

# Dietary protein to support a resilient and strong skeleton



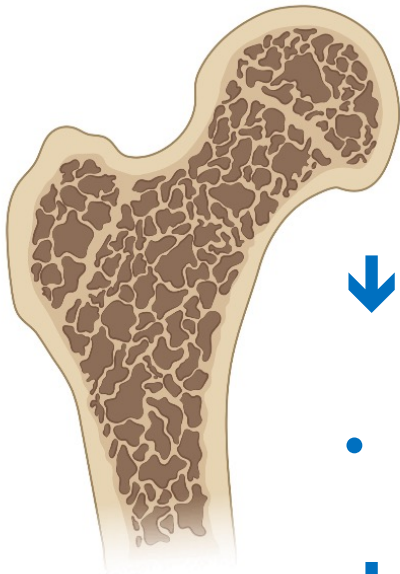
**Wendy Ward**

**Professor & Senior Research Fellow  
Department of Kinesiology, Faculty of Applied Health Sciences  
Brock University**

# Prevent a Fracture!

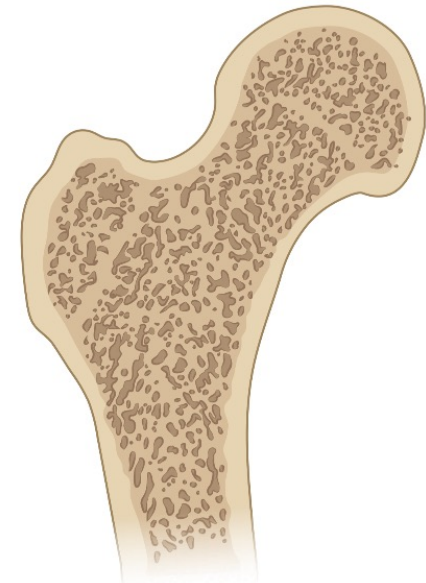
compromised bone strength → increased risk of fracture

## Osteoporosis



- ↓ Minerals “bone mineral density”
- Altered arrangement of minerals
- ↓ Proteins
- = **Weakened structure**

## Healthy Bone



# OSTEOPOROSIS BURDEN

In 2016–2017,

**2.3 million**

Canadians aged 40+ were  
**living with diagnosed  
osteoporosis**



About

**80%**

of those living  
with diagnosed  
osteoporosis  
were women

**2x**  
every  
**5** years

A light blue curved arrow pointing upwards and to the right, starting from the '5 years' text and pointing towards the risk statement.

The **RISK** of osteoporosis diagnosis  
**doubles every 5 years**, between  
the ages of 40 and 60



## PRIMARY COMPLICATIONS



In 2016–2017, there were

**150** hip fractures per  
**100,000** Canadians aged 40+

More than **1 in 5** Canadians with a hip fracture died of any cause within the following year

### Sex differences:



**WOMEN** were **2x** more likely to fracture their hip compared to men



**MEN** were **1.6x** more likely to die of any cause within a year of a hip fracture compared to women



# BONE HEALTH PROMOTION STRATEGIES

Prevent, delay or reduce bone loss by following a healthy lifestyle. Basic bone health includes:<sup>3</sup>



Balanced nutrition, ideally starting from childhood



Adequate calcium and vitamin D intake



Physical activity and resistance training exercises



Avoid smoking and excessive alcohol intake



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# Bone Health is a Lifelong Process

Diet benefits bone health throughout life





# Canada's Food Guide

Have plenty of  
vegetables and fruits

Eat protein foods  
Especially  
plants!

Make water  
your drink  
of choice

Choose  
whole grain  
foods



*Make it a habit to eat vegetables,  
fruits, whole grain and protein foods.  
✓ Plant-based protein foods more often*

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✓ Plant-based protein foods more often

**Consume higher levels of:**

- Fruits & vegetables
- Nuts & plant proteins
- Fiber

**Consume lower levels of:**

- Processed meat
- Lower saturated fat

**Water**

- Tea (unsweetened, flavonoids)
- Polyphenols

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Especially  
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Make water  
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## Why the emphasis on plants?

Lower risk of chronic diseases:

- Cardiovascular disease
- Type 2 diabetes
- Healthy body weight
- Some cancers

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Protein → amino acids  
“building blocks”

- Hormones, Enzymes
- Immune function
- Any tissue in the body  
muscle, bone

# Dietary Patterns & Bone Health



## How was bone evaluated?

- BMD or BMC (at various sites)
- Risk of osteoporosis
- Fracture

49 studies; >20 countries represented

Many studies are cross-sectional designs:  
“a snapshot in time”



## Healthy Dietary Pattern characterized by:

- High intake of fruit, vegetables
- Whole grains
- Poultry, fish, nuts and legumes
- Low fat dairy products

## Bone Outcomes:

- Higher BMD – more mineral in bone
- Lower risk of fracture



# Foods beneficial for bone health....

Many food sources of protein!

## Higher intake:

- ✓ Fruits & vegetables
  - ✓ Legumes: beans, peas, lentils
  - ✓ Whole grains
  - ✓ Nuts
  - ✓ Poultry, Fish
  - ✓ Low-fat dairy products
- 
- Less intake: soft drinks, fried foods, meat and processed products, sweets and desserts, and refined grains



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# Canada's Food Guide

Have plenty of vegetables and fruits

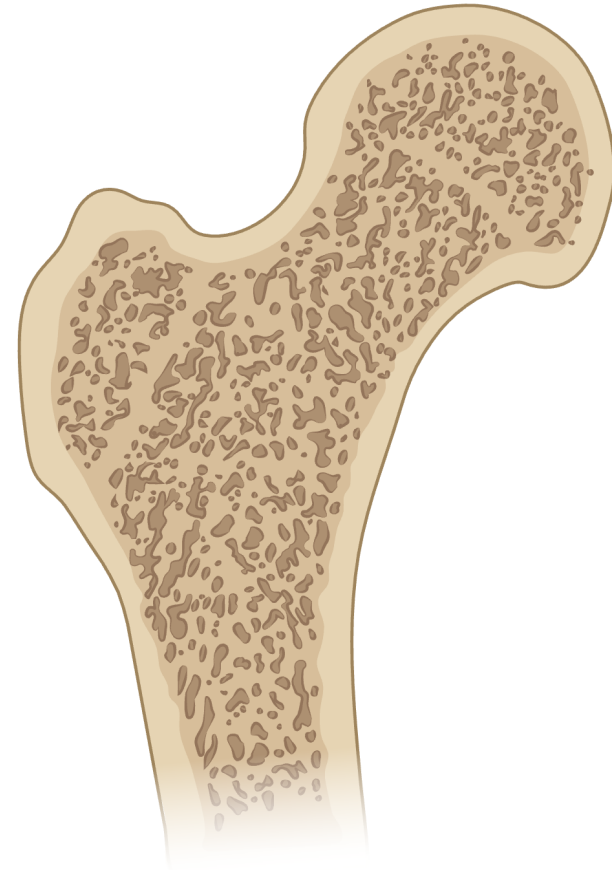
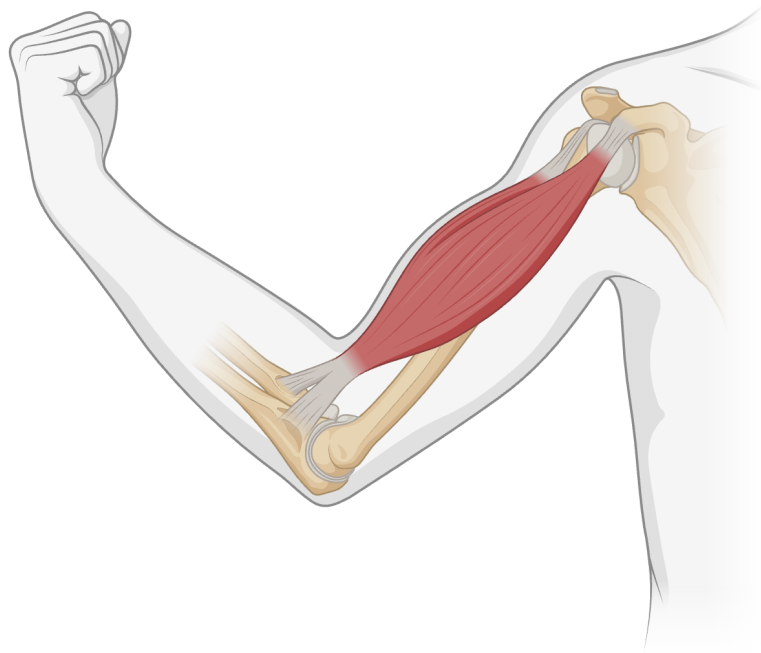
Eat protein foods

Make water your drink of choice

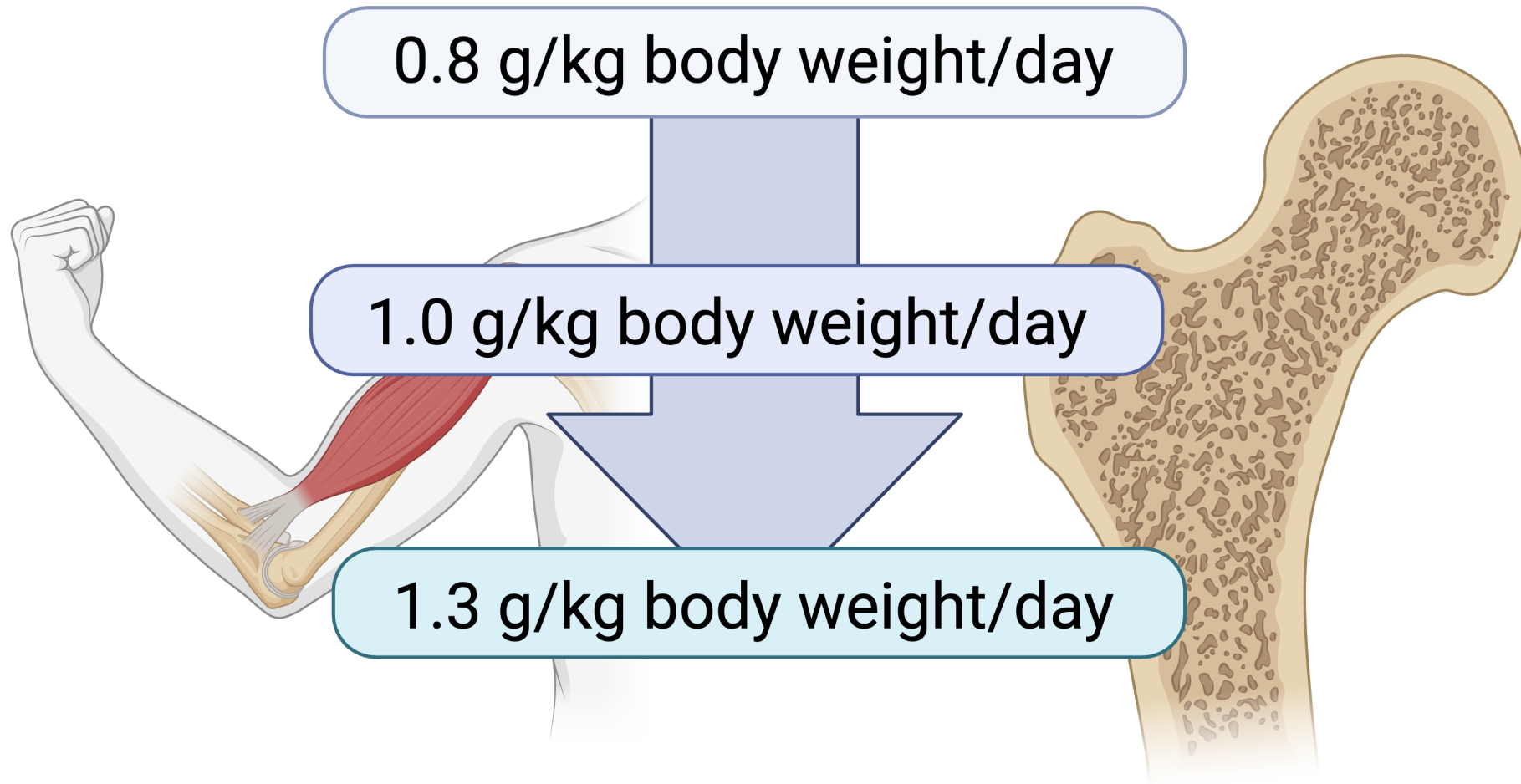


Choose whole grain foods

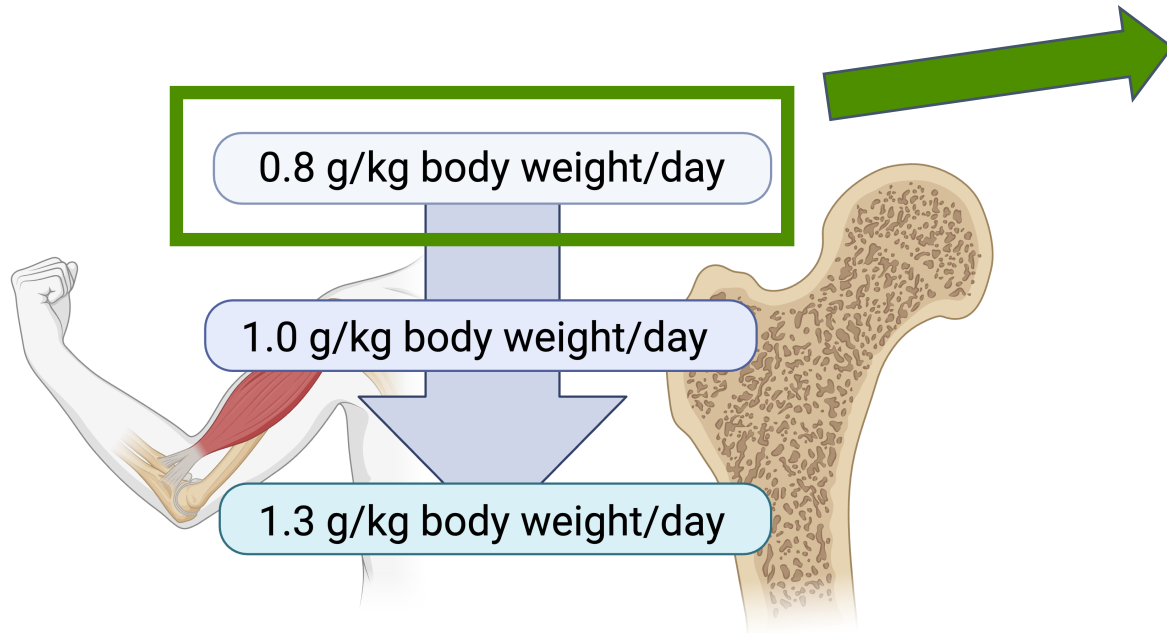
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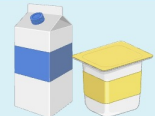




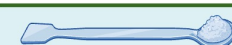


**0.8 g protein/kg body weight/day**  
**for all ages!**  
*minimum amount of protein*

For individuals of  
60 – 80 kg body weight








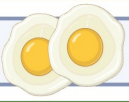





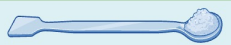
**How to consume**  
**48 – 64 g protein/day?**

# How to consume 48 – 64 g protein per day?

Food Item	Serving Size	Protein g	Energy kcal	
	Chicken	85 g	28	141
	Steak	85 g	26	158
	Ground Beef	85 g	22	140
	Salmon	85 g	22	155
	Greek Yogurt	170 g	18	100
	Milk	250 mL	8	86
	Peanut Butter	30 g	8	190
	Eggs	1 large	6	71
	Quinoa	125 g	4	111
	'Beans'	125 g	6-11	94-134
	'Nuts'	28 g	4-12	120-163
	Flaxseed	15 g	2.7	80
	Pea Protein	"Scoop"	20	110
	Whey Protein	"Scoop"	27	121

Consider different food sources of protein in terms of protein and energy content.....

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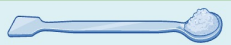
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**Foods contain more than protein**

Consider food sources of bone supporting micronutrients:

- ✓ Calcium
- ✓ Vitamin D
- ✓ Other healthful components  
fiber, fatty acid profile  
bioactives:  
polyphenols →  
flavonoids



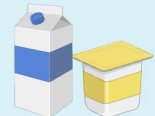




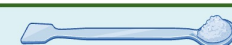
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← ✓ Protein

← ✓ Calcium  
 ✓ Different fat profile  
 ✓ Fiber

# How to consume 48 – 64 g protein per day?














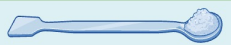
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- ✓ Similar protein
- ✓ Calcium
- ✓ Vitamin D

- ✓ Different fat profile
- ✓ Fiber



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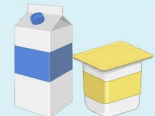




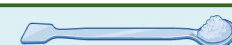


✓ **Similar protein, energy**



- ✓ **Vitamin D**
- ✓ **Calcium (if canned)**
- ✓ **Different fat profile**

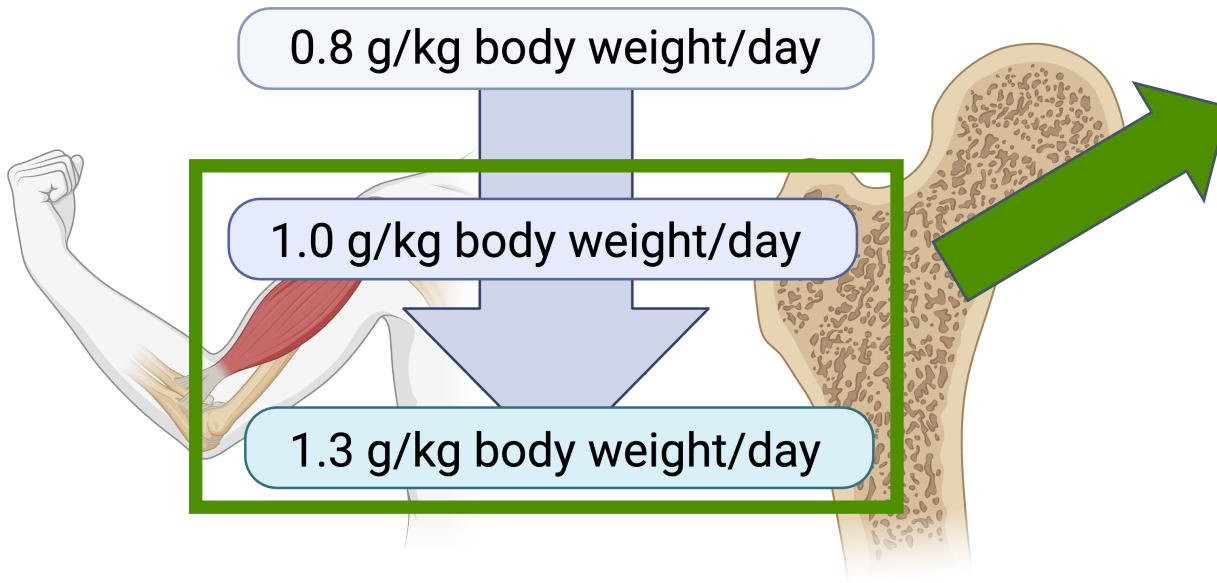
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- ✓ Protein level differs
- ✓ Similar calcium, vitamin D

# Should I consume a higher level of protein for healthy bones?



## Aging?

- ✓ Consider other tissues: *muscle*
- ✓ 1.0-1.2 g protein/kg body weight per day
- ✓ 25-30 g/meal  
Even distribution throughout day
- ✓ 0.8→1.3 g protein/kg body weight/day not harmful to bone

# Complete versus Incomplete Proteins...

*What does this mean?*

- ✓ Essential Amino Acids (n=9)
- ✓ Non-Essential Amino Acids (n=11)
  
- **Complete proteins: contain all 9 essential amino acids**
  
- **Incomplete proteins: do not contain all 9 essential amino acids**



# Complete versus Incomplete Proteins...

*What does this mean?*

- ✓ **Essential Amino Acids (n=9)**
- ✓ **Non-Essential Amino Acids (n=11)**

## Incomplete Protein Sources

- Legumes  
Beans, Peas, Lentils
- Nuts
- Whole Grains
- Vegetables



## Complete Protein Sources

- Poultry
- Eggs
- Beef
- Pork
- Fish
- Dairy
- Whole sources of soy  
tofu, edamame, miso, tempeh
- Hemp, Chia

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**Combine proteins!  
'protein  
complementation'**

*Consuming a mixture of  
protein sources allows you to  
consume sufficient levels of all  
essential amino acids!*



## Complete Protein Sources

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**How do I know what nutrients  
are in a food?**

✓ **protein**

# Canadian Nutrient File (CNF)



Government  
of Canada

Gouvernement  
du Canada

Search Canada.ca



MENU ▾

[Canada.ca](#) > [Departments and agencies](#) > [Health Canada](#) > [Food and nutrition](#) > [Nutrition and Healthy Eating](#)

Nutrition and Healthy  
Eating

Children and Healthy  
Eating

Dietary reference intakes

Healthy Weights

Nutrient Data

The Canadian Nutrient  
File

Canadian Nutrient File

## Nutrient Data



Health Canada publishes two databases which list nutrient values in Canadian foods. [The Canadian Nutrient File](#) (CNF) is a comprehensive, computerized bilingual database that reports up to 152 nutrients in over 5690 foods. The database can help you find values for nutrients such as vitamins, minerals, protein, energy, fat and many more, and is updated periodically. The CNF has an online, searchable application that allows Canadians to search the nutrient values for specific foods.

<https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/nutrient-data.html>



# Canadian Nutrient File

## Canadian Nutrient File (CNF) - Search by food

From [Health Canada](#)

[Search by nutrient](#)

The food search is case- and accent-insensitive, and keywords used can represent complete or partial words. Keywords will be matched in any order against any part of food descriptions. If more than one keyword is used, they may be separated by a space or any of the operators 'and', 'or', or 'not'. A space is equivalent to the operator 'and'. In all cases, keywords are searched both as whole words and partial words, which means that a singular keyword will also find the corresponding plural forms, and prefixed forms. Examples: a) **'fish'** will also find 'Crayfish', b) **'apple raw'** (or 'apple and raw') will find all the foods having both keywords anywhere in their description, but also: 'Pineapple, raw', c) **'apple or raw'** will find any food having either or both keywords anywhere in the description, while **'apple not raw'** will find all instances of 'apple' except where 'raw' is also present anywhere in the description. Alternatively, you can search by the unique four digit Canadian Nutrient File (CNF) food code.

### Search criteria

Food name

skim milk

Food code

Food search

Reset

**\*Can also look up unpackaged foods**  
**-fruits & vegetables**  
**-cuts of meat, fish**

<https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/nutrient-data.html>

# Canadian Nutrient File

## Serving size

From [Health Canada](#)

[New search](#)



**Milk, fluid, partly skimmed, 1% M.F. /**

Lait, liquide, partiellement écrémé, 1% M.G.

**Food code: 63**

### Available serving size(s)

100 grams of edible portion = 100 grams

100ml = 103.1 g



250ml = 257.8 g

Refuse:

- total refuse 0 %



Generate nutrient profile

Reset

# Nutrient profile

From [Health Canada](#)

[New search](#)

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Lait, liquide, partiellement écrémé, 1% M.G.

**Food code: 63**

Help on accessing alternative formats, such as Portable Document Format (PDF), Microsoft Word and PowerPoint (PPT) files, can be obtained in the [alternate format help section](#).

📎 [Nutrient profile \(Excel Version ~ 350K\)](#)

### List of nutrient data

250 mL or 1 cup

Nutrient name	Unit <sup>1</sup>	250ml / 258 g
<b>Proximates</b>		
Moisture	g	231.83
Ash	g	1.93
Protein	g	8.69
Total Fat	g	2.50
Carbohydrate	g	12.87
Alcohol	g	0.00
Energy (kcal)	kCal	108
Energy (kJ)	kJ	456
<b>Other Carbohydrates</b>		

12/5/22, 7:23 PM

Nutrient profile

Nutrient name	Unit <sup>1</sup>	250ml / 258 g
Fibre, total dietary	g	0.0
Glucose	g	0.00
Fructose	g	0.00
Maltose	g	0.00
Galactose	g	0.00
Lactose	g	13.41
Sucrose	g	0.00
Sugars, total	g	13.41
<b>Minerals</b>		
Calcium, Ca	mg	322
Iron, Fe	mg	0.08
Magnesium, Mg	mg	28
Phosphorus, P	mg	245
Potassium, K	mg	387
Sodium, Na	mg	113
Zinc, Zn	mg	1.08
Copper, Cu	mg	0.026
Manganese, Mn	mg	0.008
Selenium, Se	µg	8.5
<b>Vitamins</b>		
Beta carotene	µg	5
Alpha carotene	µg	0
Retinol	µg	162
Retinol activity equivalents, RAE	µg	163
Folacin, total	µg	13
Folic acid, synthetic form	µg	0
Folate, naturally occurring	µg	13

# Food Labels: “Nutrition Facts”

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g	
+ 0.1g <b>Trans fat</b>	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
Calcium	30%
Iron	0%

## Nutrition Facts table:

- Learn about calories & nutrients
- Make it easy to compare similar foods
- Look for foods with a little or lot of a certain nutrient (% Daily Value)
- Select foods for special diets

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← **Serving Size**

← **Calories (energy)**

**% Daily Value (DV)**

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Iron	0%

Serving Size

Calories (energy)

% Daily Value (DV)

5% DV or less is a little

15% DV or more is a lot

-helpful when comparing foods

-mandatory reporting for 13 nutrients

(optional reporting for other vitamins & minerals)

$\% \text{ DV} = \text{Amount in food} / \text{Dietary Reference Intake} \times 100\%$

% DV for Calcium:

$= 300 \text{ mg Ca per serving} / 1000 \text{ mg} \times 100\%$

# Let's Compare 'Yogurts'

## Plain Yogurt 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g + 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	<b>Protein 10 g</b>
Vitamin A	6%
Vitamin C	0%
Calcium	30%
Iron	0%

## Skyr Plain Yogurt 4% mf

Nutritional Information	
Serving Size Per 3.0 / 4 cup   175 g	
Amount	% Daily Value
<b>Calories</b>   160 cal	
<b>Fat</b>   6 g	8%
Saturated Fat   4.0 g	
Trans Fat   0.2 g	21%
<b>Cholesterol</b>   30 mg	
<b>Sodium</b>   60 mg	3%
<b>Potassium</b>   250 mg	5%
<b>Carbohydrate</b>   7 g	
Sugars   2 g	2%
<b>Protein</b>   18 g	<b>Protein 18 g</b>
Calcium	13%
Iron	1%

## Unsweetened Almond Dairy Free Yogurt-Style

Nutrition Facts	
Valeur Nutritive	
Per 3/4 cup (175 g) pour 3/4 tasse (175 g)	
Amount	% Daily Value*
<b>Calories</b> 180	% valeur quotidienne
<b>Fat / Lipides</b> 15 g	20%
Saturated / saturés 1 g + Trans / trans 0 g	5%
<b>Carbohydrate / Glucides</b> 11 g	
Fibre / Fibres 7 g	25%
Sugars / Sucres 1 g	1%
<b>Protein / Protéines</b> 6 g	<b>Protein 6 g</b>
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium</b> 60 mg	3%
Potassium 250 mg	5%
Calcium 125 mg	10%
Iron / Fer 1 mg	6%

\*5% or less is a little, 15% or more is a lot  
\*5% ou moins c'est peu, 15% ou plus c'est beaucoup

# Let's Compare 'Yogurts'

## Plain Yogurt 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g + 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
Calcium	30%
Iron	0%

**Protein 10 g**

## Skyr Plain Yogurt 4% mf

Nutritional Information	
Serving Size Per 3.0 / 4 cup   175 g	
Amount	% Daily Value
<b>Calories</b>   160 cal	
<b>Fat</b>   6 g	8%
Saturated Fat   4.0 g	
Trans Fat   0.2 g	21%
<b>Cholesterol</b>   30 mg	
<b>Sodium</b>   60 mg	3%
<b>Potassium</b>   250 mg	5%
<b>Carbohydrate</b>   7 g	
Sugars   2 g	2%
<b>Protein</b>   18 g	
Calcium	13%
Iron	1%

**Protein 18 g**

## Unsweetened Almond Dairy Free Yogurt-Style

Nutrition Facts	
Valeur Nutritive	
Per 3/4 cup (175 g) pour 3/4 tasse (175 g)	
	% Daily Value* % valeur quotidienne
<b>Calories</b> 180	
<b>Fat / Lipides</b> 15 g	20%
Saturated / saturés 1 g + Trans / trans 0 g	5%
<b>Carbohydrate / Glucides</b> 11 g	
Fibre / Fibres 7 g	25%
Sugars / Sucres 1 g	1%
<b>Protein / Protéines</b> 6 g	
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium</b> 60 mg	3%
Potassium 250 mg	5%
Calcium 125 mg	10%
Iron / Fer 1 mg	6%

**Protein 6 g**

\*5% or less is a little, 15% or more is a lot  
\*5% ou moins c'est peu, 15% ou plus c'est beaucoup



# Let's Compare 'Yogurts'

## Plain Yogurt 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g + 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
Calcium	30%
Iron	0%

**Fat 5.5 g**

**Protein 10 g**

## Skyr Plain Yogurt 4% mf

Nutritional Information	
Serving Size Per 3.0 /4 cup   175 g	
Amount	% Daily Value
<b>Calories</b>   160 cal	
<b>Fat</b>   6 g	8%
Saturated Fat   4.0 g	21%
Trans Fat   0.2 g	
<b>Cholesterol</b>   30 mg	
<b>Sodium</b>   60 mg	3%
<b>Potassium</b>   250 mg	5%
<b>Carbohydrate</b>   7 g	
Sugars   2 g	2%
<b>Protein</b>   18 g	
Calcium	13%
Iron	1%

**Fat 6 g**

**Protein 18 g**

## Unsweetened Almond Dairy Free Yogurt-Style

Nutrition Facts	
Valeur Nutritive	
Per 3/4 cup (175 g) pour 3/4 tasse (175 g)	
Amount	% Daily Value*
<b>Calories</b> 180	% valeur quotidienne
<b>Fat / Lipides</b> 15 g	20%
Saturated / saturés 1 g + Trans / trans 0 g	5%
<b>Carbohydrate / Glucides</b> 11 g	
Fibre / Fibres 7 g	25%
Sugars / Sucres 1 g	1%
<b>Protein / Protéines</b> 6 g	
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium</b> 60 mg	3%
Potassium 250 mg	5%
Calcium 125 mg	10%
Iron / Fer 1 mg	6%

**Fat 15 g**

**Protein 6 g**

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# Let's Compare 'Yogurts'

## Plain Yogurt 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g + 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
Calcium	30%
Iron	0%

Carb 5.5 g

Protein 10 g

## Skyr Plain Yogurt 4% mf

### Nutritional Information

Serving Size Per 3.0 /4 cup | 175 g

Amount	% Daily Value
<b>Calories</b>   160 cal	
<b>Fat</b>   6 g	8%
Saturated Fat   4.0 g	
Trans Fat   0.2 g	21%
<b>Cholesterol</b>   30 mg	
<b>Sodium</b>   60 mg	3%
<b>Potassium</b>   250 mg	5%
<b>Carbohydrate</b>   7 g	
Sugars   2 g	2%
<b>Protein</b>   18 g	
Calcium	13%
Iron	1%

Carb 7 g

Protein 18 g

## Unsweetened Almond Dairy Free Yogurt-Style

Nutrition Facts	
Valeur Nutritive	
Per 3/4 cup (175 g) pour 3/4 tasse (175 g)	
Amount	% Daily Value* % valeur quotidienne
<b>Calories</b> 180	
<b>Fat / Lipides</b> 15 g	20%
Saturated / saturés 1 g + Trans / trans 0 g	5%
<b>Carbohydrate / Glucides</b> 11 g	
Fibre / Fibres 7 g	25%
Sugars / Sucres 1 g	1%
<b>Protein / Protéines</b> 6 g	
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium</b> 60 mg	3%
Potassium 250 mg	5%
Calcium 125 mg	10%
Iron / Fer 1 mg	6%

Carb 11 g

Protein 6 g

\*5% or less is a little, 15% or more is a lot  
\*5% ou moins c'est peu, 15% ou plus c'est beaucoup

# Let's Compare 'Yogurts'

## Plain Yogurt 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g + 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
<b>Calcium</b> 30%	30%
Iron	0%

**Protein 10 g**

**Calcium 30%**

## Skyr Plain Yogurt 4% mf

Nutritional Information	
Serving Size Per 3.0 / 4 cup   175 g	
Amount	% Daily Value
<b>Calories</b>   160 cal	
<b>Fat</b>   6 g	8%
Saturated Fat   4.0 g	
Trans Fat   0.2 g	21%
<b>Cholesterol</b>   30 mg	
<b>Sodium</b>   60 mg	3%
<b>Potassium</b>   250 mg	5%
<b>Carbohydrate</b>   7 g	
Sugars   2 g	2%
<b>Protein</b>   18 g	
<b>Calcium</b>	13%

**Protein 18 g**

**Calcium 13%**

## Unsweetened Almond Dairy Free Yogurt-Style

Nutrition Facts	
Valeur Nutritive	
Per 3/4 cup (175 g) pour 3/4 tasse (175 g)	
Amount	% Daily Value*
<b>Calories</b> 180	% valeur quotidienne
<b>Fat / Lipides</b> 15 g	20%
Saturated / saturés 1 g + Trans / trans 0 g	5%
<b>Carbohydrate / Glucides</b> 11 g	
Fibre / Fibres 7 g	25%
Sugars / Sucres 1 g	1%
<b>Protein / Protéines</b> 6 g	
<b>Cholesterol / Cholestérol</b> 0 mg	
<b>Sodium</b> 60 mg	3%
<b>Calcium</b> 125 mg	10%
Iron / Fer 1 mg	0%

**Protein 6 g**

**Calcium 10%**

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\*5% ou moins c'est peu, 15% ou plus c'est beaucoup

# Comparing Full Fat versus Lower Fat Yogurt

## Plain Yogurt, 3.3% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 140	
<b>Fat</b> 5.5g	8%
Saturated 2.5g	
+ 0.1g	13%
<b>Cholesterol</b> 15mg	
<b>Sodium</b> 140mg	6%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 13g	
<b>Proteins</b> 10g	
Vitamin A	6%
Vitamin C	0%
<b>Calcium</b>	<b>30%</b>
Iron	0%

## Plain Yogurt, Skim, 0% mf

Nutrition Facts	
Per 3/4 cup (175g)	
Amount	% Daily Value
<b>Calories</b> 90	
<b>Fat</b> 0.5g	1%
Saturated 0.2g	
+ 0g	1%
<b>Cholesterol</b> 5mg	
<b>Sodium</b> 120mg	5%
<b>Carbohydrate</b> 13g	4%
Fibre 0g	0%
Sugar 9g	
<b>Proteins</b> 9g	
Vitamin A	10%
Vitamin C	0%
<b>Calcium</b>	<b>30%</b>
Iron	0%

**Calories: 140 or 90 kcal**

**Protein: 10 g or 9 g**

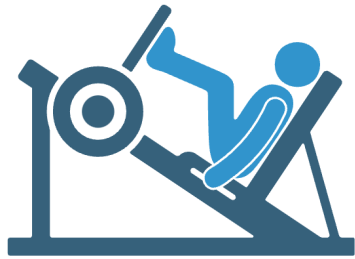
**Calcium: 30% or 30%**

***“Can’t outrun a bad diet”***



# “Can’t outrun a bad diet”

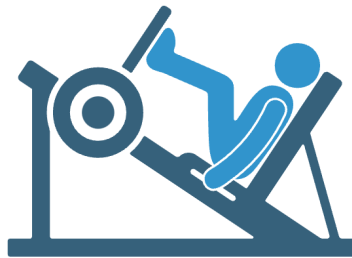
## ...importance of healthy diet with physical activity!



- Large groups of men & women studied
- High quality diet:
  - 5 servings fruits & vegetables/day
  - 2 servings fish/week
  - lower consumption of red meat, particularly processed meat
- Reduced risk of death in people consuming **high quality diet & physical activity:**
  - ✓ *reduced 17% all causes*
  - ✓ *reduced 19% CVD*
  - ✓ *reduced 27% selected cancers*

# “Can’t outrun a bad diet”

## ...importance of healthy diet with physical activity!



- Large groups of men & women studied
- High quality diet:
  - 5 servings fruits & vegetables/day
  - 2 servings fish/week
  - lower consumption of red meat, particularly processed meat
- Reduced risk of death in people consuming high quality diet & physical activity:
  - ✓ reduced 17% all causes
  - ✓ reduced 19% CVD
  - ✓ reduced 27% selected cancers

# *“Can’t outrun a bad diet”*

## ...importance of healthy diet with physical activity!

### Diet

Have plenty of  
vegetables and fruits

Eat protein foods

Make water  
your drink  
of choice



Choose  
whole grain  
foods

### Physical Activity

#### CANADIAN 24-HOUR MOVEMENT GUIDELINES:

An Integration of Physical Activity,  
Sedentary Behaviour, and Sleep





# 24 Hour Movement Guidelines: 18-64 years

A healthy 24 hours includes:

## PHYSICAL ACTIVITY

Performing a variety of types and intensities of physical activity, which includes:



- **Moderate to vigorous aerobic physical activities** such that there is an accumulation of at least 150 minutes per week

- Muscle strengthening activities using major muscle groups at least twice a week



- Several hours of **light physical activities**, including standing

## SLEEP



Getting 7 to 9 hours of good-quality sleep on a regular basis, with consistent bed and wake-up times

## SEDENTARY BEHAVIOUR



Limiting sedentary time to 8 hours or less, which includes:

- No more than 3 hours of recreational screen time
- Breaking up long periods of sitting as often as possible

✓ Progressing towards any of these targets will result in some health benefits.

### Lower risk:

- mortality
- type 2 diabetes
- adverse blood lipid profile
- anxiety
- depression

### Improves:

- bone health
- cognition
- physical function
- quality of life



# Closing thought.....

Have plenty of  
vegetables and fruits

Eat protein foods

Make water  
your drink  
of choice

Choose  
whole grain  
foods

Protein is part of a diet that supports overall health as well as strong bones.



**Annotated list of  
websites for future  
reference &  
sharing  
(3 pages)**

**Email me:  
wward@brocku.ca**

## **Helpful Resources on the Topics of Nutrition, Physical Activity and Health**

### **Canada's Food Guide - Health Canada**

The "Food Guide Snapshot" (the picture of the plate) provides a guide to eat a variety of healthy foods each day. This website provides detailed guidance about healthy food choices and healthy eating habits, essentially 'what to eat' and 'how to eat'.

<https://food-guide.canada.ca/en/>



**Subscribe to e-mail updates about Canada's Food Guide at:**

<https://www.canada.ca/en/health-canada/services/canada-food-guide/subscribe.html>

### **Dietitians of Canada**

This website is full of useful, practical information about nutrition and health for the public. Some recipes are included. <https://www.unlockfood.ca/en/default.aspx>

**Video that explains how to estimate portion sizes:**

<https://www.unlockfood.ca/en/Videos/Food-Portions-Toolkit/Video-Size-up-your-food-portions>

**Video that provides tips to manage food portion sizes when eating out, eating in and snacking:**

<https://www.unlockfood.ca/en/Videos/Food-Portions-Toolkit/Video-Tips-to-manage-your-food-portions>

**There is an online menu planning tool to make customized meal plans. [h](#)**

<https://www.unlockfood.ca/en/MenuPlanner.aspx>



**Sign up for a newsletter at <https://www.unlockfood.ca/en/NewsletterSignUpCASL.aspx>.**

**Make it a habit to eat a variety of healthy foods each day.**

**Eat plenty of vegetables and fruits, whole grain foods and protein foods.  
Choose protein foods that come from plants more often.**

- Choose foods with healthy fats instead of saturated fat

**Limit highly processed foods. If you choose these foods, eat them less often and in small amounts.**

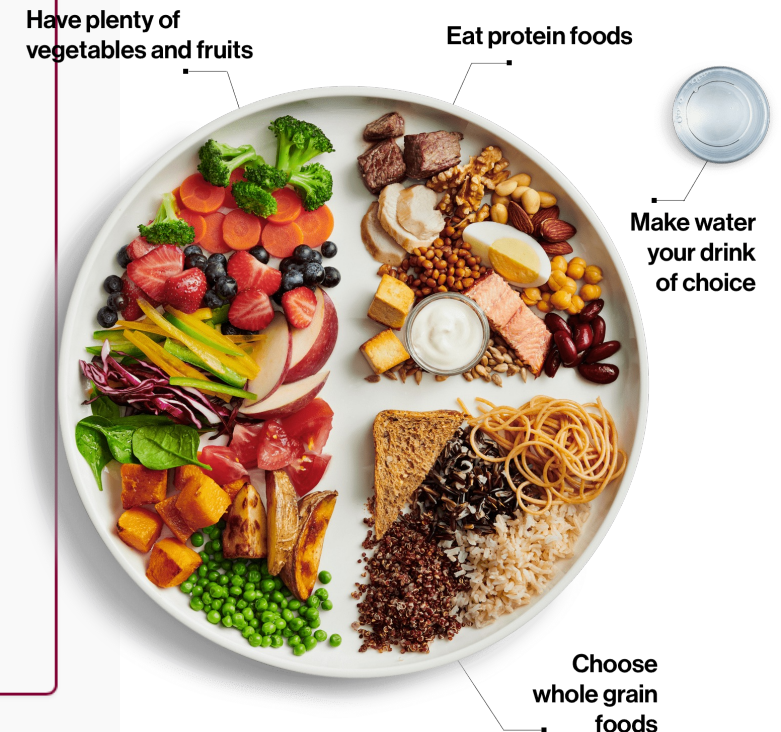
- Prepare meals and snacks using ingredients that have little to no added sodium, sugars or saturated fat
- Choose healthier menu options when eating out

**Make water your drink of choice**

- Replace sugary drinks with water

**Use food labels**

**Be aware that food marketing can influence your choices**



Healthy eating is more than the foods you eat. It is also about where, when, why and how you eat.

### Be mindful of your eating habits

- Take time to eat
- Notice when you are hungry and when you are full

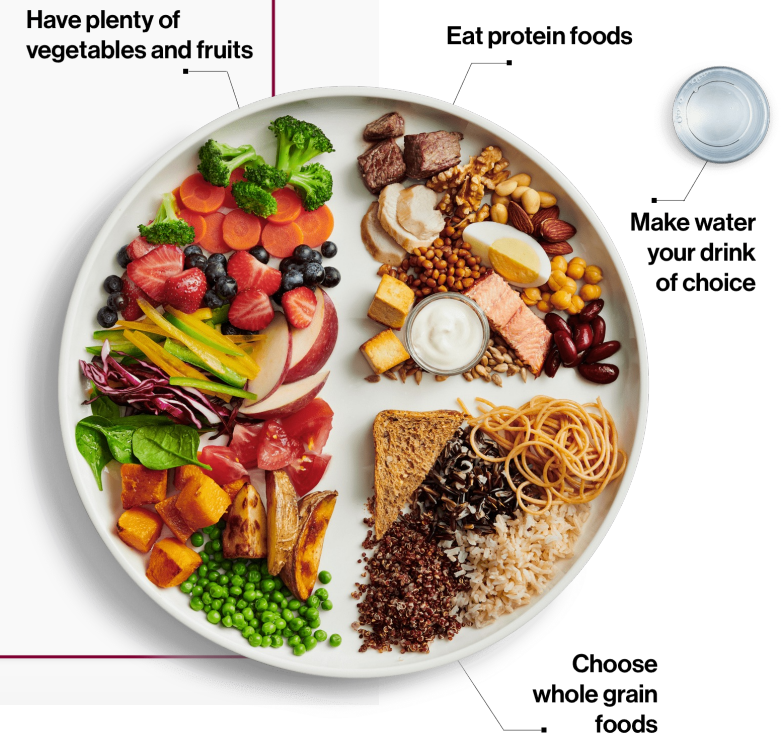
### Cook more often

- Plan what you eat
- Involve others in planning and preparing meals

### Enjoy your food

- Culture and food traditions can be a part of healthy eating

### Eat meals with others



**Thank you for listening.**

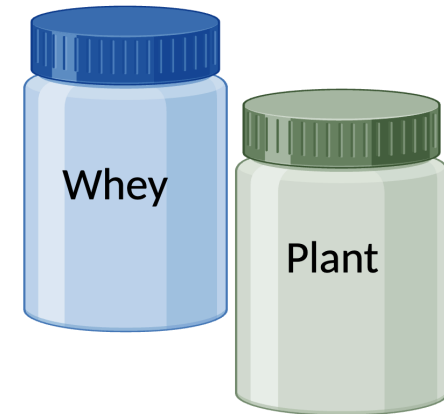
**Questions?  
wward@brocku.ca**



# Choosing a Protein Supplement

## Per serving:

- ✓  $\leq$  200 or fewer calories
- ✓  $<$  2 grams of saturated fat
- ✓  $\leq$  5 grams of sugar
- ✓ No partially hydrogenated oils and artificial sweeteners



"Is it ok to take protein supplements?" on CBC podcast, *The Dose*  
<https://www.cbc.ca/listen/cbc-podcasts/410-the-dose>



# OSTEOPOROSIS CARE GAP

The Canadian clinical practice guidelines recommend:<sup>2</sup>



A **bone mineral density (BMD)** test in adults that had a fragility fracture after age 40



**Anti-osteoporosis medication** for all adults aged 50+ who had a fragility fracture of the hip

The most recent data show a **major GAP** between best practices and actual care. After sustaining a fracture at sites most attributable to osteoporosis:



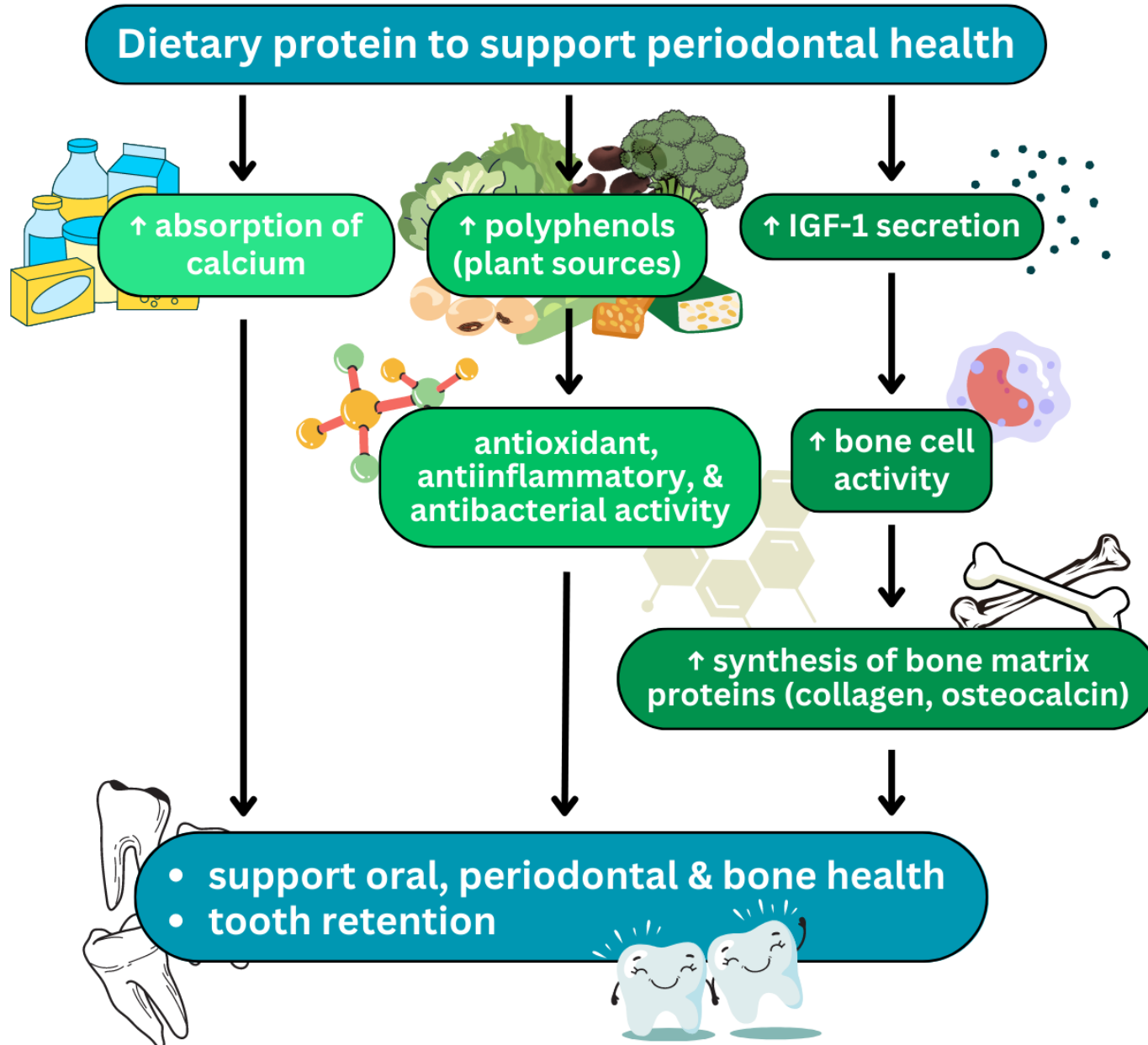
Less than **10%** of Canadians aged 40+ had a **BMD test**

Less than **20%** of Canadians aged 65+ received a **prescription** for an anti-osteoporosis medication



**MEN** are less likely to receive any intervention





# Protein Supplements

<b>Nutrition Facts</b>	
<b>Valeur nutritive</b>	
Per 30 g (1 scoop)	
Pour 30 g (1 mesure)	
<b>Calories 121</b>	<b>% Daily Value*</b>
	<b>% valeur quotidienne*</b>
<b>Fat / Lipides 1 g</b>	<b>1 %</b>
Saturated / Saturés 0 g	0 %
+ Trans / Trans 0 g	
<b>Carbohydrate / Glucides 1 g</b>	
Fibre / Fibres 0 g	0 %
Sugars / Sucres 1 g	1 %
<b>Protein / Protéines 27 g</b>	
<b>Cholesterol / Cholestérol 0 mg</b>	
<b>Sodium 45 mg</b>	<b>2 %</b>
Potassium 0 mg	0 %
Calcium 150 mg	12 %
Iron / Fer 0 mg	0 %
*5% or less is a little, 15% or more is a lot	
*5% ou moins c'est peu, 15% ou plus c'est beaucoup	

<b>Nutrition Facts</b>	
<b>Valeur nutritive</b>	
Per 1 scoop (28 g)	
pour 1 mesure (28 g)	
Servings Per Container: About 21 servings	
Portions par contenant : Environ 21 portions	
<b>Calories 110</b>	<b>% Daily Value*</b>
	<b>% valeur quotidienne*</b>
<b>Fat / Lipides 2.5 g</b>	<b>3 %</b>
Saturated / saturés 1.5 g	8 %
+ Trans / trans 0 g	
<b>Carbohydrate / Glucides 3 g</b>	
Fibre / Fibres 1 g	4 %
Sugars / Sucres 1 g	1 %
<b>Protein / Protéines 20 g</b>	
<b>Cholesterol / Cholestérol 0 mg</b>	
<b>Sodium 150 mg</b>	<b>7 %</b>
Potassium 100 mg	2 %
Calcium 175 mg	13 %
Iron / Fer 4 mg	22 %
Vitamin A / Vitamine A 50 µg	6 %
Vitamin C / Vitamine C 5 mg	6 %
Vitamin K / Vitamine K 30 µg	25 %
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*5 % ou moins c'est peu, 15 % ou plus c'est beaucoup	

# Physically Active Individual

**Greater protein needs.....fuel, recovery**

**$\geq 1.2$  g protein/kg body weight/day  
rather than**

**0.8 g protein/kg body weight/day**

**Plant-based athlete:**

- **nutrients of concern**  
(calcium, vitamin D, iron)
- **careful dietary planning**
- **sports dietitian**



## Nutrition and Athletic Performance

Position of Dietitians of  
Canada, the Academy  
of Nutrition and Dietetics  
and the American College  
of Sports Medicine

February 2016  
Revised December 2016

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Concurrent publication of this joint position paper:  
- DC website [www.dietitians.ca/sports](http://www.dietitians.ca/sports)  
- Canadian Journal of Dietetic Practice and Research  
(abstract, position statement)  
- Journal of the Academy of Nutrition and Dietetics  
- Medicine & Science in Sports and Exercise®



[https://journals.lww.com/acsm-  
msse/Fulltext/2016/03000/Nutrition\\_and\\_Athletic\\_Performance.25.aspx](https://journals.lww.com/acsm-msse/Fulltext/2016/03000/Nutrition_and_Athletic_Performance.25.aspx)