

# The Role of Diet and Exercise After Cancer Treatment

Thomas Hedley, MD, MSc., CCFP, DipABLM

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# Living With and Beyond Cancer

- You got through treatment. You endured significant mental and physical stress.
- Now you are living with and beyond cancer potentially with:
  - Late or persistent side effects
  - Heightened health risks
- Treatment helped your cancer but may have created vulnerabilities in your health:
  - Heightened risk of heart disease
  - Heightened risk of metabolic diseases – diabetes
  - Heightened risk of secondary cancers
  - Bone density loss
  - Brain fog, anxiety, depression
- Good news: Lifestyle changes can modify these risks and symptoms!

# It's Not Too Late – Reclaiming Your Power

- “I wish someone told me this earlier.”
- After avoiding smoking tobacco and minimizing alcohol, *a healthy eating pattern and exercise are the most powerful lifestyle behaviours you can do to lower your risks and improve your health after treatment.*
- Furthermore, if you feel disconnected from your body or unsure what it can do now, then:
  - **Rebuilding trust with your body through movement and nutrition can be a source of power.**

# Why does eating healthy and exercising matter to you?

- If you feel motivation to improve your food choices or increase your physical activity...
- Pick one of these behaviours – food choices or physical activity
  - Ask yourself why you want to make this change?
  - If it's to reduce your risks or improve your health, again ask yourself why?
  - If it's to feel better and have better quality of life, ask yourself why? Consider what sorts of experiences, feelings, or connections feeling better could allow.
  - Keeping asking yourself why? Do this up to 5 times if needed.
- Purpose: To help you connect your intention to eat healthier or exercise more to your deeper values (i.e. what matters most to you).

# What Exercise Helps After Cancer Treatment

- Improves cancer outcomes and reduces risk of new cancers
- Chronic disease risk
  - Improves cardiovascular and metabolic risk factors
  - Improves or helps maintains bone density
- Late-effects of cancer treatment
  - Improves anxiety and depression symptoms
  - Improves brain fog
  - Improves fatigue
- Improves quality of life and physical function



# Different Treatments Create Different Needs

- Abdominal radiation vs. Chest Radiation vs. Limb surgery
- Nerve changes or heart damage after chemotherapy
- The relationship with one's body can change after treatment
  - Scars
  - Weight changes
  - Loss of function – less strength, energy, and/or cardio tolerance
  - Anxiety about physical exertion triggering health fears
- Meet yourself where you're at – modify exercise as needed

# Exercise Prescription to Improve Quality of Life and Symptoms

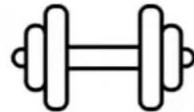
Current guidelines for people with cancer recommend:



## Aerobic exercise

- 30-60 minutes
- 3 days per week
- moderate-vigorous intensity

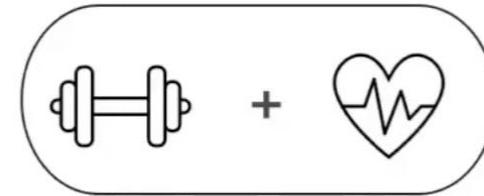
or



## Strength training

- 2-3 days per week
- 2 sets of 8-15 repetitions

or



## Strength training

- 2-3 days per week
- 2 sets of 8-15 repetitions

## Aerobic exercise

- 20-40 minutes
- 2-3 days/week
- moderate-vigorous intensity

# Exercise Rx to Improve QOL and Symptoms

- **Aerobic alone – 3 times per week, 30 minutes per session for at least 12 weeks**
  - To improve fatigue, anxiety, depression, quality of life, and physical function
  - Intensity - moderate (60-80% max heart rate)
- **Resistance alone – 2 times per week, 2-3 sets of 8-15 reps for all major muscle groups for at least 12 weeks**
  - To improve fatigue, quality of life, and lymphedema
  - Intensity – At least 60% of 1 rep max aka at least 6/10 effort each set
- **Combined Aerobic and Resistance**
  - **Aerobic 3 times per week, 30 minutes per session + Resistance training 2 times per week, 2 sets of 8-15 for all major muscle groups at 60% 1 rep max weight – for at least 12 weeks**
  - To improve fatigue, anxiety, depression, quality of life, and physical function

Campbell et al, *Med Sci Sports Exerc.* 2019;51(11):2375-2390

Avancini et al, *Crit Rev Oncol Hematol.* 2025;210:104718

# Exercise Intensity

- Talk Test
  - Moderate – can talk, can't sing
  - Vigorous – can't talk, can't sing
- % of Max Heart Rate
  - Moderate – 60-80%
  - Vigorous – greater than 80%



# How to Start Exercising

- What does “start small” look like?
  - Example: 20 minutes brisk walk, 2-3x/week
    - At least 1 day off in between sessions BUT...
    - If no time during week, maybe do both sessions on weekend (i.e. on Saturday and Sunday).
  - Increase duration by 5 minutes every 2 weeks until at 30-40 minutes per session.
- Goal is for exercise to boost your energy
  - Initially do less minutes at a lower intensity so that your physical activity doesn't drain you from other roles and responsibilities
    - Rate and track your energy before and after exercise
  - Helps build momentum



# How to Start Exercising

- Adapting exercise to your symptoms
  - If shoulder pain after treatment and you want to start with strength training, start with only lower body exercises.
  - If neuropathy in hands makes gripping weights painful, do high reps of body weight exercise or invest in a weighted vest.
- Learn from and listen to your body
  - In the beginning, consider a heart rate monitor or tracker to re-learn what light, moderate, and intense exercise feel like now.
  - Experiment and reflect on what forms of exercise work for you and what doesn't. *This may mean a change from the type of exercise you did previously.*
- Explore emotions around exercise
  - Example: If the exercise you can do now is different from the exercise you did before and that is causing anger or frustration, giving yourself permission to feel sad about that loss.

# What a Healthy Diet Helps

- Cancer outcomes and risk of developing new cancers
  - Healthiest vs. least healthy diets post diagnosis associated with 30% improvement in outcomes
  - *Example of a healthy diet:* Higher adherence to “planetary health diet” post-diagnosis is associated with improved cancer outcomes and decreases in inflammation.
  - A healthy eating pattern addresses the top 3 dietary risk factors associated with developing new cancers:
    - Low fruit and vegetable intake
    - Low fibre intake
    - Processed meat intake



# What a Healthy Diet Helps

- Chronic disease risk
  - Decreased chance of developing heart disease
  - Decreased chance of developing type 2 diabetes
  - Decreased chance of developing osteoporosis
  - May help with weight management
- Late effects of cancer treatment
  - May improve brain fog – MIND diet post-chemotherapy
  - May improve fatigue, when combined with exercise
  - May also improve depression symptoms



# A word on food

- Everyone has their own unique relationship with food.
- Food is culture.
- Food can be a source of comfort or a coping mechanism.
- Food and eating can come with trauma.
- Food can be fuel.

# Dietary Principles After Treatment

- Nutritional goals during treatment are not the same as post-treatment
  - During treatment, goals are to maintain muscle and physical function to improve treatment tolerance and completion
  - **Post-treatment, goals are cancer prevention, re-building muscle + bone density, and improving function and quality of life.**
- After treatment:
  - A higher protein diet may not be as important as during treatment
  - Fibre can be a key nutrient of focus.

# Dietary Principles After Cancer

- There is no single diet that is best for everyone after cancer
- Specific dietary considerations depend on:
  - Body composition
  - Goals
  - Medical and surgical history
  - Presence of GI symptoms – nausea, taste changes, diarrhea/constipation
  - Your relationship with food - eating behaviours, trauma, etc.



# Dietary Principles After Cancer

- Components in a healthy diet after cancer:
  - Mostly whole or minimally processed foods
  - Plant-predominant – *does not mean you need to exclude all animal products*
    - Likely consuming 60-80% of foods from plants provides majority of benefits
  - High in fibre from vegetables, fruits, whole grains, beans, lentils, and nuts/seeds.
- Foods to consider limiting after cancer:
  - Processed meats - 1x/week or less
  - Red meats - 2x/week or less
  - Refined grains - 2-3x/week at most
  - Added sugar – less than or equal to 6 teaspoons or 30g/day
    - Specifically limit sugar sweetened beverages to <2 drinks/month

# Plant Predominant Diet Example

- Example of achievable plant-predominant diet is the Planetary Health Diet (PHD)
- Planetary Health Diet aka “Flexitarian Eating Pattern”
  - 1 serving of dairy per day
  - 1 serving of meat/eggs per day (fish, poultry, eggs)
  - 1-2 servings of red meat per week (beef, pork, lamb)
  - On base of lentils, beans, soy foods, whole grains, vegetables, fruits, seeds, nuts, and plant oils
  - Minimize refined grains, sugar sweetened beverages, fried foods and processed meats.



Lawrence et al., *Pub Health Nutr.* 2019;22(16):1-5

Chen et al., *Nutr Journal.* 2025;24(1):28

Willet et al., *Lancet.* 2019;393(10170):447

# Supplements After Cancer

- There is no single supplement that reduces risk for all types of cancer
- Many supplements are anti-oxidants
  - Anti-oxidants help boost our immune system, which is important for recovery and preventing new cancers
  - Foods can also be rich sources of anti-oxidants and contain many other beneficial compounds.
- Supplements you may consider:
  - Probiotics – short course once completed chemotherapy to help with gut symptoms
  - Vitamin-D – 400-1000 units daily - to help ensure maximal calcium absorption by the body



# Strategies to get more anti-oxidants from food

1. **Snack on nuts/seeds** – add a handful of raw, unsalted almonds/walnuts/pecans/pumpkin seeds to your morning or afternoon snack.
2. **Sprinkle cinnamon and turmeric** - Add cinnamon to your morning yogurt, oatmeal, and/or coffee. Add turmeric to your morning eggs, tofu, or lunch bowls. Less than ¼ tsp. per day is enough to provide health benefits.
3. **Supplement your bowls, soups, and salads with the most anti-oxidant rich greens and herbs** - add 1-2 handfuls of darky leafy greens – spinach, kale, arugula, chard to your soups, salads, or bowls. Add a small handful of parsley or cilantro to your salads.
4. **Sample berries according to the season** – fresh blueberries, strawberries, and raspberries are cheaper in the summer; blackberries, cranberries, and pomegranates are cheaper in the fall; frozen mixed berries are cheaper in the winter and spring.
5. **Swap half of your meat for lentils** – in chili, soups, or pasta recipes with ground meat, replace half the ground meat with green or French lentils. Lentils have the highest anti-oxidant content of all legumes (except black beans) and are a great way to begin eating legumes as they have a meaty texture and are easier to digest than other legumes.

# Supplements After Cancer

- Approach:
  - What are the benefits on symptoms and/or outcomes? Verify with reputable resource
  - What are the risks? Possibility of interactions with other supplements and/or your treatment or other meds.
- Resources:
  - **National Centre for Complementary and Integrative Health** – free database
  - BC Cancer Provincial Pharmacy Team – [druginfo@bccancer.bc.ca](mailto:druginfo@bccancer.bc.ca)

# Sugar After Cancer

- The association between sugar intake and cancer is COMPLEX with mixed evidence and differences between specific cancer types.
- High sugar intake may be related through effects on insulin resistance and chronic inflammation
- Considerations:
  - Type of sugar consumed matters – added vs. naturally occurring
  - Many studies indicating a link between sugar and cancer are observational – don't account for all confounding variables (food quality, other lifestyle factors).
  - Impact of sugar consumption on cancer risk varies depending on cancer types – *for some cancers, added sugar is not associated with increased risk*



# Sugar and Cancer – Summary of Evidence

- Does sugar cause cancer?
  - There is not strong evidence to suggest that *added sugar* directly causes cancer.
  - Growing body of observational evidence which suggests an *association* between *higher added sugar* intake and increased risk of developing certain cancers.
- Does sugar increase risk of recurrence?
  - Limited clinical evidence for this in certain cancer types
    - Observational studies in breast and colon cancer related to *sugar sweetened beverages*

# Dietary Tips for Managing Sugar After Cancer

- Focus on low glycemic index foods – lead to slower more gradual increases in blood sugar levels
  - Yams vs. white potatoes; lentil or whole wheat pasta vs. white pasta; wild rice vs. white rice; Medjool dates vs. snack bars
- Increase dietary fibre – slows absorption of sugar, reducing rapid blood sugar spikes
- Limit added sugar intake
  - Goal <2 tbsp/day or <30g/day
  - Limit sugar sweetened beverages (soft drinks, pop, juice) to 1 can/1 small glass per week
  - Beware of added sugar in frozen pre-packaged meals, snack bars, and store-bought sauces/dressings

# Goal and Intention Setting

- Make a SMART Goal
  - “I will exercise 2 times per week for 20 minutes with brisk walking outdoors at 7am for the next 4 weeks.”
- Clarify your *intention*
  - If you want to exercise and eat healthy to improve cancer outcomes and/or symptoms
    - What will improving symptoms allow you to feel or do?
    - Try to connect goal to your values.



# The Power of Routines

- Best way for implementing new behaviours is to stack with existing behaviours or routines
- Specify the HOW, WHERE, WHEN you will perform your desired behaviours
- Make a plan
- Anticipate potential road bumps/time periods where you may get off track and proactively brain-storm strategies to manage this
  - Holiday season – November, December
  - Summer holidays

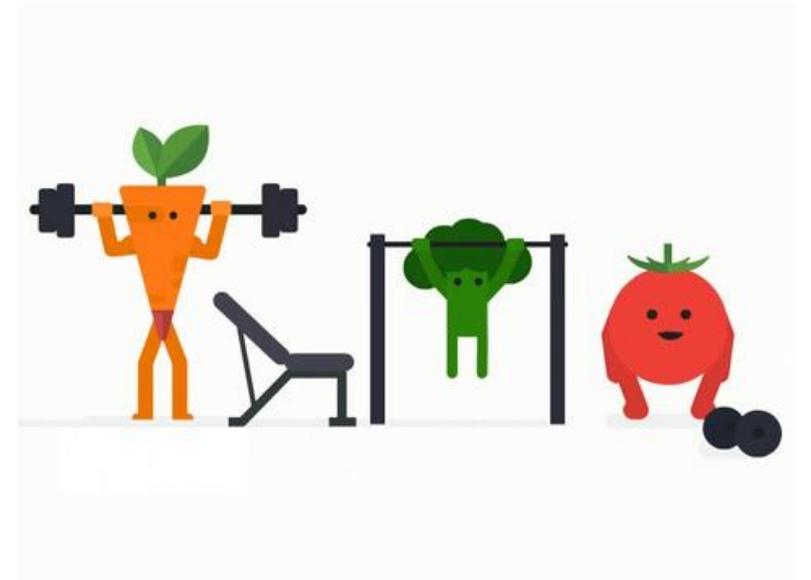
# Important of Support Through Coaching

- When you are making a change or trying something new, feeling supported may allow a shift in mindset from struggle to challenge
- Struggle vs. Challenge
  - Struggle feels like you aren't understood and/or you don't have guidance → draining
  - Challenge feels like you are understood and there is guidance available → invigorating
- How to get support:
  - Find a coach, in-person group, or virtual platform that is open to accommodating your unique needs.
  - Ensure the coach/professional has the skills and expertise you trust so they can guide you.



# Key Takeaways

- Movement and nutrition can be a way to rebuild trust with your body and regain your power.
- Shift your mindset on working on exercise or diet from a struggle to a challenge by recruiting support.
- Pick ONE small thing to begin working on this week.
  - Make a SMART goal
  - Remember your why



# Best General Resource – BC Cancer Website

## Adolescent & Young Adult Cancer Care & Support

Every year in Canada, over 9,200 adolescents and young adults (AYA), ages 15-39, are diagnosed with cancer. AYAs have unique needs and challenges. Below is a collection of resources to help navigate these challenges and get support.

BC Cancer resources

More resources

Counselling



Support groups



Library



Sign up to receive Supportive Care  
monthly eBulletin by email

Helpful links

# Top Resources to get help with exercise

- Inspire Health – best free access to exercise classes
  - <https://inspirehealth.ca/> - Can self-refer
- BC Cancer Website – AYA Cancer Care Page – *Exercise Support* tab
  - <https://www.bccancer.bc.ca/health-info/coping-with-cancer/exercise-support> - Explore handout on maximizing energy and reducing fatigue with exercise
- Thrive Health Services – free evidence based exercise resources for cancer survivors
  - <https://thrivehealthservices.com/>
- Prehab Rx – private pay virtual tailored exercise programs and prescriptions by kinesiologists and exercise physiologists with experience working with cancer patients
  - <https://www.prehabrx.ca/#personas>
- Bonus:
  - Peloton App – inexpensive - scalable workouts that can be done with body weight, weights, or bands

# Top Resources to get help with your eating

- Inspire Health
  - Free virtual cooking classes, access to 1 on 1 meeting with dietitian
- Aroga Lifestyle Medicine Clinic
  - Free access to dietitian and lifestyle medicine physician to help with behaviour changes
  - Ask your family MD for referral
- Lifestyle Rx
  - Free group nutritional counselling visits – specifically if you have a history of metabolic condition (diabetes, prediabetes) or heart disease
  - Ask your family MD for referral but can also self-refer
- Bonuses:
  - American College of Lifestyle Medicine – many helpful, free resources and tips to help adopt a more plant-rich diet
  - Healthiest Chef Online Program

# More Resources

- **Wellspring Cancer Support Program** – free programs focused on mental and cognitive health after cancer, ideally online course on Brain Fog.
  - <https://wellspring.ca/>
- **Lymphedema hub** – resources and directory of providers (physios, RMTs, etc.) who treat lymphedema
  - <https://bclymph.org/Lymphedema>
- **UBC Bone Metastases and Exercise Hub** – resources for patients and providers and directory of physiotherapists and exercise trainers with experience working with people with bone mets.
  - <https://cancerexercise.med.ubc.ca/bmehub/>

# General Educational Resources

- **BC Cancer Website** - nutrition information
  - <http://www.bccancer.bc.ca/prevent/nutrition-exercise/healthy-eating>
- **American Institute of Cancer Research** – nutrition information
  - <https://www.aicr.org/cancer-prevention/food-facts/>

# Supplemental Slides

# Quality of Evidence in Exercise and Nutritional Oncology

- The strength of the evidence behind the data presented is low as many of these studies are not randomized controlled trials.
- The benefit that healthy eating and exercise have on cancer outcomes is likely meaningful, but generally not greater than the benefit of anti-cancer treatments.
- Despite the low quality of evidence behind exercise and healthy eating after cancer treatment, I would still strongly recommend these behaviours.
  - The risk of harm from healthy eating and exercise is low and there is strong evidence that exercise improves quality of life, physical function, and mental health.

# Tips to Begin Changing Your Eating Pattern

- You don't have to go vegan!
- Your gut takes time to adjust to more fibre
- Your taste buds will take time (i.e. weeks to short months) to adjust to less sugar and fat if you are moving towards a more plant-predominant diet
- Start small – make your shift towards a more plant-predominant eating pattern gradually – i.e. meatless before 6pm on weekdays
- Start by changing habits → view your new diet as a change in lifestyle.
  - Encourages developing systems for meal planning, grocery lists, and new cooking skills
  - Enlist the support of family and friends – consider making cooking a date activity or family event

## AICR's Foods that Fight Cancer™

**No single food can protect you against cancer by itself.**

But research shows that a diet filled with a variety of vegetables, fruits, whole grains, beans and other plant foods helps lower risk for many cancers. In laboratory studies, many individual minerals, vitamins and phytochemicals demonstrate anti-cancer effects. By including more foods that fight cancer into your diet, you will help reduce your risk of developing cancer.



APPLES



ASPARAGUS



BLUEBERRIES



BROCCOLI AND  
CRUCIFEROUS  
VEGETABLES



BRUSSELS SPROUTS



CARROTS



CAULIFLOWER



CHERRIES



COFFEE



CRANBERRIES



FLAXSEED



GARLIC



GRAPEFRUIT



GRAPES



KALE



ORANGES



PULSES: DRY BEANS,  
PEAS, AND LENTILS  
(LEGUMES)



RASPBERRIES



SOY



SPINACH



SQUASH (WINTER)



STRAWBERRIES



TEA



TOMATOES



WALNUTS



WHOLE GRAINS

## Foods to Limit to Reduce Cancer Risk

A lot of us grow up eating foods that might be *okay* to eat, but aren't necessarily the *best* thing to eat. As you build your meal plans, make sure you're not overdoing it with foods that are best to have in small portions. Excessive consumption of alcohol, processed meats, red meats and sugar-sweetened drinks can all increase your risk of cancer. Read further to learn more about each of these foods, and the impact they can have on your risk of cancer.



ALCOHOL



PROCESSED MEAT  
(SAUSAGES, HAM,  
BACON, HOT DOGS,  
SALAMI)



RED MEAT (BEEF,  
PORK, LAMB)



SUGAR-SWEETENED  
DRINKS

<https://www.aicr.org/cancer-prevention/food-facts/>