



# PEDIATRIC CANCER EXERCISE & NUTRITION GUIDE

[MapleTreeCancerAlliance.org](http://MapleTreeCancerAlliance.org)

# Choose Healthy Lifestyle Practices



The goal of this comprehensive guide is to help families, just like yours, begin to incorporate healthy lifestyle practices during your child's cancer recovery.

We will help you assess your child's current status, set short- and long-term goals for your child and family, think about how to overcome any barriers to these goals, and include weekly challenges to help you incorporate fun, family-friendly activities to lead a healthy lifestyle for your family.

In addition, principles of healthy nutrition and trouble shooting with food will be presented, along with exercise assessment tools and tips to help you get moving!

Sincerely,

Karen Wonders, Ph.D., FACSM  
EXECUTIVE DIRECTOR



## For the Parents -

**To begin, answer these quick questions!**

What is your child's current activity level?

How is your child performing in school?

Does your child play any sports? If so which ones?

What extracurricular activities does your child participate in?

Comments, Questions, Concerns?

## For the Family

### Goal Setting!

It has been said that a dream without a plan is just a wish. That is why we set goals! People who set goals are much more likely to be successful than those who do not.

Goals help people stay focused on what is important and help keep them from getting lost in what is not.

Make sure that the goals you and your family set are **PERSONAL** goals, and not entirely focused on a number. Things to consider are a focus on your child's symptoms. How does your child feel? How do you want them to feel?

Be sure to set **SMART** goals! **SMART** goals are:

- S.** Specific
- M.** Measurable
- A.** Attainable
- R.** Relevant
- T.** Time bound

### Examples:

- Run a 5k
- Stay active for at least 45 minutes per day
- Eat more fruits and vegetables each day
- Eat less junk food
- Make exercise apart of your daily routine
- Learn a new sport

### List your goals for your child and family below!

1. \_\_\_\_\_  
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2. \_\_\_\_\_  
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3. \_\_\_\_\_  
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4. \_\_\_\_\_  
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5. \_\_\_\_\_  
\_\_\_\_\_
6. \_\_\_\_\_  
\_\_\_\_\_
7. \_\_\_\_\_  
\_\_\_\_\_





# Nutrition



When we consider the nutrition aspects of pediatric cancer, it is important to consider ALL of the elements of cancer control.

This includes prevention, treatment, supportive care, long term side effects, and palliative care.

Intensive therapy, including chemotherapy, surgery, radiation, and stem cell transplantation, has resulted in increased survival rates for children diagnosed with cancer.

### *This is wonderful news in the fight against cancer!*

However, treatment-related side effects often result in suboptimal nutritional status that can negatively impact quality of life for the child.

According to the Children's Oncology Group (COG), there is no standard way to assess nutrition in pediatric cancer. Those who do assess nutritional status use a variety of approaches.

One approach that is often utilized to determine the nutritional status of a pediatric cancer patient includes monitoring body weight and body mass index.

Body Mass Index is the weight of the patient divided by the squared-height of the patient. Basically, it is a fancy height-weight calculation. Children who fall in the 85th percentile or above are considered to be at risk for overweight or obesity.

The reason this is important is because there appears to be a relationship between increased body mass index and morbidity and mortality in children with cancer.

It is very common for children to gain weight after completion of cancer therapy — especially in females treated for acute lymphoblast leukemia, and in all patients receiving cranial radiation.

This weight gain is associated with long term side effects, including heart damage, metabolic alterations, fatigue, and depression. In addition, it is the number one modifiable risk factor for cancer recurrence.

On the other hand, malnutrition leading to a cachexic syndrome is also seen in some pediatric cancer patients. This malnutrition is related to insufficient quality and/or quantity of food, increased energy expenditure related to the tumor, nutritional status, age, sex, hormones, pathological conditions, cancer treatments, and complications of therapy.

Because of the long term health related benefits of eating a healthy lifestyle, and the importance of avoiding cancer-related weight gain or cachexia, sound nutrition practices are vital.

The nutritional advice and guidelines presented in this program have been gleaned from existing literature on this topic and is meant to help provide generalized guidance.

If you worry that your child may be experiencing any nutritional disturbances as a result of their cancer therapy, please consult with your oncologist, as well as a registered dietitian who can help guide you and your family in the right direction.

## Our Body's Food Fuels

Our body converts the food we eat into a usable energy currency for the body, called Adenosine Triphosphate (ATP). There are three basic food fuels our body can use for this process. These include:

- **Carbohydrates** are the body's main fuel source, providing energy for cells and helping to maintain organ function. Good sources of carbohydrates include potatoes, rice, fruits, corn, and beans. Whole-grain breads and pastas also add fiber, which helps children feel fuller longer and prevents constipation, a common side effect of cancer treatment.
- **Fats** help the body store energy, insulate body tissues, and carry certain vitamins throughout the bloodstream. Fats are dense in calories, which is important to a child who might be losing weight during treatment. Unsaturated fats found in fish, nuts, olive oil, and avocados provide more health benefits than saturated fats and trans fats, which are found in red meats and fried foods.
- **Protein** helps the body grow and repair tissues, build blood cells, and replenish the immune system. It can also help your child heal faster from the side effects of radiation and chemotherapy, while working to prevent infections. Foods like beans, peanut butter, nuts, lentils, and soy are all good sources of protein.

## What To Do When Your Child Isn't Eating Enough

Oftentimes, cancer treatments can leave your child feeling tired and sick. During these times, it can be difficult to get them to eat a healthy, well balanced diet. The following tips might help!

- **Offer smaller, more frequent meals.**
- **Keep snacks on hand.** Whether it's a breakfast bar, a liquid nutrition drink or shake, crackers, or fruit.
- **Stick to bland foods.** Avoid strong smells or tastes and stick to whole wheat breads and pastas, rice, and broth-type soups.
- **Experiment with food temperatures.** Many children undergoing cancer treatment prefer foods that are served at room temperature rather than very hot or too cold.
- **Avoid acidic foods.** If your child is suffering from mouth sores, do your best to avoid acidic foods, such as orange juice, lemonade, and tomato-based products.
- **Make foods easier to swallow.** If swallowing is difficult, try pureed foods, soups, shakes, or smoothies. Use a straw to help food go down easier.



## What To Do When Your Child Needs to Eat Less...Or Better!

But some children experience an increase in their appetite during cancer treatment, especially if they take steroid medicines. This can lead to fluid retention and weight gain. It is important to note that most often, this will normalize once treatment ends. But in the meantime, it's important for kids to make healthy food choices and maintain a healthy weight. These tips can help!

- **Set a mealtime schedule.** Serve three moderate-sized meals a day, plus two or three snacks, and make sure your child sticks to that schedule. Encourage waiting at least 20 minutes after eating before asking for more, so that feelings of satiety may set in.
- **Limit salt intake.** Help prevent fluid build-up by limiting the amount of salt in your child's diet. Avoid fast foods, processed foods, frozen meals, and salty snacks like chips and pretzels. Use spices other than salt to season foods made at home.
- **Serve fruits and veggies first.** Offer fruits and vegetables at the beginning of the meal, followed by whole-grain products (like breads and pastas).
- **Provide healthy snacks.** Keep healthy foods on hand for snacking, and bring them with you when you go out. If sweets and sugary juices or sodas are not around, your child will not eat them!
- **Stay active.** Help keep your child's mind off of eating — try alternative activities, such as sports, games, reading, or hobbies.
- **Keep food out of sight and out of mind** — Keep snack food away in a cabinet, not out on the counter. On the other hand, keep fruit in a bowl on the counter for easy access!
- **Limit liquids calories** — Juices, sodas, and sports drinks have extra calories, are loaded with sugars or artificial sweeteners, and often provide very little nutrition.

## Eating to Reduce Side Effects

Cancer and its treatments can cause a number of side effects! You can help manage many of these side effects through food!

- **Nausea and vomiting** can be reduced by offering bland foods, especially on treatment days. Avoid foods that are salty, sweet, fatty, and fried. Smells also can exacerbate nausea, so consider offering foods with little or no smell.
- **Diarrhea** can be managed by giving your child foods like bread, bananas, white rice, and applesauce that are easy to digest (i.e. the BRAT diet!). Avoid dairy products, greasy, spicy, and fried foods; foods that are high in fiber foods, raw fruits and vegetables, and foods that can cause uncomfortable gas, such as cabbage and broccoli. It is also very important that you allow your child to drink more liquids than usual to replace lost fluids and avoid dehydration.
- **Constipation** can be alleviated through a diet of foods that are high in fiber, including fruits, vegetables, nuts, and whole-grain breads.
- **Change in food preferences** may cause your child to lose interest in eating. This has a variety of different causes that you can manage in different ways:
  - Mouth sores can often cause food to taste different. Good oral hygiene and rinsing the mouth regularly can help decrease mouth sores and make food taste better.
  - Sometimes, a child develops a sensitivity to the taste of metal. Using plastic forks and spoons can help!
  - Keep a wide variety of foods handy and encourage your child to try new foods.

## Food Safety

Cancer treatments can compromise the immune system, placing children at a high risk for infection. Therefore, it is very important to handle and prepare food safely. Put these tips into practice:

- Wash your hands before handling food, as well as after touching foods like raw meat and poultry.
- Keep hot foods hot and cold foods cold. Do not allow prepared food to sit at room temperature for longer than one hour.
- Consume all leftovers within a few days.
- Wash raw fruits and vegetables well before they're eaten, including melons or any other thick-skinned fruit you might cut with a knife.
- Cooked foods should be cooked to their proper temperature before they're served.

## Stock Your Pantry!

The concept of clean eating boils down to eating whole, minimally processed foods that are nutritious for your body, as well as kind to our planet.

Clean foods are foods that are closest to their natural state... the way God created them! Consider selecting a delicious apple that is picked from a local orchard, which has just one ingredient. Contrast this with buying a packaged, processed apple pie from a gas station – 20+ ingredients! Not to mention additives and preservatives, some of which are even difficult to pronounce. Foods like this are void of antioxidants; anti-inflammatory properties and immune boosters, which help us, prevent major health issues like cancer, heart disease and diabetes.

So, make steps to stock your pantry, refrigerator and freezer with these whole food ideas for better health.

### **Pantry Goods:**

- Whole or sprouted grain breads, tortillas, crackers brown rice
- Whole-wheat pasta, quinoa, barley, old fashion oats, bulgur nuts and seeds
- Natural nut and seed butters
- Unsalted vegetable, chicken or beef stock
- Pouches of light tuna or salmon
- Dried beans, peas or lentils
- Cartons of diced tomatoes or puree
- Dark chocolate
- Extra virgin olive oil, grape seed oil
- Vinegars – cider, balsamic, rice, or raspberry
- Dried herbs and spices
- black and green tea
- Herbal tea
- Popcorn
- Root vegetables – sweet potatoes, beets, turnips, parsnips, onions and garlic
- Sweeteners – real maple syrup, molasses

**Refrigerator Items**

- Colorful fruits –apples, grapes, citrus, berries, stone fruits, avocado
- Colorful vegetables-tomatoes, carrot, squash, sugar snap peas, broccoli, cauliflower
- Salad greens-spinach, kale, chard, arugula, romaine, watercress
- Hummus
- Pasture raised eggs
- Tofu,
- Edamame

**Freezer Items**

- Frozen vegetables-kale, diced peppers and onions, broccoli, mixed vegetables
- Frozen fruits – unsweetened berries for smoothies or dessert
- Grains- brown rice or quinoa in a bag, whole-wheat waffles, sprouted grain bread
- Nuts
- Chicken
- Ground turkey (white meat, skinless); fish and seafood (non-breaded); lean cuts of red meat (loin or round); wild game

## Cancer Fighting Eating Plan

An anti-cancer eating plan is not as complicated as you would think. It simply is a plant-based diet centered on whole grains, legumes, fruits, and vegetables. Here are some simple cancer fighting tips you can follow:

- Eat 3 oz. fatty fish (salmon, tuna, sardines) twice a week.
- Eat 7 servings of whole grains daily. Try new grains, such as quinoa, bulgur, and whole-wheat couscous.
- Eat 5-9 servings of fruits and vegetables daily. Choose a variety of dark colored produce – orange, green, and red. Be sure to include cruciferous vegetables, such as broccoli, kale, and cabbage, as well as tomato products.
- Snack on nuts, but limit portions to 1/3 C.
- Flavor foods with phytochemical-rich herbs and spices such as oregano, rosemary, garlic, and turmeric.
- Sip on black tea daily.
- Reduce total dietary fat by limiting animal fats (both milk and meat) and opt for healthier monounsaturated fat (olive oil, canola oil, and avocados) and omega-3 fats (salmon, flaxseeds, and walnuts). Avoid polyunsaturated vegetable oils, such as corn oil and hydrogenated vegetable oils (trans fats).





## Meal Plan

Taking some time over the weekend to plan out your meals will save you so much time and headache during the week! It will also help you stay on budget at the grocery store, and stay focused with your food choices! Use the recipes provided to guide your choices!

When setting your meal plan, limit added sugars and processed foods. Dairy recommendation is between  $\frac{1}{2}$  c – 3 c depending on age.

Also, aim for all of your meals to be plant-based. Imagine your plate as a clock — it should have enough vegetables and fruit to cover from 12:00 to 8:00.

	Breakfast	Lunch	Dinner	Healthy Snack 1	Healthy Snack 2
Sunday					
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					

## Grocery List

Based on your meal plan, make your grocery list. Be sure “shop” in your kitchen to see what you have on hand first!

<b>Produce</b>	<b>Grains/Pasta/Rice</b>
<b>Frozen foods</b>	<b>Meats</b>
<b>Dairy</b>	<b>Snacks</b>
<b>Condiments</b>	<b>Paper goods</b>
<b>Beauty Products</b>	<b>Household items</b>

## Tips for Picky Eaters

- **Don't give up!** Don't force foods, but offer them to your children with most meals. It takes at least 8 exposures to a new food before a child decided whether he or she likes (or will even try) it!
- **Make snacks count.** Make snack time nutritious by offering healthy snacks – such as fresh fruit or homemade granola.
- **Offer fruit at every meal.** Most kids will eat fruit – so make sure it is available to them!
- Offer vegetables first. Along with the fruit, make sure to offer the child vegetables first. If the child is hungry at meal time, he/she will be more likely to eat them!
- **Small bites can help!** One way to help your child become accustomed to new flavors is by giving him or her foods in smaller quantities. Try shredding, dicing, and pureeing vegetables!
- **Get rid of the junk food.** Save the junk food for special occasions, and keep healthy options on hand. Out of sight, out of mind!
- **Kids in the Kitchen!** Involving your child in the cooking process will increase their chances of trying the food they make – even when it is healthy! Depending on their age, your child can help add ingredients, stir, sprinkle cheese, and even cut (if they are old enough!). Don't be afraid to include them!
- **Dip it!** Sometimes pairing a new food with a dip is a great way to get your child to try it! Who doesn't love a good dip?!



- **Make your favorites healthy!** Try different ways to make their favorite foods healthier by substituting greek yogurt for heavy creams or even adding vegetable purees to baking mixes! Read “The Sneaky Chef” for some great ideas on this!
- **Be a good role model!** Make healthy choices in front of your child. They are watching you and you can be teaching them healthy habits that will stick with them for the rest of their life!



## Getting Your Family On Board

Making a dietary change can feel overwhelming. Often, it is difficult to get the entire family on board with this change. Here are some tips that might help you get your family on board!

- **Involve your family in meal planning.** Asking them if they would like Italian or Mexican food, chicken or fish, rice or potatoes. When people feel empowered to make decisions, they are more likely to embrace the change!
- **Bring your child to the grocery store with you.** Have them help select the food.
- **Start slow.** Gradually add one or two new recipes each week, mixing them into other days that are tried and true.
- **Avoid “All or Nothing” thinking.** Making the switch doesn’t have to be all at once. You and your family can get healthier one bite at a time!





# Exercise



# Guidelines to Get (and keep) Your Family Moving!

## Step 1: Self-Assessment

This at-home assessment allows you to keep track of your child's progress throughout our 8-week online program.

This assessment consists of tests that determine your child's fitness level and includes the following: body composition, abdominal strength and endurance, upper body endurance, trunk strength and flexibility, shoulder flexibility, and cardiovascular endurance.

You will do this assessment with your child before (s)he begins exercising and will repeat this assessment every 9th week to track your child's progress.

Each assessment has a Healthy Fitness Zone (HFZ) category that pertains to age and gender of your child(ren).

The HFZ determines your child's fitness level and shows if your child needs improvement on an assessment test or to maintain that level of fitness. The score ranges are categorized by age and gender.

This assessment is composed of six tests to gauge your child's overall current fitness level. Each test will be scored in comparison to the HFZ (Healthy Fitness Zone.) The HFZ scores are researched and standardized in order that you can see where your child's current fitness level is, and what you should be working toward together.

## Body Composition – Body Mass Index

For the at home assessment, we will be using BMI to test overall body composition. BMI (body mass index) is a number that is calculated with a formula that uses height and weight.

$$\text{BMI} = \text{weight (lbs.)} \times \frac{703}{\text{height (in)}^2}$$

**Example:** A 10-year-old female, 60 lb. and 50 in.  
 $60 \text{ lb} \times 703/50 \text{ in}^2$   
 $42,180/2,500 = 16.872$   
 BMI = 16.9 and is considered in the Healthy Fitness Zone

FEMALE BMI CHART					MALE BMI CHART				
Age	NI-Health Risk	NI	HFZ	Very Lean	Age	NI-Health Risk	NI	HFZ	Very Lean
5	>28.4	>20.9	20.8-9.8	<9.7	5	>28.4	>20.9	20.8-9.8	<9.7
6	>28.4	>20.9	20.8-9.9	<9.8	6	>28.4	>20.9	20.8-9.9	<9.8
7	>28.4	>20.9	20.8-10.1	<10.0	7	>28.4	>20.9	20.8-10.1	<10.0
8	>28.4	>20.9	20.8-10.5	<10.4	8	>28.4	>20.9	20.8-10.5	<10.4
9	>30.8	>22.7	22.6-11.0	<10.9	9	>30.8	>22.7	22.6-11.0	<10.9
10	>33.0	>24.4	24.3-11.6	<11.5	10	>33.0	>24.4	24.3-11.6	<11.5
11	>34.5	>25.8	25.7-12.2	<12.1	11	>34.5	>25.8	25.7-12.2	<12.1
12	>35.5	>26.8	26.7-12.7	<12.6	12	>35.5	>26.8	26.7-12.7	<12.6
13	>36.3	>27.8	27.7-13.4	<13.3	13	>36.3	>27.8	27.7-13.4	<13.3
14	>36.8	>28.6	28.5-14.0	<13.9	14	>36.8	>28.6	28.5-14.0	<13.9
15	>37.1	>29.2	29.1-14.6	<14.5	15	>37.1	>29.2	29.1-14.6	<14.5
16	>37.4	>29.8	27.9-15.3	<15.2	16	>37.4	>29.8	27.9-15.3	<15.2
17	>37.9	>30.5	30.4-15.9	<15.8	17	>37.9	>30.5	30.4-15.9	<15.8
>17	>38.6	>31.4	31.3-16.5	<16.4	>17	>38.6	>31.4	31.3-16.5	<16.4

**NI: needs improvement; HFZ: healthy fitness zone**

Cde.ca.gov. (2018). FITNESSGRAM: Healthy Fitness Zone Charts - Physical Fitness Testing (PFT) (CA Dept of Education). [online] Available at: <https://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp> [Accessed 8 Dec. 2018].

### Muscular Endurance – Curl-up

This test measures muscular endurance.

1. To do this assessment, have the child lie down with knees bent, feet flat, and head touching the mat.
2. Have the child curl up until fingers go from the mid-thigh to the top of the knee and then return to the starting position. Heels must stay on the mat and the head must touch the mat each time.
3. Set a metronome to a cadence of 43 beats per minute.
4. Have the child do as many curl-ups as they can. Stop the test on the second incorrect curl-up and record the score.

#### **Curl-ups: Healthy Fitness Zone Chart**

Age	5	6	7	8	9	10	11	12	13	14	15	16	17
Boys	≥2	≥2	≥4	≥6	≥9	≥12	≥15	≥18	≥21	≥24	≥24	≥24	≥24
Girls	≥2	≥2	≥4	≥6	≥9	≥12	≥15	≥18	≥18	≥18	≥18	≥18	≥18

Cde.ca.gov. (2018). *FITNESSGRAM: Healthy Fitness Zone Charts - Physical Fitness Testing (PFT)* (CA Dept of Education). [online] Available at: <https://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp> [Accessed 8 Dec. 2018].

### Trunk Extensor Strength/Flexibility – Trunk Lift

The trunk lift measures low back strength and flexibility.

1. Begin the test by having the child lying on their front with their toes pointed, and hands under their thighs.
2. Place a marker on the mat right under the nose.
3. While keeping their eyes looking at the marker, have the child lift their upper body off the floor. The neck should remain straight. Do not look up. Hold this position until the measurement is made.
4. Do two trials.

#### **Trunk Lift: Healthy Fitness Zone Chart**

Age	5	6	7	8	9	10	11	12	13	14	15	16	17
Boys	6-12	≥6-12	6-12	≥6-12	6-12	9-12	≥9-12	9-12	≥9-12	≥9-12	≥9-12	9-12	9-12
Girls	6-12	≥6-12	6-12	≥6-12	6-12	9-12	≥9-12	9-12	≥9-12	≥9-12	≥9-12	9-12	9-12

Cde.ca.gov. (2018). *FITNESSGRAM: Healthy Fitness Zone Charts - Physical Fitness Testing (PFT)* (CA Dept of Education). [online] Available at: <https://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp> [Accessed 8 Dec. 2018].

## Upper Body Endurance – Push-up

This test measures upper body strength.

1. Have the child begin with their hands under their shoulders, fingers stretched out, legs straight, and back straight.
2. Instruct them to bend their arms until their elbows are at 90 degrees, keeping their back and legs straight.
3. Push up to the starting position.
4. Set a metronome to a cadence of 43 beats per minute. Do as many push-ups as you can.
5. Stop the test on the second incorrect push-up and record the score.

### Push-ups: Healthy Fitness Zone Chart

Age	5	6	7	8	9	10	11	12	13	14	15	16	17
Boys	≥3	≥3	≥4	≥5	≥6	≥7	≥8	≥10	≥12	≥14	≥18	≥18	≥18
Girls	≥3	≥3	≥4	≥5	≥6	≥7	≥7	≥7	≥17	≥7	≥17	≥17	≥7

Cde.ca.gov. (2018). FITNESSGRAM: Healthy Fitness Zone Charts - Physical Fitness Testing (PFT) (CA Dept of Education). [online] Available at: <https://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp> [Accessed 8 Dec. 2018].

## Cardiorespiratory Fitness – 3-Minute Step Test

This test measures cardiovascular endurance.

1. This test is performed on a step that is 12 inches tall. A box or stool would work just fine.
2. The child will stand to face the step.
3. When the child is ready to begin. Start the timer.
4. The child will step up and down the step for a total of 3 minutes continuously staying on beat with a metronome set to 96 beats per second.
5. Once the child has completed the full 3 minutes, check the radial pulse of the child for a full minute and write the number down.

### Female 3-Minute Step Test Rankings

Rating GIRLS	(6-9 years)	(10+ years)
Excellent (<5th %tile)	<100	<102
Very Good (≤ 25th %tile)	100-113	102-116
Good (≤ 50th %tile)	114-123	117-128
Sufficient (≤75th %tile)	124-134	129-141
Poor (≤ 95th %tile)	135-152	142-157
Very Poor (> 95th %tile)	>152	>157

### Male 3-Minute Step Test Rankings

Rating BOYS	(6-9 years)	(10+ years)
Excellent (<5th %tile)	<95	<93
Very Good (≤ 25th %tile)	95-106	93-105
Good (≤ 50th %tile)	107-115	106-116
Sufficient (≤75th %tile)	116-126	117-128
Poor (≤ 95th %tile)	127-142	129-147
Very Poor (> 95th %tile)	>142	>147

Jankowski, M., Niedzielska, A., Brzezinski, M. and Drabik, J. (2018). Cardiorespiratory Fitness in Children: A Simple Screening Test for Population Studies. [online] Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4284398/> [Accessed 8 Dec. 2018].



### Shoulder Flexibility – Shoulder Stretch

This test measures upper arm and shoulder flexibility.

1. Have the child stand with both arms to the side, with the right palm facing forward, and the left palm facing back.
2. With the right hand, reach up and over the right shoulder and down the back as if you were pulling up a zipper.
3. Reach up with your left hand and touch your fingertips together.
4. Do your fingers touch? Record your score as a yes or no. Test the left side and record the score.

#### **Shoulder Stretch: Healthy Fitness Zone Chart**

AGE    BOYS    GIRLS

5-17    YES    YES

*Cde.ca.gov. (2018). FITNESSGRAM: Healthy Fitness Zone Charts - Physical Fitness Testing (PFT) (CA Dept of Education). [online] Available at: <https://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp> [Accessed 8 Dec. 2018].*

#### **Record Your Scores:**

Test	Your Score	HFZ
Body Composition		
Curl-Up Test		
Trunk Flexibility		
Push-Up Test		
3-Minute Step Test		
Shoulder Stretch		

## Beginning an Exercise Routine

Exercising during cancer can seem very daunting. Most patients (around 85%) are sedentary at the time of their diagnosis. Now, faced with fatigue, nausea, and other side effects of treatment, exercise is probably the last thing you want to do! Even children, who naturally seem to have an abundance of energy, can find that fatigue sidelines them.

Ideally, for an individual undergoing cancer treatment, the exercise program will include a whole-body workout that targets all the major muscle groups. The overall goal of the exercise program should be to minimize the general de-conditioning that often results from cancer treatment so that the cancer treatments are better tolerated. In general, the exercise prescription should include a slow progression and demonstrate adaptability to changes in the patient's health status, which frequently change from day-to-day during treatment.

Each exercise training session should consist of the following components:

- **Warm up:** Each session should begin with a 5- to 10-minute warm-up that stimulates blood flow to the working muscles. Warm-up activities may include walking or jogging to increase the body temperature and other physiologic responses, as well as decrease the chance of injury. Warm-up activities are also important to help ensure that the muscles and cardiovascular system are prepared for the activities to come in the training session.
- **Aerobic Component:** During the aerobic component of exercise, it is important to frequently monitor blood pressure and heart rate. If the patient is on a medication that effects heart rate, the Borg Scale of Exertion may be used to monitor intensity. Based on this scale, a light-to-moderate intensity (RPE of 11 to 14) should be encouraged. If dizziness, nausea, or chest pain occurs, all exercise should be stopped. Frequent short breaks are sometimes encouraged to accommodate therapy-related fatigue.
- **Resistance Training:** The type of resistance exercise performed will depend on the patient's range of motion, tissue removal, and wound healing. ACSM recommends at least 48 hours of rest between each resistance training session. Therefore, it may be advisable to plan a whole-body approach to resistance training, where all major muscle groups are targeted in one day. If the patient is unwilling or unable to participate in traditional modes of strength training, Yoga or Pilates may serve as an alternative form of strength exercise.



## Exercise Guidelines:

	Aerobic Training	Strength Training	Flexibility Training
<b>Frequency</b>	3-5 days/wk	2-3 days/wk	2-7 days/wk
<b>Intensity</b>	40-60% HRR*	40-60% HRR*	Stretch to the point of mild discomfort
<b>Duration</b>	20-60 min/session	1-3 sets, 8-12 reps per exercise	10-30 seconds per stretch
<b>Mode</b>	walking cycling cross trainers swimming	free weights machines resistance bands resistance balls	static stretching

### Contraindications to Exercise

- Onset of nausea following exercise initiation
- Vomiting within the last 24 hours
- Leg pain
- Decreased heart rate and blood pressure with increased workload
- Chest pain
- Difficult or shallow breathing
- Unusual muscle weakness
- Numbness in the extremities
- Chemotherapy treatment within the last 24-hours
- Irregular pulse during exertion
- Disorientation and confusion
- Dizziness

## Sample Age-Appropriate Exercises

### AGES 2-3

- walk/run
- walk like a penguin
- Kick a ball
- hop like a frog
- Jump in place with both feet
- caterpillar walk
- Balance on one foot
- follow the leader
- Throw a ball
- dance to music
- Catch
- body weight resistance exercises (push ups, sit ups, planks, etc.)

### AGES 4-5

- Run
- freeze tag/ freeze dance
- Jump
- pretending to be statues and balance practice
- Kick
- follow the leader
- Throwing a ball
- treasure hunts
- Hop
- obstacle course using chairs, boxes, and toys
- Skip
- balloon volleyball
- Jump forward/backward
- hot potato
- Balance 1 foot
- body weight resistance exercises (push ups, sit ups, planks, etc.)
- Fast clap (how many claps in 30 seconds, repeat overhead, behind the back)
- Tumbling
- summersaults

### AGES 6-8

- Hula-hoops
- jumping
- Fast clap (how many claps in 30 seconds, repeat overhead, behind the back)
- Riding bikes
- Playing tag
- Jump rope
- hot potato
- Building a snowman
- body weight resistance exercises (push ups, sit ups, planks, etc.)
- Hiking
- Catching a ball
- Throwing a ball
- Kicking a ball

### AGES 9-11

- Hula-hoops
- jumping
- Playing tag
- body weight resistance exercises (push-ups, sit ups, planks, etc.)
- Riding bikes
- building a snowman
- Jump rope
- Hiking
- Catching a ball
- Throwing a ball
- Kicking a ball
- Body weight training/resistance

### AGES 12-15

- Skateboarding
- Yoga
- Swimming
- Hiking
- Building a snowman
- Dancing
- Riding a bike
- Kicking a ball
- Weight training basics
- Body weight training/resistance

### AGES 16-18

- Weight/resistance training (similar to adults) preferred with adult supervision/fitness professional
- Sport specific activities
- Competitive and noncompetitive sports
- Walking
- Running
- Swimming
- Body weight training/resistance



## Fun for the Whole Family!

Let's face it, exercise is better together! Encourage everyone in your family to think of fun activities that get you up and moving. Incorporating new games and learning new activities is one way to keep physical activity fun! Family Activity Points help make exercise a “friendly” and fun family challenge!

### Here's how it works:

- Develop a list of activities to try on a weekly or monthly basis.
- Choose a different activity each day or each week to try. Think of ways to have fun and be physically active at the same time. For example, turn on music while making dinner and have a dance party while waiting for the meal to cook!
- Assign various points depending on the activity. For example, taking a walk around the block is 1 point, jumping rope for 10 minutes is 2 points, and run for 15 minutes is 3 points.
- Add in bonus points if a family member does an extra physical activity that day.

You can either have individual competitions within your family, or form teams (boys vs. girls, or parents vs. kids), to make it extra fun. Losers have to take out the trash!



## Weekly Activity Tracker

[illegible]

## Weekly Challenges

Weekly challenges are listed below to help increase your child's activity level or begin to incorporate healthier eating habits throughout the week. These challenges are simple, but fun ways to exercise and eat healthier – together!

Achieving the goal or challenge each week as a family could provide a step in the right direction for a positive lifestyle change.

Simply pick one challenge to achieve each week and commit to do that challenge everyday for that week!

- 10 push-ups every day this week.
- Take a walk every day.
- Help your parents around the house. (Wash the dishes, vacuum, laundry, etc.)
- Try some different foods this week. You might be surprised by what you like.
- For 30 minutes every day this week do something to get your heart rate up. Go for a brisk walk, a jog, a bike ride, etc. (*Bonus challenge: Bring a friend or your parents with you — exercise can be much more enjoyable with friends and family.*)
- Try a new sport this week. Grab a friend and try something different. This is a great way to learn a new skill and a great way to get some exercises.
- Try to plank for 1 minute every day this week. Gradually increase the time if you can.
- Help your parents around the house.
- When watching TV, exercise during the commercials. (wall sits, body weight squats, jog in place, push-ups, planks, sit ups, etc.)
- Keep a food log of everything you eat for an entire week.
- Take a walk every day after dinner with your family.
- Go a week without drinking pop or other sugary drinks.
- Try waking up earlier and making breakfast. Scrambled eggs, fresh fruit, yogurt, are just a few health breakfast options that take very little or no time at all to prepare.
- Random Acts of Kindness — think of some nice things to do for those around you.
- Try to avoid foods that are high in processed fats and sugars.
- Instead of junk food eat more fruit this week.



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