



A practical guide to keeping active during cancer treatment

# Childhood cancer physical activity

Edition 1

Childhood cancer: Physical activity  
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# Childhood cancer physical activity

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# Introduction

This booklet is for children and adolescents with cancer, and their parents and carers, to learn about the benefits of physical activity during cancer treatment. Cancer treatment is a stressful time and can cause major disruptions to normal routines. The thought of exercising during cancer treatment may seem daunting and unachievable; however, it is possible to stay active. This booklet offers tips and ideas to help get into a more active daily routine, as well as information about when you might need to ask for help from a healthcare professional.

There are lots of ways to stay active during treatment. 'Physical activity' can include a wide range of activities and does not always mean a structured exercise program. Physical activity can involve playing active games or sports, or everyday activities such as walking or simply sitting out of bed. The definition of physical activity is very broad and will change depending on factors such as age, treatment and physical limitations and abilities. We hope that the information in this booklet will give you the basic tools to safely and confidently undertake physical activity during cancer treatment.

## Is physical activity safe during treatment?

Physical activity can benefit children and adolescents of all ages during the different stages of cancer treatment. Evidence shows there is little risk of harm when physical activity is carried out with care and when the advice provided by healthcare professionals is followed closely.



Physical activity can involve time spent playing at home or sports, or everyday activities such as walking or simply sitting out of bed.

# Why is keeping active important?

Physical activity has many benefits for children and adolescents with cancer.

## Help with treatment side effects

Cancer treatment can have many side effects that vary for each child or adolescent. Side effects often make keeping active a challenge and can lead to long periods of time spent in bed. Certain chemotherapy drugs can also damage nerves and muscles. Evidence shows that children and adolescents with a cancer diagnosis are less active than other children and adolescents of the same age. Long periods of bed rest can result in muscle weakness and joint stiffness, which over time may affect the ability to walk and do everyday tasks independently. Keeping active can help to minimise and even prevent some of the side effects of cancer treatment. It can also have a positive effect on mood and improve treatment-related symptoms such as fatigue.

### Potential benefits of physical activity include:

- prevent muscle wasting and shortening
- improve balance
- improve bone strength
- improve mood and self-esteem
- improve appetite
- reduce feelings of nausea
- lessen symptoms of fatigue
- lower feelings of anxiety and depression
- improve independence in completing everyday tasks
- improve overall quality of life.

### FACT

**Fatigue is a common side effect of cancer treatment. Research suggests that physical activity can help reduce feelings of fatigue.**



## Staying independent

Independence is important, especially for adolescents. By keeping strong and maintaining fitness, children and adolescents can keep doing things for themselves, including everyday activities such as dressing and walking. Keeping strong can also help children and adolescents to take part in activities they enjoy such as climbing, running and some sports. These activities are an important part of childhood development. Keeping active may help children and adolescents return to school and sport more easily after treatment.

## Improve long-term outcomes

Long-term outcome studies have found that adults who were diagnosed with a childhood cancer were more likely to have:

- a less active lifestyle
- less physical fitness
- a higher proportion of body fat
- a higher risk of chronic health conditions.

Keeping active throughout treatment may help to prevent or reduce the severity of these long-term issues.

### Physical activity for parents and carers

Caring for a child with cancer can be an overwhelming and often stressful experience. It is important that parents and carers take time to look after themselves and to stay active. Taking part in physical activity with the family is a good way to keep active together. Independent exercise can also be beneficial because it provides parents and carers with an opportunity to do something for their own wellbeing.



# Getting started

## Who should be physically active?

Everyone! Children and adolescents should aim to be as physically active as their abilities and condition allow. This should begin from the time of their diagnosis and continue throughout the entire cancer journey.

## Things to consider before starting

There are many things that may affect a child or adolescent's ability to keep physically active. It is important to consider their limitations and have an understanding of what they can and can't do. Sometimes activities will need to be adapted to ensure they are safe.

**Children and adolescents may be limited in their ability to participate in physical activity due to:**

- low platelet or red blood cell count
- primary or metastatic bone cancer
- damage to nerves (vincristine-induced peripheral neuropathy)
- unsafe mobility
- shortness of breath at rest
- any precautions outlined by their treating team or physiotherapist.

## Who to talk to?

Discuss any precautions you may need to consider with the treating team. If you are concerned about difficulties with everyday tasks, pain with physical activity or safety when keeping active, a physiotherapist may be able to help. Depending on treatment effects and a child's or adolescent's abilities, the type of physical activity may need to be modified.



## How often should children and adolescents be active?

Maintaining normal levels of activity is the overall goal. This is often not achievable during cancer treatment for many reasons. The aim is therefore to create as many opportunities as possible to be active every day.

### TIP

#### START SLOWLY

Even if physical activity is only possible for a few minutes a day, it will help. The level of activity that is achievable will vary throughout treatment. Improvement can be slow but remember every little bit helps.

## Short bursts of activity are fine

When getting physically active, it is OK to have rests whenever they are needed. If the activity is too tiring, divide it into smaller chunks and break it up over the day. Activity that is completed in small bursts is still beneficial.

## There is no need for special equipment

There is no need for expensive equipment and clothing. There are many exercises that don't require any equipment and instead use

objects already at home. Supportive footwear and loose, comfortable clothing should be worn when exercising.

## Keep an eye on intensity

Always monitor children and adolescents during physical activity because working too hard can put them at risk of injury. How hard the body is working during physical activity is known as 'exercise intensity'. The levels of intensity can be described as low, moderate or vigorous. Aim to find a balance between exercising too hard and not exercising hard enough. An easy way to monitor exercise intensity is with the talk test (see 'Talk test' on page 57).

### WHEN TO STOP

#### Stop the activity if you experience:

- dizziness
- sudden onset of nausea
- vomiting
- severe pain
- an inability to talk while exercising
- severe shortness of breath.

# Types of physical activity

The type of physical activity that is appropriate will vary depending on age, interests, cancer treatment and abilities. Physical activities can involve a structured exercise program or playing active games, or may focus on practising everyday activities such as getting out of bed or walking.

## Incidental physical activity

Incidental physical activity involves using daily routines to build in opportunities to be more active. This can be done in many ways.

### Examples of incidental physical activities:

- sitting on the couch instead of lying in bed
- sitting out of bed or on the edge of the bed for meals
- walking to the bathroom
- walking to appointments at the hospital
- using the stairs instead of the lift
- playing games while standing, rather than while sitting on the floor or in bed
- helping with everyday tasks such as carrying the shopping or unloading the dishwasher.

Try to avoid participating only in inactive ('sedentary') activities such as watching TV. Some days will be more challenging than others; however, even when in hospital or too unwell to play or do structured exercises, it is important to try to fit incidental physical activity into every day. If spending consecutive days in bed, there are exercises that can be done in bed to help maintain muscle strength and flexibility. Standing beside the bed or sitting out of bed can also help to stretch the leg muscles and ankle joints. It can be difficult to resist the urge to help, but it is important for parents and carers to encourage their child to complete everyday tasks by themselves. Provide support only when needed.

## TIPS

### INCORPORATE INCIDENTAL PHYSICAL ACTIVITY INTO EVERY DAY

- Try to avoid sedentary activities and aim to incorporate incidental physical activity into every day.
- If spending consecutive days in bed, there are exercises that can be done in bed to help maintain muscle strength and flexibility. Simply standing beside the bed or sitting out of bed can help stretch muscles and joints.

## Games, activities and positions for play

Physical activity should be fun. Think about favourite sports and interests and incorporate these into activities. Games involving throwing, catching, kicking or hitting a ball can all help to maintain balance, coordination and strength.

Using play to keep active is a great way to introduce physical activities. Games can be made more challenging by changing positions and incorporating some of the strength, balance and flexibility exercises contained in this booklet.

**For examples of play and positioning see page 19.**

## Structured exercise training

Older children and adolescents can participate in more structured exercise. Each type of exercise listed below has specific benefits. These exercises can be done in a block together or spread out over the day. A program that incorporates a combination of the following is recommended:

- strength exercises
- flexibility exercises
- aerobic exercises
- balance and coordination activities.

### Strength exercises

Strength training (or 'resistance training') aims to strengthen and build endurance in muscle groups throughout the body. This can help improve the way muscles work and make them stronger. These exercises can be completed using your own body weight, exercise bands, weight machines or free weights.

### Flexibility exercises

Stretches aim to keep joints moving and prevent muscles getting tight and short. Shortened muscles and joint stiffness can develop with long periods of reduced activity and bed rest. Regular stretching can help prevent this from occurring.

### Aerobic exercises

Aerobic exercise helps to improve heart and lung fitness. Improving fitness can increase endurance (e.g. walk or run further) and energy levels. Examples of aerobic exercise are walking, running, cycling and swimming.

### Balance and coordination activities

Balance activities can improve safety and independence with walking and completing everyday tasks. Activities that challenge balance can be incorporated into many games and everyday activities.

**For examples of structured exercises see page 29.**

### TIPS

#### WARM UP AND COOL DOWN TO AVOID INJURY

When completing a few exercises as a block together, warm up and cool down to avoid injury.

#### Warm up

Start with warm-up exercises for 2–3 minutes if completing a more structured exercise program. This helps the body prepare for exercise. Examples of warm-up exercises include stretches, shoulder shrugs, lifting the arms overhead, and marching on the spot.

#### Cool down

A good way to end the exercise session is to stretch or to do flexibility exercises. Deep breathing and relaxation techniques like meditation are also great for cooling down after exercise.



# Physical activity anywhere and everywhere

**Physical activity can take place virtually anywhere. If possible, it is a good idea to try to vary the type and location of activities to help maintain interest and motivation.**

## Home

Home-based and outdoor activities are a great way to build physical activity into daily routines. Activities such as walking, riding a scooter, stretching and strengthening exercises can be planned to fit in around your home and family schedule. Spreading activities out across the day can help make keeping active more manageable. Keep a physical activity diary (see page 56) or try a sticker chart (see page 58) to track progress and increase motivation.

## Hospital

It is vital that children and adolescents stay as active as possible during their hospital stays. If possible, it helps to spend time out of bed each day and to keep up daily routines such as showering and dressing. Participating in active games and going for regular walks can also help children and adolescents keep active whilst in hospital.

## Sporting groups

Staying connected with friends and maintaining interests throughout treatment is really important. For example, staying in touch with sporting clubs or dance classes is a great way to keep up contact with their own community and is great motivation for staying active.

### TIP

#### CHECK GROUP ACTIVITIES ARE OK

Depending on the type and phase of treatment, and how well the child or adolescent feels, it might not be appropriate to participate in physical activity in a group setting due to the risk of infection or, for contact sports, risk of bleeding when blood counts are low. You can discuss this with the treating team.

## School

Going to school is another great way to incorporate physical activity into the week as well as helping to maintain social connections. It is important to stay in touch with school and, where possible, to participate in school-based activities.

## Pool

Swimming or playing in a pool has many potential physical benefits. However, skin irritations, immune compromise, the presence of feeding tubes and central lines

as well as recent wounds may make getting into a pool difficult. It is important to speak to the treating team before starting a pool-based program. A hospital-based aquatic therapy pool may be safer than a community pool during active treatment. Spas and hot tubs are not recommended for children and adolescents undergoing cancer treatment due to the risk of infection.





# Physical activity across age groups

No matter the age, physical activity needs to be fun, motivating and achievable. The type of activity will vary depending on age.

## Infants and toddlers (0–2 years)

Giving infants opportunities to develop their gross motor skills, such as rolling, sitting and tummy time are very important. Giving them time out of bed – for example, sitting on your knee or playtime on a mat on the floor and playing with age-appropriate toys – is also beneficial for development. Building confidence to hold and play with your infant, even if they are in hospital with lines and attachments, is very important. If you need ideas or support, speak to your treating doctor or a physiotherapist.

To be most effective, it is best for parents or carers to guide their child in this.



## Pre-school and early primary school (3–7 years)

Maximising physical activity through play and everyday tasks is the most effective way to keep children more active in this age group. A structured exercise program is not usually a realistic option; however, strength, balance and flexibility exercises can be incorporated into everyday tasks and games through modifying games and altering positioning.

Check out 'Physical activity for young children: PLAY and POSITIONING' in the physical activity examples section of this booklet (page 19).



### **Primary school (8–12 years)**

Semi-structured exercise can be introduced in this age group. There still needs to be a large focus on games and play; however, more traditional exercises such as stretching, aerobic activity and strengthening exercises can also be included. The program will need to be led by a parent or carer to ensure that the activities are performed safely and effectively.

### **Adolescents (13–18 years)**

For teenagers, the responsibility for keeping active can start to shift from the parents to the young person. Work together to plan, design and schedule activities – this can help to increase motivation

and participation. Creating goals, incentives and thinking of activities that incorporate interests can be effective techniques to stay motivated over time.

**Check out 'Physical activity for older children and adolescents: STRUCTURED EXERCISES' in the physical activity examples section of this booklet (page 29).**

# Staying motivated

Often one of the biggest challenges to being physically active is staying motivated. The cancer journey can be long, and there are often times when children and adolescents will feel unwell or be in hospital.

## TIPS

### STAYING MOTIVATED TO EXERCISE

- Set short-term and long-term goals such as being able to walk to the end of the corridor or up a certain flight of stairs.
- Focus on having fun.
- Keep trying different activities to keep it fresh.
- Involve others – get friends and family to participate.
- Use a diary or chart to record progress.
- Acknowledge when improvements are made and reward successes.
- Use daily family routines so it does not feel like a chore.

Check out the 'Physical activity diary' and 'Sticker chart' examples found later in this booklet (pages 56 and 58).



# After treatment

Physical activity is important for overall health and quality of life. Resuming physical activities and sport after treatment is especially important for children and adolescents because it can help them reconnect with school, friends and community and sporting groups. There is evidence to suggest that getting back to and staying at a healthy weight, eating right and being physically active may help reduce the risk of chronic health problems in the future.



# Physical activity examples

## Physical activities for young children: **PLAY and POSITIONING**

On the following pages are some strength, stretching and balance activities that can be used to introduce physical activities into your child's day. The activities and positions shown can be used as part of play or incorporated into daily routines. Stop immediately if you feel that your child is in pain or seems unsafe. Get the whole family involved and do the exercises together. Don't feel as though you need to complete each activity every day. It's OK to complete a few at a time and spread them over the day.

## Bear walking

Bear walking is when your child walks along the floor on their hands and feet with their bottom in the air. This can help to build strength in the arms and legs and to stretch their calves. It also challenges their balance.



## Squatting

Setting up an activity on the floor and positioning your child in a squatted position provides a great opportunity to stretch the calves and improve balance. Encourage reaching out for toys while they stay in the squat position.

To make this activity more challenging, choose an activity that requires your child to move from the squatted position into standing and back to squatting.



## Standing on tiptoe

Position toys or objects above your child's head height and encourage them to reach up and grab them. Getting up on tiptoes helps to improve strength in the legs and can improve balance.



## Kneeling on the floor

Getting your child down onto the floor and encouraging them to move around on their knees is a great way to strengthen muscles that are important for walking and balance.

To work on all the important muscle groups, encourage your child to move in all directions – forwards, backwards and sideways.





## Crab walking

Crab walking is when your child walks along the floor on their hands and feet with their tummy facing upwards and their bottom lifted off the floor. This activity strengthens muscles in the shoulders and legs.



## Reaching in the crawling position

Reaching for toys from a crawling position is a great way to challenge your child's strength in a safe and stable position. Get your child to kneel on their hands and knees with some objects on the floor in front of them. Ask them to reach for an object and to move it to another position while holding themselves up with the other arm.



## Stomping and jumping

Stomping and jumping is a fun and active way to work on the large muscle groups in the legs that help with balance and running. Set up activities that require your child to stand on one leg, squash toys and jump over objects.



## Stepping up and climbing

Practising stepping up and down on steps or climbing on and over objects can help to build strength throughout your child's body.

You can use everyday items around the house to practise step-ups or to play games, such as climbing up and down off the couch.



## Half-kneeling

Half-kneeling is when you position your child on the floor resting on one knee with the other foot flat on the floor in front. This position is very challenging for balance and helps to build strength in the legs.

You can make this activity harder by getting your child to reach for toys or to throw and catch while in the position. You can also ask them to stand up and then return to the position. The movement of going up and down makes it more challenging for balance.



## Penguin walking

Penguin walking is when your child lifts up their toes and tries to walk on their heels. This activity challenges their balance and strengthens muscles in the legs.



## Bridging

For bridging, start with your child lying on their back with their knees bent and feet flat on the floor. From this position, ask them to lift their bottom off the floor. You can make this fun by rolling a ball underneath or squashing toys under their bottom.



# Physical activity examples

## Physical activity for older children and adolescents: STRUCTURED EXERCISES

Note that this section has been written for older children and adolescents so they can complete the exercises on their own. However, where required support from a parent or carer should be provided to ensure the activities are performed safely and effectively.

On the following pages are some strength, balance and stretching activities you can use to help introduce physical activity into your day. You can complete these activities in a block of exercise together or break them up and build them into your daily routine. Stop immediately if you experience pain or feel unsafe. Don't feel as though you need to complete each activity every day. It's OK to complete a few at a time and spread them over the day.

### TIP

#### IMPORTANT EXERCISES

The exercises marked with \* are the most important and should be completed daily if possible.

# Strength exercises

## Instructions:

- Aim to complete a block of 6–12 repetitions of each exercise.
- Complete each block 1–3 times.
- Rest for 60–90 seconds between each block.

## Progressing:

- Increase the number of repetitions from 6 to 12.
- Increase the number of blocks from 1 to 3.
- Increase the load of the weight (you may need to reduce the number of blocks and repetitions you complete if increasing the load).





## Chair raise\*

1. Sit towards the middle or front of a chair with your hands on your knees.
2. Stand up, using your hands on your knees for assistance if necessary. Try to keep your back straight as you stand.
3. Sit back down slowly, then repeat.



## Standing push-up

1. Stand with your feet shoulder-width apart. Lean forwards with your arms outstretched at shoulder height and your hands on the wall. Do not lock your elbows or knees.
2. Slowly move your body towards the wall, bending your arms at the elbow.
3. Once your nose is close to the wall, slowly push away from the wall, then repeat.



## Calf raise

1. Stand upright, with a wall or chair as support if necessary.
2. Lift your heels off the ground, keeping your knees and body straight. Hold the position for 3 seconds.
3. Return to the starting position and repeat.



## Wall squat

1. Stand 30–40 cm from a wall with your feet shoulder-width apart. Slightly bend your knees and lean back into the wall.
2. Keeping your body in contact with the wall, slide down (as if to sit) until you can feel your legs working – this may not be very far. Hold this position for 5 seconds if you can.
3. Slowly slide up until you are back into the starting position, then repeat.



## Clam shells

1. Lie on your back with your knees bent and your feet flat on the floor about hip-width apart.
2. Slowly lower one knee out to the side without moving your hips. Hold that position for 5 seconds.
3. Return to the starting position. Repeat with the other knee.



## Bridge

1. Lie on your back with your knees bent and your feet flat on the floor about hip-width apart.
2. Lift your bottom from the floor and hold the position for 3 seconds.
3. Lower your bottom and relax your muscles and rest for a few seconds, then repeat.



## Modified floor push-up

1. Start with your knees and hands on the floor and your arms extended. Keep your back and bottom as straight as possible.
2. Lower your chest towards the floor slowly, bending your arms at the elbow.
3. Push up, trying not to lock your elbows at the top, then repeat.



## Four-point kneeling

1. Start on all fours, with your legs hip-width apart, knees directly under your hips, hands directly under shoulders, and your back in a straight line.
2. Keeping your back flat and steady, extend one leg while supporting your chest with both hands on the floor. Once balanced, slowly extend the opposite arm. Pause for 5–10 seconds.
3. Maintain normal breathing. Slowly return to all fours. Change sides and repeat.





## Standing row

1. Attach a resistance band to a fixed point such as a door handle. Stand with your arms outstretched at waist height.
2. Pull the resistance band by drawing your elbows backwards, keeping your hands at waist height.
3. Slowly return to the starting position, then repeat.



## Shoulder press

1. Stand with your feet shoulder-width apart. Hold a set of hand weights at chest height with your elbows almost completely bent (so they are almost touching your sides).
2. Push the weights up until they are above and slightly in front of your head.
3. Pause, then lower the weights back to the starting position, then repeat.



## Bicep curl

1. Stand with your arms by your side. Hold a set of hand weights with your palms facing forwards.
2. Bend your elbows to lift the weights to shoulder height. Keep your elbows tucked in and avoid moving your shoulders.
3. Slowly return almost to the starting position but do not fully straighten your elbows, then repeat.



## Upright row

1. Stand with your arms by your side and your feet shoulder-width apart. Hold a set of hand weights with your palms facing your thighs.
2. Bending your arms, raise both weights slowly up to chest height. Avoid jerking them up. Maintain your head and neck position, looking straight ahead. Feel the exercise work the muscles in your shoulders and not in your neck.
3. Pause, then lower both weights back to the starting position, then repeat.



# Flexibility exercises

## Instructions:

- Aim to stretch frequently throughout the day (at least 5 times).
- Choose a variety of stretches including your arms, legs and body.
- Repeat each stretch twice on each side.



## Calf stretch\*

1. Stand facing a wall with your arms straight and your hands flat against the wall. Step one of your feet straight back, placing the heel flat on the floor.
2. Lean forwards against the wall and bend your front leg. Keep your back leg (stretching leg) completely extended and your foot flat on the floor – move the foot backwards until you feel the stretch. Hold for 15–30 seconds.
3. Repeat the stretch on the other side.



## Hamstring stretch\*

1. Stand on one leg with the other foot on a step. At first, you may want to do this near a wall in case you need to steady yourself.
2. Lean forwards from the hips, pushing your chest towards your knee. Keep your back straight. Hold the stretch for 15–30 seconds.
3. Repeat the stretch on the other side.



## Seated heel-toe ankle-stretch\*

1. In a seated position raise your feet up onto your toes and hold for 3 seconds.
2. Switch to raising your feet onto your heels and hold for 3 seconds.
3. Alternate between the two for 30 seconds.





## Seated back rotations

1. Start by sitting on the edge of a chair or on the side of a bed.
2. Slowly twist around to the right until you feel a good stretch in your lower back. Hold the stretch for 5 seconds.
3. Slowly return to the front and then rotate to the left.



## Back rotations

1. Lie on the floor or a bed with your knees pointing to the ceiling.
2. Gently rock your knees from side to side so you can feel a stretch in your lower back.
3. Keep rocking back and forth for 15–30 seconds and increase the size of the movement as your back loosens up and it becomes more comfortable.



## Shoulder stretch

1. Stand with your feet about hip-width apart.
2. Pull one arm straight across your chest and hold it with the other arm at the elbow. Keep your elbow just below your shoulder-line. Hold the stretch for 15–30 seconds.
3. Repeat the stretch on the other side.



## Tricep stretch

1. Lift one arm above your head, bending it at the elbow so your fingers point down your back.
2. Holding your elbow with your other hand, gently push the arm further down your back. Hold the stretch for 15–30 seconds.
3. Repeat the stretch on the other side.



## Pectoral stretch

1. Stand near a wall or a pole.  
Raise one arm out to the side so it is parallel to the floor, and hold the wall or pole with your hand.
2. Without moving your feet, partially turn your body away from the arm that is holding the wall/pole. Hold the stretch for 15–30 seconds.
3. Repeat the stretch on the other side.



## Quadricep stretch

1. Stand on one leg, with a wall or chair for support if necessary.
2. Hold your foot with your hand and pull the leg towards your bottom by the ankle. Hold the stretch for 15–30 seconds.
3. Repeat the stretch on the other side.



## Full body stretch 1

1. Stand with your feet slightly apart. Make an arch with your arms beside your body and reach your hands until they come together above your head.
2. Push your chest forwards and hold your hands together straight above your head. Hold for 10–30 seconds.
3. Slowly lower your hands to beside your body, then repeat.



## Full body stretch 2

1. Stand facing the wall with your feet shoulder-width apart. Place your hands flat on the wall at shoulder height.
2. Keeping your hands on the wall, bend over and point your bottom backwards.
3. Hold this stretch for 20 seconds.



# Balance activities

## Instructions:

- Balance activities can be done every day.
- Balance activities may need to be done with supervision to ensure safety.



## Standing on one leg

1. Stand on a firm surface.  
Use the back of a chair for support if necessary.
2. Slowly bend one knee to lift the foot off the ground so that you are balancing on the other leg. Keep your eyes on a fixed point in front of you and breathe slowly and deeply. Hold this position for 10–30 seconds if you can.
3. Lower your leg and put your foot back on the ground. Repeat the exercise with the other leg.





## High marching on the spot

1. Stand with your feet shoulder-width apart and lift one knee up to the height of your hip. At the same time lift your opposite arm to shoulder height.
2. Hold this position for 3 seconds and then lower your arm and leg back to the floor.
3. Alternate side to side (completing one repetition on each side).



## Physical activity diary

Keep track of what physical activity you do, or how many steps you take each day

# Talk test

Exercise intensity levels are used to describe how hard the body is working during physical activity. Monitoring your exercise intensity is a good way to ensure you are not working too hard because working too hard can put you at risk of injury. Aim to find a balance between exercising too hard and not exercising hard enough. The talk test below is a good way to measure how hard you are working.

Exercise intensity level	How easy is it to talk?
Light	You can talk and sing
Moderate	You can talk but need to pause for breath occasionally
Moderate to vigorous	You are huffing and puffing and can only talk in short conversations
Vigorous	You find it difficult to talk

Adapted from: Cancer Council Australia (2016). *Exercise for People Living with Cancer: A guide for people with cancer, their families and friends*. Cancer Council Australia, Sydney.

## Sticker chart

Draw a star or add a sticker every time you do a task



# Useful websites

(in alphabetical order)

## **Cancer Australia – Children’s cancer**

<https://childrenscancer.canceraustralia.gov.au>

## **Cancer Council Victoria – Childhood cancers**

[www.cancervic.org.au/about-cancer/cancer-and-children](http://www.cancervic.org.au/about-cancer/cancer-and-children)

## **Children’s Cancer and Leukaemia Group**

[www.cclg.org.uk](http://www.cclg.org.uk)

## **Children’s Oncology Group**

[www.childrensoncologygroup.org](http://www.childrensoncologygroup.org)

## **Hope Portal**

<http://searchhope.chla.org>

## **Monash Children’s Hospital**

[www.monashchildrenshospital.org](http://www.monashchildrenshospital.org)

## **National Cancer Institute**

<https://www.cancer.gov/types/childhood-cancers>

## **Paediatric Integrated Cancer Service (PICS)**

[www.pics.org.au](http://www.pics.org.au)

## **Peter MacCallum Cancer Centre**

[www.petermac.org](http://www.petermac.org)

## **The Royal Children’s Hospital Children’s Cancer Centre**

[www.rch.org.au/cc](http://www.rch.org.au/cc)

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- Cancer Council Australia (2016). *Exercise for People Living with Cancer: A guide for people with cancer, their families and friends*. Cancer Council Australia, Sydney.
- Braam KI, van der Torre P, Takken T, Veening MA, van Dulmen-den Broeder E, Kaspers GJ (2016). Physical exercise training interventions for children and young adults during and after treatment for childhood cancer. *Cochrane Database of Systematic Reviews*, 3, CD008796.
- Chang CW, Mu PF, Jou ST, Wong TT, Chen YC (2015). The effectiveness of non-pharmacological interventions on fatigue in children and adolescents with cancer: a systematic review. *JBIC Library of Systematic Reviews*, 10(10), 574–614.
- Grimshaw SL, Taylor NF, Shields N (2016). The feasibility of physical activity interventions during the intense treatment phase for children and adolescents with cancer: a systematic review. *Pediatric Blood & Cancer*, 63(9), 1586–1593.
- Ness KK, Gurney JG, Zeltzer LK, Leisenring W, Mulrooney DA, Nathan PC, Robison LL, Mertens AC (2008). The impact of limitations in physical, executive, and emotional function on health-related quality of life among adult survivors of childhood cancer: a report from the Childhood Cancer Survivor Study. *Archives of Physical Medicine and Rehabilitation*, 89(1), 128–136.
- Winter C, Muller C, Brandes M, Brinkmann A, Hoffmann C, Hardes J, Gosheger G, Boos J, Rosenbaum D (2009). Level of activity in children undergoing cancer treatment. *Pediatric Blood & Cancer*, 53(3), 438–443.

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