

Medically Supervised Weight Loss Program (MSWLP)

MACRONUTRIENTS 101

This section includes:

- Carbohydrates
- Sugars and weight management pre and post bariatric surgery
- Proteins
- Importance of protein for weight management
- Sources of protein
- Fats
- Importance of fats for weight management
- Vitamins and Minerals

ASSIGNMENTS | Answer the questions below:

1. What is the difference between a complex carbohydrate and a simple carbohydrate?
2. What is the recommendation for intake for added sugars per serving?
3. What organ in the body uses only carbohydrate for its fuel (energy) supply?
4. What is one thing you can be mindful of when you eat carbohydrates?

Carbohydrates

The primary sources of carbohydrate are grains, starchy vegetables, legumes, fruits, and vegetables. Dairy also contains carbohydrate in the form of lactose. Carbohydrates are necessary for your brain to function and should not be completely eliminated before or after weight loss surgery.

2 weeks after surgery: 40-90g carbohydrates per day

6 weeks after surgery: 40-110g carbohydrates per day

3 months after surgery: 40-150g carbohydrate per day

6 months after surgery: 80g carbohydrate per day on average

12 months after surgery: 90g carbohydrate per day on average

12-24 months after surgery: 130g carbohydrate per day on average

24+ months after surgery: same as above, but adjust calories according to appetite & weight goals

COMPLEX CARBOHYDRATE

(starches)

Whole Grain Starches
Whole grain cereals
Barley
Brown rice, basmati rice, wild rice
Steel cut oats, rolled oats
Quinoa
Cracked wheat
Whole wheat bread
Pasta
Sweet potatoes, potatoes
Corn
Winter squash
Pumpkin
Peas

Refined Starches

White breads, pasta, rice
Saltines, various commercial crackers
Bagels
Pretzels
Popcorn
Graham crackers
Most dry cereals

SIMPLE CARBOHYDRATE

(sugars)

Glucose (blood sugar)
Fructose (fruit sugar)
Galactose (part of lactose, found in milk)

Maltose (Glucose + Glucose)
Sucrose (Glucose + Fructose) (table sugar)
Lactose (Glucose + Galactose) (milk sugar)

Other names for sugars:

dextrose	agave
corn syrup	evaporated cane juice
high fructose corn syrup	fruit concentrate
cane syrup	maple syrup
brown rice syrup	molasses
honey	jelly/ jam

Vegetables:

Most vegetables have very small amounts of carbohydrates



Reducing refined sugar intake pre and post bariatric surgery

1. Avoid juice, sports drinks, soda, coffee, black tea, energy drinks and alcohol
2. Avoid fast food, fried food, white bread, white rice, white pasta and sweets
3. Limit sugar intake to 5-7g per serving when eating packaged foods.

Eat This or That?

Cheerios®

Nutrition Facts			
Serving Size 1 cup (28g)			
Children Under 4 - ¾ cup (21g)			
Servings Per Container about 18			
Children under 4 - about 24			
Amount Per Serving	Cheerios	with ½ cup skim milk	Cereal for Children Under 4
Calories	100	140	80
Calories from Fat	15	20	10
% Daily Value**			
Total Fat 2g*	3%	3%	1.5g
Saturated Fat 0g	0%	3%	0g
Trans Fat 0g			0g
Polyunsaturated Fat 0.5g			0g
Monounsaturated Fat 0.5g			0g
Cholesterol 0mg	0%	1%	0mg
Sodium 160mg	7%	9%	120mg
Potassium 170mg	5%	11%	130mg
Total Carbohydrate 20g	7%	9%	15g
Dietary Fiber 3g	11%	11%	2g
Soluble Fiber 1g			0g
Sugars 1g			1g
Other Carbohydrate 17g			12g
Protein 3g			2g
% Daily Value**			
Protein	-	-	9%
Vitamin A	10%	15%	10%
Vitamin C	10%	10%	10%
Calcium	10%	25%	8%
Iron	45%	45%	50%
Vitamin D	10%	25%	6%
Thiamin	25%	30%	35%
Riboflavin	25%	35%	35%
Niacin	25%	25%	35%
Vitamin B ₆	25%	25%	45%
Folic Acid	50%	50%	60%
Vitamin B ₁₂	25%	35%	30%
Phosphorus	10%	25%	8%
Magnesium	10%	10%	10%
Zinc	25%	30%	30%

* Amount in cereal. A serving of cereal plus skim milk provides 2g total fat (0.5g saturated fat, 1g monounsaturated fat, less than 5mg cholesterol, 220mg sodium, 380mg potassium, 26g total carbohydrate (7g sugars), and 8g protein.

** Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Protein		50g	65g

Ingredients: Whole Grain Oats (includes the oat bran), Modified Corn Starch, Sugar, Salt, Tripotassium Phosphate, Wheat Starch, Vitamin E (mixed tocopherols) Added to Preserve Freshness.

Vitamins and Minerals: Calcium Carbonate, Iron and Zinc (mineral nutrients), Vitamin C (sodium ascorbate), A B Vitamin (niacinamide), Vitamin B₆ (pyridoxine hydrochloride), Vitamin A (palmitate), Vitamin B₂ (riboflavin), Vitamin B₁ (thiamin mononitrate), A B Vitamin (folic acid), Vitamin B₁₂, Vitamin D₃.

Nature Valley Protein Crunchy®

Nutrition Facts	
Serving Size ½ cup (50g)	
Servings Per Container about 6	
Amount Per Serving	
Calories 210	Calories from Fat 40
% Daily Value*	
Total Fat 4.5g	7%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Polyunsaturated Fat 1g	
Monounsaturated Fat 2.5g	
Cholesterol 0mg	0%
Sodium 135mg	6%
Potassium 125mg	4%
Total Carbohydrate 32g	11%
Dietary Fiber 3g	10%
Sugars 12g	
Other Carbohydrate 17g	
Protein 10g	10%
Vitamin A 0%	Vitamin C 0%
Calcium 2%	Iron 10%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Protein		50g	65g

Ingredients: Whole Grain Oats, Sugar, Soy Protein Isolate, Canola Oil, Refiner's Syrup, Honey, Rice Starch, Soy Lecithin, Salt, Baking Soda, Natural Flavor, Corn Starch, Vitamin E (mixed tocopherols) Added to Preserve Freshness.

CONTAINS SOY; MAY CONTAIN ALMOND, MILK, PECAN AND WHEAT INGREDIENTS.

Answer the questions below:

1. How much sugar is in 1 cup of granola?
2. Which cereal would you choose and why?

New Nutrition Facts Label: What's Different

NEW LABEL / WHAT'S DIFFERENT

**Servings:
larger,
bolder type**

**New:
added sugars**

**Change
in nutrients
required**

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
<small>% Daily Value*</small>	
Total Fat 8g	10%
Saturated Fat 1g	5%
<i>Trans Fat</i> 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

**Serving sizes
updated**

**Calories:
larger type**

**Updated
daily
values**

**Actual
amounts
declared**

**New
footnote**

Added sugars: Added sugar is sugar not naturally part of the food. Eat less foods and beverages with added sugars.

- Added sugar includes: sugar, sucrose, fructose, glucose, dextrose, corn syrup, high fructose corn syrup, cane syrup, brown rice syrup, honey, agave, evaporated cane juice, and fruit concentrate.
- Sugar from whole fruit and unsweetened dairy does not count as added sugar.

Proteins

Protein's main function is to build, maintain and repair tissues of the body. The protein we eat in foods is broken down into amino acids which are the building blocks for DNA, muscle, enzymes, hormones, or blood proteins, for instance. After surgery, protein assists in quicker healing, maintaining lean muscle tissue as you lose weight, assists in staying fuller longer and reduces hair loss.

Complete proteins contain all the essential amino acids we cannot make in the body as animal proteins are considered complete proteins. Plant proteins do not have all the essential amino acids. They may be lacking in one or more of the essential ones. For example legumes are missing an amino acid that grains have, and grains are missing one that legumes have. Eating a variety of plant protein foods means you get all the essential amino acids you need for that day.

2 weeks after surgery: 60-100g or 1-1.5 g/kg IBW per day

6 weeks after surgery: 60-80g/day (women), 80-100g/day (men) or 1-1.5g/kg IBW

3 months after surgery: 60-80g/day (women), 80-100g/day (men) or 1-1.5g/kg IBW

6 months after surgery: 60-80g/day (women), 80-100g/day (men) or 1-1.5g/kg IBW

12 months after surgery: 60-80g/day (women), 80-100g/day (men) or 1-1.5g/kg IBW

12-24 months after surgery: 60-80g/day (women), 80-100g/day (men) or 1-1.5g/kg IBW

24+ months after surgery: same as above, but adjust calories according to appetite & weight goals

COMPLEX PROTEINS

Nonfat or 1% Milk
Unsweetened nonfat yogurt
Nonfat Cheese
Nonfat or 1% Cottage cheese
Eggs
Fish
Seafood
Chicken
Turkey

Pre-made protein shakes

Premier Protein shakes
Equate High Performance Protein shake
Slim Fast Advanced Nutrition HighProtein
Boost 30g Max Protein shake

Unflavored whey protein powders tips

- Whey, casein, milk, egg, soy, or pea protein as the first ingredient
- Avoid protein powders with collagen or rice protein as the first ingredient
- less than 5g sugar per serving

INCOMPLETE PROTEINS

Kidney beans
Pinto beans
Garbanzo beans
Black beans
Red beans
Navy beans
Cannelini
Lentils
Split peas
Soy beans
Tofu
Tempeh
Edamame
Unsweetened soymilk
Vegetarian meat substitutes (may contain added fats, sugars or starches)

Whole grains complement the amino acids found in beans and vice versa.

Nuts and nut butters- nuts are higher in fat than protein and they contribute significant amounts of amino acids.

The importance of protein for weight management

HOW MUCH PROTEIN INTAKE IS REQUIRED AFTER SURGERY?

See the table below for your protein needs after surgery. During the weight loss phase, the closer you get to your protein maximum, the more muscle you will keep. However, this may not be realistic. Make sure you get at least 60g per day or 1/1g/kg of your idea body weight. After you reach your goal weight, just divide your weight in pounds by 2.7 for your minimum daily protein goal.

Height	Protein Goal	Protein Maximum
4'10"	60	82
4'11"	62	84
5'	64	87
5'1"	66	90
5'2"	68	93
5'3"	71	96
5'4"	73	99
5'5"	75	102
5'6"	77	106
5'7"	80	109
5'8"	82	112
5'9"	85	115
5'10"	87	119
5'11"	90	122
6'	92	126
6'1"	95	129
6'2"	97	133
6'3"	100	136
6'4"	103	140
6'5"	105	144
6'6"	108	148



Is there a problem with too much protein after weight loss surgery?

Yes, it is possible to have too high intake of protein after weight loss surgery. You will not build more muscle by eating more protein than your protein maximum (see table). If you eat more protein than the maximum, you will not have enough room in your pouch or sleeve for fruits or vegetables. It is also possible to have increased and more calories from protein shakes or bars, which can slow weight loss. More protein combined with decreased fluids can also promote constipation and increased risk of kidney stones. A new study concluded that 50-65 year old women with obesity eating more protein than the protein maximum (see table) eliminated the beneficial effects of 10% weight loss on blood sugar control.

Smith, Yoshino, Kelly et al. (2016). High-protein intake during weight loss therapy eliminates the weight loss induced improvements in insulin action in obese postmenopausal women. *Cell Rep*, 17 (3): 849-861.

Fats

Fats are a concentrated energy source and are used along with carbohydrate to fuel muscles. Other functions include the absorption and functioning of fat-soluble vitamins, giving taste and smell to foods, and insulating against temperature extremes. Foods are either naturally high in fat or are high fat because it has been added to the food during cooking or for condiments, sauces or toppings.

The different fats listed below all provide the same amounts of fuel (calories). We need most of our fats from the monounsaturated and polyunsaturated and less from the saturated fats.

2 weeks after surgery: 20-30g fats per day

6 weeks after surgery: 20-40g fats per day

3 months after surgery: 20-50g fats per day

6 months after surgery: 30g fats per day on average

12 months after surgery: 40g fats per day on average

12-24 months after surgery: 40g fats per day on average

24+ months after surgery: same as above, but adjust calories according to appetite & weight goals

Monounsaturated

Olives
Olive oil
Canola oil
Peanut oil
Almonds
Pecans
Peanuts
Pistachios
Cashews
Peanut butter
Almond butter
Avocados

Polyunsaturated

Corn oil
Safflower oil
Soy oil
Sunflower oil
Sesame oil
Sunflower seeds
Walnuts
Pumpkin seeds
Soy nut butter
Fish oil

Saturated

Lard
Butter
Fat from beef, pork, lamb
Cream
Sour cream
Cream cheese
Coconut oil
Palm oil
Shortenings (Crisco, etc).
Cocoa butter



The importance of fat for weight management

Preparing for bariatric surgery, a lower fat intake is recommended, following less than 65g of fat per day. After surgery, fat is very limited, as little as 5-10g per day initially and then up to 20-40g per day 6 weeks after surgery.

Meal preparation at home creates an easier opportunity to manage the total fat intake at each meal and each day. Eating out, foods tend to have higher amounts of butter, oil, or added fats such as cheese or sauces, creating a higher intake of daily fat.

BE AWARE OF COMMON HIGHER FAT INGREDIENTS SUCH AS:

- Names of high fat sauces: cream or cheese sauce, Alfredo, béarnaise, hollandaise, mayo, aioli
- Other words indicating a high fat item: breaded, crispy, crunchy, crusted, prime, cheesy, bacon

WHEN EATING OUT, FOCUS ON FINDING ENTRÉES OR FOOD ITEMS SUCH AS:

- Names of low fat sauces: tomato or marina sauce, salsa, hot sauce, soy sauce
- Words indicating lower fat food preparation: grilled, broiled, baked, poached, roasted, steamed

Quick weight loss fad diets that are high in fat intake are not recommended before or after bariatric surgery as higher fat intake can lead to complications.

