Guideline *Physical activity: brief advice for adults in primary care*
- NICE Guideline *Behaviour change: individual approaches*
- NICE Guideline *Exercise on referral*

Based on this evidence and insight, Macmillan developed a model that was delivered as an integrated part of the cancer care pathway. This began in the healthcare setting, with the benefits of moving more being emphasised as part of the Recovery Package. This was then followed by a multi-stage, behaviour-change based intervention, usually based in the community, supporting the individual to make a sustained behavior change to become and stay active, in an activity and at an intensity that is right for them.



Macmillan has also developed behaviour change support resources for patients, that can be used as a stand alone support option, The resources have the potential to support people with a range of long-term conditions.

Move more patient resources

Move More Guide. This patient information resource combines print and digital information to provide: information about physical activity and cancer outcomes; behaviour-change tools; an activity diary; an exercise-to-music DVD; case studies and videos; and an online *Ask the Expert* forum and Online Community as well as motivational emails. **Move More was 'highly commended' in the 2017 BMA Patient Information Awards and won the award for self-care.**

A randomised controlled trial of this resource is ongoing¹⁶. Early findings indicate statistically significant increases in physical activity levels over six months, with the biggest improvements seen in those who were classified as inactive prior to cancer diagnosis. The results will be published in 2018.

Order and access *Move More* and digital resources at macmillan.org.uk/beactive



The *Move More* service

Macmillan has worked in partnership with a range of organisations from 55 sites across the UK to test the *Move More* service to test models of working. Each service has participated in a community of practice to share action learning and collected a standardised validated dataset and submitted quarterly data to a national database. This has been underpinned by an independent process and impact evaluation of 14 test sites across the UK¹⁷.

Evaluation data shows service users maintained or increased physical activity levels when participating in the programme. This is positive given the service users had a diagnosis of cancer. The data showed modest increases after three months, although it is unclear from the data whether the increases were sustained beyond the intervention and whether the increases are clinically significant. Of those who completed questionnaires at start and 12 months, all who were inactive at the start were active by 12 months.

There were statistically significant improvements to quality of life, self-assessed health and fatigue across the programme. These are all important measures as they counter the potential debilitating consequences of treatment, and increase the individual's ability to take control back of their lives, such as being able to live independently or work.

The cost per quality adjusted life year (QALY, the value used by NICE to determine cost effectiveness) estimates range, from £1,109 to £29,132, depending on assumptions used in the economic analysis, notably the duration of effect¹⁷. Values below £20,000 are generally considered cost effective. Due to this large range of values being generated, it is difficult to state with certainty whether the intervention is or is not cost-effective.

As with other physical activity interventions, the value of data collection, and stakeholders' understanding of the importance of robust data, cannot be over-emphasised.



Case study example: 'signposting' to physical activity

The *Move More* programme in Lincolnshire is delivered by Active Lincolnshire, the County Sports Partnership. They host and support the two *Move More* practitioners, who assess individual need and deliver behaviour change interventions within a service user's home, and in public venues such as coffee shops, libraries, community centres and other community venues.

The intervention includes a needs assessment, provides motivational support and for those who are ready identifies which activities would most suit the individual, who are then 'signposted' to appropriate local opportunities, from home-based activities to sports. Each individual service user is followed up and provided with ongoing behaviour change support by their dedicated *Move More* practitioner over a period of 12 months, in a format and regularity that is best suited for the service user.



Case study example: healthcare delivery

The Move More programme at Guy's and St Thomas' trust is delivered by the physiotherapy department within the hospital trust, from the dedicated Guy's Cancer Centre. The hospital trust provides cancer treatment for patients across six south-east London boroughs and the Move More service replicates this. Isla Veal, Highly Specialist Oncology Physiotherapist explains "the physiotherapists take referrals directly from healthcare professionals and self referrals. The patients are risk stratified and supported to take up physical activity opportunities based on their capabilities, consequences of treatment and patient choice.

Nicola Peat, Clinical Lead Oncology Physiotherapist, continues "During the behaviour change intervention, patients are triaged into the most appropriate physical activity – from one-to-one physiotherapy support (for severe and complex cases) to exercise in the community such as health walks. They are followed up at regular intervals, regardless of their activity choice or their participation in further behaviour-change interventions over the subsequent 12-month period."



Case study example: direct delivery in the community

Move More Luton is run by the Active Luton sport and leisure trust. A dedicated Cancer Nurse Specialist oversees referrals to the programme from secondary care. Tailored physical activity sessions are made available to anyone with a cancer diagnosis – either curative or palliative – and at any stage of the journey, whether currently in active treatment, recovering from surgery or in remission. The first 12 sessions are free within any Active Luton leisure facility.

There are a wide variety of sports and activities to suit all tastes, which are all led by cancer rehabilitation specialists. Activities range from swimming, cancer specific and long term condition group classes, walking for health, one-to-one sessions in the gym and walking sports.

"The Move More Luton service has not only provided a base and foundations for people to become physically active in a way of their choosing, it has also supported those living with cancer to be more emotionally and socially active with their peers and support networks through boosting confidence and self-esteem. This is why people keep coming back. It's an event, not just an exercise session. The aim is to improve people's quality of life and empower them to take back control: something we are very proud of."

Matt Corder – Director, Health & Community Wellbeing (Active Luton)

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Matt Corder – Director, Health & Community Wellbeing (Active Luton)

 **Case study example: direct delivery in the community**

David Barr (67) spent Christmas 2015 in hospital, having surgery on a stage-four brain tumour. The retired fitter is a strong advocate of Macmillan's Move More programme. He now walks with the aid of an ambulator, the tumour having impaired the left side of his body.

“When I got out of hospital, I tried to keep active — I get cabin fever sitting around the house — but it was hard. Now, I go to the swimming pool once a week with the Move More co-ordinator, Eimear. She steers, I put the noodle on the rubber ring and kick my feet. I can do a few lengths, too. It really lifts

the spirits and you feel great after you shower and change. It won't make you better but it helps you progress. I'm going to the gym now too, not to be Mr Universe but just to improve my quality of life. Both Macmillan and Marie Curie have given me amazing support. It's very easy to sit around doing nothing when you get out of hospital, but the exercise really makes a difference. You sleep better, you eat better. Your quality of life improves. I highly recommend Move More to anyone. It's fantastic when you've been ill.”

Move More Belfast is run by Greenwich Leisure Limited, a charitable social enterprise that operates fourteen leisure services.

‘It's very easy to sit around doing nothing when you get out of hospital, but the exercise really makes a difference. You sleep better, you eat better. Your quality of life improves. I highly recommend Move More to anyone.’

David Barr, text text

Physical activities

Macmillan's insight research¹⁸ shows that some people would like group-based physical activities, some individual. Some people want the activities to be cancer-specific, while others do not want to be associated with cancer and would like to 'get back to a new normal'.

Macmillan encourages providers to have a variety of local physical activities available for people to choose from. These include specialist cancer rehabilitation, walking groups, and dance, programmes focused on getting back into sport, gentle movement classes such as chi gung or adapted tai chi, or home-based activities such as Macmillan's exercise-to-music DVD.



Walking for Health walk supporting Joyce (third from left), diagnosed with head and neck cancer in 2009

Conclusion

Physical activity can be said to be an underrated 'wonder drug', and more should be done to ensure people living with cancer, and other long-term conditions, and those supporting them, are aware of its benefits.

Macmillan's *Move More* service was developed to help people with cancer become more active. Evaluation has shown it has the potential to support people with a range of long-term conditions and lead to behaviour change. This evidence and insight can now be used to encourage greater commissioning of physical activity services, ensuring physical activity is seen as an integral part of cancer care.



Bei, diagnosed with Colorectal cancer in 2014

Key resources and references

Key resources

Integrating Physical activity into cancer care: evidence and guidance www.macmillan.org.uk/assets/integrating-physical-activity-into-cancer-care-evidence-and-guidance

*Physical activity and cancer: a concise evidence review*¹⁹ www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf

*Move More Guide*²⁰
<https://be.macmillan.org.uk/be/p-19569-move-more-guide.aspx>

'Understanding Physical Activity and Cancer' short online course for professionals on giving very brief advice.
www.learnzone.org.uk/vbatraining

Recovery Package
www.macmillan.org.uk/about-us/health-professionals/programmes-and-services/recovery-package

Evaluation of the Macmillan Physical Activity Behaviour Change Care Pathway
www.macmillan.org.uk/assets/evaluation-of-macmillan-physical-activity-behaviour-change-care-pathway-2018.pdf

References

1. Maddams J, Utley M, Moller H. Projections of cancer prevalence in the United Kingdom, 2010–2040. *British Journal of Cancer* 2012; 107:1195-1202.
2. Macmillan Cancer Support. *Routes From Diagnosis*. www.macmillan.org.uk/_images/Routesfromdiagnosisreport_tcm9-265651.pdf
3. Macmillan Cancer Support. *Cured – but at what cost?* 2013.
4. Macmillan Cancer Support. *Hidden at home*. 2015. www.macmillan.org.uk/documents/getinvolved/campaigns/carers/hidden-at-home.pdf
5. Sullivan R, et al. Delivering affordable cancer care in high-income countries. *The Lancet Oncology*. 2011. Volume 12(10): 933–980.
6. Macmillan Cancer Support. *Physical activity and cancer a concise evidence review*. www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf
7. Buffart LM, et al. Evidence-based physical activity guidelines for cancer survivors: current guidelines, knowledge gaps and future research directions. *Cancer Treatment Reviews*. 2014. 40: 327-40.
8. Sarfati D, Koczwara B, Jackson C. The impact of comorbidity on cancer and its treatment. *CA Cancer Journal for Clinicians* 2016;66:337-50
9. Department of Health. *Start Active, Stay Active*. Report on physical activity in the UK. 2011.

10. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/541233/Physical_activity_infographic.PDF
11. Macmillan Cancer Support. *Physical activity and cancer: a concise evidence review*. www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf
12. *Quality of Life of Cancer Survivors in England*. Report on a pilot survey using Patient Reported Outcome Measures (PROMS). London: Crown Copyright; 2012.
13. British Heart Foundation Centre on Population Approaches for Non Communicable Disease Prevention. Nuffield Department of Population Health, University of Oxford (2015) Physical activity statistics.
14. Macmillan Cancer Support. *What motivates people with cancer to get active?* 2015.
15. Macmillan Cancer Support. 2017. *What motivates people with cancer to get active?* <https://be.macmillan.org.uk/be/p-23309-what-motivates-people-with-cancer-to-get-active.aspx>
16. Study protocol. www.ncbi.nlm.nih.gov/pmc/articles/PMC5701086
17. Macmillan Cancer Support (2018). *Evaluation of the Macmillan Physical Activity Behaviour Change Care Pathway* www.macmillan.org.uk/assets/evaluation-of-macmillan-physical-activity-behaviour-change-care-pathway-2018.pdf
18. Macmillan Cancer Support (2015). *What Motivates people with cancer to get active?*
19. Macmillan Cancer Support. *Physical activity and cancer: a concise evidence review*. www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf
20. <https://be.macmillan.org.uk/be/p-19569-move-more-guide.aspx>

Being told ‘you have cancer’ can affect so much more than your health – it can also affect your family, your job, even your ability to pay the bills. But you’re still you. We get that. And, after over 100 years of helping people through cancer, we get what’s most important: that you’re treated as a person, not just a patient.

It’s why we’ll take the time to understand you and all that matters to you, so we can help you get the support you need to take care of your health, protect your personal relationships and deal with money and work worries.

We’re here to help you find your best way through from the moment of diagnosis, so you’re able to live life as fully as you can. **For information, support or just someone to talk to, call 0808 808 00 00 or visit [macmillan.org.uk](https://www.macmillan.org.uk)**

