The Children & Young People's Cancer Association

Physical activity and exercise guideline statements

CCLG: The Children & Young People's Cancer Association Exercise Guidelines

Choose to move. Do what you can, when you can.

Expertise.
Progress.
Community.

www.cclg.org.uk

Movement is safe, important and beneficial for every child and young person affected by cancer [1, 2, 3, 4, 5]

Benefits to this population can occur from the most basic forms of movement, including getting out of bed and walking to the toilet, all the way through to specific exercise programmes and high intensity physical activities. This guideline aims to empower healthcare providers to safely encourage movement and exercise through the cancer journey and beyond.

Movement is important and possible for all children and young people affected by cancer [1, 2, 3, 4, 5]:

- Across all ages, abilities, diagnoses, stages of treatment and beyond
- Across all settings: in hospital, at home and in the community (including school and nursery), and outdoors
- Movement might look and feel different from day to day, and that is ok.

Throughout this document, the terms **physical activity**, and **movement** are used interchangeably to reflect the spectrum and intensities of being active on a daily basis. **Exercise** is used to refer to more planned and structured physical activity that is focused on improving or maintaining physical fitness.

Definitions

Physical activity is any bodily movement produced by skeletal muscles that require energy expenditure above resting levels.

Exercise is a subcategory of physical activity that is planned, structured, repetitive, and purposely focused on improvement or maintenance of one or more components of physical fitness.

https://onlinelibrary.wiley.com/doi/10.1111/nuf.12296

Physical activity, movement and exercise are essential for the healthy development of children and young people with and without chronic health conditions [6,7]. Evidence shows that physical activity is not only safe for children and young people living with and beyond cancer, but also provides many important short-term and long-term benefits [8]. Some of these benefits include decreased fatigue and anxiety, improved strength and aerobic fitness, and improved health and quality of life.

All healthcare professionals should encourage and empower children, young people and families affected by cancer to move daily and remain active during and beyond treatment [9].

At diagnosis, every child or young person and their family should have a consultation, either with an exercise professional or with another member of their healthcare team, to educate them about the benefits of physical activity, movement and exercise. Each family should receive a copy of the CCLG booklet *Keeping your child active during and after treatment*. Every contact counts, and healthcare professionals should discuss and encourage movement routinely during ward rounds and consultations. It is important to help children, young people and their families understand that engaging in physical activity throughout the cancer journey is feasible, safe and beneficial as well as the significant role it can play in optimising treatment outcomes and speeding up recovery.

Every child and young person should have a consultation at the end of treatment to discuss their needs and goals for physical rehabilitation. Some may have aspirations to return to specific sports, whereas others may simply hope to improve their functioning to be more active, feel better in themselves, or derive more enjoyment from life. Physical activity, health behaviour change or exercise programmes with clearly defined goals and outcomes should be designed to take this into account.

Recommendations

The CCLG recommend:

While everyone should encourage physical activity and daily movement, an exercise professional (e.g. exercise physiologist, exercise therapist, physiotherapist or an individual with appropriate knowledge, skills and training) is recommended when prescribing specific exercise programmes.

The exercise professional should consider the following:

- Age, developmental stage and ability
- Type and location of cancer and any associated complications
- Specific physical and cognitive limitations
- Treatment related considerations and contraindications
- Individual differences between children and young people, including their goals, previous experience and preferences
- Setting (inpatient, community-based, outdoors)

Good communication between the exercise professional and healthcare team is required to ensure safety and provide the child or young person with the best possible standard of care.

An exercise professional should be DBS checked and have specific knowledge about paediatric cancer and exercise gained through training and/or clinical experience. This is important to ensure safety and effectiveness of exercise recommended for children and young people affected by cancer. The exercise professional can support children and young people with initial movement goals or design programmes for pre or rehabilitation dependent on stage of treatment. A flexible, adaptable and individualised approach is recommended as each child or young person is different and the course of the treatment journey is often difficult to predict.

An intake form (see appendix 2) should be completed for each child or young person with cancer referred to an external exercise professional by their healthcare team, particularly for those referred to non-medical professionals (e.g exercise therapists without healthcare qualifications and/or external or community-based referrals). This should include the following information:

- Age
- Diagnosis and Date
- Treatment: planned, current and previous
- Other medical issues
- Current symptoms that could impact movement or exercise
- Physical restrictions, including site and location of indwelling lines
- Other therapies: past, current and previous
- Current movement, exercise and physical condition
- Additional information felt to be relevant from the medical team
- Child or young person's goals, preferences, concerns and barriers

It is appropriate to make this information available more informally when referring internally to physiotherapists and other members of the healthcare team.

Considerations for higher intensity physical activity or exercise sessions

- **Bleeding risk and platelet count**
- **Chemotherapy**
- **Respiratory insufficiency**
- **Post-operative and post-interventional situation**
- **Bone tumours and risk of fractures**
- **Fever and infections**
- **Radiotherapy**
- **Central nervous system tumours**
- **Cardiovascular disorders**
- **Co-morbidities and pre-existing conditions**
- **Generalised disorders and pain**
- **Anaemia**

For the more physically demanding and intensive activities, additional considerations and adaptations may be required to ensure on-going safe participation.

The following considerations may guide risk assessment processes to enable participation where possible

Environment: Can the environment be adjusted to facilitate safe participation?

Equipment: Can additional equipment be put in place to facilitate safe participation?

Monitoring & symptom reporting: If required, can measures be put in place to ensure symptoms are monitored throughout?

Task: Can the activity be adapted to the patients' individual needs and abilities to facilitate safe participation?

Individual needs: Can the patient be optimised from a medical perspective to help facilitate safe participation?

Communication: Are there members of the wider MDT who may be able to support decision making and problem solving?

It is important to be aware of specific medical considerations that require extra care or adaptations when undertaking high intensity physical activity or defined exercise sessions. "High intensity" will look different for every child and can be determined on clinical discretion. These considerations are most applicable to children and young people who are receiving treatment as inpatients in hospital.

Each case should be considered individually and discussed when felt appropriate with the healthcare team/ consultant. The criteria below are not contraindications to movement, which should be encouraged wherever possible. Even when intense exercise is not appropriate, the emphasis should be on encouraging movement rather than restricting it. (Based on medical considerations to exercise from the *FORTEe Research Study*).

NB If bloods are not being checked routinely, there is no need to do so specifically prior to exercise.

Bleeding risk and platelet count	• Children with platelet counts below 10,000 per µL should avoid high intensity activities and risk of falls should be minimised. • In case of platelet levels below 30,000 per µL, the exercise session should be adjusted according to the needs of the child or young person. • The individual bleeding risk must be considered, especially with regard to: - Risk of intracerebral haemorrhage - Signs of haemorrhage - Co-existing infection - Co-existing hyperleukocytosis - Co-existing coagulation abnormalities - Platelet count dynamics e.g. rapid fall of platelet count)
Anaemia	• If Haemoglobin < 8 g/dL, the exercise session should be adapted to the condition of the individual child or young person • Patients with symptomatic anaemia (e.g. dizziness, dyspnoea) should not undertake intense exercise, and gentle movement should be encouraged
Fever and infections	• No high intensity exercise with fever > 38.0°C (even if normalised/treated by fever reducing medication). Gentle movement should be encouraged. • No high intensity exercise in case of a severe infection or systemic infection. Gentle movement should be encouraged • In case of a mild infection (without fever) or in case of local infections, the exercise session should be adapted NB Please see clinical reasoning guide to facilitate decision making based on blood markers and infection risk in children requiring regular surveillance blood tests (appendix 1)
General disorders and pain	• Exercise should be adapted to minimise pain or discomfort and maximise enjoyment. Timing with analgesia should be optimised. • In case of mild pain or dizziness, the exercise session should be adjusted individually
Bone tumours and risk of fractures	• In patients with bone tumours or metastases, the affected region should not be loaded and treated with special care (in consultation with the treating physician) • **Particular caution is needed in patients with tumours and metastases of the spine.**
Central nervous system tumours	• Patients with central nervous system tumours (brain and spinal tumours) may be at higher risk of falling and injury if they have neurological impairment. • Take caution with patients with external ventricular drains (EVDs) • Exercise sessions should be adjusted individually with regard to: - Physical impairment - Cognitive impairment - Risk of seizure

Cardiovascular disorders	• Patients with cardiovascular disorders are at risk for serious complications, and precautions should be taken for patients with the following conditions following discussions with a cardiologist: - Acute heart failure (especially when symptomatic or decompensated) - Acute or active myocarditis or pericarditis or endocarditis - Cardiac arrhythmia (especially when causing symptoms or hemodynamic compromise) - Severe arterial or pulmonary hypertension - Large vessel thrombosis/deep vein thrombosis/embolisms - Circulatory instability with need of administration of e.g. catecholamines
Respiratory insufficiency	• Exercise should be adapted on an individualised basis in patients with respiratory problems • Patients at risk from an acute respiratory deterioration should avoid intense exercise, although gentle movement should be encouraged
Post-operative & post-interventional situation	• Particular caution is needed in the following situations: - after biopsy/lumbar puncture - after surgical interventions - existing wound-drainages • If the healing of surgical wounds has not yet been completed, the exercise session should be individually adjusted (no local loading/ wound kept clean and dry).
Radiotherapy	• No intense exercise during total body irradiation and mediastinal or cardiac-directed irradiation, although gentle movement should be encouraged
Co-Morbidities/ pre-existing conditions	• Adaptations will be needed in the following situations: • Acute or chronic disorder that may be aggravated by exercising, e.g.: - renal failure - metabolic disease (especially when uncontrolled), e.g. diabetes • Reduced bone density at risk of insufficiency fractures

For any patient undertaking physical activity, exercise or sport, it is a given that it is conducted in an appropriate and safe environment. It is incumbent on healthcare providers and exercise professionals to make the environment safe so that anyone with a physical disability or cognitive impairment can take part in physical activity appropriate to them.

The development of these guidelines was informed by the International Paediatric Oncology Exercise Guidelines (iPOEG)

References

1. Wurz A, McLaughlin E, Lategan C,Chamorro-Viña C, Grimshaw SL, Hamari L, Götte M, Kesting S, Rossi F, van der Torre P, Takken T, Guilcher GMT, McIntyre K, Culos-Reed SN. (2021). The International Pediatric Oncology Exercise Guidelines (iPOEG). Translational Behavioral Medicine, 11(10), 1915-22.
2. Grimshaw SL, Taylor NF, Shields N. The Feasibility of Physical Activity Interventions During the Intense Treatment Phase for Children and Adolescents with Cancer: A Systematic Review. Vol. 63, Pediatric Blood and Cancer. 2016.
3. Götte M, Kesting SV, Gerss J, Rosenbaum D, Boos J. Feasibility and effects of a home-based intervention using activity trackers on achievement of individual goals, quality of life and motor performance in patients with paediatric cancer. BMJ Open Sport and Exercise Medicine. 2018;4(1).
4. Rapti C, Dinas PC, Chryssanthopoulos C, Mila A, Philippou A. Effects of Exercise and Physical Activity Levels on Childhood Cancer: An Umbrella Review. Vol. 11, Healthcare (Switzerland). 2023.
5. Shi Q, Zheng J, Liu K. Supervised Exercise Interventions in Childhood Cancer Survivors: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Vol. 9, Children. 2022.
6. Faigenbaum AD. ACSM Information On...Physical Activity in Children and Adolescents. American College of Sports Medicine. 2015.
7. Alvarez-Pitti J, Casajús-Mallén JA, Leis-Trabazo R, Lucía A, López de Lara D, Moreno-Aznar LA, et al. Exercise as medicine in chronic diseases during childhood and adolescence. Anales de Pediatría (English Edition). 2020;92(3).
8. Spreafico F, Barretta F, Murelli M, Chisari M, Gattuso G, Terenziani M, et al. Positive Impact of Organized Physical Exercise on Quality of Life and Fatigue in Children and Adolescents With Cancer. Frontiers in Pediatrics. 2021;9.
9. Wogksch MD, Goodenough CG, Finch ER, Partin RE, Ness KK. Physical activity and fitness in childhood cancer survivors: A scoping review. Aging and Cancer. 2021;2(4).

Appendix 1:

Clinical Reasoning Guide: Blood markers and considerations

This flowchart in relation to blood markers, with suggestions on facilitating participation in scenarios where the oncology patient may have lower blood counts. This may only be relevant in certain environments e.g. acute inpatient wards, where blood are monitored as routing practice.

These flowcharts serve as a guide and are not absolute contraindications. Individuals must be assessed on a case-by-case basis, where symptoms and presentations may vary.

Neutrophils < 1.0

Immunocompromised patients are at increased risk of developing infections.

Considerations and adaptations:

- For neutropenic patients, aim to use patient owned, wipeable or single use equipment. Follow strict PPE (according to local IPC protocols).
- Setting: if severely neutropenic, can sessions be completed 1:1?. Aim to avoid crowded shared spaces and minimise cross contamination with other infectious patients.
- Be aware of restrictions around activities such as swimming/hydrotherapy. This may require specific permission from a consultant and use of swim-safe wear such as line covers or drysuits.
- **Children with a fever >38** may be able to engage in gentle activity and movement, however, may not be appropriate for more intensive exercise. Be aware of medications that may mask a temperature.
- In the case of severe infection or systemic infection, patients may not be appropriate for intensive physical activities/exercise.

Hb < 8 g/dL

Patients who are anaemic may present with symptoms of dizziness, dyspnoea and fatigue.

Considerations and adaptations:

- If symptomatic consider choosing less cardiovascular demanding activities, reducing the intensity as indicated to ensure tolerance for the patient.
- Start the exercise gradually to allow for assessment of symptoms.
- Be prepared to monitor symptoms throughout the intervention and facilitate rest or cessation of activity if required
- Setting: can the exercise be adjusted and carried out in alternative positions e.g. floor based or seated?
- Observe trends. **Patients with very low Hb or who are experiencing rapid drops in counts may not be appropriate for intensive physical activities/exercise.**

Platelets < 30,000 per µL

Patients with low platelets are at increased risks of bleeds. **Individual bleeding risk must be considered.**

Considerations and adaptations:

- For patients with lower platelet counts, aim to encourage exercise that involves a reduced risk of falls and injury e.g. avoid higher level balance tasks.
- High impact/contact exercises that risk injury and bleeding should be avoided.
- Environment: Can the environment be adjusted to facilitate safety? e.g. providing an exercise mat and creating a dedicated exercise space clear of obstructions.
- Safety equipment: e.g. a helmet for children scooting or cycling.
- Be aware of aware of symptoms and monitor for signs of bleeding.
- **Children with platelets below 10,000 per µL should avoid high intensity activities, with extra considerations around minimising risk of falls.**

Can high intensity physical activity or exercise be safely facilitated?

YES

Encourage participation with the appropriate adaptations in place as required

Continue to risk assesses prior to and throughout the activity, according to local protocols

NO

If patients are unable to participate intensive physical activity or exercise, continue to promote more gentle forms of movement and activity.

Consider if any additional measures can be implemented to facilitate safe participation

Liaise with the wider team to seek advice regarding the appropriateness of more intensive physical activity

Review risk vs benefit and risk assess according to local protocols

References

1. Gilchrist, L. and Tanner, L.R. (2017) 'Safety of symptom-based modification of physical therapy interventions in paediatric oncology patients with and without low blood counts', Rehabilitation Oncology, 35(1), pp. 3–8. doi:10.1097/01.reo.0000000000000042.
2. Jeevanantham, D. et al. (2020) 'Mobilization and exercise intervention for patients with multiple myeloma: Clinical practice guidelines endorsed by the Canadian Physiotherapy Association', Physical Therapy, 101(1). doi:10.1093/ptj/pzaa180.
3. Knips, L. et al. (2019) 'Aerobic physical exercise for adult patients with haematological malignancies', Cochrane Database of Systematic Reviews, 2019(1). doi:10.1002/14651858.cd009075.pub3.
4. Moriyama, T., Takami, A. and Makino, M. (2021) 'Safety of rehabilitation interventions for patients with hematologic diseases associated with low blood counts—verification focusing on blood cancer', Journal of Physical Therapy Science, 33(10), pp. 761–766. doi:10.1589/jpts.33.761.
5. Peters, K., Tice, J. and Gilchrist, L. (2012) 'Safety of physical therapy using symptomatic blood value guidelines in children being treated for cancer', Rehabilitation Oncology, 30(1), pp. 29–30. doi:10.1097/01893697-201230010-00019.
6. RCN Physical Activity Factsheets 03: PHYSICAL ACTIVITY AND CANCER .Available at: https://www.rcn.org.uk/-/media/Royal-College-Of-Nursing/Documents/Clinical-Topics/Public-Health/M2M/Starting-to-get-active.pdf (Accessed: 06 August 2024).
7. Seattle Cancer Care Alliance (2020) Exercise and blood value precautions. Available at: https://healthonline.washington.edu/sites/default/files/record_pdfs/Exercise-Blood-Value-Precautions-SCCA.pdf (Accessed: 06 August 2024).

Appendix 2:

Example Medical Clearance & Parental Consent to Exercise:

Affix patient details sticker if available

NAME

DATE OF BIRTH

HOSPITAL NUMBER

NHS NUMBER

CCLG The Children & Young People's Cancer Association

Medical Clearance and Parental Consent to Exercise

Before initiating a physical activity or exercise session **in the acute setting**, please review the list of medical considerations and tick each box.

To be read in conjunction with the CCLG Recommendations for Medical Clearance.

MEDICAL CONDITION	Tick if considered
Platelet count ≥30 (≥10*)	
Haemoglobin >8g/dl *	
No fever (>38 C) or severe infection	
Not on active chemotherapy infusion**	
No severe pain *	
No severe nausea/vomiting *	
No significant • cardiovascular disease • respiratory insufficiency • renal impairment • metabolic disease (e.g.diabetes)	
No surgical intervention within the last 12 hours	
If bone tumour or metastases • the affected region should not be loaded and treated with care	
If brain or spinal tumours • be aware of increased risk of loss of sensation and muscle power and higher risk of falls	

*If counts fall below this number/ some symptoms exist but child or young person is symptomatically well and the responsible physician has approved of physical activity exercise on this day they may be trained, but with low risk and low demand activities only.

**'If so PA should be modified to ensure the safety of the patient and reduce the risk of dislocation of the line'. Some low intensity, low risk exercise may still be possible.

These are not absolute contraindications to movement, which should be encouraged.

This form can be downloaded from **www.cclg.org.uk/guidelines**

The Children & Young People's Cancer Association

Statement of Health Professionals

Health Professionals Statement

This patient is medically fit for physical activity or exercise:- **Yes** ☐ **No** ☐

The following conditions should be taken into account:

Signature ..... **Name** .....

Job Title ..... **Date** .....

Exercise Therapist Statement

I understand that I have reviewed the information with a physician where appropriate and the child or young person is medically fit to perform physical activity at this time, with the recommended modifications.

I understand that underlying diagnosis, conditions on this list and the child or young person's physical and mental wellbeing should be taken in to professional context and I should deliver an appropriately modified session to meet their needs and reduce risk of harm.

Signature ..... **Name** ..... **Date** .....

Statement of parent

☐ I am happy for my child to take part in physical activity or exercise today

Parent / Legal Guardian signature ..... **Date** .....

Name (PRINT) ..... **Relationship to child** .....

Child or young person's agreement *(if they wish to sign)*

☐ I am happy to take part in physical activity or exercise today

Signature ..... **Date** .....

Name (PRINT) .....

September 24 | Page 2 of 2

Appendix 3:

Example Activity Intake Form

Affix patient details sticker if available

NAME

DATE OF BIRTH

HOSPITAL NUMBER

NHS NUMBER

The Children & Young People's Cancer Association

Parental Contact details:

Name: _____ Telephone number: _____

Email address: _____

Physical Activity Intake Form

Diagnosis: _____

Date of Diagnosis: _____

Site of primary tumour: _____

Site of metastases: _____

Treatment Protocol: _____

Planned, current and previous treatment (e.g. chemotherapy, surgery, radiotherapy):

_____

_____

Other medical conditions and/or considerations:

_____

_____

Lines in place and location: _____

This form can be downloaded from **www.cclg.org.uk/guidelines**

The Children & Young People's Cancer Association

Participant's current levels of movement, exercise and physical condition:

Current difficulties and recommendations to facilitate physical activity or exercise (symptoms, physical restrictions):

Preferences for activities (e.g. dancing, football, strength training) and/or specific goals:

The Children & Young People's Cancer Association

Century House, 24 De Montfort Street
Leicester LE1 7GB
0333 050 7654
info@cclg.org.uk | www.cclg.org.uk

@cclguk

CCLG and The Children & Young People's Cancer Association are operating names of The Children's Cancer and Leukaemia Group, registered charity in England and Wales (1182637) and Scotland (SC049948).

This version: September 2025
Next review date: September 2030

Produced by the CCLG Physical Activity & Exercise Special Interest Group.
Email: guidelines@cclg.org.uk

We are CCLG: The Children & Young People's Cancer Association. We unite the children and young people's cancer community, driving collective action and progress. Powered by expertise, we work together to create a brighter future for children and young people with cancer.

Research is the key to better treatments, improved care, and potential cures. We fund and lead world-class research, fuelling groundbreaking work led by brilliant minds. Collaboration is at the heart of our approach - bringing together the right people and organisations to drive progress and deliver real impact.

We provide trusted information and guidance for children and young people with cancer, their families, and everyone supporting them. Our expertise helps them navigate the challenges of cancer and its impact, offering reassurance and clarity when it's needed most.

Through our professional membership, we bring together the brightest minds in childhood cancer, creating a national network that drives progress. Together, we shape better treatment and care - developing guidelines, sharing knowledge, offering expert advice, leading pioneering research, and creating essential resources and education for professionals. Our collective expertise sets the standard, advocating for excellence at every level - local, national, and global.