

DESIGN AND TECHNOLOGIES
PROJECT FOLIO
NUTS FOR LIFE
YRS 7/8



Project Folio - Part 2 (a)

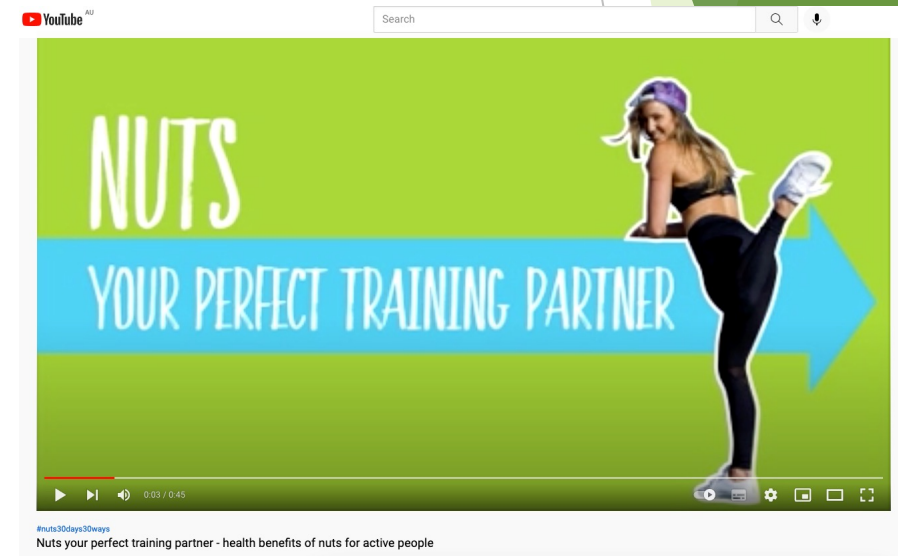


Evaluate the opportunity for food specialisation using nuts to promote the adolescent's current and future health, by examining the nutritional value of nuts and providing recipes that may solve the Design challenge.

NUTRITIONAL NEEDS OF THE ADOLESCENT

- Healthy lunch snack
- Promote current and future health status
- Healthy weight
- Healthy heart
- Healthy brain
- Guard against diabetes
- ▶ Watch the video ‘Nuts - your perfect training partner’ (0.45secs)

<https://www.youtube.com/watch?v=OEUjKisDTK0>



NUTRITION

Where do nuts belong?



HEALTHY TIPS



- ▶ Use foods from the five core food groups:
 - vegetables and legumes/beans
 - fruit
 - grain (cereal) foods, mostly wholegrain and/or high fibre
 - lean meat and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
 - milk, yoghurt, cheese and/or their alternatives, mostly reduced fat
- ▶ This will ensure the adolescent is receiving adequate nutrition from various food groups during the day.
- ▶ <http://www.nutritionaustralia.org/national/resource/whats-lunch>

PROMOTE GENERAL HEALTH

Why should nuts be part of a healthy daily diet?

- ▶ **Healthy fats** - Nuts are a great source of both good fats - monounsaturated and polyunsaturated fats¹² - which are essential for regulating blood cholesterol.¹³
- ▶ **Fibre** - all nuts contribute fibre to the diet and eating foods rich in fibre, especially soluble fibre, helps to satisfy hunger for longer. Dietary fibre helps to lower blood cholesterol and is essential for healthy bowel function.
- ▶ **Protein** - nuts are a source of plant protein, particularly for vegetarians, providing approximately 10-20g of protein per 100g.
- ▶ **Vitamin E** - an antioxidant that helps protect tissues in the body from damage. An average 30g serve of mixed nuts provides 20% of the recommended daily requirements for adults.
- ▶ **Folate** - a B vitamin associated with heart health. Hazelnuts, chestnuts, pistachios and walnuts contain folate.
- ▶ **Magnesium** - a mineral essential for good nerve and muscle function, strong bones and may reduce the risk of type 2 diabetes. An average 30g serve of almonds, brazil nuts, cashews, hazelnuts, macadamias, pecans, pine nuts or walnuts are a source of magnesium.
- ▶ **Zinc** - needed for many processes in the body including a strong immune system and healing and protecting the skin. Brazil nuts, cashews, hazelnuts, macadamias, pecans and pine nuts all contain zinc.
- ▶ **Selenium** - essential for a well functioning immune system and thyroid gland. In addition, it's an antioxidant which may reduce heart disease risk. Brazil nuts are particularly rich in selenium with just two Brazil nuts providing 100% of an adult's daily selenium requirements, or just 1 Brazil nut providing 100% of an adolescents daily selenium requirements (9-13 years).

PROMOTE FUTURE HEALTH

Are nuts nutritious?

Why should nuts be part of a healthy daily diet?

Other natural phytochemicals

- **Antioxidants** - Nuts contain a wide variety of antioxidants, including vitamin E, selenium, copper, manganese plus other phytochemicals such as flavonoids, resveratrol and ellagic acid. These help protect the body from a range of lifestyle related diseases. Similar to fruits and vegetables, the specific content of plant compounds varies from nut to nut - so eating a variety of nuts is key.
- **Arginine** is an amino acid or building block of protein that helps keep blood vessels healthy. Nuts contain arginine and it may contribute to their heart healthy properties.
- **Plant sterols** - Tree nuts contain plant sterols, substances that reduce cholesterol reabsorption from the intestine. Pistachios, cashews, almonds and pecans provide plant sterols.

ARE NUTS NUTRITIOUS?

- ▶ **Nuts are like nature's own vitamin pill** and contain a combination of at least 28 different essential nutrients and bioactive substances. A healthy, well balanced diet should include a variety of different foods, including nuts.
- ▶ **Nuts are vital for heart health.** Nuts are an excellent source of healthy fats - polyunsaturated and monounsaturated, as well as containing Vitamin E, antioxidants, folate, arginine and plant sterols - all of which contribute to better heart health. Studies show enjoying a handful of nuts (30g) at least five times a week can significantly reduce the risk of developing heart disease by 30-50%.
- ▶ **Nuts help control body weight.** Eating nuts regularly can actually help you maintain a healthy body weight and not cause weight gain. The fibre and protein help to satisfy hunger and reduce appetite, whilst the healthy fats in the nuts help release satiety hormones in the digestive system which help to tell you when you're full.
- ▶ **Nuts add fibre to your diet.** All nuts contribute fibre to the diet - around 8g per 100g on average, and eating foods rich in fibre, particularly soluble fibre, helps satisfy hunger for longer. Dietary fibre also helps to lower blood cholesterol and is essential for healthy bowel function.
- ▶ **Nuts may reduce the risk of diabetes.** Nuts contain nutrients and bioactive substances such as fat, fibre and polyphenols that can help improve insulin function, as well as reducing the rise in blood glucose after eating. They also contain magnesium, and a diet high in magnesium has been linked to a reduced risk of developing type 2 diabetes.
- ▶ Regular nut consumption has also been linked to a host of other health benefits including: gut health, brain health, reducing the risk of cancer, and living longer.

HEALTHY WEIGHT

Here's how nuts can help manage weight!

► Satisfying hunger and reducing appetite

Protein and fibre in nuts helps to satisfy hunger and reduce appetite; plus healthy fats help release satiety hormones in the digestive system which also help to tell you when you are full. Eating a snack of nuts can reduce the desire to overeat later in the day, helping to reduce your overall daily kilojoule intake.

► Fewer kilojoules absorbed

As a wholefood with fibre, the digestion and absorption of the energy in nuts is incomplete. It's estimated that you don't absorb between 5% and 15% of the energy in nuts. This is because some of the fat passes through your digestive system trapped in the nuts' fibrous structure.

► Increased energy expenditure

The physical effort the body uses to digest nuts may result in an increase in energy expenditure, estimated to be around 10% of the energy the nuts contain.

► Low glycaemic index effect

When mixed with foods containing carbohydrate, nuts can slow the digestion of the meal resulting in a slower rise in blood glucose. This helps to satisfy appetite for longer through sustained energy levels.

► Improving insulin sensitivity

Diets high in saturated and trans fat have been linked to an increased risk of insulin resistance. Insulin resistance can lead to weight gain as insulin influences fat storage. However, diets rich in monounsaturated and polyunsaturated fats appear to improve insulin sensitivity.

Source: <https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-weight-management/>

HEALTHY HEART

Eat nuts regularly to promote heart health

- ▶ **Research suggests nuts can help reduce heart disease because:**
 - A natural source of plant sterols which can help to lower cholesterol levels by reducing cholesterol reabsorption in the intestine.
 - High in potassium and low in sodium, providing benefits for blood pressure and heart health.
 - A good source of arginine - this amino acid helps keep blood vessels elastic and helps prevent blood clotting. Hardening of the arteries and blood clotting can lead to heart disease.
 - Studies show enjoying a handful of nuts every day can significantly reduce your risk of developing heart disease or dying from it.
 - Even those who eat nuts once a week have less heart disease than those who don't eat any nuts. It seems frequent nut consumption is associated with lower levels of inflammatory markers, which may partially explain the lower risk of both heart disease and diabetes.
 - In general, you can achieve an 8.3% reduction in risk of death from coronary heart disease with each weekly serving of nuts. A daily handful of nuts also reduces mortality by 20% adding more years to your life.

Source: <https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-heart-health/>

HEALTHY BRAIN

Nuts & Brain Health
What's the latest Evidence?

[View our Webinar >](#)



- ▶ Studies have reported that regular nut consumption is associated with better cognitive function.
- ▶ Data across multiple National Health and Nutrition Examination surveys, representing over 10,000 individuals, found that cognitive function was consistently greater in adult participants who consumed walnuts, regardless of age, gender, race, education, BMI, smoking, alcohol consumption and physical activity.
- ▶ One study has also suggested that eating nuts on a regular basis strengthens brainwave frequencies associated with cognition, healing, learning, memory and other key brain functions, with another study showing benefits when walnuts are consumed.
- ▶ For more information, watch this webinar:

https://www.webcasts.com.au/n4l310518/player/index.php?player_id=10270&skip_stats=1&archive=1

The essential nutrients in nuts all have important roles in aspects of brain health. Table 1 highlights the main mechanisms of action of polyunsaturated fatty acids, vitamins and minerals and phytonutrients.

B group vitamins (folate, vitamin B2, vitamin B6 and vitamin B12)	Necessary for the production of specific components of the brain, such as neurotransmitters and cell structure
Polyunsaturated fatty acids	Critical components of neuronal cell membranes, maintaining membrane fluidity and communication between brain cells
Vitamin E	Directly involved in nervous cell membrane protection through its action as an antioxidant
Zinc	Component of enzymes and as a structural component of many proteins, hormones, hormone receptors and molecules involved in brain cell communication
Iron	Necessary to ensure oxygenation of the brain, as well as for the synthesis of neurotransmitters and myelin

NUTS AND DIABETES

Why are nuts so good for type 2 diabetes?

► **Research suggests that nuts can help to reduce diabetes, due to:**

- Low glycaemic index (GI) - nuts have a GI lowering effect - they reduce the overall GI of a meal.
- Rich source of healthy fats - nuts contain mostly healthy monounsaturated and polyunsaturated fats, plus are low in saturated fat and trans fats.
- A good source of fibre - diets high in fibre may help manage diabetes and weight and can reduce the risk of developing type 2 diabetes.
- A natural source of plant sterols which can help to lower cholesterol levels by reducing cholesterol reabsorption in the intestine.
- High in potassium and low in sodium, providing benefits for blood pressure and heart health.
- A good source of arginine - this amino acid helps keep blood vessels elastic and helps prevent blood clotting. Hardening of the arteries and blood clotting can lead to heart disease.
- A rich source of magnesium - a higher intake of magnesium is linked with a reduced risk of type 2 diabetes.
- High in vitamin E - an essential vitamin and antioxidant which can help protect against heart disease. Some studies suggest that vitamin E may protect against diabetes complications.

Recommended daily serve for nuts



Just 30g of nuts a day, which is around a handful, can help you meet your daily nutrient needs and maintain your health. For those wanting to lower cholesterol research shows around 67g (or two handfuls) of nuts are needed each day.

NB. Australian Dietary Guidelines state a serve of nuts is 30g.

Ways nuts can be included in a healthy eating plan

- ❖ Sprinkle some nuts on your morning muesli
- ❖ They add great crunch to a salad or sandwich
- ❖ Keep some nuts in your lunch box for the perfect snack
- ❖ Use them when cooking. From stir-fries to pasta, nuts add an extra boost of nutrients to your evening meal as well as increase the enjoyment with extra taste and crunchy texture.

For more ideas, log on to

<https://www.nutsforlife.com.au/recipes/>



HEALTHY LUNCH IDEAS

Remember to include two serves of fruit and five of vegetables, plus a handful of nuts every day.

- ❖ Make up small snack-size portions of mixed nuts and dried fruit for a nutritious alternative to snack foods like chips and lollies.
- ❖ Nut spreads make a great sandwich filling, combined with celery or grated carrot; or use it to fill celery sticks for a quick snack.
- ❖ Add walnuts or pecans to homemade cakes and muffins.
- ❖ Banana splits are a dessert that most kids enjoy - slice a banana down the middle, top with a scoop of vanilla ice-cream and sprinkle with chopped pistachio nuts.
- ❖ Combine home made popcorn with freshly roasted cashews and almonds for a healthy afternoon snack.
- ❖ Use chestnut meal to make gluten-free pancakes.
- ❖ Layer berries, yoghurt and crushed hazelnuts in a parfait glass for a healthy afternoon snack or dessert.
- ❖ Mix crushed macadamia or Brazil nuts with fresh breadcrumbs to make home made fish or chicken nuggets.

<https://www.nutsforlife.com.au/resource-library/>

MORE IDEAS FOR HEALTHY SNACKS

(that include nuts!)

- ❖ Add nuts to your bread and muffin recipe
- ❖ Blend nuts into fruit smoothies - e.g. milk, yoghurt, fruit and almonds
- ❖ Use roasted chestnuts in place of potato or add to a stuffing mix
- ❖ Throw nuts into a salad - they add great texture and flavour
- ❖ Make your own nut butters and pastes
- ❖ Toss nuts through your veggies with some olive oil and garlic
- ❖ Add nuts to homemade muesli, blended into smoothies, topped over cereal, or sprinkled over avo-toast
- ❖ Sprinkle crushed roasted hazelnuts onto a warming soup for winter
- ❖ Crush almonds, macadamias or walnuts over fresh fruit and yoghurt
- ❖ Make your own pesto - try walnuts, almonds and pine nuts
- ❖ Make your own energy boosting trail mixes - a selection of your favourite nuts, dried fruit and some chocolate
- ❖ Add nuts to jazz up your stir-fries, pastas and risottos.

Other factors to consider

- ▶ **Aesthetics** - needs to appeal to adolescent's senses - look, smell, taste, mouth feel
- ▶ **Cost** - needs to keep to a budget and use ingredients readily available
- ▶ **Ingredients** - should use fresh, little processing, no preservatives/additives/colours, limit refined sugars
- ▶ **Equipment and tools** - consider what you have available to use
- ▶ **Techniques and processes** - consider experience with chopping, grating, slicing, sifting, beating, creaming, folding; if too difficult, it may not be a suitable solution
- ▶ **Time** - what time is available to produce the product; quick to produce for an adolescent?

Part 2 (b) Research recipes for healthy snacks using nuts by accessing the Nuts for Life website:

<https://www.nutsforlife.com.au/recipes/>



Part 2 (c) Characteristics and properties of nuts

Nuts are famous for their great taste and textured crunch. With so many to choose from, nuts are versatile from breakfast to dinner and anytime in between.

- ▶ **Almonds** - if puréeing or food-processing, be sure they have cooled completely after toasting, or they'll get gummy. They make great 'meals' or flours for baking
 - ▶ **Brazil Nuts** - for a tasty, surprising snack, pop a Brazil inside a date or pitted prune for something sweet and crunchy
 - ▶ **Cashews** - are ideal for pureeing - for a change to peanut butter, try ABC spread: almonds, Brazils and cashews
 - ▶ **Chestnuts** - have a consistency more like grains, so they go great added to a pumpkin soup
 - ▶ **Hazelnuts** - team brilliantly with chocolate. To remove the skin, roast them and then rub them between a clean kitchen towel.
 - ▶ **Macadamia nuts** - crush them with breadcrumbs for a tastier and healthier coating for fish or chicken
 - ▶ **Pecans** - go well with chicken salads - simply chopped and tossed through
 - ▶ **Pine-nuts** - make a perfect pesto - Simply blend with basil, garlic, olive oil and parmesan
 - ▶ **Pistachios** - cost-effective to buy in their shells and shuck them yourself. They make a great snack
 - ▶ **Walnuts** - Toast them to coax out their sweetness or combine them with sweet things, such as honey and maple
- NB. To keep nuts in their best condition, store them in sealed containers in the fridge or freezer

