

PHYSICAL ACTIVITY FOR PEOPLE WITH METASTATIC BONE DISEASE

Guidance for healthcare professionals

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Background

Physical activity is known to have numerous benefits for people living with cancer. However, there is a lack of clear information on how much and what types of activity are safe to recommend for those with metastatic bone disease (MBD). This guidance aims to address that gap, and is intended for use by all healthcare professionals who come into contact with people living with cancer, including nurses, dietitians, occupational therapists, physiotherapists and doctors.

The guidance is divided into general principles, suggested advice for those at risk of MBD, those with confirmed but asymptomatic MBD, and those with symptomatic MBD. They also highlight 'red flag' signs that should prompt immediate referral of patients for a specialist orthopaedic opinion. They should be used in conjunction with existing guidance, especially the Recovery Package (macmillan.org.uk/about-us/health-professionals/programmes-and-services/recovery-package).

Physical activity can benefit patients at all stages of the cancer care pathway. Keeping active can improve survival rates¹⁻⁴, help maintain quality of life⁵, improve sleep⁵, have mental health benefits^{6,7} reduce fatigue⁸ and risk of falls⁹.

Unfortunately, physical activity can be a perceived contraindication in people with MBD, due to concerns about pathologic fracture. This can have deleterious consequences. Lack of activity can lead to significant functional impairment and muscle atrophy, which increases the likelihood of fracture itself, bone pain, and falls¹⁰ because of disuse osteoporosis.

Nonetheless, people with metastatic bone lesions are at an increased risk of fracture¹¹, and this needs to be taken into account when recommending exercise and advising patients on the kinds of activities they should do.

Where appropriate, people with cancer should aim to reach levels of physical activity consistent with public health guidelines¹², that is:

- at least 150 minutes of moderate aerobic activity such as cycling or fast walking every week OR 75 minutes of vigorous aerobic activity such as running or singles tennis, and
- strength exercises on two or more days a week that work all the major muscles (legs, hips, back, abdomen, chest, shoulders and arms).

However, these guidelines should be modified to avoid metastatic sites at risk of pathologic fracture and in accordance with what is realistic for each person. It should be noted that this will change over time depending on treatment and disease progression. Furthermore, individuals will have different goals and priorities, and these should always be taken into account. Support to identify appropriate goals with individuals can be undertaken by different healthcare professionals including dietitians, occupational therapists, physiotherapists and nurses.

People are living longer and healthier lives after many of the most common cancers are diagnosed and this means the benefits of physical activity are increasingly relevant. These guidelines are intended to be a useful resource for all healthcare professionals working with people with cancer.

Key messages:

1 There is increasing evidence for the benefits of physical activity in people living with cancer. Although it is important to minimise the risk of fracture in patients with MBD, this should not mean avoiding physical activity. Physical activity within the capabilities of the person should be promoted. Where possible, people with MBD should aim towards public health guideline levels of physical activity.

2 People with MBD should be informed about the benefits of physical activity and encouraged to be as active as realistically possible within their capabilities and in accordance with their values and goals. They should receive training on how to self-monitor for signs and symptoms that should be brought to the attention of their healthcare team, and should be given the emergency contact details for this team.

This message should be communicated to people with or at risk of MBD at every stage of the cancer care pathway.

Introduction

There are now an estimated 2.5 million people living with cancer in the UK, a figure that is projected to rise to 4 million by 2030^{13,14}. Thanks to advances in treatment, people are now living longer with a cancer diagnosis than ever before, with the number of people surviving for five or more years after diagnosis rising by over 260,000 (or 21%) in the five years to 2015^{13,14}. This trend is expected to continue.

Bone is the third most common site of metastasis for cancers. Primary tumours that tend to metastasise to bone include prostate, breast, lung, kidney and thyroid. Bone is also the site of myeloma¹¹, a cancer that affects the bone marrow and weakens bone; it is different from MBD but many of the principles outlined in this document will be applicable to people with this disease. MBD is common in people at advanced stages of these cancers. For example, approximately 70% of people who die of breast or prostate cancer have bone metastases¹⁵. The prognosis for patients with MBD continues to improve and it is not uncommon for patients with MBD to survive for many years. The improvement is particularly marked for patients with bone metastases secondary to breast and prostate cancer¹⁶.

There is early evidence that increasing physical activity levels after a diagnosis of cancer can improve survival¹⁷. Beyond effects on mortality, keeping active can have numerous benefits at all stages of the cancer journey. A randomized, controlled trial examining the effects of seated exercise in women with advanced-stage breast cancer found that those randomised to the seated exercise intervention group showed statistically lower fatigue scores compared with the usual care group¹⁸. Similarly, a pilot study examining the effects of yoga in women with metastatic breast cancer found that, on the day after the women practiced yoga, they were significantly more likely to report lower levels of pain and fatigue¹⁹.

Even in a palliative care setting, studies show that physical activity can have significant benefits. For example, one group of patients in palliative care were asked to participate in 50 minutes of group exercise twice a week for six weeks, which resulted in an improvement in physical fatigue²⁰. Another study found that palliative care participants in a group exercise programme reported relief of mental stress and anxiety²¹. And patients with advanced-stage cancer receiving palliative care who walked at least 30 minutes per day were found to have improved quality of life compared to those who exercised less²².

Importantly, many people with advanced cancer would like to be more physically active. Findings from two studies show that as many as 92% of patients diagnosed with advanced-stage cancer are interested and physically able to participate in physical activity^{23,24}. However, there is also evidence that people with advanced cancer would prefer to avoid a gym setting, favouring exercise at home, in a physiotherapy or hospital setting²⁴, and that it is important to this population that whoever is leading the physical activity is familiar with people with cancer and their specific needs²⁵.

One review of six randomised control trials of exercise interventions in people with cancer undergoing palliative treatment found that there were no significant differences in adherence between supervised and unsupervised activity programmes²⁶. Reassuringly, the review also found that no adverse events were reported during the exercise sessions in any of the studies.

There are limited data specifically looking at physical activity in people with MBD, but we do know that keeping active can improve quality of life, levels of fatigue and physical functioning in this population^{27,28}. However, there is a risk of fracture and metastatic spinal cord compression (MSCC) in people with MBD, risks which must be minimised as they carry a reduction in survival rates²⁹. Fractures can have a negative impact on a person's quality of life and ability to self-manage.

This guidance will support healthcare professionals to offer appropriate advice to encourage people with MBD to be as active as possible while minimising fracture risk. It is designed to be used in conjunction with the Recovery Package (macmillan.org.uk/recoverypackage) and other resources, including:

1. Macmillan Cancer Support: Move More
be.macmillan.org.uk/be/p-20843-move-more-dvd.aspx
2. Macmillan Cancer Support: The Importance of Physical Activity for People Living With and Beyond Cancer: A Concise Evidence Review
macmillan.org.uk/documents/aboutus/commissioners/physicalactivityevidencereview.pdf
3. British Orthopaedic Oncology Society & British Orthopaedic Association: Metastatic Bone Disease: A Guide to Good Practice
baso.org.uk/media/61543/boos_mbd_2016_boa.pdf
4. The British Association of Sport and Exercise Sciences: The BASES Expert Statement on Exercise and Cancer Survivorship
bases.org.uk/write/Documents/SES_EXPERT_2.pdf
5. The American Cancer Society: Nutrition and Physical Activity Guidelines for Cancer Survivors
onlinelibrary.wiley.com/doi/10.3322/caac.21142/epdf
6. Age UK: Preventing Falls: Strength and Balance Exercises for Healthy Ageing
ageuk.org.uk/Documents/EN-GB/strength_and_balance_training_PDF.pdf

General Principles

Treating people as individuals:

People living with cancer can be at very different stages of their lives and will have individual goals for how active they want to be and can be during their cancer journey. These goals should be determined, and individual expectations and anxieties about staying active should be addressed, preferably as part of a Holistic Needs Assessment. This means taking into account a person's medical situation — tumour type, treatments, any co-morbidities — but also their social situation, including their emotional and psychological state. Prognosis will be variable; many people will continue to live for a long time after a diagnosis of MBD (Table 1). The views and anxieties of families and care givers should also be considered but the person's own views are paramount. To ensure consistent and appropriate advice, all healthcare professionals involved in an individual's care should actively participate in multi-disciplinary team meetings and communicate patient goals and priorities as a central part of care delivery.

Stressing the importance of staying active:

Maintaining good physical health can have long term benefits in people living with cancer. Healthcare professionals working with people with MBD should have a good understanding of current evidence on the benefits of physical activity, which encompasses all kinds of activities. This could include encouraging/facilitating service users to engage in valued occupations which require a degree of physical exertion particularly for those people who would not engage in exercise classes or sports e.g. gardening, visiting places such as museums, art galleries and theatres and walking. A referral to an occupational therapist could support patients to consider different activities. Healthcare professionals should also understand the risks of sedentary behaviour.

For example, one study of a 3-month supervised resistance exercise programme in 20 men and women with metastatic disease secondary to prostate or breast cancer showed that improvements in functional ability, physical activity level, lean mass and quality of life remained 6 months after completion of the programme²⁸. Another trial, which compared a resistance training programme to passive physical therapy in 60 patients with spinal bone metastases, showed that resistance training was able to improve functional capacity, reduce fatigue and thereby enhance quality of life over a 6-month period²⁷.

By contrast, sedentary behaviour (prolonged sitting or reclining characterized by low energy expenditure) is associated with all-cause mortality³⁰⁻³³, and should be avoided. Other risks of sedentary behaviour include cardiovascular disease^{30,33,34}, diabetes^{34,35}, osteoporosis³⁶, deep vein thrombosis³⁷, loss of balance and muscle strength and therefore increased risk of falls³⁸, as well as increased anxiety and depression^{6,7}.

The evidence suggests that there is a need for physical activity programmes to address physical deficits in those with MBD. For example, a study of 71 women with metastatic breast cancer and 71 healthy controls showed that those with MBD were significantly less aerobically fit than the control group, were weaker, less active and more symptomatic³⁹. A focus on balance exercises (for example, tai chi⁴⁰) can reduce the risk of falls, and ensuring that patients can comfortably complete activities of daily living and maintain independence⁴¹.

The importance of rest and recovery:

People with cancer should be advised of the importance of recovery periods between periods of exercise or physical activity. High-quality rest and relaxation periods should be incorporated into any programme of physical activity to enable the body to recuperate. Good sleep is also important, and while sleep can be disrupted in people with cancer, staying active can, in itself, improve sleep quality⁴².

Awareness of 'red flag' symptoms:

Healthcare professionals should be aware of 'red flag' symptoms so that they can inform people with or at risk of MBD of when they need to seek urgent medical advice:

- Bone pain in the vertebral column that is worse at night indicates high risk of spinal MBD and imminent fracture
- Bone pain on weight bearing, especially in the proximal femur, indicates high risk of MBD in the long bones and imminent fracture.

Worsening and intractable bone pain at any time should also be reported, as it would raise the index of suspicion for MBD and high fracture risk and would necessitate close monitoring.

Symptoms that could indicate add Metastatic Spinal Cord Compression (MSCC) and necessitate urgent referral to the MSCC team:

- Back or neck pain
- Pain with a rapid crescendo and radiating in a band-like fashion around the chest or abdomen
- Numbness or pins and needles in toes, fingers or buttocks
- Unsteadiness on feet
- Progressive weakness in legs
- Bladder or bowel problems.

People at risk of MSCC should be provided with the Macmillan Cancer Support Malignant Spinal Cord Compression leaflet (be.macmillan.org.uk/be/p-22794-mscc-leaflet.aspx) or another, locally specific guidance leaflet.

Table 1. Scandinavian Sarcoma Group scoring system can be used to estimate survival after bone metastases

Score	0	1
Number of metastases	Single	Multiple
Visceral metastases	None	Yes
Breast/renal/thyroid/myeloma	Yes	Other
Karnofsky score >70	Above (self-caring)	Below (needs help)

Reproduced from ref. 52. A total score of 0 or 1 is associated with 2/3 of patients surviving for more than 12 months. Patients with a score of 2 or 3 are likely to survive over 3 months and a score of 4 is associated with less than 3 months survival in 75% of cases. Karnofsky score is measure of cancer patients' general wellbeing and activities of daily life.

TOP TIPS:

1. Inform people at risk of or with confirmed MBD of the benefits of being physically active throughout their cancer care journey.
2. Ensure that people at risk of or with confirmed MBD are aware of 'red flag' or worrying symptoms that should lead them to seek urgent or immediate medical advice.

Section One: People at risk of metastatic bone disease

All cancers can spread to bone. People with breast, prostate, lung, kidney and thyroid cancers are most at risk of bone metastases. The prognosis for these patients is variable, but many people with MBD will live for many years.

The estimated 5-year survival rate for men with MBD secondary to prostate cancer is 30–46%¹⁰. By contrast, kidney cancer has a particularly high avidity for bone and can be relatively aggressive. Furthermore, spread to the bone metastases can be the first sign of kidney cancer, as the primary tumour can grow fairly large without causing local symptoms⁴⁴.

Healthcare professionals coming into contact with people living with these cancers, particularly at a late stage of disease progression, should have a low threshold for suspecting MBD. It is important to note that individuals may not be aware themselves that they have MBD, either because they have not yet been diagnosed or because they have chosen not to know. People with MBD may report suspicious symptoms such as dull, unrelenting bone pain, or they may present with a fracture resulting from minimal or low trauma.

A review of the notes may reveal a diagnosis of MBD, a history of fracture with minimal or low trauma, a high serum calcium level, or treatments that indicate MBD, such as:

- Bisphosphonates
- Denosumab.

Where bone metastases are suspected, individuals should be assessed with a plain X-ray followed by radiological review and, if indicated, an orthopaedic opinion.

Supporting physical activity with good nutrition

In order to stay active, people with MBD need to be supported by good nutrition. Healthcare professionals should try to optimise nutritional status by ensuring that:

- Nutrient and calorie needs are met
- A healthy weight is maintained
- Side effects that can impact nutrition, such as mouth sores or difficulty swallowing, are prevented or managed as best as possible.

Referral to a dietitian may be helpful, especially as many cancer sufferers may experience low appetite.

If there is nothing to indicate MBD and no red flag symptoms that would indicate a need for urgent referral are present, individuals should be assessed for:

- General pain
- Fatigue
- Anxiety and fear
- Co-morbidities
- Adequate nutrition (see box above)
- Motivational state
- Understanding of the likely benefits of physical activity.

These factors could affect how much and also what type of physical activity somebody feels able to do, and should first be addressed. Those with pre-existing pain should have a thorough baseline assessment to ensure that any changes are identified early.

Patients should then be informed about the possible benefits of physical activity, including:

- Early indications of an impact on prognosis
- Increased quality of life
- Improved function/maintenance of independence
- Decrease in fatigue
- Pain relief
- Improved mood.

It is important to determine baseline physical activity levels before and since diagnosis, as well as current motivational state, in order to ensure that realistic goals are set with each individual. Some people may be used to doing a lot of exercise; others will never have been particularly active.

As part of the Holistic Needs Assessment, and especially where people are elderly and/or frail, it is important to determine their:

- Falls risk
- Activities of daily living.

Limiting the risk of falls (and therefore fracture) and optimising activities of daily living is key for maintaining independence. In one study, findings revealed that, for people with a terminal illness who participated in rehabilitation, the functional activities of daily living improved by a rate of 27%²¹. Even when individuals have a relatively poor prognosis (≤ 2 years) there is evidence that a supervised exercise programme of 60 minutes twice a week tailored to each person's physical functioning can improve physical performance⁴⁵.

Where realistic/appropriate, healthcare professionals should recommend public health guidelines of 150 minutes of moderate aerobic activity (or 75 minutes of vigorous exercise) per week plus strength exercises on two or more days per week¹². People can be referred to the Macmillan Cancer Support Move More DVD (be.macmillan.org.uk/be/p-20843-move-more-dvd.aspx).

There is no reason why people at risk of MBD cannot engage in physical activity and, indeed, they are likely to benefit from being as active as possible.

TOP TIPS:

3. Address any factors that could adversely affect a person's ability to engage in physical activity, such as fear and anxiety, motivational status, and nutrition.
4. Encourage people at risk of or with confirmed MBD to set realistic, individualised physical activity goals, and support them to meet these goals.

Section Two: People with diagnosed metastatic bone disease who are asymptomatic

Some people will have a confirmed diagnosis of MBD but will be asymptomatic. A diagnosis of cancer may be made from biopsy/histology, following which individuals may be sent for further imaging to determine the stage of their cancer, which may reveal MBD.

A lack of bone pain is reassuring; however, in order to determine the level of fracture risk in these people, a recent plain film X-ray could be reviewed for MBD lesions. This can then be used to determine a baseline Mirels' score (see Table 2), which will then indicate best practice for clinical treatment (see Table 3).

A Holistic Needs Assessment will indicate nutritional and other factors that may affect a person's ability to engage in the recommended physical activity levels.

If the Mirels' score is 7 or under, people with MBD can be considered to be at low risk of fracture and should be encouraged to be as active as possible within pain-free limits (see Section One). If it is 8 or above, the individual should be referred for an orthopaedic opinion (see Section Three).

Table 2. Mirels' classification

Criteria	Score		
	1	2	3
Site	Upper limb	Lower limb	Peritrochanteric area of femur
Pain	Mild	Moderate	Functional
Lesion	Blastic	Mixed	Lytic
Size	<1/3 of bone cortex	1/3 to 2/3 of bone cortex	>2/3 of bone cortex

Reproduced from ref. 47.

Table 3. Clinical recommendations as per Mirels' score

Mirels' score	Clinical recommendation
≤ 7	Radiotherapy and observation
8	Use clinical judgement
≥ 9	Prophylactic fixation

Reproduced from ref. 47.

If any issues with pain on physical activity arise, people with MBD should be advised to go back to their healthcare provider for further assessment.

There is evidence that people with MBD may particularly benefit from resistance training (see box right)⁴⁶ and, where possible, they can be referred to a supervised exercise programme, group classes and/or a local Health and Wellbeing Event.

What is resistance training?

Resistance training is a form of physical activity that is designed to improve muscular fitness by exercising a muscle or a muscle group against external resistance. Examples of resistance training are exercises using a person's own body weight as resistance (e.g. bridges, squats, push ups against a wall, step ups, sit to stand), or exercises using hand-held weights or therabands (e.g. biceps curl). Loads can be progressively increased as people gain strength. Healthcare professionals who are not comfortable prescribing resistance training should undertake continuing professional development in personal training and GP exercise referral, or work in conjunction with specialist physiotherapists and fitness trainers.

TOP TIPS:

- In people with confirmed MBD, Mirels' classification should be used to determine relative fracture risk.
- Local services, such as Health and Wellbeing Events, should be signposted to people at risk of or with MBD to help them stay active.

Section Three: People with symptomatic metastatic bone disease

People with MBD and new onset of bone pain, or bone pain that has changed in nature or intensity, should be considered at risk of fracture until proven otherwise. Functional pain (see box below) should be of particular concern.

In one study, the rate of fracture was found to be 10% among people with MBD with mild to moderate pain, but all those with functional pain progressed to a fracture⁴⁷. Mirels has reported an association between pain and the size of the MBD lesion⁴⁸.

In these people, imaging, radiological review and an orthopaedic opinion should be sought in the first instance. Figure 1 shows a suggested protocol for advising people who have MBD and bone pain.

This does not mean, however, that people with symptomatic MBD should remain sedentary. A lack of activity leads to muscle atrophy, which can, in fact, increase the likelihood of skeletal complications such as fracture and bone pain¹⁰. Furthermore, anecdotal reports suggest that people with MBD may be as likely to fracture performing activities of daily living as from any other physical activity.

What is functional pain?

Functional pain is pain on weight bearing. It may be aggravated by functional movements such as walking, dressing, and getting out of bed. This pain should be of particular concern in people with suspected or confirmed MBD as it may indicate imminent fracture.

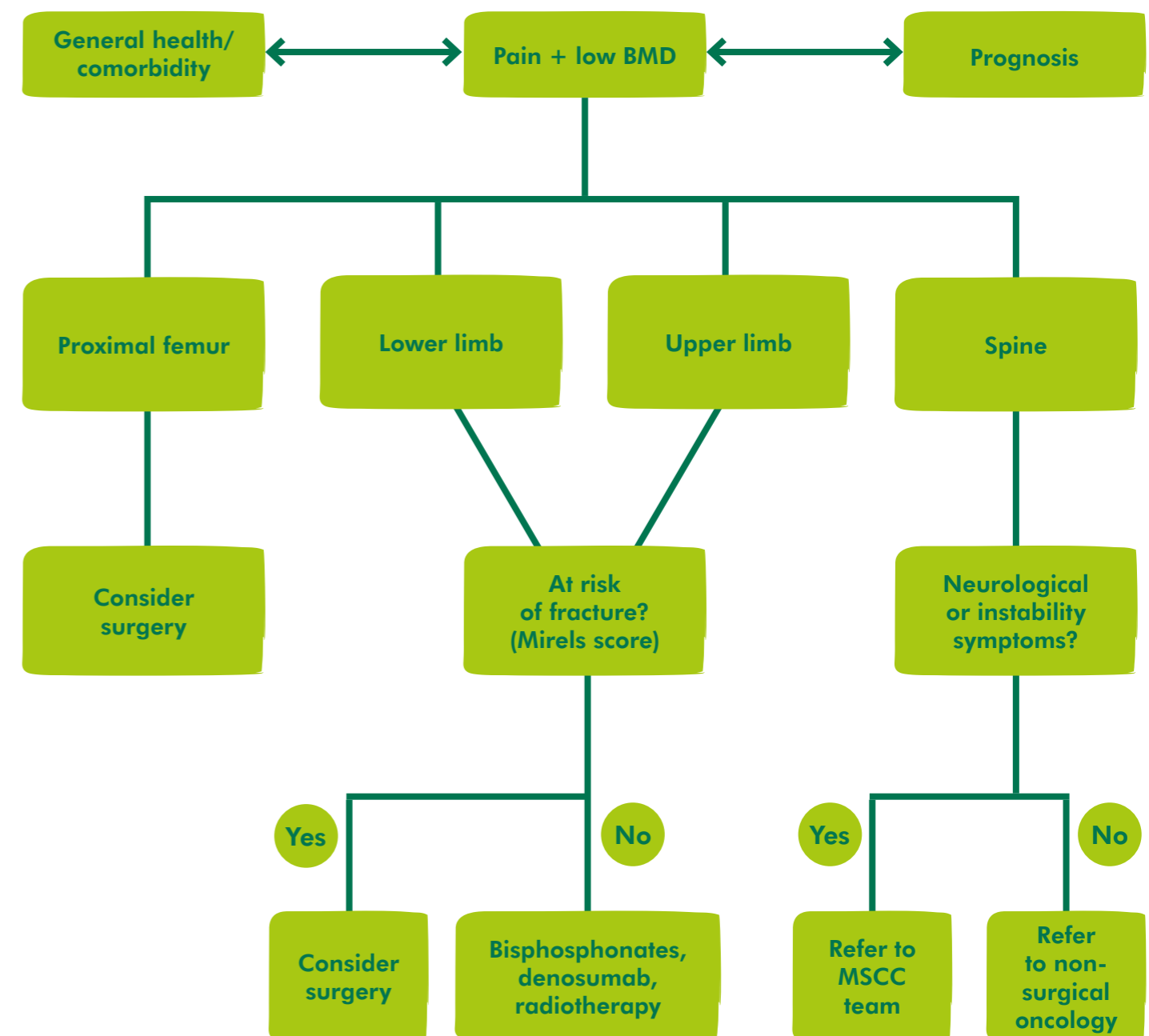
A Holistic Needs Assessment will indicate nutritional and other factors that may affect a person's ability to engage in the recommended physical activity levels. Health and Wellbeing events can help people stay active.

Nonetheless, there may be some activities that are best avoided. Research ethical review rightly prioritises participant safety; therefore, there is limited evidence on what types of exercise put people with MBD most at risk of fracture. However, some guidance can be drawn from the research that has been done into exercise programmes for patients with extensive MBD.

One study looked at a sample of 20 men with MBD secondary to prostate cancer, 65% of whom had two or more regions affected by bone metastases¹⁰. One group was assigned to a supervised resistance exercise programme designed to avoid the affected sites. Although it was a small trial, the exercise programme was shown to be safe and well tolerated, as well as leading to improvements in physical function, physical activity levels and lean mass.

A larger trial is currently underway to evaluate further the benefits of a particular exercise programme (the modular multi-modal physical exercise programme (M3EP)) in people with prostate cancer and MBD. Although the results have yet to be published, the M3EP programme is designed to minimise compressive and shear loads on affected skeletal sites to account for the reduced load-bearing capabilities of bone due to metastatic disease in specific regions, and can be used as general guidance for physiotherapists working with people with MBD (see Table 4).

Figure 1 Protocol for people with symptomatic MBD



Some literature suggests avoiding torsion, such as turning on a weight-bearing limb, as bone is weakest in torsion and even a small defect can reduce torsional strength by 50%⁴⁹. This can be taken into account when advising people with MBD on what activities are safest for them. However, many healthcare professionals believe complete avoidance is unrealistic, as torsion is a regular feature of daily life (e.g. turning in bed, turning on a fixed foot to sit down or reach, bending to pick something up).

Recommended exercise programmes should target the unaffected limbs and avoid stressing affected limbs. People with MBD should be advised to limit any movement that causes pain, and seek medical advice if pain does not resolve quickly or if there are increased episodes of breakthrough pain. They should also be advised against exercises that induce high torsion, such as yoga-style twists, using the rowing machine, and swinging in golf and tennis. Walking aids can be used to take the weight off affected lower limbs.

Some people with MBD will need to be considered for prophylactic fixation, especially if they have large lesions with functional pain in the lower limb. The general rule is to avoid fracture wherever possible, as that can severely affect a person's quality of life and ability to self-care. The benefits of surgical fixation can include pain relief and increased mobility⁵⁰.

However, prognosis, co-morbidities or a person's own wishes may preclude surgery. If surgical fixation is not an option, an opinion from the orthopaedic team should be sought on weight bearing. Generally, the advice would be to avoid stress on the affected limb. These people should still be encouraged to keep mobile, carrying out resistance exercises in other limbs (see Table 4). The importance of reducing sedentary time should be stressed, and any adaptive equipment necessary for mobilization should be provided.

If people with MBD do undergo fixation, prophylactic or otherwise, they should be encouraged to mobilize as much as possible after the procedure in consultation with their orthopaedic surgeon. Orthopaedic fixation should enable immediate weight bearing¹⁶.

Table 4. A model for resistance exercise selection in people with bone metastases.

Site affected by metastases	Exercise mode					
	Resistance			Aerobic		Flexibility
	Upper	Trunk	Lower	WB	NWB	Static
Pelvis	•	•	•**		•	•
Axial skeleton (lumbar)	•		•		•	•***
Axial skeleton (thoracic/ribs)	•*		•	•	•	•***
Proximal femur	•	•	•**		•	•
All regions	•*		•**		•	•***

Adapted from ref. 53. A tick indicates that a region of the body can be targeted for exercise. WB, weight bearing (e.g. walking); NWB, non-weight bearing (e.g. cycling).

Note that the efficacy and safety of this modular multi-modal exercise program is currently being determined and this table should not act as an absolute guide.

*Exercise should exclude shoulder flexion/extension/abduction/adduction but can include elbow flexion/extension.

**Exercise should exclude hip extension/flexion but can include knee extension/flexion.

***Exercise should exclude spine/flexion/extension/rotation.

Conclusion

There is considerable and growing evidence that physical activity improves multiple outcomes in people living with cancer, including those with MBD. Where people are at risk of MBD, they should be encouraged to be as active as realistically possible while being aware of worrying symptoms and signs that should lead them to seek medical advice.

The advice is the same for people with confirmed, but asymptomatic, MBD. Those with symptomatic MBD should be advised to stay active while minimizing stress on the affected limb/s.

Healthcare professionals should feel confident in recommending that people with MBD stay active, as maintaining physical strength can help with fatigue, pain levels, mood, ability to stay independent, and even fracture risk. This message should be communicated early and often to people with cancer, as there is evidence that a physical activity programme can deliver benefits even after its completion²⁸. It is important to be aware of factors that could make staying active difficult, such as pre-existing conditions, anxiety and fear, nutritional status, motivational status, and activity levels prior to diagnosis in order to set realistic, individualised activity goals with patients. However, physical activity can have beneficial effects on many of these factors, so they should not necessarily act as a barrier. For example, staying active can improve anxiety⁶ and depression⁷ and increase appetite, which is often decreased in cancer sufferers, leading to poor nutritional status⁵¹.

People with cancer may not feel comfortable in a gym setting, even if they were regular gym users prior to diagnosis²⁵. They may need to be referred to exercise programmes tailored to people with similar issues, either through a physiotherapist, a Health and Wellbeing Event, or a hospital-provided service. Healthcare providers should be aware of these and other possible anxieties patients (and their families) may have about staying active, and address them where possible. This will maximize the chances that physical activity goals will be met.

With more people living with cancer and people with the disease living for longer than ever before, it is paramount that patients have the best information to help them maintain their quality of life and independence throughout their cancer journey. Staying active is key to this. Some healthcare professionals still consider MBD a contraindication to physical activity. However, the benefits of physical activity and the risks of sedentary behaviour are becoming increasingly clear. This guidance is intended to help healthcare professionals to safely guide patients at risk of or with MBD to form and meet realistic physical activity goals.

TOP TIPS:

- Encourage people with MBD to seek assessment from a qualified, experienced physiotherapist to guide them in their physical activity
- Nutritional status can influence the ability of people with MBD to engage in physical activity, but can also be improved by physical activity, which can increase appetite. Healthcare professionals should work with people with MBD to make both food and physical activity as enjoyable as possible.

Top tips

- 1 Inform people at risk of or with confirmed MBD of the benefits of being physically active throughout their cancer care journey.
- 2 Ensure that people at risk of or with confirmed MBD are aware of 'red flag' or worrying symptoms that should lead them to seek urgent or immediate medical advice.
- 3 Address any factors that could adversely affect a person's ability to engage in physical activity, such as fear and anxiety, motivational status, and nutrition.
- 4 Encourage people at risk of or with confirmed MBD to set realistic, individualised physical activity goals, and support them to meet these goals.
- 5 In people with confirmed MBD, Mirels' classification should be used to determine relative fracture risk.
- 6 Management decisions should be made with good MDT communication and should include the patient in the decision-making process.
- 7 People with symptomatic MBD should be encouraged to be as physically active as they can be, while knowing how they can move and exercise their affected limb/s as safely as possible.
- 8 Even when people have extensive MBD or a poor prognosis, they should be advised to avoid sedentary behaviour to help maintain quality of life.
- 9 Encourage people with MBD to seek qualified, experienced physiotherapy assessment to guide them in their physical activity
- 10 Nutritional status can influence the ability of people with MBD to engage in physical activity, but can also be improved by physical activity, which can increase appetite. Healthcare professionals should work with people with MBD to make both food and physical activity as enjoyable as possible.

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