## Audience: Junior and Senior High School Students

**Length:** 45 minutes  
**Location:** Various

### Outcomes

By the end of this presentation students will be able to:

1. Identify the difference between energy drinks, pop and sports drinks.
2. Identify and explain the labeling on an energy drink.
3. Identify how energy drinks can affect their sport performance.
4. Identify the risks associated with consuming energy drinks.
5. Identify how caffeine affects health and how much caffeine is considered safe.
6. Identify strategies used to market energy drinks.
7. Identify the monetary cost of energy drinks.
8. Identify alternative strategies to increase and maintain energy levels throughout the day.

### Materials needed/Introduction

- Presentation (electronic copy), laptop and projector (if required)

**Handouts**

- Canada’s Food Guide
- The Energy Drink Buzz

**Optional Handouts**

- Healthy Drinks, Healthy Kids
- Wake up to Breakfast Everyday
- What’s for Lunch
- Healthy Snacking

Handouts can be accessed from:  
http://www.albertahealthservices.ca/nutrition/page2914.aspx

**Props – Optional**

-Presenters may wish to bring props such as product cans and sugar cubes to complement the slides.

**Videos:**

- Video clips can be used throughout the presentation to enhance content.
- Slide 4 contains a blue movie icon with a direct link to a Health Canada video clip.
- In slides 8, 15, 32 and 33, use the YouTube link provided in the notes pages to access videos written, performed, filmed and edited by One Life One You Youth Leaders in collaboration with Middlesex-London Health Unit staff.  
  https://www.healthunit.com/energydrinks. You will need to stop the video at the end of each section or it will continue on to play the entire series. These videos were published in May 2013.
- Internet connection is required to play the videos.

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(Revised links September 2016)  
All rights reserved. No part of this presentation may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of Alberta Health Services. Direct correspondence to Nutrition Services. This information is intended as a general resource only and is not meant to replace the medical counsel of your doctor or individual consultation with a Registered Dietitian.
# Overview

- What is an energy drink?
- Energy drinks vs. sports drinks
- What’s in an energy drink?
  - Nutrition Facts table
  - Ingredients
  - Caffeine
- Alcohol and energy drinks
- Better energy sources

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<table>
<thead>
<tr>
<th>Outcome</th>
<th>N/A</th>
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<table>
<thead>
<tr>
<th>Key Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A variety of information about energy drinks will be covered in the presentation.</td>
</tr>
</tbody>
</table>
Outcome N/A

Key Messages
• Video clips can be used throughout the presentation to enhance content.
• Click on the blue movie icon to start playing video.

Facilitator Notes
• Video clips can be used throughout the presentation to enhance content.
• Videos are linked to the website. In the upcoming slides, click on the blue movie icon to start playing video.
  Note: There is a series of videos that are interspersed throughout the presentation. You will need to stop the video at the end of each section or it will continue on to play the entire series.
• Internet connection is required. Where there is no internet connection, move to the next slide without viewing video.
• The presentation must be viewed in "slideshow" mode in order to access the video links.
Outcome: Students will brainstorm ideas about energy drink use.

Key Messages

- Students are encouraged to think about energy drink use.

Facilitator Notes
### Outcome
Students will identify the difference between energy drinks, pop and sports drinks.

### Key Messages
- Watch video clip.

### Facilitator Notes
Click the icon to start the video clip.

Video is 1 min 41 seconds and produced by Health Canada. The video provides an overview of the key messages regarding energy drinks and takes place in a cafeteria with students purchasing and being interviewed about energy drinks.

Video can be accessed at: [https://www.youtube.com/watch?v=ZfSJ1ik-2qA](https://www.youtube.com/watch?v=ZfSJ1ik-2qA) or [http://healthycanadians.gc.ca/video/boissons-energ-drinks-eng.php](http://healthycanadians.gc.ca/video/boissons-energ-drinks-eng.php)
Outcome: Students will identify the difference between energy drinks, pop and sports drinks.

Key Messages
- Energy drinks contain a significant amount of caffeine and sugar.
- Energy drinks are advertised to youth to boost mental and physical energy for a short period of time.

Facilitator Notes
- Often energy drinks will advertise that they “are developed for periods of increased mental and physical exertions, and help to temporarily restore mental alertness or wakefulness when experiencing fatigue or drowsiness.” However, there is no research to support these claims.

Activity:
- Use the questions and answers below to facilitate a discussion about energy drinks.

Question: What is an energy drink? (answers may be similar to what is on the slide)
Answer: Energy drinks often claim to give you extra energy, help you to concentrate, and feel alert. They are often high in caffeine, sugar, and other medicinal ingredients. Energy drinks do not hydrate your body. (Dietitians of Canada, 2012)

Question: What is the difference between an “energy drink” and pop?
Answer: An energy drink is carbonated like pop, has sugar like pop, but can have 2 to 3 times the amount of caffeine per can than pop. (Health Canada, 2010a)

Background Information:
Energy drinks often claim to “stimulate and energize the user, improve alertness and delay fatigue”. They usually contain caffeine, taurine (an amino acid, one of the building blocks of protein), vitamins and glucuronolactone, a carbohydrate, and herbs. (Dietitians of Canada, 2012)
**Outcome:** Students will identify the difference between energy drinks and sports drinks.

**Key Messages**
- Sports drinks and energy drinks are not the same.
- Sports drinks are designed for high intensity activity or prolonged sweat losses.

**Facilitator Notes**

**Activity:**
1. Ask audience “What is the difference between an energy drink and a sports drink (for example Gatorade® or PowerAde®)?”
2. Allow students to brainstorm answers.
3. Answer will be discussed on the next slide.

**Background Information:**
- Energy drinks should not be confused with sports drinks such as Gatorade® or PowerAde®. Sports drinks re-hydrate the body and provide sugars, which the body burns to create energy and replenish electrolytes. Electrolytes, such as sodium (salt) and potassium can be lost through sweat and our muscles when we are active. Energy drinks, on the other hand, should not be used as a fluid replacement. (Dietitians of Canada, 2012)
Outcome: Students will identify the difference between energy drinks, pop and sports drinks.

Key Messages
• Sports drinks and energy drinks are not the same.
• Sports drinks are designed to replace fluids and electrolytes for high intensity activity or prolonged sweat losses. Energy drinks will not hydrate our bodies.

Facilitator Notes
• Energy drinks are not the same as sport drinks and should not be used during exercise. Energy drinks do not keep you hydrated. They may even have harmful side effects (e.g. headache, trouble sleeping, getting nervous or anxious, or having an upset stomach, etc.) because of the high amount of caffeine and sugar. (Alberta Health Services, 2014b)

• Sports drinks are made to keep athletes hydrated after intense activity that lasts longer than 60 minutes. Sports drinks help replace the blood sugar that is used up by the muscles and brain, as well as the electrolytes lost through sweat during an activity that lasts longer than one hour. However, sports drinks are not all the same and can contain a wide range of ingredients that athletes do not need. Sports drinks are high in sugar and have added sodium and potassium. For most people, water is the best choice during and after exercise. (Alberta Health Services, 2014b)

Background:
• Athletes must consume enough fluids before they begin an activity and then continue to drink during and after activity. Athletes can simply choose water when active for an hour or less. (Alberta Health Services, 2014b)
• Athletes need to drink about 1½ - 2½ cups of fluid 2 to 3 hours before activity. Athletes need to drink ½ - 1 ¼ cups of water every 15 to 20 minutes during activity. Young athletes need to drink 4 mL of fluid per kilogram of body weight after exercise to ensure good hydration. On average, this would be 1 to 2 cups of fluid for a young athlete. (Purcell, 2013)
• Rehydrate with water or low fat milk afterwards. Low fat milk is a healthy choice as it also provides nutrients with few calories.
• Don't like water? Try adding a lemon, lime, berries, cucumber or melon, mint or basil for a different flavour.
• For more information on hydration during activity, see the Alberta Health Services Sports Nutrition Manual at http://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-sports-nutrition-for-youth.pdf
Outcome: Students will identify how energy drinks can affect their sport performance.

Key Messages
• Energy drinks are carbonated and contain a significant amount of caffeine and sugar.
• Energy drinks can negatively affect sport performance.

Facilitator Notes
• Energy drinks are not meant to be consumed during physical activity and can negatively affect sport performance.
• The high sugar content and carbonation in energy drinks can cause stomach upset during activity.
• Consuming energy drinks before or during physical activity can lead to dehydration, vomiting, increased heart rate, and muscle cramps.

Video (optional): Use the YouTube link below to access the video clip. Video is 29 seconds. [Link](https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4)

Narrative from video: Drinking energy drinks before or during physical activity can cause muscle cramps, increased heart rate and vomiting. Tell your friends - energy drinks and physical activity don't mix.

Background Information:
• Consuming energy drinks before or during physical activity can lead to dehydration, tremors, heat stroke or heart attack. (Rath, 2012)
• Excessive caffeine consumption can cause vomiting, increased heart rate, and muscle cramps. (Rath, 2012)
• Energy drinks are advertised to supply mental and physical stimulation for a short period of time. They usually contain caffeine, taurine (an amino acid, one of the building blocks of protein), vitamins and glucuronolactone (a carbohydrate). (Dietitians of Canada, 2012)
• Energy drinks should not be confused with sports drinks such as Gatorade® or PowerAde®. Sports drinks re-hydrate the body and provide sugars, which the body burns to create energy and replenish electrolytes. Electrolytes, such as sodium (salt) and potassium can be lost through sweat and our muscles when we are active. Energy drinks, on the other hand, should not be used as a fluid replacement. (Health Canada, 2012c)
**Outcome:** Students will identify how energy drinks can affect their sport performance.

**Key Messages**
- Energy drinks are carbonated and contain a significant amount of caffeine and sugar.
- Energy drinks can negatively affect sport performance.

**Facilitator Notes**
- Energy drinks are not meant to be consumed during physical activity and can negatively affect sport performance.
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- Consuming energy drinks before or during physical activity can lead to dehydration, vomiting, increased heart rate, and muscle cramps.

**Video (optional):** Use the YouTube link below to access the video clip. Video is 29 seconds.
[https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4](https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4)

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- Energy drinks should not be confused with sports drinks such as Gatorade® or PowerAde®. Sports drinks re-hydrate the body and provide sugars, which the body burns to create energy and replenish electrolytes. Electrolytes, such as sodium (salt) and potassium can be lost through sweat and our muscles when we are active. Energy drinks, on the other hand, should not be used as a fluid replacement. (Health Canada, 2012c)
Outcome: Students will identify the risks associated with consuming energy drinks.

Key Messages
• Energy drinks are not safe for everyone.

Facilitator Notes

Activity:
1. Ask audience “Are energy drinks safe for everyone?”
2. Allow students to brainstorm answers.
3. Answers will be discussed on the following slides.
**Outcome:** Students will identify and explain the labeling on an energy drink.

**Key Messages**
- Energy drinks are intended for adult use and have various dosage instructions written on the labels.
- If consuming energy drinks, dosage should always be followed.

**Facilitator Notes**
- **Answer:** No, energy drinks are not safe for everyone.
- Energy drink labels must have a ‘Caution’ or a ‘Usage’ statement
- Energy drinks contain high amounts of caffeine and many ingredients that have not been tested for safety in children and pregnant and breastfeeding women
- This energy drink has a “Caution” statement written on its label that reads - “Do not consume more than 1 can (473 mL) per day. Not recommended for children, women who are pregnant, planning to become pregnant, or breastfeeding, or for caffeine sensitive persons.”
- Caution statements can vary by brand and product. Always read the label carefully to determine the manufacturer’s instructions.
- Some ingredients in energy drinks may have the potential to interact with certain medications or medical conditions. (Dietitians of Canada, 2012). It is important to speak to your family physician to learn more.

**Background:**
- There have been reports of serious injury or death related to energy drinks. It is difficult to determine what role energy drinks play in many of these incidents. Case studies highlight that there may be risks involved with consuming energy drinks, especially among more vulnerable populations, and further investigation into the safety of energy drinks is warranted. (Dietitians of Canada, 2012)
- Health Canada requires the following statements be included on the label of an energy drink. (Health Canada, 2012a):
  - “Do not consume more than (X) container(s)/serving(s) daily” or “Usage: (X) container(s)/serving(s) maximum daily”
  - “Not recommended for children, pregnant or breastfeeding women and individuals sensitive to caffeine”
  - “Do not mix with alcohol”
  - “Mixing alcohol with energy drinks is not recommended. The stimulants (taurine, ginseng, ginko biloba) in energy drinks may hide the effects of drinking alcohol. This can be harmful to the body”. (Health Canada, 2012c)
### What’s in an Energy Drink?

#### To find out, look at:

<table>
<thead>
<tr>
<th>Nutrition Facts table</th>
<th>Ingredient list</th>
<th>High caffeine content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrition Facts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per can (473 mL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td></td>
<td></td>
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<tr>
<td>Fat</td>
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<tr>
<td>0 g</td>
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<tr>
<td>% Daily Value</td>
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<td>0 %</td>
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<td>Sodium</td>
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<tr>
<td>570 mg</td>
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<tr>
<td>% Daily Value</td>
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<td>15 %</td>
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<tr>
<td>Carbohydrate</td>
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<td>55 g</td>
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<tr>
<td>% Daily Value</td>
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<td>7 %</td>
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<td>Sugar</td>
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<td>54 g</td>
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<td>% Daily Value</td>
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<td>3 %</td>
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<td>Protein</td>
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<td>% Daily Value</td>
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<td>0 %</td>
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<tr>
<td>Riboflavin</td>
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<tr>
<td>210 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niacin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>170 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin B6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin B12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>520 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not a significant source of saturated fat, cholesterol, fibre, vitamin A, vitamin C, calcium or iron</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### High Caffeine Content

Contains (per can)

| Caffeine | 169 mg |

#### Key Messages

- In Canada, energy drinks have been reclassified from *natural health products* to *food and beverage* and must meet the same labeling standards as food and beverage items. (Alberta Health Services, 2014a; Health Canada, 2012a)
- Energy drink labels must now include a Nutrition Facts table, Ingredient List, and total amount of caffeine.

#### Facilitator Notes

- Although the new labeling regulations are a positive change, energy drinks are still not a healthy choice. Energy drinks are not recommended for children and youth because of their high levels of caffeine, large quantities of vitamins and minerals and other ingredients such as herbal extracts.
- Even though Health Canada has set a limit on caffeine in a single serving, the amount in a single serving could still be higher than the recommended maximum daily intake for children and youth. Therefore some energy drinks may provide more caffeine than is considered safe, especially if youth have multiple energy drinks in a day.
- It’s hard to link levels of caffeine to specific health effects because everybody has a different tolerance for caffeine. Children are at an increased risk of experiencing behavioural effects from consuming caffeine (Health Canada, 2012c).
- Health Canada has received a number of reports of suspected health problems associated with energy drinks. Symptoms have included irregular heart beat and nervousness (Health Canada, 2012c).

#### Background information:

- As of December 2013, all energy drink labels must include a Nutrition Facts Table, a more detailed Ingredient List, and the total caffeine content from all sources (natural and added caffeine). (Health Canada 2012a, 2012b)
- There is now a limit to the amount of caffeine that can be in a single serving. For a single serving container, the maximum amount of caffeine shall not exceed 180 mg, per container. (Health Canada, 2012a, 2012b)
- There are also guidelines providing maximums for the levels of added vitamins, minerals, amino acids and food additives. (Health Canada, 2012a, 2012b)
- Energy shots are still considered a natural health product because of their small size. They will remain as a natural health product. (Health Canada, 2012b).
Outcome: Students will identify and explain the labeling on an energy drink.

Key Messages
- Energy drink labels now have to include a Nutrition Facts table.
- The Nutrition Facts table tells you how much of some nutrients are in the product.

Facilitator Notes
- The % Daily Value found on the nutrition facts table tells you if a food has a little or a lot of a nutrient. The % Daily Value is based on an adult intake of 2000 kcal; thus the % Daily Value would actually be higher for children for some of the nutrients.
- The energy drink label featured on this slide contains a lot of B vitamins. It has:
  - 210 % of the daily recommended amount of riboflavin (vitamin B2)
  - 170 % of the daily recommended amount of niacin (vitamin B3)
  - 220 % of the daily recommended amount of B6
  - 590 % of the daily recommended amount of B12
- Getting more than the daily recommended amount of B vitamins does not give you more energy.
- Extra B vitamins may leave the body as waste (urine).
- Taking higher amounts of vitamins is not better. Getting too much of a vitamin can make you sick.

Background:
- Caffeinated energy drinks are not recommended for children because of their high levels of caffeine and other ingredients. (Health Canada, 2012c)
**Outcome:** Students will identify and explain the labeling on an energy drink.

**Key Messages**
- Ingredients are listed by weight; the first few ingredients make up most of a food or beverage.
- Energy drinks contain high amounts of sugar and caffeine.

**Facilitator Notes**
- Ingredients are listed by weight. Therefore, the first few ingredients make up most of the beverage.
- As you can see on the slide, the first few ingredients include: carbonated water, sucrose and glucose.
- Other ingredients in this energy drink are herbs, vitamins, and amino acids.
- Note: individual ingredients will be reviewed in detail in the upcoming slides.

**Background Information**

**Herbs:**
- Many energy drinks contain herbs such as gingko biloba and ginseng. These ingredients are meant to improve memory and concentration. (Therapeutic Research Faculty, 2013a, Therapeutic Research Faculty, 2013b)
- There is no scientific evidence to prove that these herbs have an effect on the body. There is also no long term research on how these herbs interact with other medications.

**B vitamins:**
- B vitamins are added to energy drinks to provide extra energy. Most people get enough B vitamins through the food they eat.
- Getting more than the daily recommended amount of B vitamins does not give a person more energy. Excess vitamins are removed from our body through our urine.

**Amino Acids:**
- We get amino acids from the foods that we eat, such as meat, fish and dairy products. Different energy drinks contain different amino acids.
- The common amino acids found in energy drinks are taurine and carnitine. There is not enough evidence that adding amino acids to a drink gives a person more energy.

**Caffeine:**
- Caffeine will be discussed in more detail in the following slides.
- Caffeine naturally occurs in coffee beans, tea leaves and chocolate, as well as other sources such as guarana and yerba mate. (Health Canada 2010a). These other sources of caffeine will be discussed later in the presentation.

**Note:** Anything that ends in "ose" is a sugar. Therefore, the second and third ingredients (sucrose and glucose) are sugar. This means that this energy drink is mostly made from sugar. Sugar will be discussed later in the following slides.
Outcome: Students will identify and explain the labeling on an energy drink.

Key Messages
- There are many types of sugar found in energy drinks.
- Sugar affects dental health and body weight. It may also replace nutrients from food.

Facilitator Notes
- Unhealthy eating habits and physical inactivity can contribute to weight gain beyond normal growth. There is some evidence that consuming sugar sweetened beverages is associated with obesity. Sugar sweetened beverages come in large sizes making it easy to drink a lot of sugar. Since sugar provides calories, drinking too many sugar sweetened beverages can result in increased calorie intake which may lead to excess weight gain. (Alberta Health Services, 2014a)
- Information about sugar can be found in the Nutrition Facts table and in the ingredients list.
- Remember the ingredients are listed by weight, so the first few ingredients typically make up most of the food or beverage. Energy drinks usually have a lot of sugar.

Sugar:
- Any ingredient ending in “ose” is a sugar.
- The sources of sugar in this energy drink are: glucose and fructose. You can see on the slide that this energy drink is high in fructose and glucose.
- The amount of sugar in energy drinks varies by brand.
- These sugars are absorbed quickly into your blood and do not make you feel full. The energy provided does not last very long. Too much sugar also affects dental health and body weight.
- See next slide for a picture of how much sugar is contained in energy drinks.

What about sugar free energy drinks?
- Sugar free energy drinks are available, however they contain sugar substitutes.
- Sugar substitutes are food additives that make food taste sweet but they have very few calories. Examples of sugar substitutes are: aspartame, sucralose, acesulfame potassium, stevia, and sugar alcohols (sorbitol, xylitol, mannitol, maltitol). (Dietitians of Canada, 2013a)
- Some energy drinks contain sugar substitutes as well as sugar. This is shown in the example on this slide (sucralose is a sugar substitute – highlighted in red).
- Sugar substitutes are not recommended for children and youth. (Alberta Health Services, 2014a)
- The rationale behind this recommendation is that long term studies on the use of sugar substitutes in children and youth have not been done. (Alberta Health Services, 2014a)
**Outcome:** Students will identify the risks associated with consuming energy drinks.

**Key Messages**
- 1 can of a standard energy drink has an average of 14 teaspoons of sugar. (Alberta Health Services, 2014a)

**Facilitator Notes**

**Activity:**
1. Ask audience to guess how many teaspoons of sugar are in a 473 mL can of an energy drink. Click to reveal answer.

**Answer:**
- This 473 mL can of energy drink contains 14 teaspoons of sugar.
- 1 teaspoon of sugar is equal to 4 grams. The Nutrition Facts table contains information about the number of grams of sugar that is found in an energy drink.
- It is recommended that adolescents aged 9-13 years have no more than 10.5 teaspoons of added sugar per day and those aged 14-18 have no more than 13 teaspoons per day. (Alberta Health Services, 2014a)
- Since sugar provides calories (energy) for the body, drinking too many sugar-sweetened drinks can result in increased calorie intakes overall, which may lead to weight gain. (Vartanian L. et al., 2007)

**Background Information**
- The World Health Organization recommends that people have no more than 10 % of their total energy (calorie) intake from added sugars. (WHO 2015, 2003a, 2003b)
Outcome: Students will identify the risks associated with consuming energy drinks.

Key Messages
• Watch video clip.

Click the icon to start the video clip.

Video is 29 seconds long.

Published on May 1, 2013
Most energy drinks are packed with sugar. One energy drink can have the same amount of sugar as 5 ½ large donuts. Tell your friends – you wouldn't eat this much sugar ... so why drink it?

This energy drink video was written, performed, filmed and edited by One Life One You Youth Leaders in collaboration with Middlesex-London Health Unit staff. [https://www.healthunit.com/energydrinks](https://www.healthunit.com/energydrinks)

Video can be accessed at:
[https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4](https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4)
**Outcome:** Students will identify the risks associated with consuming energy drinks.

**Key Messages**
- Energy drinks contain many ingredients.

**Facilitator Notes**

**Activity**
1. Ask audience to look at the Ingredients listed and identify if any of the ingredients are familiar.
2. Click to next slide for explanations.
Outcome: Students will identify the risks associated with consuming energy drinks

Key Messages
• There is not enough research to support the health claims of these ingredients
• There is no long term research to evaluate their safety

Facilitator Notes

Activity:
1. Ask the question: ‘Why do you think herbs, vitamins, amino acids, and other natural health products are added to energy drinks? (Click links to find out)
2. Click on each of the links to go to a slide that corresponds to that ingredient
3. Click on the blue ‘play’ button to come back to this slide
4. Repeat for each of: herbs, vitamins and amino acids
Outcome: Students will identify the risks associated with consuming energy drinks.

Key Messages
- There is not enough research to support the health claims of these ingredients.
- There is no long term research to evaluate their safety.

Facilitator Notes

Activity:
1. Review the claims, risks and realities for some herbs added to energy drinks.
2. Click on the blue ‘play’ button to return to the previous slide and continue the activity.

The following are claims about ingredients that may be found in energy drinks. There is not enough research to support the claims and their effect on energy.

Ginseng
- Claim: Provides energy and mental alertness.
- Reality: No research to support the claim (Therapeutic Research Faculty, 2013b)
- Risk: Some people may experience insomnia, anxiety, or headaches (Vuksan et al. 2008; Scaglione et al. 1996), anxiety (Sievenpiper et al. 2006; Ellis and Reddy 2002), or headaches. (Lee et al. 2008b; de Andrade et al. 2007)

Ginkgo
- Claim: Helps with mental alertness.
- Reality: No research to support this.
- Risk: Can interfere with blood clotting. (Therapeutic Research Faculty, 2013a)
Outcome: Students will identify the risks associated with consuming energy drinks.

Key Messages
• There is not enough research to support the health claims of these ingredients.
• There is no long term research to evaluate their safety.

Facilitator Notes

Activity:
1. Review the claims, risks and realities for vitamins added to energy drinks.
2. Click on the blue ‘play’ button to return to the previous slide and continue the activity.

The following are claims about ingredients that may be found in energy drinks. There is not enough research to support the claims and their effect on energy.

Vitamins: Thiamine B1, Pyrodoxine B6, Pantothenic Acid B5, Riboflavin B2, Cobalamin B12 and Niacin B3

Claim: Energy Regulation

These are some of the important B-vitamins that work to make red blood cells, form your genetic blueprint, keep your nervous system healthy and even help your body use energy from food. You can get all of your B-vitamins by eating a variety of foods from Canada’s Food Guide. B-vitamins are found in all four food groups. (Dietitians of Canada, 2013b)
**Outcome:** Students will identify the risks associated with consuming energy drinks.

**Key Messages**
- There is not enough research to support the health claims of these ingredients.
- There is no long term research to evaluate their safety.

**Facilitator Notes**

**Activity:**
1. Review the claims, risks and realities for amino acids added to energy drinks.
2. Click to continue to next slide in the presentation.

The following are claims about ingredients that may be found in energy drinks. There is not enough research to support the claims and their effect on energy.

**Amino Acids:**

**Taurine**
- **Claim:** It regulates energy levels
- **Reality:** Found in meat and meat alternatives and made by our bodies
- **Risk:** Research has not determined the safety of supplementing with these large doses

**Carnitine**
- **Claim:** Increases energy levels
- **Reality:** Most people get enough from food; additional carnitine is not used by the body

**Other ingredients:**

**Glucuronolactone**
- **Claim:** Extra energy
- **Reality:** Can be made in the body from sugar, also found naturally in the diet in a wide variety of foods. No clear rationale for the addition to energy drinks

**Inositol**
- **Claim:** Help brain function
- **Reality:** Our body can make inositol and it is found in whole grains, fruit and meat (estimated daily intake of 1 g/day). It has been evaluated as a possible treatment for depression (in doses from 6-10 g/day). Dosages in energy drinks is typically around 70 mg per 355 mL serving. There is no clear rationale for the addition to energy drinks
**Outcome:** Students will identify how caffeine affects health and how much caffeine is considered safe.

**Key Messages**
- Negative side-effects can occur at any dose and varies with an individual’s sensitivity and body weight. The body does not need caffeine.

**Facilitator Notes**

**Activity:**
1. Ask the question: “True or False - One can of an energy drink contains more caffeine than you should have in an entire day?”
2. Click mouse to reveal answer: True

*More information presented on next slide.*
Outcome: Students will identify and explain the labeling on an energy drink.

Key Messages
• Total caffeine content (natural and added) now has to be listed on energy drink labels.

Facilitator Notes
• As of December 2013, all energy drink labels must include the total caffeine content from all sources (natural and added caffeine). (Health Canada 2012a, 2012b)
• An energy drink may have caffeine listed as an ingredient, but may also contain natural sources such as guarana, kola nut, tea, yerba mate, and cocoa, which all contribute to the total caffeine content. For example, kola nut is the source of caffeine for cola and cocoa is the source of caffeine in chocolate bars.
• Caffeine content may be displayed in a table, like the drink on the left, or it may simply be listed below the Nutrition Facts table, like the drink on the right.

Background:
• Health Canada has set a maximum limit for total caffeine per energy drink. An energy drink cannot have more than 180 mg of caffeine per single serve container.
• Health Canada has determined that a single serve container is a container that cannot be resealed.
• If a container is re-sealable and equal to or less than 591 mL, it will be treated as a single-serve container. (Health Canada, 2012b)
**Outcome:** Students will identify how caffeine affects health and how much caffeine is considered safe.

**Key Messages**
- Negative side-effects of caffeine can occur at any dose and varies with individuals' sensitivity and body weight. The body does not need caffeine.

**Facilitator Notes**
- Total caffeine must be listed on every energy drink label.
- 85 – 150 mg is the maximum amount of caffeine recommended for teenagers. Caffeine recommendations for teens are determined by body weight. This number is the range for average teens in grade 7 to 9 (body weights of 75 lbs to 132 lbs (34 kg to 60 kg)).
- Teens should follow the precautionary recommendations of 2.5 mg/kg body weight. Older and heavier adolescents may be able to consume up to the adult limit: 400 mg/day. (Health Canada, 2012c)
- Less caffeine can still produce side-effects. Side effects are determined by weight and sensitivity.
- Caffeine is also found in coffee, espresso, hot tea, iced tea, cola, and chocolate. Caffeine consumed in these beverages/foods contributes to daily total intake of caffeine.

**Background Information:**
- Maximum daily caffeine recommended limit is based on 2.5 mg/kg/day for persons 10 - 12 and teens recommended by Health Canada. (Health Canada, 2012c)
- Health Canada has not developed definitive advice for adolescents 13 and older because of insufficient data. Nonetheless, Health Canada suggests that daily caffeine intake for this age group be no more than 2.5 mg/kg body weight. This is because the maximum adult caffeine dose may not be appropriate for light weight adolescents or for younger adolescents who are still growing. The daily dose of 2.5 mg/kg body weight would not cause adverse health effects in the majority of adolescent caffeine consumers. This is a conservative recommendation. (Health Canada, 2010a).
- Additional daily maximum caffeine recommendations based on weight:
  - 75 lbs (34 kg) = 85 mg
  - 100 lbs (45.5 kg) = 114 mg
  - 120 lbs (54.5 kg) = 136 mg
  - 130 lbs (59 kg) = 147 mg
  - 140 lbs (64 kg) = 159 mg
  - 150 lbs (68 kg) = 170 mg
  - 160 lbs (73 kg) = 181 mg
  - 170 lbs (77 kg) = 193 mg
- There is now a limit to the amount of caffeine that can be in a single serving of an energy drink. For a single serving container, the maximum amount of caffeine shall not exceed 180 mg, per container. (Health Canada, 2012b).
Outcome: Students will identify how caffeine affects health and how much caffeine is considered safe.

Key Messages
• Caffeine affects the brain and triggers many secondary reactions.

Facilitator Notes

Activity:
1. Ask: “Do you think the effects caused by caffeine will affect sleeping patterns?”
2. Click to reveal ‘X’ blocking the sleep molecules
   Answer: The effects caused by caffeine often lead to sleeping problems

Caffeine action in the brain:
• After drinking an energy drink, Caffeine travels quickly from your stomach to your liver and then to your brain where it fits nicely into your sleep signal receptors.
• Caffeine blocks sleep molecules from talking to your brain and the nerves continue to fire.
• Your brain notices the increased firing and releases excitement hormone “adrenaline” throughout your body. (That’s where the ‘buzz’ effect comes from)
• Adrenaline increases your heart beat, constricts your blood vessels, which increases your blood pressure and triggers your kidneys to be more active and increases urination (i.e. diuretic or dehydrate).
• If you have been using caffeine regularly, your body will become accustomed to its effects and you will need more caffeine to have the same effect. Plus, if you stop taking caffeine your blood vessels will dilate (become bigger) causing withdrawal symptoms that can include head-aches. (Liguori et al, 1997).

Background Information:
• In doses of 100-200 mg, caffeine stimulates the brain producing a more rapid and clearer thought flow, wakefulness or arousal in fatigued people. It can also improve coordination. In slightly larger doses, caffeine promotes increased heart rate, increased breathing rate, and constriction of blood vessels. Tolerance to the effects of caffeine may develop (Gerald et al, 2011).
• Prolonged, high intake of caffeine may produce tolerance, habituation, and psychological dependence. Physical signs of withdrawal such as headaches, irritation, nervousness, anxiety, and dizziness may occur upon abrupt discontinuation of the stimulant (Gerald et al, 2011).
Outcome: Students will identify how caffeine can affect their health.

Key Messages
• Students will brainstorm side effects of caffeine.
• Side effects will be discussed in the following two slides.

Facilitator

Activity:
1. Ask: “What are the possible side effects from consuming caffeine?”
2. Allow students to brainstorm answers.
3. Side effects will be discussed on the following two slides.
**Outcome:** Students will identify how caffeine affects health and how much caffeine is considered safe.

**Key Messages**
- There are many negative side effects of caffeine for teenagers.

**Facilitator Notes**
Ask: "Has anyone experienced any of the side-effects of caffeine listed on the slide?"

**Side Effects:**
(Babu et al, 2008; Bramstedt, 2007; Dietitians of Canada 2012; Health Canada, 2010b; Reissig, 2009)

**Increased heart rate**
- You learned from the previous slide that adrenaline causes our heart to beat faster and work harder.
  (Increased heart-rate: above the normal 60-80 beats per minute.)

**Cold Sweats**
- Body perspires but feels chilly. This can happen when you have had too much caffeine.

**Shakes**
- The adrenaline released by the brain causes increased muscular activity causing shakes.

**Diarrhea**
- Caffeine stimulates the bowels.

**Increase urine**
- You learned on the last slide that since caffeine increases blood pressure, the kidneys sense this and trigger fluid release to normalize pressure causing increased urination.

**Nausea**
- Feel sick. This can happen when you have had too much caffeine.

**Nervousness**
- Due to the adrenaline rush and quickened heart rate.
  - Imagine trying to write a test with cramps, sweats and a shaky hand; you wouldn’t be able to concentrate.
Outcome: Students will identify and explain the labeling on an energy drink.

Key Messages
• Energy drinks companies use marketing strategies to appeal to children and youth.

Facilitator Notes

Activity:
1. Ask: “What strategies do energy drink companies use to make their products more appealing to children and youth?”
2. Allow students to brainstorm answers.
3. Strategies will be discussed on the next slide.
Outcome: Students will identify strategies used to market energy drinks.

Key Messages:
• Energy drink companies may have youth-targeted marketing strategies.

Facilitator Notes:

Answer:
• Bright colors and graphics
• TV, radio and online advertising
• Product placement on social media sites: Face book, Twitter, YouTube and others
• Health Claims
• Celebrity and professional athlete endorsement
• Sponsor extreme or thrill-seeking sports
• Easy accessibility → vending machines, convenience stores, recreation centres and sporting events

• Although energy drinks are not recommended for children because of their high levels of caffeine and other ingredients, energy drink companies may use marketing techniques that seem more likely to appeal to children and youth than adults.

Background:
• Caffeinated energy drinks are not recommended for children because of their high levels of caffeine and other ingredients. For this reason, this type of product must not be promoted to children. This includes not providing samples of the product to children. (Health Canada, 2012a)
**Outcome:** Students will identify the monetary cost of energy drinks.

**Key Messages**
- Energy drinks are costly.

**Facilitator Notes**

**Activity:**
1. Ask: “If you bought one energy drink every day for a year, how much money would you spend?”
2. Allow students to brainstorm answers.
3. Answer will be presented on next slide.
**Outcome:** Students will identify the monetary cost of energy drinks.

**Key Messages**
- Energy drinks are costly.

**Facilitator Notes**
- If one energy drink is purchased per day, based on an average of $3.00 per can, energy drinks will cost:
  - $ 21.00 per week
  - $ 90.00 per month
  - $ 1095 per year

**Activity:**
1. Ask: “If you were given $1100, what would you do with the money?”
2. Discuss responses.
3. Some ideas will be presented on the next slide.
**Outcome:** Students will identify the monetary cost of energy drinks.

**Key Messages**
- Energy drinks are costly.
- There are better ways to spend your money.

**Facilitator Notes**

**Activity**

Ask: “What would you spend $1100 on instead of energy drinks?”

If one energy drink is purchased per day, based on an average of $3.00 per can, energy drinks will cost:
- $21.00 per week
- $90.00 per month
- $1095 per year
Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages
• Energy drinks can have a negative effect on health.

Facilitator Notes

Activity:
Ask: "How do energy drinks impact health in other ways (besides caffeine)?"

Energy Crashes
• Short term energy and crashes from caffeine and sugar highs. (Bramstedt, 2007)

Dependence
• Dependence on the caffeine (for example: cycle of energy drink use during the day, crashing when you get home and not sleeping well at night, therefore needing more energy drink the next day). (Babu et al, 2008)

Cavities
• Sugar is one of the main causes of dental problems.
• Although other factors also play a role in the development of dental cavities, such as oral hygiene, fluoride in drinking water and frequency of meals and snacks, the World Health Organization observed that countries with a lower sugar intake also have a lower level of cavities. (Canadian Dental Association, 2014)

Poorer Diet
• Poor nutritional intake can occur when energy drinks are replacing healthy food and drinks such as low fat milk or foods from Canada's Food Guide.
• For example, if people choose pop instead of milk, they may not get enough calcium and vitamin D.
• High sugar food and drinks are often called "empty calories" because they are typically low in nutrients. (Frary, 2004)
**Outcomes:** Students will identify alternative strategies to increase and maintain energy levels throughout the day.

**Key Messages**
- Watch the video.

**Facilitator Notes**

Click the icon to start the video clip.

Video is 29 seconds.

Published on May 1, 2013
Drinking energy drinks can disrupt sleep at night and increase the chance of falling asleep during the day. Tell your friends – avoid the crash. Lasting energy doesn’t come in a can.

This energy drink video was written, performed, filmed and edited by One Life One You Youth Leaders in collaboration with Middlesex-London Health Unit staff.
[https://www.healthunit.com/energydrinks](https://www.healthunit.com/energydrinks)

Video can be accessed at:
[https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcvT3HPmZ0O&index=4](https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcvT3HPmZ0O&index=4)
**Energy Drinks and Alcohol**

*Never* mix energy drinks with alcohol

Mixing alcohol and caffeine can increase the chance of being involved in risky situations including:
- overdosing on alcohol
- getting hurt or hurting someone else
- requiring medical attention

**Energy drinks do not lower blood alcohol levels but may fool you into thinking you are less drunk.**

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**OPTIONAL SLIDE** – This slide is optional and is to be used only at the discretion of the presenter.

**Outcome:** Students will understand the risks of consuming energy drinks.

**Key Messages**
- Energy drinks do not lower blood alcohol levels.
- Energy drinks do not reduce the effects of most alcohol impairments (although you may feel less drunk).

**Facilitator Notes**

With caffeinated alcoholic drinks, the caffeine fools you into thinking you're not as drunk as you really are. The caffeine also keeps you awake and maybe drinking longer, increasing your risk of getting hurt, overdosing on alcohol or doing something else you might regret.

Studies of North American university and college students indicate that students who reported consuming alcohol mixed with energy drinks had significantly higher prevalence of alcohol related consequences, including being taken advantage of sexually, taking advantage of another sexually, riding with an intoxicated driver, driving while intoxicated, being physically hurt or injured, and requiring medical treatment. (Can. Centre on Substance Abuse 2012)
**Outcome:** Students will understand the risks of consuming energy drinks.

**Key Messages**
- Watch video clip.

**Facilitator Notes**

Click the icon to start the video clip.

Video is 29 seconds.

Published on May 1, 2013

Mixing energy drinks with alcohol may make you feel more alert and less drunk, but the alcohol still affects you the same. Tell your friends – energy drinks and alcohol don’t mix.

This energy drink video was written, performed, filmed and edited by One Life One You Youth Leaders in collaboration with Middlesex-London Health Unit staff. [https://www.healthunit.com/energydrinks](https://www.healthunit.com/energydrinks)

Video can be accessed at: [https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4](https://www.youtube.com/watch?v=kl8oeshykcl&list=PLXYSd3E5ACSj4323SVKYpXwcwT3HPmZ0O&index=4)
Choose Your Fuel

Energy drinks have ingredients that claim to boost energy.
Can you boost your energy through healthy foods and beverages instead?

YES!

Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages
- Food keeps you fueled.
- Choose balanced meals including all 4 food groups.

Facilitator Notes
- Ask audience if they can boost their energy through healthy foods and beverages instead of energy drinks.
- Ask audience to list examples of foods that will fuel their body.
- Go through next few slides with quiz questions to provide more detailed examples.
Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages
- Food keeps you fueled.
- Choose balanced meals including all 4 food groups.

Facilitator Notes
Which food groups provide amino acids?
- **Protein** helps build and repair tissues, contributes to growth, and helps our bodies fight infections. Protein also takes a long time to digest and helps to slow down the absorption of sugar into our body, so we can get a steady level of energy to keep us going. (Otten et al, 2006) (Found in Milk and Alternatives; Meat and Alternatives)
- **Amino acids** are the building blocks of protein. Protein is made up of amino acids, like taurine and carnitine found in energy drinks. Most of us get enough protein in our diets, so the amino acids in energy drinks are unlikely to provide extra benefits.
- **Iron** is an important part of red blood cells, which carry oxygen in our blood. (Otten et al, 2006) Without enough iron, you may feel more tired (Otten et al, 2006) and be less able to fight off infections. (Failla, 2003) (Found in Meat and Alternatives; some Grain Products).
Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages
- Food keeps you fueled.
- Choose balanced meals including all 4 food groups.

Facilitator Notes

Which food groups provide B vitamins?
- **B Vitamins** are found in a variety of foods from all four food groups of Canada’s Food Guide. Meat, fish and poultry, whole grains, mushrooms, beans and lentils all contain B vitamins. B vitamins are water soluble which means your body does not store them. (Dietitians of Canada, 2013b) Excess amounts in energy drinks are unlikely to provide any benefit.

- **Thiamin, riboflavin and niacin** are B vitamins that help us get energy from our food. (Otten et al, 2006) They work together with other naturally occurring components to provide an overall health benefit. (Health Canada, 2007)
Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages
- Food keeps you fueled.
- Choose balanced meals including all 4 food groups.

Facilitator Notes

Which food groups provide carbohydrates?
- Carbohydrates provide the body with energy (Otten et al, 2006) for all kinds of activity, from writing an exam to playing a game of tennis.
- Carbohydrates are naturally found in grain products, low fat dairy products, fruits and vegetables.
- Carbohydrates in whole grain foods provide a longer boost of energy, so choose whole grains more often. Eating whole grains will provide nutrients that work together to promote good health
- Whole grains are made of the entire grain kernel. Examples of whole grain products are whole grain bread or pasta, quinoa, wild or brown rice, or oats.
- Refined grains are missing parts of the grain kernel and do not have important nutrients like fiber, vitamins, and minerals. Examples of refined grains are white flour, white rice, grits, and cream of wheat. (Alberta Health Services, 2012)

- Fibre helps us to feel fuller longer. (American Dietetic Association, 2008; Health Canada, 2007) Fibre helps to slow down the absorption of sugar into our body, so we can get a steady level of energy to keep us going. Fibre also helps keep our bowels regular, which prevents constipation. (American Dietetic Association, 2008) Found in Vegetables and Fruits; Grain Products; some Meat Alternatives such as beans, lentils, and legumes.
**Outcome:** Students will identify alternative strategies to increase and maintain energy levels throughout the day.

**Key Messages**
- Food keeps you fueled.
- Choose balanced meals including all 4 food groups.

**Facilitator Notes**
- Canada’s Food Guide recommendations are based on scientific evidence that will help you meet the recommendations for vitamins, minerals and other nutrients.
- Following Canada’s Food Guide and eating a balanced diet from all four food groups will help you to get the recommended amount and type of food each day.
  - Vegetables and fruit: provide us with vitamins, minerals and fiber.
  - Grain products: provide us with fiber and carbohydrates. They also give us vitamins and minerals.
  - Milk and alternatives: provide us with protein, carbohydrate, and important vitamins and minerals.
  - Meat and alternatives: provide us with iron, zinc, and protein. (Health Canada, 2007)
**Outcome:** Students will identify alternative strategies to increase and maintain energy levels throughout the day.

**Key Messages**
- Be active at least 60 minutes each day.
- Follow Canada’s Food Guide.
- Sleep 9-10 hours per night.

**Facilitator Notes**

**Be Active** (Canadian Society of Exercise Professionals, 2011)
- For health benefits youth aged 12-17 years should accumulate at least 60 minutes of moderate to vigorous-intensity physical activity daily. This should include:
  - Vigorous-intensity activities at least 3 days per week
  - Activities that strengthen muscle and bone at least 3 days per week
- Being active for at least 60 minutes daily can help teens:
  - Improve their health, improve fitness, grow stronger
  - Feel happier, improve self confidence
  - Maintain healthy body weight
  - Learn new skills, improve academic focus

**Canada’s Food Guide** (Health Canada, 2007) The following recommendations will help teens meet their nutritional needs for healthy growth:
- Eating regularly is important to sustain energy throughout the day. Be sure to include three meals, including breakfast, and snacks to help keep you fueled through the entire day.
- Meals: A healthy, well balanced meal should include food from all four food groups found in Canada’s Food Guide (breakfast: aim for at least 3 of the 4 food groups).
- Snacks: A healthy snack includes foods from at least 2 of the 4 food groups found in Canada’s Food Guide.
- Aim to have vegetables and fruits at all meals and snacks.
- Eating well and being active can help you have more energy, stronger muscles and bones, and support better overall growth and health.

**Sleep**
- Teenagers need 9-10 hours of sleep per day. This is more sleep than was needed as a child and more than will be needed as an adult. (Canadian Pediatric Society, 2013)

**Hydration**
- Satisfy your thirst with water.
- Drink more water in hot weather or when you are very active.
Outcome: Students will identify alternative strategies to increase and maintain energy levels throughout the day.

Key Messages: Summary of the key messages from the presentation.

Facilitator Notes

Review points on the slide.
### Outcome:
Students will identify alternatives strategies to increase and maintain energy levels throughout the day.

### Key Messages
- There are healthy ways to keep energy levels up throughout the day.

### Facilitator Notes

#### Activity:

**Ask:** “Has your opinion of energy drinks changed?”
Answers will vary, discuss.

**Ask:** “What choice can you make to improve your energy levels in the future?”
Sample answers:
1. Get enough sleep
2. Hydrate with healthy drinks such as water, milk and 100 % fruit juice
3. Follow Canada’s Food Guide

**Ask:** “What is something your class can do to promote awareness in your school or community?”
Sample answers:
1. Make your school a No-Energy Drinks School.
2. Feature healthy drinks at discounted prices.
3. Survey other students to find out what healthy drinks they would like to see available at school.
References


Failla ML. Trace elements and host defense: recent advances and continuing challenges. J Nutr. 2003;133:1443S-7S.


