

TEACHING NUTRITION IN SASKATCHEWAN



Physical Education 20/30

Developed by: Public Health Nutritionists of Saskatchewan

The purpose of *Teaching Nutrition in Saskatchewan: Concepts and Resources* is to provide credible Canadian based nutrition information and resources based on the Saskatchewan Physical Education 20 and 30 Curricula (2019).

The **Nutrition Concepts, Related Indicators and Suggested Resources** section, found on pages 4-12 identifies nutrition concepts and resources relating to the curriculum outcomes. They are only suggestions and not exclusive. Suggested resources are mostly Canadian websites with information, activities, handouts and videos. All resources have been reviewed for quality and accuracy by registered dietitians.

The **Nutrition Background Information** section found on pages 13-44, provides current and reliable Canadian nutrition and healthy eating information for educators.

The **Activities** Section on p. 46-48 has additional student assignment ideas on top of the listed online resources in the resource section.

For more information, contact your local Public Health Dietitian

Visit: www.saskhealthauthority.ca/Services-Locations/Pages/Home.aspx
for contact information in your area.

Canada's Food Guide 2019

The 2019 version of Canada's Food Guide provides a different approach to healthy eating recommendations than in the past. Although Canada's Food Guide includes a large suite of online information, there are limited resources available for guidance on teaching it to children at this time. In this update of Teaching Nutrition in Saskatchewan, we included resources that address these same healthy eating concepts to help teach the new food guide with limited reference to the 2007 version.

Web-links

This document is updated yearly, however, due to the dynamic nature of the Internet, some hyperlinks may no longer be active. If this has occurred, try searching for the name of the resource on the Internet through a search engine such as Google.

Public Health Nutritionists

The Public Health Nutritionists of the Saskatchewan Health Authority work together to promote support and protect the nutritional health of people living in Saskatchewan. Dietitians who developed this resource are:

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To reach a public health dietitian in your area, your local health authority. Saskatchewan Health Authority contact information for different areas is available at www.saskhealthauthority.ca/Services-Locations/Pages/Home.aspx

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Physical Education 20

Health and Skill-Related Fitness		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE 20.2 Explore components of health- and skill-related fitness through physical activity.</p>	<p>Fitness Appraisal Tools, Body Measurement Tools and BMI</p>	<p>Background Information: Measuring Health and Fitness (p. 13)</p> <p>Online Tools</p> <ul style="list-style-type: none"> • Dietitians of Canada. www.eatracker.ca/background.aspx <i>eaTracker</i>.

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE20.8 Examine how healthy nutritional choices support a physically active lifestyle</p>	<p>Canada’s Food Guide and Canada’s Food Guide – First Nations, Inuit and Métis</p>	<p>Background Information: Canada’s Food Guide 2019 (p. 15)</p> <ul style="list-style-type: none"> • Health Canada. food-guide.canada.ca/en. Canada’s Food Guide. <i>Physical Activity; Teens</i> • Health Canada. www.canada.ca/en/health-canada/services/food-nutrition/reports-publications/eating-well-canada-food-guide-first-nations-inuit-metis.html <i>Eating Well with Canada's Food Guide - First Nations, Inuit and Métis</i> <p>Sample Activities</p> <ul style="list-style-type: none"> • Saskatchewan Health Authority. www.rqhealth.ca/department/health-promotion/nutrition-and-healthy-eating. Unlock the Potential of Food with the New Canada Food Guide - Toolkit for Educators 2019. <i>Food Guide Scavenger Hunt, p.9</i> • Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>The Diary of</i>. (For this activity, have students compare their intake to the new Canada’s Food Guide Eat Well Plate instead of the old 4 food groups. Also have them look at their eating habits beyond the types of food they eat such as eating mindfully and eating with others).

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
PE20.8 Examine how healthy nutritional choices support a physically active lifestyle	Factor's Affecting Food Choice	<p>Background Information: Factors Affecting Food Choice (p. 17)</p> <p>Sample Activities</p> <ul style="list-style-type: none"> • Activity: Food Environment Assessment (p. 48) • Agriculture in the Classroom. aitc.sk.ca/resources/find-order-resources #MyFoodChoice Lesson 3, Topic: Health p.20 • Girls Action Foundation. Take Care Curriculum Guide. www.girlsactionfoundation.ca/takecare What's up with Food (page 50).
	Determinants of Health	<p>Background Information: Determinants of Health (p. 20)</p> <ul style="list-style-type: none"> • Promoting Health Equity Project (poverty in Saskatoon, SK – Social Determinants of Health) www.youtube.com. Video: <i>Della: Hurdles to Health</i>. • PROOF: Food Insecurity Policy Research. proof.utoronto.ca/resources/fact-sheets/#foodskills. Factsheets: "The Impact of Food Insecurity on Health." <p>Sample Activities</p> <ul style="list-style-type: none"> • Learning to Give. www.learningtogive.org/units/philanthropy-volunteering-and-service-historical-connections/hunger-hurts. <i>Hunger Hurts</i>
	Weight Bias	<p>Background Information: Weight Bias (p. 22)</p> <ul style="list-style-type: none"> • Rudd Center. www.uconnruddcenter.org/weight-bias-stigma-schools-andeducators. <i>Weight Bias and Stigma – Schools and Educators</i> <p>Sample Activities</p> <ul style="list-style-type: none"> • Media Smarts. <i>Kellogg's Special K Ads</i>. mediasmarts.ca/sites/mediasmarts/files/pdfs/lesson-plan/Lesson_Special_K_Ads.pdf • Learning to Give. www.learningtogive.org/units/healthy-youth-healthy-community-9-12/your-body-and-health-issues <i>Your Body and Health Issues</i>. • Alberta Health Services. Junior High Mental Health Kit www.albertahealthservices.ca/info/Page13367.aspx <i>Grade 9: Body Image: Size Discrimination</i>

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE20.8 Examine how healthy nutritional choices support a physically active lifestyle</p>	Energy Requirements, Calories and nutrients	<p>Background Information: Estimating Calorie and nutrient needs (p. 24)</p> <ul style="list-style-type: none"> Health Canada. www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/dietary-reference-intakes/tables.html. <i>Dietary Reference Intakes Tables.</i> Dietitians of Canada. www.eatracker.ca/background.aspx. eaTracker.
	Eating for performance <ul style="list-style-type: none"> Macronutrients Micronutrients Hydration 	<p>Background Information: What to eat and drink before, during and after exercise (p. 26)</p> <ul style="list-style-type: none"> Dietitians of Canada. www.unlockfood.ca/en/Articles/Physical-Activity/Sports-Nutrition-Facts-on-Carbohydrate,-Fat-and-P.aspx. <i>Sports Nutrition: Facts on Carbohydrate, Fat and Protein, Facts on Hydration; Facts on Sports Drinks; Facts on Sports Supplement; Facts on Vitamins and Minerals.</i> <p>Sample Activities</p> <ul style="list-style-type: none"> Learning to Give. www.learningtogive.org/units/healthy-youth-healthy-community-9-12/classroom-community-and-good-health <i>Classroom, Community and Good Health.</i> Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Thirst Quencher</i>
	Diabetes, heart Disease and osteoporosis	<p>Background Information: Nutrition-related illnesses: Diabetes, Heart Disease, Cancer and Osteoporosis (p. 29)</p> <ul style="list-style-type: none"> Osteoporosis Canada. osteoporosis.ca/ Diabetes Canada. www.diabetes.ca/ Heart and Stroke www.heartandstroke.ca/ <p>Sample Activities</p> <ul style="list-style-type: none"> Osteoporosis Canada. osteoporosis.ca/bone-health-osteoporosis/calcium-calculator/#page-1 <i>Calcium Calculator.</i>

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE20.8 Examine how healthy nutritional choices support a physically active lifestyle</p>	Fad diets and Nutrition Trends	<p>Background Information: Nutrition trends/fad diets (p. 33)</p> <ul style="list-style-type: none"> • Ted Ed. ed.ted.com. Video: <i>Do Fad Diets Work?</i> • Dietitians of Canada. www.unlockfood.ca/en/Articles/Weight-Loss/Get-the-Facts-on-Fad-Diets.aspx. <i>Get the Facts on Fad Diets</i> • Dietitians of Canada. www.dietitians.ca/Your-Health/Nutrition-A-Z/Sports-Nutrition-(Adult).aspx. <i>Eating well for the vegetarian athlete.</i> • www.unlockfood.ca/en/Articles/Vegetarian-and-Vegan-Diets/What-You-Need-to-Know-About-a-Healthy-Vegetarian-E.aspx. <i>What you need to know about a healthy vegetarian eating plan.</i>
	Finding credible nutrition and health information	<p>Background Information: Finding credible Health Information Online (p. 41)</p> <ul style="list-style-type: none"> • Dietitians of Canada. www.dietitians.ca. <i>How to find food and nutrition information you can trust.</i> <p>Sample Activities</p> <ul style="list-style-type: none"> • Media Smarts. mediasmarts.ca/teacher-resources/reality-check-getting-goods-science-health. <i>Reality Check: Getting the Goods on Science and Health</i> • Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Food Detectives</i>
	Meal Planning	<p>Background Information: Healthy Eating Plans to Support a Physically Active Lifestyle (p. 38) and What to eat and drink before, during and after exercise + supplements (p. 26)</p> <ul style="list-style-type: none"> • Health Canada. <i>Meal Planning.</i> food-guide.canada.ca/en/tips-for-healthy-eating/meal-planning <p>Sample Activities</p> <ul style="list-style-type: none"> • Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Time Crunch! What to Eat.</i> • Dietitians of Canada. www.unlockfood.ca/en/MenuPlanner.aspx. <i>My menu planner.</i> • Activity: Plan a Healthy Menu for a School Sporting Event (p. 50)

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
PE20.8 Examine how healthy nutritional choices support a physically active lifestyle	Meal Planning (cont'd)	<p>Sample Activities (cont'd)</p> <ul style="list-style-type: none"> Saskatchewan Health Authority. www.rqhealth.ca/department/health-promotion/nutrition-and-healthy-eating. Unlock the Potential of Food with the New Canada Food Guide - Toolkit for Educators 2019. <i>Setting SMART goals p.11</i> Saskatchewan Parks and Recreation Association. <i>Eat Healthy Play Healthy: Getting Started</i>. www.spra.sk.ca/resources-and-advocacy/eat-healthy-play-healthy

Student -Directed Study		
Outcome	Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
20.11 Create and implement a plan to explore one or more topics of personal interest relevant to Physical Education 20	Sports Dietitian	<p>Background Information: Becoming a Dietitian (p. 40)</p> <ul style="list-style-type: none"> Sport Medicine and Science Council of Saskatchewan. www.smscs.ca/consultants-directory/sport-dietitian/. <i>Sport Dietitian</i>.
	Finding Credible Nutrition Information	<p>Background Information: Finding Credible Health Information Online (p.41)</p> <ul style="list-style-type: none"> <i>Dietitians of Canada. How to find food and nutrition information you can trust.</i> www.dietitians.ca <p>Sample Activities</p> <ul style="list-style-type: none"> Media Smarts. mediasmarts.ca/teacher-resources/reality-check-getting-goods-science-health. <i>Reality Check: Getting the Goods on Science and Health</i> Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Food Detectives</i>

Physical Education 30

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE 30.7 Analyze the role of nutritional choices to support participation in self-selected physical activities</p>	<p>Fad Diets/Nutrition Trends</p>	<p>Background Information: Nutrition trends/fad diets (p. 33)</p> <ul style="list-style-type: none"> • Ted Ed. ed.ted.com. <i>Video: Do Fad Diets Work?</i> • Dietitians of Canada. www.unlockfood.ca/en/Articles/Weight-Loss/Get-the-Facts-on-Fad-Diets.aspx. <i>Get the Facts on Fad Diets</i> • Dietitians of Canada. www.dietitians.ca/Your-Health/Nutrition-A-Z/Sports-Nutrition-(Adult).aspx. <i>Eating well for the vegetarian athlete.</i>
	<p>Canada's Food Guide</p>	<p>Background Information: Canada's Food Guide 2019 (p. 15)</p> <ul style="list-style-type: none"> • Health Canada. food-guide.canada.ca/en. Canada's Food Guide. <i>Physical Activity; Teens</i> • Health Canada. www.canada.ca/en/health-canada/services/food-nutrition/reports-publications/eating-well-canada-food-guide-first-nations-inuit-metis.html <i>Eating Well with Canada's Food Guide - First Nations, Inuit and Métis</i> <p>Sample Activities</p> <ul style="list-style-type: none"> • Saskatchewan Health Authority. www.rqhealth.ca/department/health-promotion/nutrition-and-healthy-eating. <i>Unlock the Potential of Food with the New Canada Food Guide - Toolkit for Educators 2019. Food Guide Scavenger Hunt, p.9</i> • Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>The Diary of</i>. (For this activity, have students compare their intake to the new Canada's Food Guide <i>Eat Well Plate</i> instead of the old 4 food groups. Also have them look at their eating habits beyond the types of food they eat such as eating mindfully and eating with others). • www.unlockfood.ca/en/Articles/Vegetarian-and-Vegan-Diets/What-You-Need-to-Know-About-a-Healthy-Vegetarian-E.aspx. <i>What you need to know about a healthy vegetarian eating plan.</i>

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
PE 30.7 Analyze the role of nutritional choices to support participation in self-selected physical activities	Eating for performance Macronutrients Sport supplements	<p>Background Information: What to eat and drink before, during and after exercise + supplements (p. 26)</p> <ul style="list-style-type: none"> Dietitians of Canada. www.unlockfood.ca/en/Articles/Physical-Activity/Sports-Nutrition-Facts-on-Carbohydrate,-Fat-and-P.aspx. <i>Sports Nutrition: Facts on Carbohydrate, Fat and Protein, Facts on Hydration; Facts on Sports Drinks; Facts on Sports Supplement; Facts on Vitamins and Minerals.</i> <p>Sample Activities</p> <ul style="list-style-type: none"> Learning to Give. www.learningtogive.org/units/healthy-youth-healthy-community-9-12/classroom-community-and-good-health <i>Classroom, Community and Good Health.</i> Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Thirst Quencher</i>
	Factors affecting food choice	<p>Background Information: Factors Affecting Food Choice (p. 17)</p> <p>Sample Activities</p> <ul style="list-style-type: none"> Activity: Food Environment Assessment (p.45) Agriculture in the Classroom. aitc.sk.ca/resources/find-order-resources #MyFoodChoice <i>Lesson 3, Topic: Health p.20</i> Girls Action Foundation. Take Care Curriculum Guide. www.girlsactionfoundation.ca/takecare <i>What's up with Food (page 50).</i>
	Determinants of Health	<p>Background Information: Determinants of Health (p. 20)</p> <ul style="list-style-type: none"> Promoting Health Equity Project (poverty in Saskatoon, SK – Social Determinants of Health) www.youtube.com. <i>Video: Della: Hurdles to Health.</i> PROOF: Food Insecurity Policy Research. proof.utoronto.ca/resources/fact-sheets/#foodskills. <i>Factsheets: "The Impact of Food Insecurity on Health."</i> <p>Sample Activities</p> <ul style="list-style-type: none"> Learning to Give. www.learningtogive.org/units/philanthropy-volunteering-and-service-historical-connections/hunger-hurts. <i>Hunger Hurts</i>

Nutrition		
Outcome	Indicator Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
PE 30.7 Analyze the role of nutritional choices to support participation in self-selected physical activities	Energy Requirements, Calories and nutrients	<p>Background Information: Estimating Calorie and nutrient needs (p. 24)</p> <ul style="list-style-type: none"> Health Canada. www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/dietary-reference-intakes/tables.html. <i>Dietary Reference Intakes Tables.</i> Dietitians of Canada. www.eatracker.ca/background.aspx. <i>eaTracker.</i>
	Meal planning	<p>Background Information: Healthy Eating Plans to Support a Physically Active Lifestyle (p. 38) and What to eat before, during and after exercise + supplements (p.26)</p> <ul style="list-style-type: none"> Health Canada. <i>Meal Planning.</i> food-guide.canada.ca/en/tips-for-healthy-eating/meal-planning/ <p>Sample Activities</p> <ul style="list-style-type: none"> Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Time Crunch! What to Eat.</i> Dietitians of Canada. www.unlockfood.ca/en/MenuPlanner.aspx. <i>My menu planner.</i> Saskatchewan Health Authority. www.rqhealth.ca/department/health-promotion/nutrition-and-healthy-eating. <i>Unlock the Potential of Food with the New Canada Food Guide - Toolkit for Educators 2019. Setting SMART goals p.11</i>

Student-Directed Study

Outcomes	Nutrition Concepts	Background Information, Resources, Videos, Sample Activities, etc.
<p>PE 30.10 Create and implement a plan to explore one or more topics of personal interest relevant to Physical Education 30</p>	Sports Dietitian	<p>Background Information: Becoming a Dietitian (p. 40)</p> <ul style="list-style-type: none"> Sport Medicine and Science Council of Saskatchewan. www.smscs.ca/consultants-directory/sport-dietitian. <i>Sport Dietitian</i>.
	Finding credible nutrition and health information	<p>Background Information: Finding Credible Health Information Online (p. 41)</p> <ul style="list-style-type: none"> Dietitians of Canada. www.dietitians.ca. <i>How to find food and nutrition information you can trust</i>. <p>Sample Activities</p> <ul style="list-style-type: none"> Media Smarts. mediasmarts.ca/teacher-resources/reality-check-getting-goods-science-health. <i>Reality Check: Getting the Goods on Science and Health</i> Alberta Health Services. www.albertahealthservices.ca/nutrition/Page15073.aspx. <i>Food Detectives</i>

Nutrition Background Information

Measuring Health and Fitness

The cultural, social, physical and psychological changes that occurring during adolescence impact body image in the teen years (1). Exercise, diet and beauty trends shown on the internet and in reality television negatively impact adolescent body image (1). Instagram, Snap Chat and other image based social media platforms place additional importance on teenagers' appearances, which can include body weight and shape (1). When associated with components of health, students may choose to focus on weight or body size as an outcome to physical activity, rather than cardiovascular endurance and flexibility, since these are not as easily visible to others.

Measuring and evaluating weight in children and teens requires accurate technology and interpretation, and is not to be done in the school setting.

Weighing and measuring students in schools

Measuring children and youth within the school setting can be more harmful than beneficial. Children and youth are often teased about their size and shape. Measuring weight or body composition at school can increase the amount of teasing children may already be receiving. Regardless of their size or shape, children and youth may be pressured to try harmful diets. Body composition can influence health, but research has shown that shaming people for their size does not improve their health, and can make it worse (2).

Being physically active, eating well, and having positive self-esteem is important for all people regardless of their size and shape. It is important to be supportive of all children and youth by keeping the focus **on** health and wellness and **off** size and shape.

There are a number of measures that health care providers use to estimate body composition in relation to health risks. **Regardless of the technique used, body composition should only be measured and used by a trained healthcare provider as part of a total health assessment to accurately evaluate disease risk.**

- **BMI (Body Mass Index) for Age:** BMI for children and youth must be interpreted differently than BMI for adults. Because children and youth are growing and developing, their body composition changes frequently. As a result, **BMI for children and youth must be interpreted by using the appropriate BMI for Age charts and not adult BMI charts.** When health care providers assess growth, several measurements over a period of time are used instead of one measurement at one point in time.

- ***Skin fold thickness measurements:*** Due to the difficulty in obtaining accurate measurements, there is a high potential for error. Most importantly, skin fold calipers measure subcutaneous fat (fat that is found under the skin). Subcutaneous fat, although still part of overall weight, is not the most concerning fat for health. Visceral fat (fat stored in the abdomen), found close to internal organs, is the type of fat that is associated with health risks and often cannot be measured using skin fold measurements (4).

Wearable Technology and Activity Apps

With the popularity of wearable activity trackers and smart phone apps such as Fit Bit and My Fitness Pal, students may be able to track many components of activity. It is important to note there are many factors that impact the accuracy of these tools (5). For example, fitness tools which show caloric expenditure are not reliable since the equations used depend on assumptions that might not be appropriate for the user (5).

Regardless of which health measurements are used, it is imperative to reinforce that health is complex and cannot be measured only using a few tools. Regardless of the level of health perceived, health must not be judged as an elitist or moral success. Also see [weight bias backgrounder](#) on p. 22

References

1. Voelker D, Reel J, Greenleaf C. Weight status and body image perceptions in adolescents: current perspectives. *Adolescent Health, Medicine and Therapeutics*. 2015.;6, 149-158. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC4554432/
2. Puhl, R. Heuer, C. Obesity Stigma: Important Considerations for Public Health. *Am J Public Health*. 2010 June; 100(6): 1019–1028. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC2866597/
3. Dietitians of Canada. PEN Current Issues: Growth Monitoring of Infants and Children Using the 2006 World Health Organization Child Growth Standards and 2007 WHO Growth References. 2013. [cited November 3, 2015]. Available from: www.dietitians.ca/Dietitians-Views/Prenatal-and-Infant/WHO-Growth-Charts/WHO-Growth-Charts---Resources-for-Health-Professio.aspx
4. Harvard Medical School. Abdominal fat and what to do about it. 2015. [cited November 3, 2015] Available from: www.health.harvard.edu/staying-healthy/abdominal-fat-and-what-to-do-about-it
5. Shcherbina A. et al. Accuracy in Wrist-Worn, Sensor-Based Measurements of Heart Rate and Energy Expenditure in a Diverse Cohort. *J of Pers Med*. 2017 May 24; 7(2), 3. Available from: www.mdpi.com/2075-4426/7/2/3

Use food labels.

- Food labels provide information you can use to make informed choices about foods and drinks at the grocery store and at home.
-

Be aware that food marketing can influence your choices.

- Food marketing is advertising that promotes the sale of certain food or food products. Many foods and drinks that are marketed can contribute too much sodium, sugars or saturated fat to our eating patterns.

Choosing Healthy Eating Habits

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

- being **mindful of your eating habits** by taking time to eat and noticing when you are hungry and when you are full.
- **cooking more often.** Cooking more often can help you develop healthy eating habits. You can cook more often by planning what you eat and involving others in planning and preparing meals.
- **Enjoying your food.** Enjoying your food is part of healthy eating. Enjoy the taste of your food and the many food-related activities that go along with eating. This includes enjoying culture and food traditions.
- **Eating with others.** Enjoying healthy foods with family, friends, neighbours or co-workers is a great way to connect and add enjoyment to your life. It can provide many benefits and contribute to a healthy lifestyle.

Several tips, resources and recipes to implement Canada's Food Guide recommendations into daily habits are available at: food-guide.canada.ca/en/

Factors affecting food choice

*Food = food and drinks

At a first glance, what determines youths' eating behaviour appears to be purely a matter of personal choice, but research shows there are so many other factors that come into play (10). These factors can include: what is available to them at school and in their community, income and the cost of food, what foods and diets have been most heavily marketed to them, cultural food norms, pressures to be a certain body size, busy schedules and convenience, and so much more (10).

When healthy food options are more available, affordable, accessible, and culturally appropriate, youth will be more likely to choose them. When youth have few healthy food options, are the targets for unhealthy food marketing, and are regularly offered unhealthy options, they often end up choosing those which are high in sugar, salt, and unhealthy fat.

Personal Factors

- **Hunger and Fullness** - We are born with the ability to feel hunger and fullness; however, many things can interfere with this as we age, such as: irregular meal patterns, adults' expectation for youth to eat a certain amount of food, and rewarding youth with food (e.g. candy for getting a question right, etc.).
- **Food Preferences** – We are born with innate preferences for sweet and aversions for bitter taste (10). There are also social and cultural norms that help to shape our food preferences, including what we learn from family, friends, and our culture. The foods that taste the best to, are most readily available, comfort us, and are most heavily marketed, often become what we like best.
- **Emotions** - Over eating, under eating or eating different foods can happen in response to different emotions. The association between emotion and food is normal, but it can be problematic if it becomes the usual way to deal with emotions.
- **Nutritional Knowledge and Perceptions of Healthy Eating** – Perceptions about healthy eating are shaped by our social surroundings and can change over time. Youth are often able to show a general understanding of the connections between food choice and health, however, in these age groups, knowledge often does not influence food choice as much as other factors (5).
- **Self-esteem and Body Image** - Media images of unrealistic body sizes and shapes, along with comments from family, friends, and role models about weight and dieting can influence youths' body image and self-esteem. This in turn can increase the risk of unhealthy dieting behaviours. Talking about healthy eating and physical activity for health benefits without focusing on weight, size and shape can promote a positive body image in children and youth. See [Weight Bias](#) backgrounder on p. 22 for more.

Factors at Home

Influences on eating habits at home can include whether families have:

- **enough income** to be able to afford to buy enough acceptable, culturally appropriate and nutritious foods. The most important barrier to healthy eating is inadequate income (11).

- **access** to healthy foods in the community or transportation to get it somewhere else. Neighbourhoods where there is limited access to affordable nutritious food but easy access to unhealthy food make it difficult for families to purchase healthy food.
- **food skills** such as grocery shopping, being able to plan and prepare healthy and tasty meals, gardening and preserving.
- **enough time** to grocery shop, plan, and prepare a meal with busy work schedules, extracurricular activities and responsibilities.
- **proper kitchen equipment**, such as a stove and refrigerator, to prepare and store healthy foods.
- **regular family meals**. Youth who participate in family meals on a regular basis tend to eat better than those who do not.
- **cultural eating practices**. Culture can influence what foods are selected, how they are prepared and served, and how and when foods are eaten. Traditional food practices are often associated with healthier eating, more affordability and a passing on of cultural knowledge.
- **multiple stressors** such as difficulty paying rent, finding a place to live, finding employment, or caring for ill family members often take priority over healthy eating.
- **specific beliefs** such as vegetarianism, religious beliefs, or beliefs around what healthy eating is can all impact the types of foods that are consumed in the household.

Factors outside the Home

Schools, community and surrounding area - When healthy foods are more accessible, more affordable and better advertised in and around the school, this makes it more likely youth will eat them (4). When students have greater access to unhealthy foods, such as fast-food restaurants and convenience stores nearby or highly processed foods served and sold right in the school, this makes it harder for them to make healthy choices.

It is also important for adults not to criticise or judge youth based on the types or amounts of food they consume, as this can actually lead to poorer eating habits, not better (5, 6, 7).

Involvement in different types of physical activities - Participation in sports and other physical activities can influence youths' eating habits. As they learn about the role of healthy eating and exercise, youth may choose healthier food options (if they are available). In addition, sports such as wrestling, football, gymnastics and dance, in which body size plays a role, also impact youths' eating habits. (For more on [what to eat before, during and after exercise](#) see p. 26).

Recreation facilities provide a space for physical activity, but unhealthy food choices are often readily available (8). Also, many unhealthy foods such as energy drinks, soft drinks and fast food are marketed by professional athletes or promoted by some coaches, and can influence youth eating habits.

Public Policy – policies at the local, regional and national level can have a significant impact on our collective food choices and this can act as determinants of healthy eating. Effective policies can help ensure our environments can produce enough food to eat, can guide Canadians towards healthier food choices without thinking much about it, and can help ensure people can afford the foods they need (10).

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Determinants of Health

The determinants of health (DOH) are physical, social, and individual factors that influence the health of people and communities. The primary factors that influence our health are not medical treatments or lifestyle choices, but rather our living conditions (1). The DOH are the conditions in which people are born, grow, live, learn, play work, and age (2).

The determinants of health can include (1, 3):

- Income and social status
- Food security
- Social support networks
- Employment/working conditions
- Social environments
- Physical environments
- Healthy child development
- Biology and genetic endowment
- Health services
- Gender
- Culture
- Personal health practices and coping skills

Although individual lifestyle choices affect health outcomes, it is important to understand that other factors have an impact on health as well (3). For example, decisions about what foods to eat and how much to eat are not simply matters of personal choice, but also of circumstances and environments. Below is a story looking at one of the determinants of health, income, and how it can affect health and food choices:

- The Smith's family refrigerator is broken.
- Although the family is able to pay rent, they do not have enough money to fix the refrigerator.
- Because they cannot store perishable items with a broken refrigerator, the family does not purchase many dairy products, vegetables and fruit, or meat.
- Since these foods are not purchased, their diets may lack key nutrients such as protein, carbohydrates, healthy fat, fibre, and many vitamins and minerals.
- If their diets lack these nutrients, they have an increased chance of feeling fatigued, being sick, developing chronic diseases, and not being able to learn or work well during the day.
- If they are not able to perform well during the day the children may fall behind in school and the parents may struggle at work or lose their jobs.
- If the parents are unable to work enough, there will be less money to spend on food, rent or to fix the refrigerator.
- This stressful situation impacts the health of the family.

Even though individuals are educated about healthy eating and know what to eat for health, research shows that knowledge is not enough to translate into behaviour change (4). To help support others in making healthy food choices, it is imperative to ensure adequate income and to make healthy food choices more accessible to all.

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Weight Bias

What is Weight Bias?

Weight bias refers to negative attitudes towards people due to their weight. These negative attitudes result in stereotypes, prejudice and unfair treatment towards these people. Weight bias can be expressed in multiple forms, such as name-calling, teasing, physical aggression, cyber bullying, rumors, and social exclusion. Not only can this be embarrassing for a child or youth, it can also have serious consequences on their physical, social and psychological health. Weight bias towards children and youth most often occurs at school and at home.

Why does weight bias happen?

Weight bias occurs because we live in a culture where there is a perception that being thin is desirable (but not *too* thin, because these people may be stigmatized as well). Our culture also tends to believe that people are responsible for their life situation and “get what they deserve”. Despite research suggesting that body weight is determined by a complex interaction of genetic, biological and environmental factors, most people believe that weight gain or loss is under personal control.

We are exposed to misleading messages about weight from various means such as television, movies, books, magazines, social media and websites. A consequence of these messages is that it is thought to be socially acceptable to judge people’s characters, personalities and behaviours based on weight. When family members, friends, and education professionals reinforce these false messages, individuals are stigmatized.

How does weight bias affect students?

Students who experience teasing or discrimination because of their weight can have low self-esteem, poor body image, and are more likely to experience symptoms of depression and anxiety. These students are also more socially isolated, less likely to be chosen as friends, and more likely to engage in suicidal thoughts and behaviours. Children and youth who experience weight biases are more likely to try unhealthy weight control measures, binge eat, and avoid physical activities. Research shows that children and youth who have been victimized because of their weight report missing more days of school, and experiencing lower expectations by their teachers, which can result in poorer academic performance.

Taking Action

All people deserve safety, respect, and acceptance in their community and classroom. Just as we should not tolerate racial or gender bias toward others, we should not tolerate weight bias. As explained by the Government of Saskatchewan in the school nutrition policy document, [Nourishing Minds – Eat Well – Learn Well – Live Well](#), “Weighing students in school does more harm than good. In trying to help all children grow well, sometimes a focus is put on children’s weight. Instead, it is important that the focus be on the health and wellness of the whole child. All students need to be physically active and eat well in order to be healthy regardless of their body weight.”

If you witness weight bias occurring in your school, intervene right away. To learn how to address weight bias within your classroom and school, refer to the resources found at www.uconnruddcenter.org/weight-bias-stigma-schools-and-educators

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Estimating Calorie and Nutrient Needs

Food provides the nutrients needed for life. Research continues to prove that food can influence health.

Canada's Dietary Guidelines have changed over the years as new evidence determines what and how we should eat for health. Released in 2019, Canada's Dietary Guidelines identify the best available scientific evidence to support healthy eating and overall nutritional wellbeing of Canadians (1).

A calorie is a measurement of energy, like a teaspoon can be a measurement in a recipe. A calorie, or kilocalorie (kcal) as it is properly named, is the amount of energy that is released when the body digests and absorbs food. This energy is necessary for all bodily functions for life. Calories in our food come from one of the three macronutrients: carbohydrate, protein and fat. Carbohydrate is found in fruits, vegetables, pasta, rice, grains, dairy products, peas, dried beans, and other legumes. Protein is found in meat, poultry, milk, yogurt, fish, eggs, and dried beans. Fat is found in meat, poultry, fish, milk, cheese, nuts, seeds and oils.

The more calories a food contains the more energy it can provide the body. If the energy is not used right away, it is stored as body fat. Eating fatty foods does not necessarily cause the body to build body fat. Even fat free or low fat foods can have many calories. Consuming too many calories for extended time can cause an increase in body fat.

Human metabolism, the digestion and absorption of nutrients, is complex and the amount of energy and nutrients each person needs depends on several factors including age, gender, health, physical activity, and genetics. There are calculations that can help to estimate energy needs, however, it is important to note that these equations require assumptions that might not be true for everyone. These calculations do not provide an exact number of calories needed for individuals, but reflect an average need for a specific population (2). Recent research also has shown a wide range of errors within these calculations and it is recommended that if calorie estimation is necessary, it should be done by measuring respiration gas exchange - indirect calorimetry, which is done in a laboratory (3). For example, the Harris Benedict equation is a common equation used to estimate energy needs. Studies show this equation does not estimate needs accurately almost 30% of the time. The Mifflin-St. Jeor (MSJ) equation is the most accurate, within 10%, when indirect calorimetry is not available (4). The MSJ provides an estimate of resting metabolic rate and additional calories are needed for any physical movement. The simplified equations are:

$$\text{Men: REE (kcal/d) = 10 weight (kg) + 6.25 height (cm) - 5 age (years) + 5}$$

$$\text{Women: REE (kcal/d) = 10 weight (kg) + 6.25 height (cm) - 5 age (years) - 161}$$

Rather than having students estimate their energy needs using the above equation, consider having students investigate the pros and cons for using equations to estimate energy needs.

Not only does food provide for essential energy needs, food also provides micronutrients for life. Putting too much focus on calories may result in people restricting foods, which may cause nutrient deficiencies. Nutrient deficiency can have a significant impact on health. Healthy eating should include a variety of different foods to provide enough energy and nutrients to maintain health, while minimizing the risk of having too much or too little of any particular nutrient ([see What to Eat Before, During and After](#)

[Exercise and Supplements backgrounder on p. 26](#)). Above all, eating for health also allows for personal food preferences and reinforces the enjoyment of eating.

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What to Eat Before, During and After Exercise

Food and beverages consumed before, during, and after activity can have an impact on performance.

Macronutrients (carbohydrates, fats and protein), fluids and micronutrients (vitamins and minerals) are all important to maintain growth and activity for adolescents as they participate in sports or other activities (1), and can usually be attained by eating a balanced diet (2).

Macronutrients and Hydration

For everyday activity, following Canada's Food Guide will provide young athletes with the nutrients and hydration they need. For more intense sports and activity or competitions, the following recommendations may benefit young athletes' performances:

- **Carbohydrates** are the most important source of fuel. Carbohydrates provide glucose (energy), which is stored as glycogen in muscles and the liver. The glycogen in muscles is the main source of energy during an activity. Fruits and grain products are good choices for carbohydrates during very active times.
- **Protein** builds and repairs muscle, and does not supply energy during short bouts of activity. If an activity lasts long enough to use up muscle glycogen, protein will be used to provide glucose for energy. Good sources of lean protein include poultry, fish, eggs, milk, yogurt, beans and nuts.
- **Fat** protects vital organs by acting as insulation and is not the main source of energy during activity, although it can become an energy source during longer bouts of activity. The type of fat eaten over time is more important for health than total fat. There are 3 types of fat: unsaturated, saturated and trans fats. Unsaturated fats are good for your health and can help reduce the risk of heart disease (3). Saturated fats are found in non-skim dairy products and animal-based foods. Saturated fat should make up only a small portion of total energy intake as they can raise the 'bad' kind of cholesterol (LDL), which can increase heart disease risk. Trans fats can raise LDL cholesterol and also lower the 'good' kind of cholesterol (HDL). Trans fats were banned from the Canadian food supply in September of 2018 (3). Good sources of fat include lean meat and poultry, fish, nuts, seeds, lower fat milk, yogurt, olive and canola oil, and avocados. (1).
- **Fluids** are also essential for hydration to support growth and athletic performance (1). Drinking fluids before activity can help prevent dehydration, muscle cramps and fatigue (4). Water is the best fluid for hydration.

Before activity: Eat a *meal* containing all three macronutrients 3 hours before activity, with a limited amount of fibre to avoid gastrointestinal upset during activity. High amounts of fat can make an athlete feel sluggish. Pre-game meals or *snacks* such as fruit, cereal and milk or a smoothie should be eaten 1 to 2 hours before the activity. Fluid intake should include 1-2 cups (250ml – 500ml) 4 hours before activity and another ½ - 1 ½ cups (125ml – 375ml) 2 hours before activity.

During activity: Fruit can be snacked on to keep energy levels high if the activity is vigorous and lasts for a long time, i.e., over an hour. Drink small sips early and regularly (every 15-20 minutes) to replace the water that will be lost as sweat.

After activity: Eating food that contains carbohydrates and protein within 30 minutes of completing activity allows muscles to rebuild their glycogen and protein stores. Good options include yogurt with

fruit, cheese and crackers, graham crackers with peanut butter (1). Drink enough water to feel hydrated after activity.

Drinks

- **Water is the recommended beverage to replace fluid lost during bouts of activity.**
- **Sport drinks** are flavoured beverages that contain a mix of water, sugar and electrolytes (i.e., sodium and potassium) and are designed to quickly replace fluid and electrolytes that are lost through sweat (7). Generally, they are unnecessary for regular activity (7). They may be helpful if the activity is intense and lasts longer than 45 minutes or the activity is taking place in a very hot environment as they will help replenish the salt lost during times of intense sweating (4, 1). Regular consumption of sports drinks when not active can result in excessive calorie consumption (1).
- **Energy drinks** are NOT the same as sports drinks. Energy drinks can actually decrease sports performance because they contain large amounts of sugar and carbonation, which can cause an upset stomach during activity and dehydration.

Supplements

If young athletes eat a balanced diet, extra supplements are not required and generally not recommended.

- **Creatine** is not recommended for anyone under the age of 18 (5).

Creatine is a substance naturally made in the liver and also comes from foods like meat and fish and is then stored in muscles. It can increase lean muscle mass and can improve performance in sports that use intense, short bursts of energy (10 – 30 seconds), such as sprinting, weight lifting, football or hockey. It does not improve endurance performance in activities like long distance running, swimming or cycling (6).

- **Protein supplements** are not necessary for youth; they can displace high quality food choices and may be high in sugar, salt or low in other nutrients or fibre. Youth can meet their protein requirements by eating nutritious, protein-rich foods, such as poultry, fish, beef, yogurt, tofu, milk, beans, cheese, nut butters and eggs. Dividing protein intake between meals and snacks throughout the day helps the body use protein for muscle repair and building (8, 9).
- **Caffeine** is the most widely used stimulant in the world. It can increase alertness and improve muscle contraction and some motor skills. It is found in coffee, tea, colas, energy drinks and shots, chocolate, some herbs, sport gels and caffeine tablets. Caffeine can affect people differently, some get jittery or nervous, and upset stomach or racing heart rate, and can affect sleep. (6). Health Canada recommends no more than 2.5mg/kg body weight for adolescents and up to 400mg/day for adults (reference from Barb).

If teens are competing at elite levels, it may be beneficial to meet with a dietitian or well-informed health care provider or coach (6). It is also a good idea to explore testing certain foods or supplements to ensure everything ingested is within the competitive parameters of allowable substances.

- **Banned substances:** For competitive athletes, it is important to be aware of consuming substances that may be banned, such as high levels of caffeine, which may be listed as guarana (11). Supplements are not as well regulated as food and medications, so competitive athletes need to be cautious about consuming supplements as they may be subject to anti-doping violations. Competitive athletes and coaches can refer to NSF International Certified for Sport® program to help minimize the risk of unintentional doping. (12)

Making the healthy choice the easy choice

Since carbohydrates are the main fuel for activity, it is important for young athletes to eat a high carbohydrate diet along with enough protein to build and repair body tissues as well as support their growth (5). Young athletes need frequent healthy meals and snacks to ensure energy requirements can be sustained. (5).

To help support active youth to make healthy food and beverage choices before, during and after activity have healthy options available in recreation facilities, at tournaments, and sporting events. Watch this short video to find out more: www.youtube.com/watch?v=3ENmGpUKHOM

Youth do not need to count calories or follow a strict diet to meet their physical activity needs. It is more important that they understand the general types of foods that can be included in their meals and snacks before, during and after physical activity to help them feel good and perform their best. Focusing too strictly on portion sizes and macronutrient distribution can have a negative impact on youth's relationship with food and can even lead to disordered eating.

If youth would like more information, sport dietitians can be contacted through the Sport Medicine and Science Council of Saskatchewan.

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Nutrition Related Illnesses

Diabetes

Diabetes is a chronic disease in which the body cannot properly use and store food for energy. This happens when the body cannot produce insulin or cannot use the insulin it produces. Insulin is a hormone that controls the amount of sugar (glucose) in the blood. The body needs insulin to use sugar as an energy source. Diabetes leads to high blood sugar levels, which can damage organs, blood vessels and nerves. (1)

Eating healthy and being physically active may help to maintain a healthy body weight, and in turn, reduce the risk of getting diabetes; however, there are many risk factors for the condition other than weight. For example, having a family history of diabetes, being over the age of 40, being a member of a high-risk group (Aboriginal, Hispanic, South Asian, Asian, or African descent), or taking certain medications increases a person's risk of getting diabetes. (1)

The fuel that your body needs is glucose, which is a form of sugar. Glucose comes from foods that naturally contain sugar such as fruit, milk, some vegetables and grain products, as well as foods in which sugar and other sweeteners such as honey, molasses and concentrated fruit juice are added. To control blood glucose (sugar), it is important to eat healthy and be active. Medication may need to be taken also. A variety of high fibre foods as recommended in Canada's Food Guide are important for adequate nutrition. Limiting foods with added sugar such as pop, candies, and baked goods is helpful since these foods can increase blood sugar levels significantly, but do not offer many vitamins and minerals. (1)

There are 2 main types of diabetes:

- **Type 1 diabetes** occurs when no, or very little, insulin is released into the body. As a result, sugar builds up in the blood instead of being used as energy. About five to 10 per cent of people with diabetes have type 1 diabetes. Type 1 diabetes generally develops in childhood or adolescence, but can develop in adulthood. Type 1 diabetes is always treated with insulin. Meal planning, physical activity and stress management also help with keeping blood sugar at the right levels. (1)
- **Type 2 diabetes** occurs when the body can't properly use the insulin that is released (called insulin insensitivity) or does not make enough insulin. As a result, sugar builds up in the blood instead of being used as energy. About 90 per cent of people with diabetes have type 2 diabetes. Type 2 diabetes develops more often in adults, but children can be affected. Depending on the severity of type 2 diabetes, it may be managed through physical activity and meal planning, or may also require medications and/or insulin to control blood sugar more effectively. (1) Research has shown that physical activity can help improve insulin sensitivity in the body to help improve blood sugar control. (2)

Because diabetes is a complex disease it is imperative that individuals manage the disease with support from a medical team including a physician, diabetes nurse and registered dietitian.

Heart Disease

Heart disease describes several different heart conditions. Coronary artery disease (CAD), the most common of these conditions, occurs when blood vessels in the heart become blocked or narrowed. This prevents the oxygen-rich blood from reaching the heart. It can cause chest pain (called angina) or even a heart attack. (3)

CAD is caused by plaque building up along the interior walls of arteries. Plaque is a sticky, yellow substance made of fatty substances like cholesterol, as well as calcium and waste products from your cells. It narrows and clogs the arteries, slowing the flow of blood. This condition is called atherosclerosis, which may begin as early as childhood. It can occur anywhere in the body, but it usually affects large and medium-sized arteries. (3)

Early symptoms of CAD can include: fatigue, chest pain and dizziness. If left untreated, this disease can lead to other serious problems such as heart attack, stroke or even death. There are various risk factors for coronary artery disease including diabetes, high blood pressure (hypertension) and high cholesterol (hyperlipidemia). (3)

Hypertension: Blood pressure is a measure of the pressure or force of blood against the arterial walls when the heart contracts or when it is at rest. High blood pressure, also called hypertension, can be caused by factors such as smoking, inactivity and poor eating habits. Research has shown that hypertension risk can be reduced by following an eating pattern rich in vegetables, fruit, low fat dairy products whole grains, protein from plant sources (lentils and beans) and low in saturated fat. There is some evidence that indicates that eating less than 2300 mg of sodium a day helps to lower blood pressure. Sodium is found in most foods, however, is especially high in convenience and fast foods, smoked and cured meat. (3) Studies suggest moderate intensity aerobic activity can reduce blood pressure. Recommendations for hypertension include regular activity. (4)

Blood cholesterol: Cholesterol is a fat found in the blood. It is naturally made and used by the body; however, it is also influenced by foods consumed and physical activity. There are two main types of blood cholesterol:

- HDL cholesterol: referred to as 'good' cholesterol because it helps to remove excess cholesterol from the body.
- LDL cholesterol: referred to as 'bad' cholesterol that can form plaque or fatty deposits on your artery walls. If your LDL level is high it can block blood flow to the heart and brain.

Regular aerobic activity can help to lower LDL and raise HDL cholesterol (6).

Foods that contain saturated fat (processed foods, fatty meat and dairy products, butter, lard) impact blood cholesterol more than foods that contain cholesterol. (3) Studies show that participation in exercise programs help improve blood lipid levels. (4) Moderate to vigorous activity everyday can increase HDL cholesterol. (5)

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Cancer (1,2)

Cancer is not one disease, it is many. All types of cancer start in our cells. Normally, our cells grow, work, divide and die so we can stay healthy. Sometimes our cells to grow and divide out of control and create abnormal cells. Abnormal cells can grow and divide to form a tumour. Some types of tumours are non-cancerous (benign). Non-cancerous tumours have cells that stay in one place and don't spread. Other types of tumours are cancerous (malignant). Cancerous tumours can grow into nearby tissues and spread to other parts of the body. Some types of cancer grow in blood.

It's important to find cancer as early as possible because it is easier to treat and there's less chance that the cancer has spread. There are many ways our lifestyle choices can help to prevent cancer. Diets high in vegetables and fruit as well as whole grains and fibre can be protective against cancer. There is also some evidence that being physically active, almost every day, can lower the risk of developing cancer. Research also shows there is a link between sitting too much and a higher risk of cancer. More research is needed to learn more about how healthy diets and physical activity can help prevent different types of cancer.

For more information on how to prevent cancer check out <http://itsmylife.cancer.ca/en.html>

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Osteoporosis

Osteoporosis is when your bones become thin and weak. As a result, your bones have a higher chance of breaking, especially if you fall.

Some people are more at risk for developing osteoporosis including those who:

- Are 65 years or older
- Are underweight
- Have a family history of osteoporosis
- Have early menopause
- Don't get enough calcium and vitamin D
- Smoke
- Have too much alcohol
- Have certain medical conditions such as celiac disease and inflammatory bowel disease
- Use certain medications such as cortisone, prednisone or other glucocorticoids for a long time

To help lower your risk of osteoporosis:

Get enough Calcium, Vitamin D and Vitamin B12

- Nutrition, especially calcium and vitamin D, play important roles in preventing osteoporosis. Calcium helps keep bones strong, while Vitamin D helps the body use and absorb calcium. Low levels of vitamin B12 may also increase the risk of osteoporosis.
- Vitamin D rich foods include milk, fatty fish like salmon, sardines or mackerel, yogurt, and egg yolk.
- Calcium rich foods include: white milk, fortified plant beverages like soy, almond or rice, yogurt, cheese, almonds, and white beans.
- Vitamin B12 rich foods: meat, poultry, fish, eggs and dairy. Also found in nutritional yeast.

Limit High Sodium Foods

- Eating high sodium foods can reduce bone density

Stay Active

- Regular physical activity can help build strong muscles and bones and improve balance to help prevent falls

Avoid smoking and limit alcohol

- Smoking can increase bone loss.
- Alcohol impacts the body's ability to use Calcium and Vitamin D.

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Nutrition trends/fad diets

Many new diets and supplements come out each year advertised as being the best for gaining muscle, losing weight or enhancing sport performance. Diet programs, however, are not regulated in Canada (1), and nutrition information can be found everywhere and come from anyone. The hard part is knowing which source of information to believe.

A fad diet is a popular diet that usually promises weight loss. A fad diet often sounds “too good to be true,” and likely does not follow healthy eating guidelines that support good health and athletic performance. Red flags to watch out for include (1):

- ❗ Promises weight loss of more than 2 pounds (1 kg) per week.
- ❗ Does not provide support for long-term weight loss success.
- ❗ Restricts you to less than 800 calories a day.
- ❗ Is rigid and does not fit into your lifestyle or state of health.
- ❗ Cuts out major food categories (like gluten or carbohydrates) and stops you from enjoying your favourite foods.
- ❗ Forces you to buy the company’s foods or supplements rather than show you how to make better choices from a grocery store.
- ❗ Uses “counsellors” who are actually salespeople. Weight management counsellors should not make a commission from anything you buy.
- ❗ Gives you nutrition advice that is based on testimonials rather than scientific evidence.
- ❗ Promotes unproven ways to lose weight such as starch blockers, fat burners and detox cleanses.
- ❗ Does not encourage physical activity.

Fad diets may be harmful

Fad diets that are too low in calories may mean individuals won’t get enough energy to do the activities they love. By cutting out major groups of foods, people may not get the nutrients their bodies need to be healthy. If people lose weight on fad diets too quickly with no support to help keep it off, they could get stuck in a cycle of weight loss and weight gain. This yo-yo dieting is stressful for the body (1) and often does not result in a sustained weight, which is the goal. Dieting may cause individuals to become preoccupied with food and weight, which can lead to disordered eating.

Impacts of Dieting on Physical Activity (2)

When you do not get enough calories from carbohydrate, fat and protein, your performance may not be the best it could be.

If you don’t get enough calories in the short-term:

- You may not see results from your training
- You may lose muscle tissue which may result in the loss of strength and endurance

If you don't get enough calories long-term:

- You may not get the vitamins and minerals you need
- Your immune system may be weakened
- Your hormone levels may be unbalanced
- You may have a higher risk of injury to muscles, bones or connective tissue
- Females may not menstruate regularly

Below are some common nutrition trends described:

1. High Fat, Low Carb Diets (moderate to high protein)

Examples: The Ketogenic Diet, Atkins, South beach, Paleolithic, etc.

The ketogenic diet is super high in fat (65-75% of your diet is fat), super low carbohydrate (<5% of your diet) and moderate in protein (15-20% of your diet). Health Canada recommends that for children 4-18 years of age, 10-30% of the calories be from protein, 45-65% from carbohydrate and 20-35% from fat (5). The ketogenic diet is high in animal sources of protein, high in fat of any kind, contains no grains or no pulses, and provides only low carb vegetables and a small amount of berries, but no other fruits. (3)

Getting most of your calories from fat forces your body to use different energy pathways. Instead of carbs for energy, the body burns fat, entering a state of dietary ketosis (when your body is forced to use ketones as an energy source instead of glucose).

Cons

- low endurance and muscle loss/harder to build it up
- flu-like symptoms due to low blood sugars – headache, brain fog, fatigue, nausea
- constipation
- high cholesterol
- potential vitamin and mineral deficiencies
- Can encourage disordered eating if focusing so heavily on restriction
- focus on what and how much to eat more than on the quality of the food
- restrictive, hard to follow, low success rate over time
- Can lead people to lose weight and gain it back and get into that cycle, which is stressful on the body - sustained weight is the goal

Where has research shown benefits?

- Reduces seizures in children and adults with epilepsy (6).
- Possible benefits for other brain disorders such as Parkinson's, Alzheimer's, multiple sclerosis, sleep disorders, autism, and even brain cancer. However, there are no human studies to support recommending ketosis to treat these conditions (7).
- May have some benefits for blood sugar control for people with diabetes (8).

2. Detox Cleanses (9)

Examples: Juice or smoothie cleanse, liver detox, colon cleanse.

What they claim: Cleansing is often promoted to improve health by 'cleansing' the bowel and removing toxins from the body that come from the air we breathe, the food we eat and the beverages we drink. They also claim to promote healthy intestinal bacteria, boost energy and immunity, and start weight loss. However, there is no scientific evidence to show that cleansing actually does any of these things. Your body already has built in detoxifiers: your intestine, lungs, liver and kidneys effectively remove waste from your body every day.

Cleansing diets are not recommended for growing children and teens (9).

Cons

- If done often or followed for a long time, can be harmful and cause cramping, bloating, nausea, vomiting, dehydration, headaches, lack of energy and dizziness.
- Can change the healthy bacteria in the colon and lead to other more serious side effects such as:
 - changes in electrolyte levels
 - low blood sugar
 - low or high blood pressure
 - interactions with medications
 - vitamin and mineral deficiencies
- Not something you can do for long-term
- Can be expensive

Where has research shown benefits?

- There is no scientific evidence to support any beneficial claims.

3. Intermittent fasting

What it is: With Intermittent Fasting, you are restricting food intake, but only on certain days or for certain hours of the day, and on other days you would have the freedom to eat and meet energy requirements.

Examples: Fast daily for 16 hours, eating window is 8 hours (16/8), eat normally for 5 days a week (5:2), restrict calories to 600 for 2 days a week, do a 24 hour fast once or twice a week (eat-stop-eat), alternate day fasting

Cons

- hard to follow long-term
- not listening to body's hunger and fullness cues
- low energy, poor mood during fasting periods
- digestive issues
- could lead to bingeing
- no long-term studies, so not sure of the long-term effects
- high drop-out rate of studies, showing it may not be sustainable
- In animal studies has shown a negative impact on reproductive health.

Where has research shown benefits?

- can help lower cholesterol (10)
- can have a beneficial effect on cognitive performance, including memory (11)

When students investigate different diets, make sure they know how to find credible nutrition information backed up by scientific evidence. Encourage them to compare diets to the list of red flags as listed above, and also to Canada's Food Guide to see what might be missing.

Teenagers may be easily influenced by media and peer messages with diet promises for quick fixes and enhanced performance. Teachers can help to reinforce the importance of eating a variety of foods from Canada's Food Guide and encourage students to contact a dietitian should they have specific questions about diets. EatWell Saskatchewan is a free service connecting residents to a Registered Dietitian by email or phone, for more information see: eatwellsask.usask.ca. People may also see a [private practice dietitian](#) for one on one counselling for more personalized and tailored services. Health insurance policies may cover these services.

For more information see:

- finding [credible nutrition information](#) see page 41
- [sport supplements](#) see page 26
- [What to eat before during and after activity](#) see page 26
- [Canada's Food Guide](#) page 15

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Healthy Eating Plans to Support a Physically Active Lifestyle

There are many components to a healthy diet and it can difficult to sort out what qualifies as healthy when we are inundated with marketing and social media. A balanced nutrition plan will encourage optimal performance, for both competitive and recreational athletes.

When creating a nutrition plan, consider timing of food, personal preferences, cost and availability. A successful nutrition plan is one that can actually be followed.

Components of a good nutrition plan

Personal preferences: Each nutrition plan needs to include food that the athlete enjoys eating. Taste is a main factor of a decision to eat a food.

Availability: Include foods that can be purchased locally. Even if foods are preferred by athletes, it is not realistic to include them in an ongoing nutrition plan if they are not available for purchase.

Food costs: Food costs are different depending on location and types of foods available. Buying ingredients in bulk and/or on sale then preparing homemade items, like soup, chili or stew, can help keep food costs down for healthy items. Watch for sales and promotions (e.g. in apps and flyers) for deals and buy foods in-season to also help save on costs. (See Canada's Food Guide for [Healthy Eating on a budget](#))

Timing: all activity requires energy, so it is important to plan meals, snacks and fluids to ensure enough energy for all types of activity.

For competitive athletes, a general recommendation is to eat a meal that includes some carbohydrates, fats and protein, 3 hours before an event to allow for digestion. High fibre and high fat should be avoided as they take longer to digest so can make the athlete feel sluggish before an event and thus compromise performance. Liquid snacks, such as smoothies, 1-2 hours before early morning activity, followed by a full breakfast after, will help maximize performance. Athletes should not experiment with new foods on competition days (1)

Pre-event snacks should be consumed 1-2 hours beforehand and can include fresh fruit, dried fruit, a bowl of cereal with milk, or fruit-based smoothies. Sports drinks, fresh fruit or granola bars can be consumed during long events to maintain energy (1).

Recovery foods should include carbohydrate and protein and should be consumed within 30 minutes of completing activity to allow for muscles to rebuild and energy stores to be replenished (1).

Healthy eating on the go

Young athletes often eat on the go, when traveling to and from practices, games and tournaments. Encourage students to plan ahead to pack healthy items. Some ideas include fresh fruit like apples and oranges, *nut butter sandwiches, *nuts, rice cakes, air-popped popcorn, applesauce and dry whole grain cereals (2). This is also an opportunity for host groups to sell healthy items, like homemade soups with

buns, if a canteen or concession is available. Work together with local groups, such as parent or volunteer sport boards to have healthy items available throughout events. Refer to Healthy Foods for My Recreation Centre – Getting Started Guide for ideas: www.spra.sk.ca/resources-and-advocacy/eat-healthy-play-healthy

*Always check for food allergies and facility life threatening conditions policies before serving foods to others. Most Saskatchewan Schools have one. For more see foodallergycanada.ca/professional-resources/educators/school-k-to-12/national-school-policies

Meeting the needs

Nutritional needs of recreational and competitive young athletes can be met by eating wholesome foods and drinking plenty of water. Follow the recommendations in Canada’s Food Guide [hyperlink] and speak to a registered dietitian for more in-depth nutrition planning.

See the [What to Eat Before, During and After Exercise](#) backgrounder and [Menu Planning Activity](#) for more information and activity suggestions.

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Becoming a Dietitian

Dietitians believe in the power of food to enhance lives, improve health and enhance performance. Dietitians empower clients, patients and communities to understand the science of food and reduce barriers to eating well. The guidance and information they provide is tailored to the unique needs and challenges of the individuals and communities with which they work. They translate the science of nutrition into language everyone can understand to support healthy living for all Canadians. Dietitians are held accountable to the highest standards of education and ethics, which means they look beyond fads and gimmicks to deliver reliable, life-changing health advice.

You may not know it, but dietitians are everywhere. Whether collaborating with other healthcare professionals, undertaking scientific research, driving innovation in the food industry, informing public policy, or working with patients and communities across the country, their influence runs deep and it continues to grow. Some dietitians specialize in sports nutrition, working with athletes and sports teams to improve athletic performance through evidenced based nutrition information and tailored food recommendations.

Dietitians are regulated health professionals. To use the title Registered Dietitian (RD) in Saskatchewan, dietitians must be registered with the Saskatchewan Dietitians Association. Dietitians undergo comprehensive and rigorous training, both on the job and in university. Dietitians must complete a 4 year Bachelor of Science in Nutrition degree and also complete a 36 week practicum experience in order to qualify to write a certification exam.

Interested in becoming a Dietitian? The University of Saskatchewan offers an accredited 4 year Bachelor of Science in Nutrition degree along with the required and integrated practicum experience. The 36 week practicum provides competency based practice in all aspects of dietetic practice including clinical and community dietetics, food service management and public health nutrition. Many dietitians go on to obtain additional certifications in specialty areas, for instance, dietitians that specialize in sports nutrition may go on to complete the Intensive Sport Nutrition Course with the Dietitians of Canada to provide high performance

Not every nutritionist is a dietitian! Sometimes yes, sometimes no! Some dietitians have a job title that includes nutritionist such as community or public health nutritionist. To be sure you are accessing the most qualified nutrition professional, look for the initials RD or PDt (DtP in French) after the health professional's name or ask - **Are you a dietitian? Dietitian** is a reserved and protected title across Canada, just like physician, nurse and pharmacist. Protected titles provide a way for consumers to distinguish qualified and licensed professionals from unqualified practitioners who are not licensed. **Nutritionist** is not a protected title in Saskatchewan, therefore do not need to be qualified or licensed.

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Finding Credible Health Information On-Line

We often get health information from the internet through social media and websites. It is hard to know which source is the best. It is important to inform students of ways to ensure the information from the website can be trusted.

Below are a few tips when looking for health information online:

1. Who hosts the website?

- Look for information from government authorities such as Health Canada, health authorities, or from national charities such as the Heart and Stroke Foundation, Canadian Cancer Society, or Diabetes Canada. These sources report reliable health information.
- Be wary of websites advertising or selling things that are supposed to improve your health. Many of these companies include false or misleading scientific claims to encourage you to buy their product.

2. Is the information reliable?

- Check the author's credentials. Not all information is written by qualified health professional. There are many phony health professionals making false claims on the Internet.
- Some qualified health professionals may also reference poor scientific studies with misleading information. It can be important to take a closer look at the articles backing up their claims (see backgrounder *Reading Health Studies* p. 20)
- Health information should be unbiased and based on solid evidence. The author should refer to and provide the specific links to this evidence.
- Be cautious about personal stories and opinions. They are not always objective or based on evidence.

Some websites may even have a cautionary note or full disclaimers that the information provided is purely based on opinion and not on scientific evidence.

3. When was the information written?

- Look for websites with current health information. The date of the information is often at the bottom of the page. Look for information from the last 5 to 10 years.

4. Does the website offer quick and easy solutions to your health problems?

- Be careful of health information that claims that one pill or food will cure a lot of different illnesses.
- Be cautious of articles that try to make people fearful or recommends therapies which produce amazing or 'miracle' cures. Look for other reliable websites to see if they provide the same information.
- Talk with a trusted health care professional about what you learn online before making any changes in your health care or eating plan

Food Tracking For Youth

If food tracking and nutrient analysis is an assigned activity for students there are a few suggestions and areas of caution.

- Food tracking and analysis involves having students record everything they ate or drank for a period of time. Analysis can be completed by looking at the proportion of different foods eaten at each meal and snack compared to the recommendations in Canada's Food Guide (CFG) snapshot. They can also keep track of when they eat mindfully, enjoy their meals, eat with others, cook their own meals, and are aware of food marketing. Alternatively, students can calculate nutrient consumption and compare it to the Recommended Daily Intake (RDI) values for macronutrients and personal estimated energy requirements.
- Because these activities can cause anxiety in some children, it is important to be cautious in how they are assigned and discussed at a classroom level. Because **youth do not need to count calories or develop strict meal plans in their everyday living**, this activity should not be conducted for long periods of time. Focusing on calories and macronutrient distribution can have a negative impact on youth's relationship with food and can even lead to disordered eating.
- **The goal of food tracking and nutrient analysis should be to help students become more aware of personal eating habits and the factors affect them.** Comparing students' eating patterns with those outlined in CFG or the DRIs not only helps to affirm healthy eating behaviours, but also helps to identify how eating habits may be improved. It is important to note that **complete accuracy and perfect eating habits must not be the primary goal of the activity.** By completing the activity with the students, the teacher models how to do the activity accurately.
- **Create a non-judgmental climate when conducting these activities.** Remind students that there is no right or wrong answer, and the goal of the activity is not to portray perfect eating patterns or achieving a certain size, weight or shape. It is important to be supportive of all youth by keeping the focus **on** health and wellness and **off** size and shape.
- **Remind students that food tracking does not reflect *usual* eating habits since they vary from day to day.** Several factors can influence a person's daily intake, such as special occasions, after school activities, how active they are throughout the day, and their genetic make-up. Also, assure the students that it is the **overall patterns of eating** that is important for health and not just individual nutrients or foods. Also make note that eating habits include not only the *types* of food we eat, but also the *social aspects of eating*, such as enjoying meals as a family and with friends. Recent evidence suggests that when families regularly eat together at mealtimes, youth eat better and are healthier (1-8).
- **Be sensitive about the possibility that some families may not be able to provide enough nutritious foods at home.** In addition, some students may eat **cultural foods that are different from their Canadian born peers.** Students may feel embarrassed or ashamed to share their food tracking results if their eating patterns are not similar to those reflected in CFG or those of their peers. You

may want to assign the food tracking activity on days that the students can participate in a snack or meal program at school or in the community. This will help the students record more healthy food choices on their food tracking activity sheets if they are not getting them at home and reflect a healthier eating pattern. Alternatively, you could have students plan out meals for a day and calculate the macronutrient and calorie content of those meals, then compare to their calculated recommended intake. That way they have the sense of what macronutrients are in food and could compare it to the DRIs.

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Planning a Healthy Menu

Planning meals and snacks for a few days at a time can help to save time and money. With a plan, you will buy fewer food items that you do not need and make fewer trips to the store. Invite students to make a week's worth of dinner menus for themselves or a family of four based on their personal lifestyle choices (e.g. how active they are; level of cooking skills; are there any cultural, biological (allergies or diabetes) or other (vegetarian) food restrictions or preferences; etc.) Planned menus could also be used to calculate their macronutrient and caloric make-up and then compared to recommended intake (RDI) values.

Note: All students need to be physically active, eat well, and have positive mental health regardless of their weight, size and shape. It is important to be supportive of all youth by keeping the focus **on** health and wellness and **off** size and shape.

Below are suggested menu planning steps that you could review with your students.

Follow these steps to make a menu:

1. Prepare your workspace.

- Gather favourite recipes and search new meal ideas they would like to try. Talk about incorporating leftovers on a night or two but remind them that they will need to plan for extra servings to make sure there is enough for more meals.
- Get a copy of the Canada's Food Guide (CFG) Snapshot and recommendations online. Each meal should include about half your plate vegetables and/or fruit, a quarter protein foods and a quarter whole grains, choosing plant-based more often.

2. Fill in the menu.

- Choose the main family meal first. Sitting down and eating together as a family is important for youth. It provides an opportunity to share experiences from the day and helps to ensure a variety of foods are available and enjoyed. Planning main family meals first will help to make sure these meals occurs. . Keep food from the Snapshot in mind when planning meals and snacks. A good rule of thumb is to have about half your plate vegetables and fruit, a quarter whole grains, and a quarter protein foods at each meal. Have food from the food guide for snacks. When making a menu it is important to include favourite meals *and* try out new recipes and foods.
- Fill in breakfast and lunch. Often students are surrounded by food choices in their school and other places they have activities and live. Planning which meals will be eaten away from home, and keeping nutrition in mind, helps students make sure they choose a balanced meal and have extra food from home to supplement what is purchased. For example, if there is a canteen at

school, students could plan to have lunch from the canteen knowing what is usually available, and then packing extra vegetables or fruit if this is not available at school.

3. Review the menu and think about the following things:

- Spice it up with variety. Encourage students to use a variety of ingredients, flavours, colours and textures. This will make meals more interesting and appealing. Combine old favourite foods with a few new dishes.
- What is going on in the week? Suggest students think about their families' schedules. A busy week filled with activities could mean planning fast and easy meals rather than food that will take longer to prepare.

4. Estimate the amount of food needed.

- Estimate the amount of food to buy and make. Students need to think about the number of people who will be eating and how much they may eat.

5. Make the grocery list

- Looking over the menu, students should think about what food they may already have on hand in order to decide what they will need to buy.
- Flip through grocery store flyers to take advantage of specials and use coupons to save money. For a homework project, you could have them compare the list to their pantry at home, then go to the store with a parent to price all the items they would have to buy to make their menu.
- Consider giving your students a budget to work with so that they need to consider the cost of the meals they have developed.

For more recipe and menu ideas check out Eat Right Ontario (www.unlockfood.ca), Dietitians of Canada (www.dietitians.ca) or download the Cookspiration mobile app from www.cookspiration.com.

Healthy Menu Template

Remember to try to: eat with others, eat mindfully, enjoy your food, and cook more often

	Monday	Tuesday	Wednesday
Breakfast ✓ Vegetables and fruit ✓ Whole Grains ✓ Protein foods			
Lunch ✓ Vegetables and fruit ✓ Protein foods ✓ Whole Grains			
Afternoon snack ✓ food from Canada's Food Guide			
Supper ✓ Vegetables and fruit ✓ Whole Grains ✓ Protein foods			
Evening Snack ✓ food from Canada's Food Guide			
Calculate Daily... Total Calories: % from Protein % from Carbs % from Fat			

Recommendations: www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/dietary-reference-intakes/tables.html

Calculation examples:

faculty.mccneb.edu/CMVanRiper/Unit%201/Nutrition%20Calculations%20Information%20Sheet.pdf

References:

1. Health Canada. Consumer's Guide to the DRIs. 2010 [cited 2017 Apr 26] from: www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/dietary-reference-intakes/consumer-guide-dr-is-dietary-reference-intakes.html
2. Health Canada. Dietary Reference Intakes Tables. 2010 [Cited 2017 Aug 22]. Available from: www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/dietary-reference-intakes/tables.html
3. Government of Canada. Canadian Nutrient File. 2016 Jul 14 [cited 2017 Apr 26]. Available from: food-nutrition.canada.ca/cnf-fce/index-eng.jsp.

Activities

Food Environment Assessment

Purpose: To help identify the influence the environment has on our food choices.

There are many reasons why we choose to eat the foods we do. Some are more obvious like hunger and taste, while others can be less obvious invitations to eat like smells of food nearby, advertising and marketing, or just because the food was there. This activity will help students identify some of the reasons we eat what we eat and the role the environment may have on our food choices.

See next page for worksheet....

Take Home Assignment – Fill out the following chart:

	What did you feel? Experience?	Did it have an influence on what you ate? Bought?	How did that influence what you ate? Bought?
1. How many food advertisements did you see during your favourite TV show or in a magazine?			
2. On your way home from school, count the number of places that you pass that sells food.			
3. How many steps does it take to get from the TV, computer, or desk at work to get something to eat?			
4. Notice how much you eat from a large bulk package versus a smaller package of food?			
5. Notice how much food you would put on a large plate versus a small plate or beverages in glasses?			
6. Do you often buy foods in meal deals, or because of a sale or special offer (e.g. 3 for \$10)?			
7. How do you feel when you see or smell food? (e.g. vending machine right by the school gym, desk with candies in a dish, passing by and smelling the KFC at lunch time).			

Adapted from: Craving Change. 2012. www.cravingchange.ca and Wansink, B. (n.d.) mindlesseating.org/index.php.

Planning for Healthy Foods at School Sporting Events

Have students plan a healthy menu for an upcoming school sporting event. Remind students to think about what they previously learned about [what to eat and drink before, during and after activity](#) (backgrounder on p. 26)

Case Study: You are hosting a tournament for elite athletes. There are no food outlets close to the school, so your team has to organize all the food. Think about what is important for athletes to eat before, during and after activity. For this assignment:

- Plan a 2 day menu including appropriate meals and snacks for athletes, families and spectators to purchase.
- Identify a marketing strategy for the food outlet.
- Use the *Getting Started Guide*: www.spra.sk.ca/resources-and-advocacy/eat-healthy-play-healthy and *Planning Healthy Menus for my School*: publications.saskatchewan.ca/#/products/100247 for help.

Sample Menu Planning Template

	Day 1	Day 2
Breakfast		
Lunch		
Snack		
Snack		
Snack		
Drinks		