**Background**

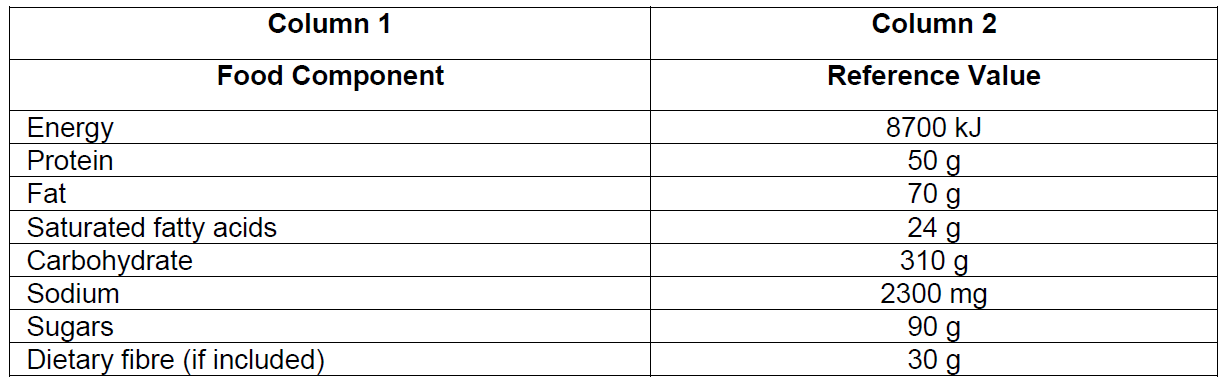
Convenience meals are increasingly becoming part of a typical Australian diet. They often contain higher levels of energy, saturated fat, added sugar and sodium than unprocessed, fresh foods. Excess energy (kJ/Cal) can lead to obesity and a number of associated health conditions such as Type 2 diabetes. Too much saturated fat and sodium in our diets is associated with increased risk of cardiovascular disease. And added sugar, really just means added energy (kJ/Cal) in the diet. However, many quick service restaurants (QSRs) now provide healthier options.

The Daily Intake Guide (DIG) is a front-of-pack labelling (FOPL) scheme developed by the food industry to help consumers learn more about how a ‘serving’ of packaged food contributes energy and nutrients to their diet. The inclusion of ‘% Daily Intake’ information by manufacturers on food labels is voluntary. Therefore, it does not appear on every food label.

According to FSANZ (Food Standards Australia New Zealand), the %DI of the food components (Column 1) shown on the product label must be calculated using the corresponding reference value (Column 2). These reference values are based on an ‘average’ adult’s requirements and the NRVs.

e.g. if a burger provides 3,600kJ of energy, this provides ~41% of the daily intake of energy for an average adult (3600 ÷ 8700 x 100 = 41%)

The key nutrients shown in %DI labelling are the ones listed in the nutrition information panel on food labels – energy, protein, fat, saturated fat, carbohydrate, sugars and sodium. Dietary fibre is optional.



**Task**

* Work through the following 3 case studies to find a ‘better’ and a ‘worse’ meal from one of the quick service restaurants (QSRs) for which you’ve been given the nutrition information.
* Consider the major ingredients in the meals and in which food group they would fit in the Australian Dietary Guidelines / Australian Guide to Healthy Eating and how many ‘serves’ of that food group they would provide.

**Case 1 – Convenience meal for reducing energy**

**The case**

Mrs Bond has a BMI of 41 and classified as obese. She has been told by her health professional that she has to reduce her ‘energy in’ (dietary intake of energy) to help manage her condition.

**Your task**

Come up with a meal for Mrs Bond to have from your QSR that would be:

* a better choice (lower energy); and
* a worse choice (higher energy).

Review the nutrition information for your selected QSR. Select a meal options (main, side + drink) that provides the highest and lowest amounts of energy. Calculate the total amount of energy that both meals provide and complete the table below.

|  |  |  |
| --- | --- | --- |
|  | **Better choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Worse choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | E (kJ) | E (kJ) | |
| Main  (e.g. burger) |  |  | |
| Side  (e.g. fries) |  |  | |
| Drink  (e.g. soft drink) |  |  | |
| **Total** |  |  | |

**Contribution of energy to daily intakes**

Using the reference value for energy in column 2 of page 1, calculate how much energy the meals you have come up with would contribute to an average adult’s daily intake (DI).

e.g. if your meal provides 3,000kJ, that meal would contribute 35% of the DI of energy

The **%DI** of energy for an average adult from the **better** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The **%DI** of energy for an average adult from the **worse** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Case 2 – Convenience meal for reducing saturated fat**

**The case**

Mr Bond has a blood test which reveals his LDL-cholesterol levels are 3.5 mmol / L (recommended <2.5mmol/L). He has been told by his health professional to reduce his intake of saturated fat (SFA) in his diet to help manage this condition.

**Your task**

Come up with a meal for Mr Bond to have from your QSR that would be:

* a better choice (lower SFA); and
* a worse choice (higher SFA).

Review the nutrition information for your selected QSR. Select a meal options (main, side + drink) that provides the highest and lowest amounts of SFA. Calculate the total amount of SFA that both meals provide and complete the table below.

|  |  |  |
| --- | --- | --- |
|  | **Better choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Worse choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | SFA (g) | SFA (g) | |
| Main  (e.g. burger) |  |  | |
| Side  (e.g. fries) |  |  | |
| Drink  (e.g. soft drink) |  |  | |
| **Total** |  |  | |

Using the reference value for saturated fat in column 2 of page 1, calculate how much SFA the meals you have come up with would contribute to an average adult’s daily intake (DI).

e.g. if your meal provides 18g of SFA that meal would contribute 75% of the DI of SFA

The **%DI** of saturated fat for an average adult from the **better** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The **%DI** of saturated fat for an average adult from the **worse** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Case 3 – Convenience meal for reducing sodium**

**The case**

Miss Saltshaker has her blood pressure tested which reveals it is 180/110 (ref range: 120/80). She’s been told by her health professional to reduce her intake of dietary sodium to help manage this condition.

**Your task**

Come up with a meal for Miss Saltshaker to have from your QSR that would be:

* a better choice (lower sodium); and
* a worse choice (higher sodium).

Review the nutrition information for your selected QSR. Select a meal options (main, side + drink) that provides the highest and lowest amounts of sodium. Calculate the total amount of sodium that both meals provide and complete the table below.

|  |  |  |
| --- | --- | --- |
|  | **Better choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Worse choice**  Main\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Drink\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | Sodium (mg) | Sodium (mg) | |
| Main  (e.g. burger) |  |  | |
| Side  (e.g. fries) |  |  | |
| Drink  (e.g. soft drink) |  |  | |
| **Total** |  |  | |

Using the reference value for sodium in column 2 on page 1, calculate how much sodium the meals you have come up with would contribute to an average adult’s daily intake.

e.g. if your meal provides 1500mg of sodium that meal would contribute 65% of the DI of sodium

The **%DI** of sodium for an average adult from the **better** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The **%DI** of sodium for an average adult from the **worse** meal would be:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Energy Equivalence – Is the indulgence equal to the burn?**

**Context**

Results of the Australian Health Survey (ABS, 2012) indicated that 63% of Australian adults are overweight or obese. These levels of overweight and obesity can partly be attributed to low activity levels. The survey also found that 67% of Australians were either sedentary or had low levels of exercise in the week prior to interview.

When an individual regularly consumes more energy than they expend (energy in > energy out), **weight gain** will occur. On the other hand, when less energy is consumed than expended, **weight loss** will occur (energy in < energy out). If an individual maintains a stable weight over time, it can be assumed that the amount of energy consumed is roughly the same as energy expended (energy in = energy out = **energy balance**).

Overindulging happens. Let’s calculate the activity required to ‘burn it off’.

**Your task**

Think about a time that you overindulged in a food / discretionery food. Use NUTTAB 2010, Calorie King or other resources to determine how much energy (kJ) that eating occasion provided you with. Then, using the table provided, calculate the amount of exercise required to ‘burn off’ that food.

e.g. a large Hungry Jacks Meal = 6575kJ = 6 hours 58 mins of cycling @ 16km/hr   
(calculated for a 70kg person)

Food consumed:

Energy in food consumed (kJ):

Activity required to expend / burn that energy off:

**Energy Expenditure of Physical Activities**

The table below provides an estimated number of kilojoules expended at various body weights while performing a range of exercises for **30 minutes**. To calculate an estimated number of kilojoules burned per 30 minutes of exercise for your body weight, simply multiply the kilojoules per kilogram figure **(kJ/kg**) by your body weight in kilograms.

**Exercise Energy Chart - Kilojoules:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity** | **kJ/kg** | **50kg** | **100kg** | **150kg** |
| Aerobics (low impact) | 10.60 | 530 | 1060 | 1590 |
| Step Aerobics (beginner) | 13.36 | 668 | 1336 | 2004 |
| Badminton | 13.82 | 691 | 1382 | 2073 |
| Basketball (game) | 20.27 | 1014 | 2027 | 3041 |
| Basketball (leisurely) | 11.98 | 599 | 1198 | 1797 |
| Bicycling, 15kph | 11.52 | 576 | 1152 | 1728 |
| Bicycling, 20kph | 18.43 | 922 | 1843 | 2765 |
| Bowling | 5.07 | 253 | 507 | 760 |
| Canoeing, 4kph | 6.45 | 323 | 645 | 968 |
| Canoeing, 6.5kph | 12.44 | 622 | 1244 | 1866 |
| Cross country ski (hard) | 30.41 | 1521 | 3041 | 4562 |
| Cross country ski (easy) | 14.28 | 714 | 1428 | 2143 |
| Cross country ski (mod) | 20.27 | 1014 | 2027 | 3041 |
| Dancing | 9.22 | 461 | 922 | 1382 |
| Dancing (slow) | 5.07 | 253 | 507 | 760 |
| Golfing (walk w/o cart) | 9.22 | 461 | 922 | 1382 |
| Golfing (with a cart) | 6.45 | 323 | 645 | 968 |
| Handball | 21.19 | 1060 | 2119 | 3179 |
| Hiking with 5kg load | 16.59 | 829 | 1659 | 2488 |
| Hiking with 10kg load | 18.43 | 922 | 1843 | 2765 |
| Hiking with 15kg load | 21.66 | 1083 | 2166 | 3248 |
| Hiking, no load | 14.28 | 714 | 1428 | 2143 |
| Jogging, 8kph | 17.05 | 852 | 1705 | 2557 |
| Jogging, 10kph | 21.19 | 1060 | 2119 | 3179 |
| Rowing (leisurely) | 6.91 | 346 | 691 | 1037 |
| Rowing machine | 16.59 | 829 | 1659 | 2488 |
| Running, 13kph | 28.11 | 1405 | 2811 | 4216 |
| Running, 14kph | 30.41 | 1521 | 3041 | 4562 |
| Running, 16kph | 32.25 | 1613 | 3225 | 4838 |
| Skipping rope | 26.26 | 1313 | 2626 | 3939 |
| Soccer | 17.97 | 898 | 1797 | 2695 |
| Squash | 18.89 | 945 | 1889 | 2834 |
| Stair climbing | 12.90 | 645 | 1290 | 1935 |
| Swimming (25 meters per minute) | 11.06 | 553 | 1106 | 1659 |
| Swimming (50 meters per minute) | 20.73 | 1037 | 2073 | 3110 |
| Tennis | 14.74 | 737 | 1474 | 2212 |
| Volleyball (game) | 11.06 | 553 | 1106 | 1659 |
| Volleyball (leisurely) | 6.45 | 323 | 645 | 968 |
| Walking 3 kph (20 minutes per km) | 5.53 | 276 | 553 | 829 |
| Walking 5 kph (12 minutes per km) | 7.37 | 369 | 737 | 1106 |
| Walking 6 kph (10 minutes per km) | 9.22 | 461 | 922 | 1382 |
| Waterskiing | 14.74 | 737 | 1474 | 2212 |
| Weight training fast | 23.50 | 1175 | 2350 | 3525 |
| Weight training mod | 17.51 | 875 | 1751 | 2626 |
| Weight training slow | 11.52 | 576 | 1152 | 1728 |