



1

Important Note

- Designed to help health & fitness professionals understand or refresh what people may have been through so you can offer more inclusive exercise
- It is NOT a qualification or form of training that allows you to work directly with those living with or affected by cancer
- If you wish to work with this condition then you must ensure you complete the full qualifications
- Remember to work within your qualification and insurance boundaries

2

Session Objectives

- Overview the common types of cancer
- Explore the different types of cancer treatments and how they affect the body
- Identify the benefits of physical activity and exercise during and post treatment
- Highlight the key considerations that must be taken when exercising with this client group
- Recognise and apply health and safety considerations

3

Introduction to Cancer

4

Introduction

—



- Cancer is caused by cells becoming abnormal
- There are over 200 types of cancer
- 1 in 2 people will get cancer in their lifetime
- Cancer develops in the form of tumours both solid and within the blood
 - Benign tumours (not cancerous)
 - Malignant tumours (cancerous)

5

Statistics

Estimated 3 million people living with cancer in the UK

Estimated to rise to 4 million by 2030

367,000 new cancer cases in the UK every year, that's around 1,000 everyday (2015-2017)

Every two minutes someone in the UK is diagnosed with cancer

38% of cancer cases are preventable

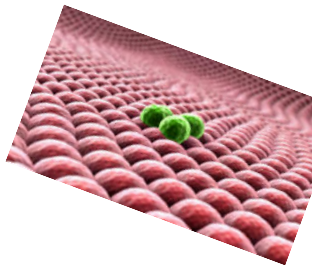
Peak rate of cancer cases are in the 85-89 year age bracket (2015-2017)

Cancer Research UK, <https://www.cancerresearchuk.org/health-professional/data-and-statistics>, accessed June, 2021. (Sourced: Macmillan.org.uk)

6

Pathophysiology

- Cells split into 2 and replace defective cells or ones that die
- The cells nucleus is responsible for this process
- Sometimes the genes within the nucleus mutate and cause the nucleus to send out wrong messages
- The cells then multiply rapidly which gets out of control (proliferation)
- Forming a tumour



7

Pathophysiology

Proliferation

Cells multiplying rapidly



Angiogenesis

Development of new blood vessels to feed the new cells



Risk of Metastasis

Cells breaking away from area of origin, travelling through blood stream and affecting other parts of the body

8

Healthy diets and lifestyle can help prevent this process

Genetics and other uncontrollable factors influence the development of this condition



9

Groups of Cancer

Carcinomas
e.g. lung, bowel, stomach or skin

Melanomas
i.e. cells that make skin colour

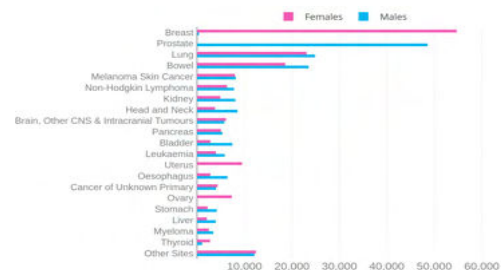
Blood cancers
Lymphomas
Leukaemia
Myelomas

Sarcomas
i.e. bone, fat, muscles, tendons or cartilage

Brain and spinal cord cancers
i.e. tumours in skull or spinal column

10

The 20 Most Common Cancers, UK, 2017



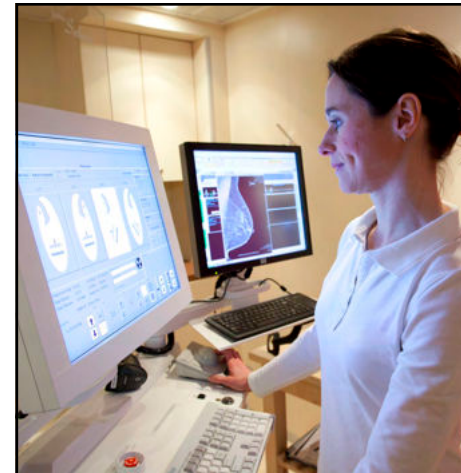
'Breast, prostate, lung and bowel cancers together accounted for over half (53%) of all new cancers in the UK in 2017.'

Data in this chart do not sum to the all cancers combined total provided elsewhere, because 'Brain, other CNS (central nervous system) and intracranial' includes tumours that are malignant and non-malignant but only the malignant tumours are included in 'all cancers combined' total.

Source: cr.uk/cancerstats

You are welcome to reuse this Cancer Research UK statistics content for your own work. Credit us as authors by referencing Cancer Research UK as the primary source. Suggested style: 'Cancer Research UK, full URL of the page, Accessed [month] [year].'

11



Common Treatments

12

Cancer Treatments

The 3 main ones we are covering include:

Chemotherapy

Radiotherapy

Surgery

13

Aim of Chemotherapy

Aims to stop or slow down progression of cancer cell growth

Aims to cure cancer and prevent its return

Different drugs and different methods of administering drugs

14

Aim of Radiotherapy

Aims to kill cancer cells or slow down their growth

Uses high energy rays to kill cancer cells (internal & external)

Site specific

15

Aim of Surgery

Aims to remove tumour in one area

Decrease size of or pains associated with tumour

16

Living with Effects of Cancer Treatment

- Can you list one side effect for the following treatments?
- Chemotherapy
- Radiotherapy
- Surgery
- Can you identify one adaptation/consideration relating to the side effects?

17

Living with Effects of Chemotherapy Treatment

- Fatigue
- Issues with blood count (WBC, Hb and platelets)
- Weight gain
- Digestive issues i.e. vomiting, diarrhoea
- Peripheral neuropathy
- Sleep problems
- Mental health conditions
- May be fitted with a central line

18

Living with Effects of Radiotherapy

- Tiredness and weakness
- Sore skin
- Stiff muscles
- Digestive and bladder problems (depending on area of radiotherapy)
- Lymphoedema

19

Living with Effects of Surgery



- Pain
- Fatigue
- Bruising
- Numbness
- Swelling
- Appetite loss

20

Additionally

Generally, most forms of treatment have the potential to impact our health-related components of fitness such as cardio-respiratory function, muscular strength and endurance, body composition, flexibility and neuromotor function.

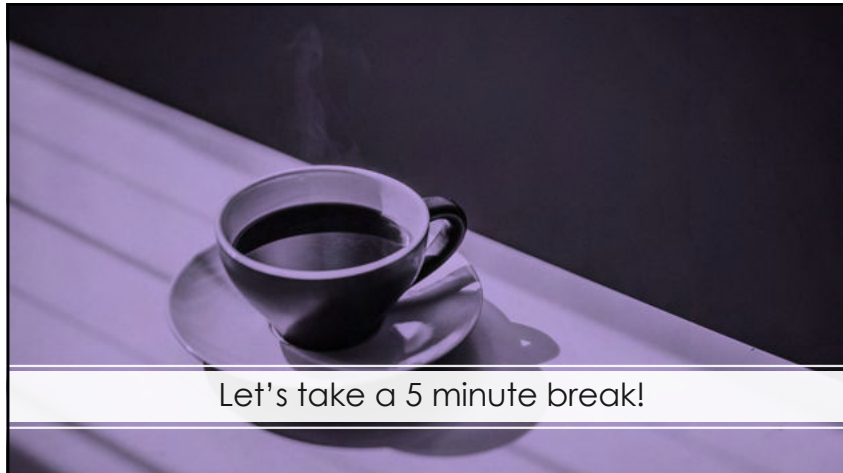
ACSM, 2018

21

Living with Effects of Cancer Treatment

- Not an exhaustive list
- Some symptoms can affect people during the treatment whilst others can last for months or years afterwards
- Make sure everything is individualised for your clients

22



23



Benefits of Physical Activity

24

Physiological Benefits of Physical Activity



- Reduce blood pressure
- Decrease CVD risk
- Boosts immune system
- Improve metabolism
- Reduce inflammatory responses
- Manage weight
- Increase BMD
- Maintain or improve muscle mass
- Improve core and pelvic floor
- Decrease mental health conditions
- Improve circulation

25

Client Orientated Benefits of Physical Activity



- Decrease risk of reoccurrence
- Improve sleep
- Improve energy/reduce fatigue
- Improve cognition
- Improve flexibility
- Improve confidence
- Reduce depression and anxiety
- Reduce incontinence
- Improve QOL
- Manage or lose weight
- Social and enjoyable

26

Summary Points from Research

Overall there is a significant amount of research to support physical activity and exercise for both prevention and management of cancer; particularly for colon and breast cancer.

It is important to explain that exercise and activity is safe for clients with cancer and those recovering from it as long as they listen to their own bodies.

27

Why?

- Physical activity can lower oestrogen levels as well as insulin which is potentially associated with signalling for cells to multiple.
- Boosts the immune system making it more efficient.
- Physical activity can speed up the removal of harmful chemicals through the bowel.
- Physical activity is proposed to combat the inflammatory effects of oncological treatments and to prevent the development of comorbidities (Leite et al, 2020) Inflammation can causes cells to multiply so controlling inflammation can help to prevent the disease

World Cancer Research Fund AI for CR (2018).



28



29

Introduction

People living with cancer and cancer survivors should avoid physical inactivity during and after treatment.

The Physical Activity Guidelines Advisory Committee suggests that all individuals should be encouraged to engage in recommended levels of physical activity to reduce risk for developing cancer and for improving cancer prognosis

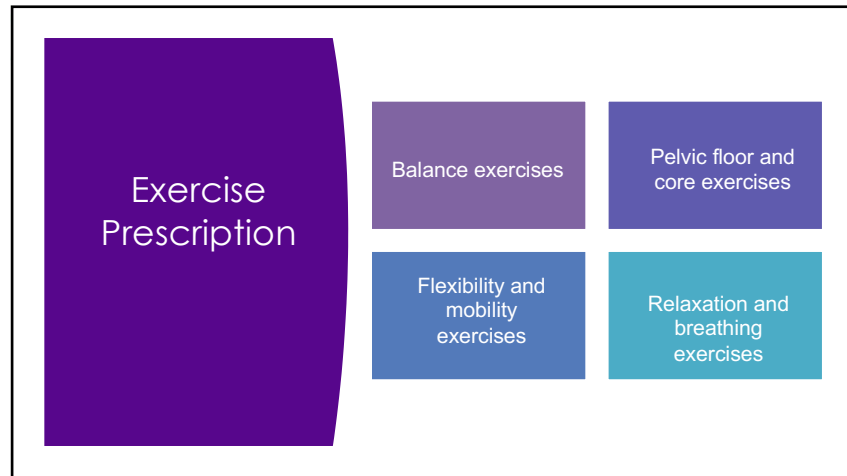
30

<ul style="list-style-type: none"> ✓ Improve quality of life ✓ Reduce fatigue ✓ Improve energy ✓ Reduce stress ✓ Maintain functional fitness ✓ Enhance social interaction ✓ Improve body image ✓ Weight and body fat management 	<h3>Key Exercise Objectives</h3>
---	----------------------------------

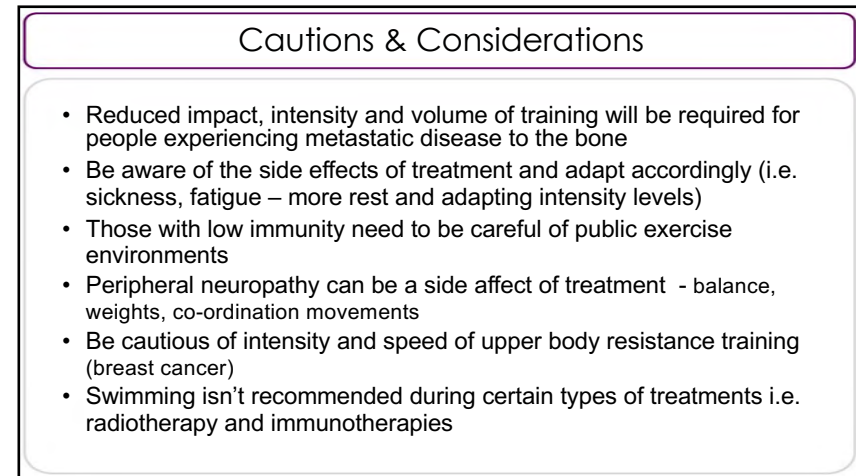
31

<h3>Exercise Prescription</h3>
<ul style="list-style-type: none"> Follow the healthy population guidelines but individualise for every person Adults should aim to be active daily. <ul style="list-style-type: none"> Any activity is better than none, and more is better still. At least 150 minutes (2.5 hours) of moderate intensity a week Alternatively, 75 minutes of vigorous intensity activity spread across the week or combinations of moderate and vigorous intensity activity. <ul style="list-style-type: none"> The higher the more effective according to research but it must be safe Improve muscle strength on at least two days a week. All adults should minimise the amount of time spent being sedentary (sitting) for extended periods.
<small>CMO, 2019</small>

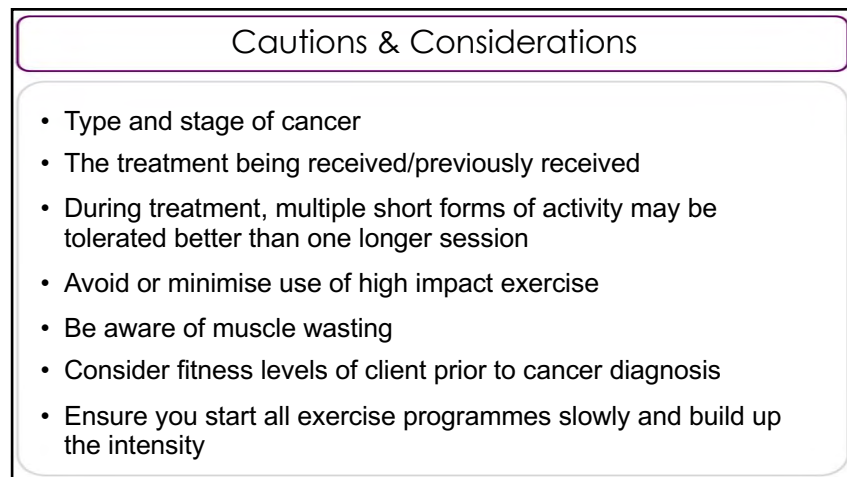
32



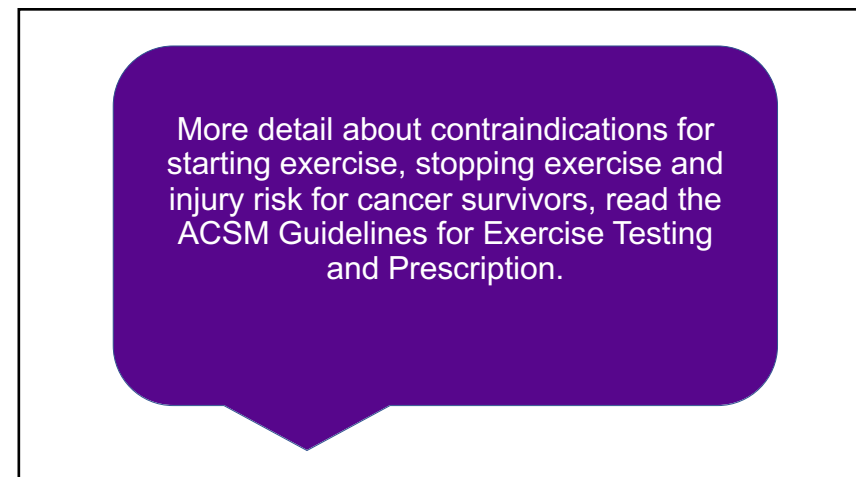
33



34



35



36

Individual Motivations

- What do you think could be the motivation for clients?
 - Consider benefits of physical activity
 - Consider side effects of treatment
 - Consider physical activity/exercise prior to cancer
 - Consider hobbies or leisure activities that they enjoyed

Finding this information out comes down to effective communication...

37

Effective Communication

- Building relationships and rapport is fundamental
 - Develop trust
 - Demonstrate empathy
 - Be genuine and compassionate
 - Active listening



38

Communicate the importance of the exercise routine in a way that will resonate with them

39

Summary

There are over 200 types of cancer; lung, breast, prostate and bowel are amongst the most prevalent

1 in 2 people will get cancer in their lifetime

Surgery, chemotherapy and radiotherapy are 3 key treatments for cancer

The side effects of treatment range depending on the type of treatment, type of cancer and individual

There are many benefits of PA and exercise for both those with cancer and those recovering from it

40

Summary

Research is still very focused on how activity can prevent and manage cancer with the majority of evidence around colon and breast cancer

It is safe to participate in activity throughout the journey but it is essential to adapt according to clients symptoms and to encourage them to listen to their body

Make sure you thoroughly screen the clients and ensure they have medical clearance to participate in activity

Effective communication and empathy is essential

41

Helpful Websites & Resources

National Cancer Institute
Cancer Research UK
Macmillan
Move More Resources

42

References

- Cancer Research UK, <https://www.cancerresearchuk.org/health-professional/cancer-statistics/cancer-stats-explained/data-collection-implications#heading=Seven>, Accessed June 2021.
- de Jesus Leite MA, Gonçalves A, Portari G, Oliveira CJ, Catarino J, Bortolini M, Penha-Silva N. Application of physical exercise therapies in breast cancer survivors and their effects on the inflammatory profile: A narrative review. *J Bodyw Mov Ther.* 2020 Oct;24(4):536-545. doi: 10.1016/j.jbmt.2020.08.002. Epub 2020 Sep 6. PMID: 33218558.
- CAMPBELL, KRISTIN L.1; WINTERS-STONE, KERRI M.2; WISKEMANN, JOACHIM3; MAY, ANNE M.4; SCHWARTZ, ANNA L.5; COURNEYA, KERRY S.6; ZUCKER, DAVID S.7; MATTHEWS, CHARLES E.8; LIGIBEL, JENNIFER A.9; GERBER, LYNN H.10,11; MORRIS, G. STEPHEN12; PATEL, ALPA V.13; HUE, TRISHA F.14; PERNA, FRANK M.15; SCHMITZ, KATHRYN H.16 Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable, *Medicine & Science in Sports & Exercise*: November 2019 - Volume 51 - Issue 11 - p 2375-2390 doi: 10.1249/MSS.0000000000002116
- MCTIERNAN, ANNE1,2; FRIEDENREICH, CHRISTINE M.3,4,5; KATZMARZYK, PETER T.6; POWELL, KENNETH E.7; MACKO, RICHARD8; BUCHNER, DAVID9; PESCATELLO, LINDA S.10; BLOODGOOD, BONNY11; TENNANT, BETHANY11; VAUX-BJERKE, ALISON12; GEORGE, STEPHANIE M.13; TROIANO, RICHARD P.14; PIERCY, KATRINA L.12; FOR THE 2018 PHYSICAL ACTIVITY GUIDELINES ADVISORY COMMITTEE* Physical Activity in Cancer Prevention and Survival: A Systematic Review, *Medicine & Science in Sports & Exercise*: June 2019 - Volume 51 - Issue 6 - p 1252-1261 doi: 10.1249/MSS.0000000000001837
- PATEL, ALPA V.1; FRIEDENREICH, CHRISTINE M.2; MOORE, STEVEN C.3; HAYES, SANDRA C.4; SILVER, JULIE K.5; CAMPBELL, KRISTIN L.6; WINTERS-STONE, KERRI7; GERBER, LYNN H.8; GEORGE, STEPHANIE M.9; FULTON, JANET E.10; DENLINGER, CRYSTAL11; MORRIS, G. STEPHEN12; HUE, TRISHA13; SCHMITZ, KATHRYN H.14; MATTHEWS, CHARLES E.3 American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control, *Medicine & Science in Sports & Exercise*: November 2019 - Volume 51 - Issue 11 - p 2391-2402 doi: 10.1249/MSS.0000000000002117
- Turner RR, Steed L, Quirk H, Greasley RU, Saxton JM, Taylor SJ, Rosario DJ, Thaha MA, Bourke L. Interventions for promoting habitual exercise in people living with and beyond cancer. *Cochrane Database Syst Rev.* 2018 Sep 19;9(9):CD010192. doi: 10.1002/14651858.CD010192.pub3. PMID: 30229557; PMCID: PMC6513653.
- World Cancer Research Fund AI for CR. Physical Activity and the Risk of Cancer. World Cancer Research Fund International; 2018. <https://www.wcrf.org/dietandcancer/exposures/physical-activity>.

43

References

- Blanchard et al (2015). Physical Activity & Exercise Benefits Cancer Patients and Survivors. *Cancer Care Nova Scotia*. Vol 5, No. 1.
- National Cancer Institute [accessed in November 2016 from: <https://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/physical-activity-fact-sheet>]
- The Christie NHS Foundation Trust booklet [accessed in November 2016 from: <http://www.christie.nhs.uk/media/2538/540.pdf>].
- Macmillan Statistics Factsheet [accessed in November 2016, re-accessed June 2017 from: <http://www.macmillan.org.uk/documents/aboutus/research/keystats/statisticsfactsheet.pdf>]
- Schmitz et al (2010). American College of Sports Medicine Roundtable on Exercise Guidelines for Cancer Survivors. *Medicine & Science in Sports and Exercise*: 1409-1426.
- American College of Sports Medicine. Cancer. In: Lupash E, ed. *ACSM's guidelines for exercise testing and prescription*. 9th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014: 263-273.
- Knob MT, Musanti R, Dorward J. Exercise and quality of life outcomes in patients with cancer. *Semin Oncol Nurs.* 2007; 23(4): 285-296.
- Maddams J, Utley M, Moller H. Projections of cancer prevalence in the United Kingdom, 2010-2040. *Br J Cancer* 2012; 107: 1195-1202. (Projections scenario 1). Macmillan analysis based on extrapolation of 2010 and 2020 projections that the number of people living with cancer will hit an estimated 2.5 million in 2015.
- Campbell et al (2011) The BASES Expert Statement on Exercise and Cancer Survivorship. Issue 28.

44

Thank you
for participating in today's training

Any Questions?

Tutor: Emma Haughton

t: 03302231302

e: support@puretraininganddevelopment.co.uk

w: www.puretraininganddevelopment.co.uk



/PureTrainingandDevelopment



@ PureTrainingandDevelopment