THE COMPLETE

BUDGET NUTRITION

GUIDE & RECIPE BOOK

Every Nutrient, Every Age — On a Budget

Tailored for Australia

Sources: Australian NRVs (NHMRC), US Dietary Reference Intakes (IOM/NASEM),
Dietary Guidelines for Americans 2020–2025, USDA FoodData Central, ABS Usual Nutrient Intakes 2023

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Part 1: Understanding Australian & New Zealand Nutrient Reference Values

The Nutrient Reference Values (NRVs) are Australia and New Zealand's evidence-based standards for nutrient intake, published by the National Health and Medical Research Council (NHMRC) in 2006 and updated in 2017. They replace the older Recommended Dietary Intakes (RDIs) and are the reference standard used throughout this guide.

1.1 Understanding the Different Reference Points

NRVs include several different types of reference values:

RDI (Recommended Dietary Intake) — the daily intake sufficient to meet the nutrient requirements of nearly all (97–98%) healthy individuals. This is the target for most people.
AI (Adequate Intake) — used when an RDI can't be determined due to insufficient evidence. It's based on observed or experimentally determined intakes. Nutrients using AI include potassium, sodium, chromium, biotin, and pantothenic acid.
EAR (Estimated Average Requirement) — the intake that meets the needs of 50% of individuals. Useful for population-level assessment but not a personal target.
UL (Upper Level of Intake) — the highest daily intake unlikely to cause adverse effects. Particularly relevant for fat-soluble vitamins (A, D, E, K) which accumulate in the body.

⚑ NRVs Are a Floor, Not a Ceiling

The RDI and AI values in this guide are the minimum intakes required to prevent deficiency in 97–98% of healthy people. They are not targets for optimal health, peak performance, or disease prevention. A substantial and growing body of research in nutritional medicine suggests that truly optimal intakes for several key nutrients are meaningfully higher than the RDI.

Key examples from the research literature:

- Vitamin D — RDI is 600 IU (15 mcg). Optimal blood levels (75–150 nmol/L) typically require 1,000–4,000 IU/day for most adults — 2–7× the RDI.
- Magnesium — RDI is 310–420 mg. Research on metabolic health, sleep quality, and muscle function suggests 400–600 mg/day may be optimal — up to 1.5× the RDI.
- Omega-3 (EPA+DHA) — The AI is 160–610 mg. Cardiovascular and anti-inflammatory benefits are consistently observed at 1,000–3,000 mg/day — 3–10× the AI.
- Vitamin C — RDI is 45 mg. Tissue saturation occurs around 200–400 mg/day. Therapeutic immune-function doses studied in trials range to 1,000 mg and beyond.
- Zinc — RDI is 8–14 mg. Immune and hormonal research points to 15–25 mg/day as potentially optimal for active adults — roughly 1.5–2× the RDI.

Practical takeaway: treat the NRVs throughout this guide as your minimum baseline — the level below which problems arise. If you have specific health goals such as immune resilience, athletic performance, reproductive health, cognitive function, or healthy ageing, it is worth exploring the research on optimal (not just adequate) intake for individual nutrients. An accredited practising dietitian or GP can advise on personalised targets.

1.2 Daily vs Weekly — Does It Matter?

For most nutrients, hitting the target as a weekly average is perfectly fine:

Fat-soluble vitamins (A, D, E, K) — stored in the liver and adipose tissue for weeks or months. Weekly averages are appropriate, and caution is needed not to exceed ULs.
Minerals (calcium, magnesium, zinc, etc.) — the body maintains stores and regulates absorption. Consistent intake across the week is ideal but brief shortfalls self-correct.
Water-soluble vitamins (C, B-group) — excreted quickly. Daily intake is more important, though a day or two below target rarely causes problems in healthy individuals.
Iron — absorption is tightly regulated daily. You cannot 'catch up' easily, especially for menstruating women. Consistent daily intake matters more for iron than most nutrients.
Vitamin B12 — the liver can store up to 2–3 years' worth. Daily requirements are less critical if overall diet is adequate, but vegans should be consistent.

Note on Vitamin D: Most Australians produce adequate Vitamin D from sun exposure — 6–15 min for fair skin, 15–30 min for darker skin, most days. The dietary RDI (600–800 IU) assumes minimal sun exposure. Supplementation is typically recommended only for those who are mostly indoors, elderly, or have darker skin in southern Australia during winter.

1.3 Key Nutrients Australians Consistently Miss

According to the ABS National Nutrition & Physical Activity Survey 2023, these are the biggest gaps:

Calcium: 60%+ of Australians don't meet requirements. Over 90% of teenage girls and women over 50 fall short. Dairy, sardines with bones, tofu, and leafy greens are the cheapest solutions.
Zinc (males): 48% of men don't meet requirements. Meat, shellfish, pumpkin seeds, and legumes are key sources.
Iron (women 18–29): 47% don't meet requirements. Combine heme iron sources (meat, liver) with Vitamin C foods to maximise absorption.
Magnesium: 31% fall short. Pumpkin seeds, almonds, leafy greens, and dark chocolate are excellent budget sources.
Vitamin D: 21% of adults are deficient. Sun exposure addresses this for free — no expensive supplements needed for most.
Folate: particularly important pre-conception and in early pregnancy (first 12 weeks). Supplementation at 400–500µg/day is recommended for pregnancy planning.

Part 2: Macronutrient Requirements by Age & Sex

Macronutrients are nutrients your body needs in large quantities: protein, carbohydrates, and fat, plus fibre and water.

Acceptable Macronutrient Distribution Ranges (AMDR)

Age Group	Protein (% kcal)	Carbohydrate (% kcal)	Fat (% kcal)
Children 1–3	5–20%	45–65%	30–40%
Children 4–18	10–30%	45–65%	25–35%
Adults 19+	10–35%	45–65%	20–35%
Pregnancy/Lactation	10–35%	45–65%	20–35%

Daily Energy (Calorie) Requirements

Age/Sex Group	Sedentary	Moderate	Active
Children 2–3	1,000	1,000–1,400	1,000–1,400
Girls 4–8	1,200	1,400–1,600	1,400–1,800
Boys 4–8	1,400	1,400–1,600	1,600–2,000
Girls 9–13	1,600	1,600–2,000	1,800–2,200
Boys 9–13	1,800	1,800–2,200	2,000–2,600
Females 14–18	1,800	2,000	2,400
Males 14–18	2,200	2,400–2,800	2,800–3,200
Females 19–30	2,000	2,000–2,200	2,400
Males 19–30	2,400	2,600–2,800	3,000
Females 31–50	1,800	2,000	2,200
Males 31–50	2,200	2,400–2,600	2,800–3,000
Females 51–70	1,600	1,800	2,000–2,200
Males 51–70	2,000	2,200–2,400	2,400–2,800
Females 71+	1,600	1,800	2,000
Males 71+	2,000	2,200	2,400
Pregnant	+340 (2nd tri)	+452 (3rd tri)	
Lactating	+330 (1st 6mo)	+400 (2nd 6mo)	

Protein RDA (grams/day)

Age/Sex Group	RDA (g/day)	Per kg body weight
Children 1–3	13 g	1.05 g/kg
Children 4–8	19 g	0.95 g/kg
Girls 9–13	34 g	0.87 g/kg
Boys 9–13	34 g	0.87 g/kg
Females 14–18	46 g	0.77 g/kg
Males 14–18	52 g	0.77 g/kg
Females 19–70+	46 g	0.75 g/kg
Males 19–70+	64 g	0.84 g/kg
Pregnant	60 g	+10 g above baseline

Age/Sex Group	RDA (g/day)	Per kg body weight
Lactating	67 g	+16 g above baseline

Note: Many experts recommend 1.0–1.2 g/kg for older adults to prevent sarcopenia (muscle loss).

Understanding Net Protein: Total Weight vs Actual Protein

When we say a food contains protein, we mean the protein content by weight — not the weight of the food itself. This is one of the most common sources of confusion.

Example:

150g of raw chicken breast ≈ 33g of protein (about 22% by weight after cooking). Not 150g of protein.

Common foods — protein per 100g cooked/as eaten:

Chicken breast: ~31g | Beef mince (lean): ~26g | Canned tuna: ~25g | Canned sardines: ~22g

Eggs (whole): ~13g | Greek yoghurt: ~10g | Cow's milk: ~3.4g | Cheddar cheese: ~25g

Cooked lentils: ~9g | Cooked chickpeas: ~8.9g | Firm tofu: ~8g | Oats (dry): ~17g

Bioavailability: animal proteins are 90–99% digestible (DIAAS score at or above 1.0). Plant proteins are typically 50–80% digestible, and most are low in at least one essential amino acid — meaning vegans and vegetarians need roughly 10–20% more total protein to hit the same absorbed amount.

Leucine threshold: muscle protein synthesis requires ~2.5–3g of leucine per meal. 3 × 30g protein meals stimulates muscle growth more effectively than 1 × 90g meal — distribution across the day matters.

Practical rule: a recipe serving 4 with 500g raw chicken breast delivers roughly 28–32g net protein per serve — a solid, complete serving.

Fibre (Adequate Intake)

Age/Sex Group	AI (g/day)
Children 1–3	14 g
Children 4–8	18 g
Girls 9–13	20 g
Boys 9–13	24 g
Females 14–18	22 g
Males 14–18	28 g
Females 19–50	25 g
Males 19–50	30 g
Females 51+	22 g
Males 51+	25 g
Pregnant	25–28 g

Water (Adequate Intake)

Age/Sex Group	AI (L/day)
Children 1–3	1.3 L
Children 4–8	1.7 L
Girls 9–13	2.1 L
Boys 9–13	2.4 L

Age/Sex Group	AI (L/day)
Females 14–18	2.3 L
Males 14–18	3.3 L
Females 19+	2.7 L
Males 19+	3.7 L
Pregnant	3.0 L
Lactating	3.8 L

Water: All Sources Count

The 2-3.5L daily target includes ALL fluid sources -- not just plain water from a glass. Approximately 20-30% of daily water intake comes from food alone.

High-water foods (% water by weight):

Cucumber: 96% | Lettuce: 95% | Zucchini: 94% | Tomato: 94% | Watermelon: 92%

Oranges: 87% | Milk: 87% | Plain yoghurt: 85% | Cooked oats: 84% | Eggs: 76%

Practical example: A day that includes a bowl of oats with milk (breakfast), two pieces of fruit, a salad-based lunch, and a vegetable-rich dinner contributes approximately 700-900mL of water from food alone -- before a single glass of water is consumed.

Tea and coffee count too (contrary to myth, moderate caffeine does not cause net fluid loss). However, avoid counting heavily caffeinated drinks as your primary fluid source.

Signs you're under-hydrated: urine darker than pale yellow, headaches in the afternoon, constipation, fatigue, difficulty concentrating. These often appear before thirst does.

Part 3: Micronutrient Requirements — Vitamins

Fat-Soluble Vitamins

Nutrient	Child 1–3	Child 4–8	F 14–18	M 14–18	F 19–50	M 19–50	F 51+	M 51+	Pregnant	Lactation
Vit A (µg RAE)	300	400	700	900	700	900	700	900	770	1,300
Vit D (IU)	600	600	600	600	600	600	600–800	600–800	600	600
Vit E (mg)	6	7	15	15	15	15	15	15	15	19
Vit K (µg)	30	55	75	75	90	120	90	120	90	90

Water-Soluble Vitamins

Nutrient	Child 1–3	Child 4–8	F 14–18	M 14–18	F 19–50	M 19–50	F 51+	M 51+	Pregnant	Lactation
Vit C (mg)	15	25	65	75	75	90	75	90	85	120
B1 Thiamin (mg)	0.5	0.6	1.0	1.2	1.1	1.2	1.1	1.2	1.4	1.4
B2 Riboflavin (mg)	0.5	0.6	1.0	1.3	1.1	1.3	1.1	1.3	1.4	1.6
B3 Niacin (mg NE)	6	8	14	16	14	16	14	16	18	17
B6 (mg)	0.5	0.6	1.2	1.3	1.3	1.3	1.5	1.7	1.9	2.0
Folate (µg DFE)	150	200	400	400	400	400	400	400	600	500
B12 (µg)	0.9	1.2	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.8
Choline (mg)	200	250	400	550	425	550	425	550	450	550

Part 4: Micronutrient Requirements — Minerals

Major Minerals

Nutrient	Child 1–3	Child 4–8	F 14–18	M 14–18	F 19–50	M 19–50	F 51+	M 51+	Pregnant
Calcium (mg)	700	1,000	1,300	1,300	1,000	1,000	1,200	1,000–1,200	1,000
Phosphorus (mg)	460	500	1,250	1,250	700	700	700	700	700
Magnesium (mg)	80	130	360	410	310	400	320	420	350
Potassium (mg)	3,000	3,800	4,700	4,700	4,700	4,700	4,700	4,700	4,700

Trace Minerals

Nutrient	Child 1–3	Child 4–8	F 14–18	M 14–18	F 19–50	M 19–50	F 51+	M 51+	Pregnant
Iron (mg)	7	10	15	11	18	8	8	8	27
Zinc (mg)	3	5	9	11	8	11	8	11	11
Iodine (µg)	90	90	150	150	150	150	150	150	220
Selenium (µg)	20	30	55	55	55	55	55	55	60
Copper (µg)	340	440	890	890	900	900	900	900	1,000

Part 5: NRV Reference Tables by Demographic

The tables below cover all major demographics from children through to elderly adults, plus pregnancy and lactation. Values are daily RDIs unless marked as AI.

2.1 Energy, Macronutrients & Key Vitamins

Vit A = µg RAE (Retinol Activity Equivalents) · Vit D = IU · Folate = µg DFE (Dietary Folate Equivalents) · Omega-3 = g ALA/day

Demographic	Energy (kcal)	Protein (g)	Fibre (g)	Omega-3 (g)	Vit A (µg)	Vit C (mg)	Vit D (IU)	Folate (µg)	B12 (µg)
Children 1–3 (M/F)	undefined	13	14	1100	300	15	600	150	0.9
Children 4–8 (M/F)	undefined	19	18	1450	400	25	600	200	1.2
Girls 9–13	undefined	34	20	1800	600	45	600	300	1.8
Boys 9–13	undefined	34	24	2000	600	45	600	300	1.8
Girls 14–18	undefined	46	22	2000	700	65	600	400	2.4
Boys 14–18	undefined	52	28	2600	900	75	600	400	2.4
Women 19–50	undefined	46	25	2000	700	75	600	400	2.4
Men 19–50	undefined	64	30	2400	900	90	600	400	2.4
Women 51–70	undefined	46	22	1800	700	75	600	400	2.4
Men 51–70	undefined	64	25	2200	900	90	600	400	2.4
Women 70+	undefined	46	22	1800	700	75	800	400	2.4
Men 70+	undefined	64	25	2000	900	90	800	400	2.4
Pregnancy	undefined	60	28	2350	770	85	600	600	2.6
Lactation	undefined	67	25	2400	1300	120	600	500	2.8

Macronutrient AMDRs (Acceptable Macronutrient Distribution Ranges): Carbohydrates 45–65% of energy · Total Fat 20–35% of energy · Saturated Fat <10% of energy · Added sugars <10% of energy

2.2 Vitamin K, Choline & Key Minerals

Ca = Calcium · Mg = Magnesium · Zn = Zinc · K = Potassium · Se = Selenium · I = Iodine

Demographic	Vit K (µg)	Choline (mg)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Zinc (mg)	Potassium (mg)	Selenium (µg)	Iodine (µg)
Children 1–3 (M/F)	30	200	700	7	80	3	3000	20	90
Children 4–8 (M/F)	55	250	1000	10	130	5	3800	30	90
Girls 9–13	60	375	1300	8	240	8	4500	40	120
Boys 9–13	60	375	1300	8	240	8	4500	40	120
Girls 14–18	75	400	1300	15	360	9	4700	55	150
Boys 14–18	75	550	1300	11	410	11	4700	55	150
Women 19–50	90	425	1000	18	310	8	4700	55	150
Men 19–50	120	550	1000	8	400	11	4700	55	150
Women 51–70	90	425	1200	8	320	8	4700	55	150
Men 51–70	120	550	1000	8	420	11	4700	55	150
Women 70+	90	425	1200	8	320	8	4700	55	150
Men 70+	120	550	1200	8	420	11	4700	55	150
Pregnancy	90	450	1000	27	350	11	4700	60	220
Lactation	90	550	1000	9	310	12	5100	70	290

Additional minerals not shown: Sodium 460–920mg AI (max 2,300mg/day) · Phosphorus 1,000mg · Copper 1.2–1.7mg (AI) · Manganese 5–5.5mg (AI) · Fluoride 3–4mg (AI) · Chromium 25–35µg (AI) · Water: women 2.1L/day, men 2.6L/day (from all sources)

Part 6: Common Nutrient Gaps by Age Group

Children (4–13 years)

Most commonly low in: calcium, vitamin D, potassium, and fibre. Many children consume adequate protein but fall short on produce-based micronutrients.

Adolescents (14–18 years)

Critical gaps: calcium (essential for peak bone mass), iron (especially girls after menarche), vitamin D, magnesium, potassium, and fibre. This is the most nutritionally demanding life stage relative to body weight.

Adult Women (19–50)

Iron needs are high at 18 mg/day — the highest RDA of any non-pregnant group. Also commonly low in folate, calcium, vitamin D, and magnesium.

Adult Men (19–50)

Tend to over-consume sodium and protein while under-consuming potassium, magnesium, fibre, and vitamin E.

Pregnant Women

Folate needs increase 50% to 600 µg/day. Iron jumps to 27 mg/day. Iodine rises to 220 µg. Choline (450 mg) and DHA (300+ mg) are critical for fetal brain development.

Older Adults (51+)

Vitamin B12 absorption declines with age — supplementation recommended. Vitamin D needs increase to 800 IU for those over 71. Calcium rises to 1,200 mg for women 51+ and men 71+. Protein should increase to 1.0–1.2 g/kg to prevent muscle loss.

3.1 Pregnancy & Pre-Conception

Nutritional requirements change significantly before and during pregnancy. Key considerations:

Folate: Increase to 400–500µg supplement daily at least 1 month before conception and through first trimester. Prevents 70% of neural tube defects.
Iron: Requirement nearly doubles to 27mg/day. Many pregnant women need supplements — check with GP or midwife.
Iodine: Increases to 220µg/day. Supplement with 150µg iodine daily (in addition to diet) throughout pregnancy and lactation per NHMRC.
Vitamin A: AVOID supplements and organ meats (liver) in the first trimester. Preformed Vitamin A (retinol) above 3,000µg RAE/day is teratogenic. Beta-carotene from vegetables is safe.
Omega-3 (DHA): 200mg DHA/day is recommended for foetal brain development. Oily fish (not shark/swordfish/king mackerel) 2–3 times/week or algae-based DHA supplement.
Calcium: Requirement stays at 1,000mg/day — the body becomes more efficient at absorbing it. Teens pregnant under 18 need 1,300mg/day.

3.2 Infants, Children & Teenagers

0–6 months: Breast milk or formula exclusively. No other food or water needed.
6–12 months: Introduce iron-rich foods first (meat, legumes, iron-fortified cereals). Breast milk or formula continues.
Toddlers 1–3: High energy density per kg needed. Full-fat dairy. Iron and zinc commonly low — prioritise meat, eggs, legumes.
Teenagers (especially girls 14–18): Iron requirements peak at 15mg/day for girls. Calcium requirements are highest of any demographic (1,300mg/day) during peak bone formation years.
Teenagers (boys 14–18): Protein requirements rise sharply with growth. Zinc (11mg/day) is commonly insufficient in typical Australian teen diets.

3.3 Elderly Adults (65+)

Protein: Requirements increase to 1.0–1.2g/kg/day to combat sarcopenia (age-related muscle loss). Many older Australians don't meet this.
Calcium: Women over 50 need 1,300mg/day (up from 1,000mg) due to post-menopausal bone loss acceleration.
Vitamin D: The RDI rises to 800 IU (20µg) for 70+. Skin becomes less efficient at synthesising Vitamin D from sun. Supplementation often warranted.
B12: Absorption declines with age due to reduced gastric acid. Regular testing recommended. Fortified foods and supplements bypass this issue.
Zinc: Commonly low in elderly Australians. Involved in immune function, wound healing, and taste — important for appetite and infection resistance.

3.4 Vegan & Plant-Based Diets

B12: MUST supplement. There is no reliable plant-based source of B12. At least 50µg/day supplement or 2,000µg weekly.
Iron: Plant-based (non-heme) iron is 2–3x less absorbable. Consume with Vitamin C and avoid tea/coffee within 1 hour. Aim for double the RDI from plant sources.
Zinc: Phytates in grains and legumes inhibit absorption. Soaking, fermenting, or sprouting legumes increases bioavailability. May need 50% more than RDI.

Calcium: Without dairy, target calcium-fortified plant milks (300mg/250mL), tofu (with calcium sulfate), tahini, and leafy greens.
Omega-3: ALA from flaxseed/chia is inefficiently converted to DHA/EPA. Consider algae-based DHA supplement for brain and heart health.
Iodine: Seaweed is unreliable (hugely variable iodine content). Use iodised salt or supplement.

Part 7: The 6 Critical Nutrient Gaps Most Australians Miss

Why These 6 Gaps?

According to the ABS National Nutrition & Physical Activity Survey 2023, six nutrients stand out as the most common shortfalls across the Australian population. These aren't minor gaps — they affect 20–60% of all Australians and are directly linked to fatigue, poor immune function, bone loss, and anaemia.

Organ meats (particularly liver) solve almost all of them in one go, which is why they feature prominently in this guide. But they're not for everyone. This chapter maps each gap to its best budget-friendly, offal-free solutions — with exact serve sizes, nutrient amounts per serve, and practical tips.

> *Key rule: Plant-based iron and zinc are 2–3× less bioavailable than animal sources due to phytates and oxalates. Always pair with Vitamin C for iron, and soak/sprout legumes to improve zinc absorption.*

1. Calcium — 60% of Australians Fall Short

Calcium is the most widespread deficiency in Australia. Over 90% of teenage girls and women over 50 don't meet requirements. Bone loss begins silently decades before osteoporosis is diagnosed.

RDI: 1,000mg/day adults · 1,300mg/day teens (14–18) · 1,300mg/day women 50+ · 1,200mg/day men 70+

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Milk (full fat)	250mL (1 glass)	~300mg (30% RDI)	~$0.40	One glass covers nearly a third of daily needs. Full-fat absorbs better.
Yoghurt (plain)	200g tub	~250mg (25% RDI)	~$0.60	Also excellent source of iodine, B12, and potassium. Choose plain over flavoured.
Cheese (cheddar)	30g slice	~200mg (20% RDI)	~$0.40	Dense calcium per gram. Hard cheeses have more calcium than soft.
Sardines (with bones)	1 tin / 95g	~350mg (35% RDI)	~$1.50	MUST eat the bones — that is where essentially all the calcium lives.
Calcium-set tofu	100g	~350mg (35% RDI)	~$0.60	Check the label — only works if set with calcium sulfate (E516). Nigari tofu has almost none.
Bok choy (cooked)	1 cup / 170g	~160mg (16% RDI)	~$0.30	Good bioavailability despite plant source — low oxalate content.
Kale (cooked)	1 cup / 130g	~180mg (18% RDI)	~$0.40	Also high in Vit K and Vit A. Oxalates are low so calcium absorbs well.

Budget strategy: 250mL milk + 200g yoghurt daily = ~550mg calcium at ~$1.00. Add 30g cheese with a meal and you're at 750mg — nearly the full RDI before counting anything else.

2. Zinc (Males) — 48% of Men Fall Short

Zinc deficiency is alarmingly common in Australian and New Zealand men. It affects immune function, testosterone production, wound healing, taste and smell, and DNA synthesis. The male RDI (14mg) is nearly double the female RDI (8mg), yet most Australian men eat well below it.

RDI: 14mg/day men (19–70) · 8mg/day women · 11mg/day teen boys · 9mg/day teen girls

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Beef mince (lean)	100g cooked	~8mg (57% male RDI)	~$1.00	Single best non-offal zinc source. One serve nearly covers the male RDI alone.
Pumpkin seeds	30g / 2 tbsp	~2.2mg (16% male RDI)	~$0.30	Sprinkle on everything. Also excellent for magnesium and iron.
Oats (rolled)	80g dry / 1 cup	~2.3mg (16% male RDI)	~$0.10	Soak overnight to reduce phytates and improve zinc bioavailability significantly.
Chickpeas (cooked)	160g / 1 cup	~2.5mg (18% male RDI)	~$0.20	Soak from dried (not tinned) for better absorption. Roast for a zinc-rich snack.
Eggs (2 whole)	100g / 2 large	~1.3mg (9% male RDI)	~$0.60	Modest but consistent daily contribution — pairs well with other zinc sources.
Cheese (cheddar)	30g	~1.0mg (7% male RDI)	~$0.40	Easy add to any meal. Stacks with other sources toward the daily target.
Lentils (cooked)	200g / 1 cup	~2.5mg (18% male RDI)	~$0.20	Soak and rinse before cooking. Cook with acidic ingredient (tomato) to reduce phytates.

Absorption note: Plant zinc (pumpkin seeds, oats, legumes) is 25–50% absorbed vs 40–60% for red meat zinc. Soaking, fermenting, and sprouting legumes breaks down phytates and increases bioavailability substantially. Eating with meat also helps — a phenomenon called the 'meat factor'.

3. Iron (Women 18–29) — 47% of Young Women Fall Short

Iron deficiency is the most common nutritional deficiency worldwide, and Australian women aged 18–29 are the most affected group (NZ surveys show similar prevalence). Symptoms — fatigue, brain fog, poor exercise tolerance, hair loss — are often misattributed to stress or poor sleep.

RDI: 18mg/day women (19–50) · 8mg/day men · 15mg/day teen girls (14–18) · 27mg/day pregnancy

Kangaroo: Australia's Most Underrated Iron Source

Kangaroo is one of the richest sources of heme iron available in Australian supermarkets and one of the cheapest per kilogram. It is also wild-harvested, making it one of the most sustainable meats on earth.

Per 100g cooked kangaroo:

- Iron: 3.5-4.0mg heme iron (absorbs at 15-35% -- far superior to plant iron)
- Protein: 26-28g -- complete, highly bioavailable
- Zinc: 2.5-3.0mg | Vitamin B12: 2-3mcg (near full adult RDI)
- Omega-3: ~60-80mg (modest but present -- unusual for red meat)
- Fat: very low at 1-2% total fat, almost no saturated fat. This means you may want to cook it with olive oil or serve with avocado for fat-soluble vitamin absorption.

Cost: $8-14/kg at Coles and Woolworths (Macro brand), often cheaper at butchers and independent stores. At $10/kg, 100g costs $1.00 -- a genuinely competitive iron source.

Best cooked: medium-rare (well-done becomes tough). Works well as stir-fry strips, burgers, mince in bolognese, or sliced in wraps.

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Lentils (cooked)	200g / 1 cup	~6.6mg non-heme	~$0.20	Highest plant iron per dollar in Australia. Always pair with Vit C — lemon juice, capsicum.
Kidney beans (cooked)	170g / 1 cup	~3.9mg non-heme	~$0.20	Versatile — chilli, soup, curry. Rinse tinned beans and pair with tomato (Vit C).
Beef mince (lean)	100g cooked	~3.2mg heme	~$1.00	Heme iron absorbs 2–3× better than plant iron. Even small serves help significantly.
Weet-Bix (fortified)	2 biscuits / 30g	~2.6mg fortified	~$0.20	Good daily base. The fortification is well-absorbed. Eat with Vit C-rich fruit.
Tofu (firm)	100g	~3.0mg non-heme	~$0.60	Stir-fry with capsicum or broccoli to maximise iron absorption from the same meal.
Spinach (cooked)	180g / 1 cup	~3.6mg non-heme	~$0.30	Cooking reduces oxalates that block absorption. Always add lemon juice or capsicum.
Dark chocolate 70%+	30g	~3.4mg non-heme	~$0.50	A genuinely legitimate iron source — and great eaten

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
				alongside Vit C-rich food.

Iron absorption blockers: Tea and coffee reduce iron absorption by 60–80% when consumed within 1 hour of a meal. Calcium supplements taken at the same time as iron-rich foods also compete for absorption. Separate these by at least 1 hour.

The Vitamin C multiplier: Adding 75–100mg Vitamin C (half a capsicum, one orange, or a squeeze of lemon) to a plant-iron meal can increase non-heme iron absorption by 2–3×. This is the single most impactful thing iron-deficient vegetarians can do.

4. Magnesium — 31% of Adults Fall Short

Magnesium is involved in over 300 enzymatic reactions including muscle contraction, nerve function, blood glucose regulation, and protein synthesis. Deficiency is associated with muscle cramps, anxiety, poor sleep, and fatigue — symptoms that are extremely common in the general population.

RDI: 320mg/day women (19–30) · 420mg/day men (19–30) · 320–420mg rises slightly with age

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Pumpkin seeds	30g / 2 tbsp	~160mg (50% female RDI)	~$0.30	One handful covers half the daily female RDI. The single best budget magnesium food.
Spinach (cooked)	180g / 1 cup	~157mg (49% female RDI)	~$0.30	Also covers iron, folate, Vit K, and Vit A. One of the most nutrient-dense cheap foods.
Black beans (cooked)	172g / 1 cup	~120mg (38% female RDI)	~$0.20	Also excellent for iron, zinc, fibre, and folate. Cheap and very versatile.
Brown rice (cooked)	195g / 1 cup	~84mg (26% female RDI)	~$0.15	Easy swap from white rice. Negligible cost difference, meaningful magnesium benefit.
Oats (dry)	80g / 1 cup	~55mg (17% female RDI)	~$0.10	Daily breakfast oats stack up meaningfully across the week.
Almonds	30g / small handful	~75mg (23% female RDI)	~$0.50	Also good for Vit E, calcium, and zinc. Higher cost than seeds but nutrient-dense.
Banana	1 medium / 118g	~32mg (10% female RDI)	~$0.30	Also potassium, Vit B6, and quick energy. A good daily addition.

The simplest magnesium fix: 30g pumpkin seeds on morning oats + 1 cup cooked spinach at dinner = ~317mg magnesium. That's essentially the full female RDI at a total cost of ~$0.60.

5. Vitamin D — 21% of Adults Deficient

Vitamin D deficiency is paradoxical in sunny Australia, but lifestyle factors — indoor work, sunscreen, longer commutes — mean 1 in 5 adults is clinically deficient. It's essential for calcium absorption, immune function, muscle strength, and mood regulation.

RDI: 600 IU (15µg)/day adults 19–70 · 800 IU (20µg)/day 70+ · UL: 4,000 IU/day (don't over-supplement)

Vitamin D from Sun: When It's Safe and When It Works

Most Australians and New Zealanders can make adequate vitamin D from sun exposure for free -- but there are important nuances about when this works and when it doesn't.

UV INDEX is the key number. Vitamin D synthesis only occurs from UV-B radiation (wavelength 290-315nm). You need a UV Index of at least 3 for meaningful synthesis:

- UV Index < 3: Almost no vitamin D synthesis possible. Common in southern Victoria and NZ through June-August. This is when supplementation becomes important.
- UV Index 3-6: 10-20 minutes of sun exposure on arms and legs (face optional) is enough for most fair-skinned adults. More for darker skin tones (2-3x longer).
- UV Index > 6: 5-10 minutes is sufficient. Longer exposure adds no more vitamin D -- the skin self-limits -- but does increase skin damage risk.

Summer timing in Victoria: before 10am and after 3pm, the UV Index is typically 3-5 even on hot summer days. This is the sweet spot -- enough UV-B for vitamin D, low enough to avoid burning. Avoid the 10am-3pm window in summer.

Winter (June-August) in Victoria and NZ: UV Index rarely exceeds 2 even at midday. Consider 1,000-2,000 IU vitamin D3 supplement through winter, especially if you work indoors.

Sunscreen SPF 15+ blocks approximately 99% of vitamin D-producing UV-B. Apply after your brief vitamin D window, not before -- a few minutes of unprotected exposure on arms and legs before applying sunscreen is a practical approach.

Glass blocks all UV-B. Driving, sitting by windows, or working in glass-fronted offices does not produce vitamin D regardless of how bright the light appears.

Check the UV Index: the Australian BOM app and SunSmart app both show real-time UV Index by location. Use it as a daily guide.

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Sun exposure	15–30 min on arms & legs	600–1,000 IU	FREE	Best source by far. Fair skin needs less; darker skin needs more. More in winter/southern states.
Sardines (tinned)	1 tin / 95g	~250 IU (42% RDI)	~$1.50	Best dietary source. Combined with omega-3 and calcium, sardines are an extraordinary budget food.
Eggs (2 whole)	2 large eggs / 100g	~80–100 IU (15% RDI)	~$0.60	Yolk only contains the vitamin D. Don't skip it or use egg whites only.
UV-exposed mushrooms	100g (gills-up in sun 30 min)	~400+ IU (67% RDI)	~$0.50	This genuinely works — Vit D2 synthesises in mushrooms just as it does in skin. Place gills-up in

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
				direct midday sun for 30–60 min before cooking.
Fortified milk	250mL glass	~40 IU (7% RDI)	~$0.40	Modest contribution but consistent. Check label — not all Australian milks are fortified.
Tinned salmon	100g	~350 IU (58% RDI)	~$2.00	Higher cost than sardines but very good Vit D. Also omega-3 and protein.

Sun timing: UV must be sufficient for skin synthesis — in southern Australia (Melbourne, Adelaide) in winter, there may be insufficient UV even at midday. In those cases, dietary sources and supplementation become more important. In northern Australia (Queensland, NT), year-round sun is adequate.

The UV mushroom hack is one of the most underrated tips in nutrition. Buy button mushrooms, place them gills-up in direct sunlight for 30–60 minutes before use, and you've created a food with potentially more Vitamin D than a supplement capsule — at the cost of remembering to leave them outside.

6. Vitamin A — 23% of Adults Fall Short

Vitamin A deficiency affects immune function, vision (especially night vision), skin integrity, and foetal development. The good news: orange and dark green vegetables are extremely cheap and contain abundant beta-carotene, which the body converts to Vitamin A as needed (without any risk of toxicity).

RDI: 700µg RAE/day women · 900µg RAE/day men · 770µg RAE pregnancy · UL: 3,000µg RAE/day (applies only to preformed retinol, not beta-carotene from vegetables)

Food	Serve Size	Nutrient / Serve	Cost	Key Tip
Sweet potato (baked)	1 medium / 130g	~960µg RAE (137% RDI)	~$0.40	Covers the ENTIRE adult RDI in one serve. One of the most nutrient-dense cheap foods available.
Carrots (cooked)	½ cup / 78g	~665µg RAE (95% RDI)	~$0.20	Nearly a full day's worth for well under $0.25. Roast in oil for best beta-carotene absorption.
Kale (cooked)	½ cup / 65g	~885µg RAE (126% RDI)	~$0.30	Also excellent for Vit K, calcium, and Vit C. One of the most nutrient-dense leafy greens.
Spinach (cooked)	½ cup / 90g	~472µg RAE (67% RDI)	~$0.20	Two serves covers the daily RDI. Easy to add to almost any meal.
Red capsicum (raw)	½ cup / 75g	~117µg RAE (17% RDI)	~$0.40	Also the highest Vit C content of any common vegetable — great eaten alongside iron-rich foods.
Pumpkin (cooked)	½ cup / 122g	~730µg RAE (104% RDI)	~$0.20	Cheap, filling, versatile. Roast, soup, or add to curries.
Eggs (2 whole)	2 large / 100g	~90µg RAE (13% RDI)	~$0.60	Contains preformed retinol (real Vit A), not just beta-carotene — highly bioavailable.

Fat is essential for Vitamin A absorption: beta-carotene from vegetables is fat-soluble and requires dietary fat to be absorbed. Raw carrots eaten plain have very low beta-carotene absorption. Always cook orange/green vegetables with a small amount of oil, butter, or eat alongside a meal that contains fat.

7. Putting It Together — The Non-Offal Daily Stack

Meeting all 6 nutrient gaps without organ meats is entirely achievable. The table below shows a practical daily and weekly framework, with the gaps each food addresses, cost per serve, and when to eat it.

Food (Daily or Weekly)	Nutrients Covered	Cost	When to Eat
2 eggs (daily)	Vitamin D, B12, zinc, choline, selenium	~$0.60	Any meal — breakfast scramble, fried rice, boiled
250mL milk or 200g yoghurt (daily)	Calcium, iodine, B12, zinc, potassium	~$0.50–0.70	Breakfast, snack, or in cooking
30g pumpkin seeds (daily)	Magnesium (160mg), zinc, iron, omega-3	~$0.30	Sprinkle on oats, yoghurt, salads
Sweet potato or 2 large carrots (daily)	Vitamin A (full day's needs)	~$0.30–0.40	Roast or steam with a drizzle of oil
1 cup lentils or beans (3–4×/week)	Iron (non-heme), zinc, magnesium, folate, fibre	~$0.20/serve	Soups, curries, stews — pair with Vit C
1 tin sardines (1–2×/week)	Vitamin D (~250 IU), calcium, omega-3, B12	~$1.50/serve	On toast, in pasta, or with rice
100g beef mince (1–2×/week)	Zinc (8mg heme), iron (heme), B12, protein	~$1.00/serve	Bolognese, stir-fry, patties
Red capsicum ½ cup raw (daily)	Vitamin C (150mg — doubles iron absorption)	~$0.40	Raw in salads, or with any iron-rich meal

7.1 Weekly Cost Summary

Daily foods (eggs, milk/yoghurt, pumpkin seeds, sweet potato/carrot, capsicum): ~$2.00–2.50/day
Weekly foods (sardines 2× + beef mince 2×): ~$5.00/week = ~$0.70/day
Total gap-filling premium over a basic diet: ~$2.70–3.20/day
Annual cost of NOT fixing these gaps (medical, supplements, energy, productivity): significantly more

7.2 Absorption Rules — The Non-Negotiables

Iron + Vitamin C (always): Add capsicum, citrus, or tomato to every legume or spinach meal. Can triple iron absorption.
Vitamin A + fat (always): Cook orange/green veg in oil or serve with a fat-containing food. Without fat, beta-carotene absorption drops to near zero.
Zinc + soaking (legumes): Soak dried legumes overnight and discard the water. Reduces phytate content by 30–60%.
Calcium + spread across day: The body absorbs calcium more efficiently in doses under 500mg. Spread dairy serves across meals rather than consuming all at once.
Iron — avoid tea/coffee within 1 hour: Tannins bind iron and block absorption by up to 80%.
Vitamin D + sun: 15–30 min daily sun on arms/legs covers most Australians most of the year. No sunscreen on the target area during that window.

Sources: NHMRC Australian Nutrient Reference Values (2006, updated 2017) · NZ Ministry of Health Nutrient Reference Values (2006) · ABS National Nutrition & Physical Activity Survey 2023 · USDA FoodData Central · Coles/Woolworths homebrand pricing (Australia, 2026) · Linus Pauling Institute Micronutrient Information Center

Fish: The Most Nutritionally Complete Budget Food

Few foods rival oily fish for nutritional density per dollar. A $1.80 tin of sardines or a $2.50 can of salmon delivers a package no supplement can replicate.

Omega-3 (EPA/DHA): sardines deliver 1.4–2.0g per serve — exceeding the daily AI. EPA reduces systemic inflammation and has antidepressant effects comparable to medication. DHA builds brain cell membranes and is the primary structural fat of the retina.

Vitamin D: canned sardines (250–350 IU/serve) and salmon (400–700 IU) are among the only reliable dietary sources of vitamin D — critical for calcium absorption, immune regulation, and mood. Most Australians and New Zealanders are borderline deficient.

Calcium from bones: canned sardines eaten with their soft bones deliver 350mg calcium per serve — comparable to a glass of milk, and from a source that also provides vitamin D to enhance absorption. One of nature's most elegant nutritional pairings.

Iodine: seafood is the most reliable dietary iodine source. 100g of fish provides 50–150mcg iodine — meaningful progress toward the 150mcg RDI. Iodine supports thyroid function, metabolic rate, and fetal brain development.

B12: sardines contain 8–9mcg B12 per serve — more than 3× the adult RDI in one tin. B12 is essential for myelin sheath integrity (nerve conduction), red blood cell formation, and methylation cycles that affect mood and gene expression.

Protein quality: fish protein is complete, highly digestible (DIAAS >1.0), and rich in leucine — the amino acid that triggers muscle protein synthesis. Particularly valuable for older adults managing sarcopenia on a budget.

Budget reality: tinned sardines ($1.20–$1.80/tin) and tinned salmon ($2.00–$2.80/tin) deliver this nutrient package for less per serve than a coffee. Whole baked fish at $10–14/kg for snapper or bream scales to $1.80–$2.20 per serve.

How often: Australian and New Zealand guidelines recommend 2–3 serves of fish per week. Avoid high-mercury species (shark, swordfish, king mackerel) during pregnancy — sardines, salmon, and tuna are all safe.

Part 7A: What Falling Short Actually Does To You

We also cover what deficiency during pregnancy does to a developing baby, and -- critically -- what happens to future generations when nutritional signals get encoded into the epigenome and passed down. This is not speculative: it is one of the most significant developments in nutritional science of the last 30 years.

Most nutrition guides list numbers. This section explains what happens inside your body and mind when those numbers aren't met -- not in vague terms like 'fatigue', but in specific, clinical, sometimes confronting detail. Understanding the real cost of deficiency is one of the most powerful motivators for change.

Iron Deficiency

Iron is the most common nutritional deficiency globally. In Australia and New Zealand, approximately 1 in 4 women of reproductive age are iron deficient.

What it does to your body and mind:

Stage 1 (depleted stores, normal haemoglobin): Persistent fatigue, reduced exercise tolerance, impaired concentration, poor temperature regulation. Most women at this stage are told their blood test is 'normal' -- but ferritin below 30 mcg/L already impairs brain function measurably.

Stage 2 (iron-deficient erythropoiesis): Worsening fatigue, pallor, headaches, difficulty concentrating, irritability, restless legs, reduced immune function. Hair begins to thin noticeably.

Stage 3 (iron deficiency anaemia): Breathlessness on exertion, heart palpitations, cold intolerance, brittle and spoon-shaped nails, cracking at corners of the mouth, smooth painful tongue, significant cognitive impairment including processing speed, verbal memory, and attention.

Cognitive effects are specific and quantifiable: iron-deficient women show measurable deficits in attention, concentration, verbal learning, and fluid reasoning. These deficits reverse within weeks of iron repletion -- demonstrating the nutrient is the cause, not a coincidence.

During pregnancy: Iron requirements nearly double. Deficiency is linked to premature birth, low birth weight, impaired fetal brain development (particularly the hippocampus -- the memory centre), and lasting cognitive deficits in the child that persist into adolescence even after iron is repleted postnatally. The fetal brain is iron-avid in trimester 3 -- this is the window that cannot be recovered.

Calcium Deficiency

Calcium deficiency is often invisible until it is severe -- because the body maintains blood calcium at all costs by leaching it from bones.

What it does to your body and mind:

Short term: Muscle cramps, twitching, numbness and tingling in fingers and toes, abnormal heart rhythms. In severe cases, tetany (sustained muscle contractions) and seizures.

Long term: Osteopenia progressing to osteoporosis. Bone mineral density losses are largely silent until a fracture occurs. In Australia, one in two women and one in three men over 60 will suffer an osteoporotic fracture. Hip fractures in the elderly carry a 20-30% one-year mortality rate and are strongly associated with nursing home admission.

Children and adolescents: Peak bone mass is set before age 25. Inadequate calcium during growth permanently reduces bone capital -- the structural foundation you carry for life.

During pregnancy: If maternal calcium intake is low, the fetal skeleton draws calcium from the mother's bones. Maternal bone density declines more rapidly with each calcium-poor pregnancy. Pre-eclampsia risk is also increased with inadequate calcium intake.

Magnesium Deficiency

Magnesium is involved in over 300 enzymatic reactions. Sub-optimal intake is extraordinarily common and almost universally unrecognised.

What it does to your body and mind:

Muscle cramps (especially nocturnal leg cramps), twitching eyelids, difficulty sleeping, anxiety and irritability, constipation, headaches and migraines, poor stress tolerance, fatigue.

Metabolic consequences: Low magnesium significantly worsens insulin resistance, increases the risk of type 2 diabetes, and is associated with metabolic syndrome. Research shows that for every 100mg/day increase in dietary magnesium, type 2 diabetes risk falls by approximately 15%.

Cardiovascular: Magnesium is a natural calcium channel blocker. Deficiency is associated with hypertension, arterial stiffness, and increased risk of cardiac arrhythmias.

Sleep: Magnesium activates the parasympathetic nervous system and regulates melatonin. Deficiency is one of the most common and reversible causes of poor sleep quality and insomnia. Magnesium glycinate at 300-400mg before bed is one of the most evidence-backed sleep interventions available without prescription.

During pregnancy: Magnesium deficiency is associated with pregnancy-induced hypertension, pre-eclampsia, premature labour, and low birth weight. Intravenous magnesium sulphate is a standard hospital treatment for severe pre-eclampsia -- showing how critical it is.

Zinc Deficiency

What it does to your body and mind:

Immune function collapse: Zinc is essential for T-cell development and function. Deficiency impairs every arm of immune defence -- innate, adaptive, and mucosal. Wound healing slows markedly.

Skin: Dermatitis around the mouth, nose and eyes; acne-like eruptions; poor wound healing; white spots on fingernails (leukonychia).

Reproductive health: Zinc is essential for testosterone production and sperm development. Male fertility is significantly impaired by zinc deficiency. In women, zinc deficiency disrupts ovulation and is associated with PCOS.

Taste and smell: Loss or distortion of taste and smell is a hallmark of zinc deficiency -- and was recognised as a COVID-19 symptom partly because SARS-CoV-2 depletes zinc stores rapidly.

Growth: In children, zinc deficiency stunts linear growth and delays sexual maturation. It is one of the primary nutritional causes of stunting globally.

During pregnancy: Zinc deficiency in the first trimester is associated with neural tube defects, cleft palate, fetal growth restriction, and premature birth.

Vitamin D Deficiency

What it does to your body and mind:

Bone: Severe deficiency causes rickets in children (bowed legs, soft skull, delayed tooth eruption) and osteomalacia in adults (bone pain, muscle weakness, waddling gait). Subclinical deficiency accelerates osteoporosis.

Immune system: Vitamin D receptors are present on virtually every immune cell. Deficiency increases susceptibility to respiratory infections, is strongly associated with autoimmune conditions (MS, type 1 diabetes, rheumatoid arthritis, IBD), and is correlated with increased all-cause cancer mortality.

Mental health: Vitamin D deficiency is one of the most consistent nutritional correlates of depression and seasonal affective disorder. Vitamin D modulates serotonin synthesis and brain-derived neurotrophic factor (BDNF). Supplementation in deficient individuals shows measurable improvement in depressive symptoms.

Muscle function: Severe deficiency causes proximal muscle weakness -- difficulty climbing stairs, rising from chairs, raising arms above the head. Falls risk in the elderly increases significantly.

During pregnancy: Deficiency is linked to pre-eclampsia, gestational diabetes, increased caesarean rate, impaired fetal skeletal development, and low birth weight. Children born to vitamin D-deficient mothers have higher rates of asthma, schizophrenia, and type 1 diabetes.

Omega-3 (EPA/DHA) Deficiency

What it does to your body and mind:

Brain structure: DHA makes up 40% of the polyunsaturated fat in the human brain. Inadequate intake impairs neuronal membrane fluidity, reduces synapse formation, and is associated with cognitive decline, depression, and increased risk of Alzheimer's disease.

Cardiovascular: EPA and DHA reduce triglycerides, lower systemic inflammation, reduce platelet aggregation (clot risk), and improve endothelial function. A diet chronically low in omega-3 is a meaningful cardiovascular risk factor independent of other lipid markers.

Mental health: Low omega-3 intake is associated with depression, anxiety, bipolar disorder, and ADHD. Multiple trials show EPA in particular has antidepressant effects comparable to medication in mild-to-moderate depression.

Skin: Dry, flaking skin is a visible sign of omega-3 deficiency. Essential fatty acids maintain skin barrier function, reduce inflammatory skin conditions (eczema, psoriasis), and slow UV-related skin ageing.

During pregnancy: DHA is the primary structural fat of the fetal brain and retina. The third trimester is when the brain undergoes its most rapid growth -- DHA demand is highest at exactly this time. Maternal DHA deficiency during pregnancy is associated with lower infant IQ, poorer visual acuity, and increased risk of postpartum depression in the mother (as her DHA stores are depleted to provision the baby).

Magnesium, B12, Folate, Iodine -- Quick Reference

Vitamin B12 deficiency: Develops slowly (the liver stores years of B12) but is devastating when it arrives. Symptoms include: irreversible peripheral neuropathy (tingling, numbness, burning in hands and feet), subacute combined degeneration of the spinal cord (balance problems, spasticity, dementia), megaloblastic anaemia (fatigue, pallor), and psychiatric symptoms including psychosis and paranoia. Almost exclusively a risk for strict vegans and elderly (who lose intrinsic factor production).

Folate deficiency: The most critical nutritional deficiency for pregnancy outcomes. Folate is required for neural tube closure, which occurs between days 21-28 of gestation -- often before a woman knows she is pregnant. Deficiency causes spina bifida and anencephaly. Every woman of reproductive age who could conceive should be taking 400-800mcg folate daily. No exceptions.

Iodine deficiency: The single most common preventable cause of intellectual disability worldwide. In Australia and NZ, iodine insufficiency is re-emerging as mandatory fortification in bread has been the primary safeguard since 2009. Deficiency causes goitre, hypothyroidism (fatigue, weight gain, cold intolerance, depression, constipation, brain fog), and in pregnancy, cretinism and irreversible intellectual disability in the child.

The Long Shadow: Nutrition, Epigenetics, and Future Generations

Here is something most people don't know: what you eat doesn't just affect your health. It can alter how genes are expressed in your children and grandchildren -- without changing the DNA sequence itself. This is epigenetics, and it is one of the most important and underappreciated frontiers in nutritional science.

How it works (in plain language):

Your DNA is the instruction manual. Epigenetic marks are sticky notes on that manual -- they tell cells which pages to read and which to ignore. These marks (primarily DNA methylation and histone modification) are profoundly influenced by diet, particularly during critical windows: conception, fetal development, early childhood, and puberty.

The nutrients that control epigenetic marks are specific:

Folate, B12, and choline supply methyl groups for DNA methylation. Zinc acts as a cofactor for histone-modifying enzymes. Vitamin D regulates expression of over 1,000 genes directly via vitamin D receptors on chromatin. Iron affects histone demethylase activity. Omega-3 fatty acids alter gene expression patterns in adipose tissue, the brain, and immune cells.

The Dutch Hunger Winter -- evidence that changed everything:

In 1944-45, the Nazi occupation of Holland caused a famine in which 22,000 people died. Children born to mothers who were pregnant during the famine have been studied for 70+ years. The findings are extraordinary:

Children exposed in utero during the first trimester had significantly higher rates of schizophrenia, bipolar disorder, obesity, type 2 diabetes, and cardiovascular disease in adulthood -- compared to siblings born just months earlier or later.

Some studies have found that grandchildren (F2 generation) of famine-exposed women also showed metabolic differences -- suggesting that nutritional epigenetic marks may persist across more than one generation. The human evidence for this true transgenerational inheritance is intriguing but remains contested; the F1 effects (in the children themselves) are much more robustly established.

The mechanism: specific genes involved in insulin signalling and fat metabolism were hypomethylated in famine-exposed individuals -- a pattern detectable in their blood decades later. Undernutrition during critical windows left permanent molecular fingerprints.

How quickly can nutritional epigenetic changes occur?

Within a single generation -- and sometimes within weeks. Studies on methyl-donor supplementation (folate, B12, choline) in pregnant mice show coat colour changes in offspring within one generation. In humans, studies of men who overate during the pre-pubertal growth period show increased cardiovascular and diabetes risk in their children and grandchildren through paternal epigenetic transmission.

The good news: epigenetic marks are reversible.

Unlike DNA mutations, epigenetic changes can be modified by nutrition. Studies show that adequate folate, choline, B12, and zinc intake can correct hypomethylation patterns. Pre-conception nutrition -- for both mothers and fathers -- is one of the most powerful interventions available for future child health. This is not speculation; it is now mainstream developmental biology.

What this means practically:

The nutritional decisions you make today ripple forward. A woman who enters pregnancy with good iron, folate, DHA, choline, iodine, and vitamin D status is not just protecting her own health -- she is shaping the epigenetic landscape of her child and potentially her grandchildren. This is the strongest possible argument for structured, nutrient-rich eating across the entire reproductive period, not just once a pregnancy is confirmed.

Part 8: The Budget Nutrition Arsenal

These foods deliver the greatest breadth and concentration of essential nutrients per dollar, based on Australian and New Zealand supermarket prices (AU: Coles/Woolworths; NZ: Countdown/Pak'nSave).

Tier 1: Nutritional Pillars

Spotlight: Canned Sardines -- The Most Underrated Food in the Supermarket

Per tin (95g, ~$1.50-$2.00 at Coles/Woolworths), canned sardines in springwater deliver:

- Omega-3 (EPA+DHA): ~1,500-2,000mg -- more than a day's optimal target in one tin
- Calcium: ~350mg -- 35% of the adult RDI, from the soft edible bones (don't remove them)
- Vitamin D: ~250 IU -- the best dietary source after UV-mushrooms, rare in most foods
- Vitamin B12: ~7-10mcg -- covers the entire adult RDI for the day (2.4mcg)
- Protein: ~22g per tin -- high-quality complete protein at roughly $0.07 per gram
- Zinc: ~1.5mg | Iron: ~2mg | Selenium: ~50mcg (near full daily requirement)

Cost per serve: approximately $1.50-2.00 for a nutritional profile that would cost $8-15 to replicate from other foods. Nothing else comes close at this price point.

Best uses: on toast with avocado or ricotta, stirred through pasta with tomato and garlic, mashed into patties, added to rice bowls, or eaten straight from the tin.

Food (Approx. Cost AUD)	Key Nutrients Per Serve
Eggs (~$0.50–0.60 each)	Protein (complete), B12 (36%), selenium (28%), riboflavin (27%), choline (23%), vitamin D, vitamin A, iron, zinc
Beef/Chicken Liver (~$3–6/kg)	B12 (2,917%), vitamin A (104%), riboflavin (261%), copper (1,578%), choline (77%), iron (36%), folate (65%), 26g protein per 100g
Dried Lentils (~$3–5/kg)	Protein 9g, fibre 8g, folate (45%), iron (18%), potassium (15%), thiamin (14%) per ½ cup cooked
Rolled Oats (~$2–4/kg)	Protein 5g, fibre 4g (beta-glucan), manganese (20%), phosphorus (15%), magnesium (13%), iron, zinc per 40g
Canned Sardines (~$2–4/tin)	Protein 23g, B12 (150%), calcium (35% with bones), selenium (70%), omega-3 EPA/DHA, vitamin D per tin
Frozen Spinach/Kale (~$2–3/500g)	Vitamin K (250%), vitamin A (47%), folate (47%), vitamin C (15%), iron (15%), magnesium (15%) per 100g

Tier 2: Essential Supporting Foods

Food (Approx. Cost AUD)	Key Nutrients Per Serve
Potatoes (~$2–4/kg)	Vitamin C (28%), potassium (15%), B6 (10%), fibre, niacin, phosphorus
Carrots (~$1.50–3/kg)	Vitamin A (200% as beta-carotene), vitamin K, vitamin C, potassium, fibre
Canned Tomatoes (~$0.80–1.50/tin)	Vitamin C (40%), vitamin A (22%), lycopene, potassium, fibre
Cabbage (~$2–4/head)	Vitamin K (56%), vitamin C (36%), fibre, folate, manganese, B6, calcium
Brown Rice (~$2–4/kg)	Manganese (88%), magnesium (20%), phosphorus (15%), fibre 3.5g, selenium
Canned Beans (~$1–1.50/tin)	Protein 14g, fibre 12g, folate (40%), iron (20%), magnesium (15%), potassium, zinc
Full Cream Milk (~$1.50–2/L)	Calcium (30%), phosphorus (25%), riboflavin (20%), B12 (18%), protein 8g, iodine
Bananas (~$2–4/kg)	Potassium (12%), B6 (25%), vitamin C (10%), fibre 3g, manganese

Tier 3: Strategic Gap-Fillers

Food (Approx. Cost AUD)	Key Nutrients Per Serve
Peanut Butter (~$3–5/jar)	Protein, niacin, magnesium, vitamin E, healthy fats, manganese
Frozen Mixed Vegetables (~$2–3/kg)	Vitamins A, C, K, folate, fibre, potassium — zero waste
Canned Tuna (~$1.50–3/tin)	Protein 25g, selenium, niacin, B12, omega-3 (limit 2–3 tins/week for mercury)
Sunflower/Pumpkin Seeds (~$8–12/kg)	Vitamin E, magnesium, zinc, selenium, copper, manganese
Fortified Cereal e.g. Weet-Bix (~$4–6)	Iron, B vitamins, sometimes vitamin D — good safety net for kids

Part 9: Which Foods Fill Which Gaps

Use this matrix to ensure your weekly meals cover all major nutrient targets.

Nutrient	Primary Budget Sources	Secondary Sources
Protein	Eggs, lentils, beans, milk, liver	Oats, rice, peanut butter, canned fish
Fibre	Lentils, oats, beans, brown rice	Potatoes, bananas, cabbage, vegetables
Vitamin A	Liver (retinol), carrots, sweet potato, spinach	Canned tomatoes, eggs
Vitamin B12	Liver, sardines, eggs, milk	Canned tuna, fortified cereal
Folate (B9)	Liver, lentils, spinach, canned beans	Fortified cereal, cabbage, eggs
Vitamin C	Cabbage, potatoes, canned tomatoes, broccoli	Bananas, spinach, seasonal citrus
Vitamin D	Sardines, eggs, fortified milk	Sunlight exposure (free!)
Vitamin K	Spinach/kale, cabbage, broccoli	Eggs, olive oil
Calcium	Milk, sardines (with bones), fortified cereal	Cabbage, canned beans, cheese
Iron	Liver, lentils, beans, spinach	Fortified cereal, oats, eggs
Zinc	Liver, beans, lentils, eggs	Oats, pumpkin seeds, milk
Magnesium	Lentils, spinach, brown rice, pumpkin seeds	Oats, bananas, canned beans
Potassium	Potatoes, lentils, bananas, beans	Spinach, milk, canned tomatoes
Omega-3 (DHA/EPA)	Sardines, canned salmon	Omega-3 enriched eggs
Choline	Liver, eggs	Beans, milk, potatoes
Iodine	Milk, eggs, sardines, iodised salt	Seaweed (small amounts)

Part 10: Core Recipes

All 102 recipes are designed to maximise nutritional coverage while keeping costs under $2.50 per serve. Nutrient data covers 11 key micronutrients per recipe. Track your household's coverage live at optimisedeats.com.

Jump to: Breakfasts | Lunches | Dinners | Snacks & Extras

Breakfasts

22 budget breakfasts — quick, nutrient-dense morning meals

Overnight Oats

No-cook oats with banana, peanut butter, seeds.

$0.80/serve • 5 min prep • Quick | Kid Friendly

INGREDIENTS

- 50g oats
- 150mL milk
- 1 tbsp peanut butter
- ½ banana
- 1 tbsp seeds

METHOD

1. Combine oats+milk
2. Add peanut butter
3. Top with banana+seeds
4. Fridge overnight

Per serve (480 kcal) — Protein: 18g | Iron: 2mg | Calcium: 200mg | Vit D: 20IU | B12: 0mcg | Folate: 40mcg | Omega-3: 0.3g

---

Egg & Spinach Scramble

Eggs with spinach on toast.

$1.20/serve • 7 min prep • Quick | Pregnancy Safe

INGREDIENTS

- 2 eggs
- 60g spinach
- Toast
- Butter

METHOD

1. Cook spinach
2. Add eggs, stir
3. Serve on toast

Per serve (380 kcal) — Protein: 20g | Iron: 3mg | Calcium: 120mg | Vit D: 80IU | B12: 1mcg | Folate: 140mcg | Omega-3: 0.1g

---

Sardine Toast

Sardines on toast. Omega-3 + calcium + B12.

$1.80/serve • 5 min prep • Omega 3

INGREDIENTS

- 1 tin sardines
- Tomato
- Toast
- Lemon

METHOD

1. Mash sardines with lemon
2. Spread on toast
3. Top with tomato

Per serve (350 kcal) — Protein: 25g | Iron: 2mg | Calcium: 350mg | Vit D: 250IU | B12: 8mcg | Folate: 15mcg | Omega-3: 1.4g

---

Power Weet-Bix

Fortified Weet-Bix + milk + seeds + banana + flax.

$0.90/serve • 3 min prep • Quick | Kid Friendly | Fortified

INGREDIENTS

- 3 Weet-Bix
- 200mL milk
- ½ banana
- Seeds
- Flaxseed

METHOD

1. Weet-Bix + milk
2. Top with everything

Per serve (400 kcal) — Protein: 14g | Iron: 4mg | Calcium: 250mg | Vit D: 30IU | B12: 0mcg | Folate: 150mcg | Omega-3: 1.8g

---

Big Breakfast

Eggs, beans, spinach, tomato, toast.

$2.00/serve • 12 min prep • High Protein | Pregnancy Safe

INGREDIENTS

- 2 eggs
- ½ tin beans
- Spinach
- Tomato
- Toast

METHOD

1. Heat beans
2. Cook spinach+eggs
3. Plate with toast

Per serve (500 kcal) — Protein: 24g | Iron: 5mg | Calcium: 130mg | Vit D: 50IU | B12: 1mcg | Folate: 160mcg | Omega-3: 0.1g

---

Liver on Toast

Chicken liver on toast. Week's B12 in one serve.

$1.30/serve • 10 min prep • Organ Meat

INGREDIENTS

- 100g chicken liver
- ½ onion
- Toast
- Butter, lemon

METHOD

1. Cook onion
2. Add liver 2-3 min/side
3. Serve on toast

Per serve (300 kcal) — Protein: 22g | Iron: 5mg | Calcium: 20mg | Vit D: 5IU | B12: 30mcg | Folate: 250mcg | Omega-3: 0.1g

---

Egg Bean Burrito

Eggs, beans, spinach, cheese in wrap. Freezable.

$1.40/serve • 10 min prep • Kid Friendly | Freezer

INGREDIENTS

- Tortilla

- 2 eggs
- Beans
- Spinach
- Cheese

METHOD

1. Cook spinach+eggs
2. Warm tortilla
3. Fill and roll

Per serve (420 kcal) — Protein: 22g | Iron: 3mg | Calcium: 200mg | Vit D: 50IU | B12: 0mcg | Folate: 100mcg | Omega-3: 0.1g

---

Tuna & Egg Rice Bowl

Savoury breakfast bowl. High protein + omega-3.

$1.40/serve • 10 min prep • Quick | Omega 3

INGREDIENTS

- 1 cup cooked rice
- Tin tuna
- 1 egg
- Soy sauce, sesame oil
- Frozen peas

METHOD

1. Cook rice
2. Drain tuna
3. Poach/fry egg
4. Microwave peas 60 sec
5. Layer rice, tuna, peas, egg
6. Drizzle soy + sesame oil

Per serve (460 kcal) — Protein: 38g | Iron: 2mg | Calcium: 55mg | Vit D: 50IU | B12: 2mcg | Folate: 55mcg | Omega-3: 0.9g

---

Vegan Overnight Oats

No-cook vegan oats. Prep the night before, grab in the morning.

$0.90/serve • 5 min prep • Quick | Vegan | Kid Friendly

INGREDIENTS

- 50g rolled oats
- 200mL plant milk (oat/soy/almond)
- 1 tbsp chia seeds
- ½ banana, sliced
- 1 tbsp peanut butter or almond butter
- Maple syrup or agave to taste
- Optional: frozen berries

METHOD

1. Combine oats, plant milk and chia seeds in a jar
2. Stir well
3. Refrigerate overnight (or at least 4 hours)
4. Top with banana, nut butter and a drizzle of maple syrup

Per serve (420 kcal) — Protein: 12g | Iron: 2mg | Calcium: 180mg | Folate: 35mcg | Omega-3: 1.8g | Zinc: 1mg | Mg: 95mg

---

Tofu Scramble

Vegan scrambled eggs. Turmeric gives it that yellow colour and an iron boost.

$1.20/serve • 10 min prep • Quick | Vegan | High Protein

INGREDIENTS

- 200g firm tofu
- ½ tsp turmeric

- ¼ tsp cumin
- Handful spinach
- 2 mushrooms, sliced
- Soy sauce
- Toast

METHOD

1. Crumble tofu into a hot pan with a little oil
2. Add turmeric, cumin, soy sauce — stir well
3. Add mushrooms, cook 3 min
4. Add spinach, cook 1 min
5. Serve on toast

Per serve (320 kcal) — Protein: 20g | Iron: 3mg | Calcium: 200mg | Folate: 65mcg | Omega-3: 0.3g | Zinc: 1mg | Mg: 55mg

---

Chia Pudding

Set-and-forget breakfast. Huge omega-3 hit. Make 3 days ahead.

$0.80/serve • 3 min prep • Quick | Vegan | No Cook | Kid Friendly

INGREDIENTS

- 3 tbsp chia seeds
- 250mL plant milk
- 1 tsp vanilla
- 1 tsp maple syrup
- Frozen berries to top

METHOD

1. Mix chia seeds, plant milk, vanilla and maple syrup in a jar
2. Stir well, leave 5 min, stir again
3. Refrigerate overnight
4. Top with berries to serve

Per serve (280 kcal) — Protein: 9g | Iron: 2mg | Calcium: 250mg | Folate: 25mcg | Omega-3: 4.2g | Zinc: 1mg | Mg: 90mg

---

Avocado & Seed Toast

Vegan calcium + iron + healthy fat. Better than cafe avo toast.

$1.10/serve • 5 min prep • Quick | Vegan | No Cook

INGREDIENTS

- 2 slices wholegrain toast
- ½ avocado
- 1 tbsp mixed seeds (sunflower, pumpkin, sesame)
- Lemon juice
- Chilli flakes, salt and pepper

METHOD

1. Toast bread
2. Mash avo with lemon, salt, chilli
3. Spread on toast
4. Top generously with seeds

Per serve (380 kcal) — Protein: 10g | Iron: 2mg | Calcium: 75mg | Folate: 90mcg | Omega-3: 0.2g | Zinc: 2mg | Mg: 80mg

---

Berry Smoothie Bowl

Thick blended smoothie you eat with a spoon. Toppings add crunch and nutrients.

$1.00/serve • 5 min prep • Quick | Vegan | Kid Friendly

INGREDIENTS

- 1 frozen banana
- 1 cup frozen mixed berries
- 3 tbsp plant milk (just enough to blend)

- Toppings: seeds, oats, coconut flakes, fresh fruit

METHOD

1. Blend banana and berries with a splash of plant milk until thick
2. Pour into a bowl — it should be thicker than a smoothie
3. Top with seeds, oats and fresh fruit

Per serve (310 kcal) — Protein: 6g | Iron: 1mg | Calcium: 80mg | Folate: 45mcg | Omega-3: 0.5g | Zinc: 1mg | Mg: 60mg

---

PB Banana Oats

Simple sweet oats. Vegan, high-fibre.

$0.85/serve • 5 min prep • Quick | Vegan | Kid Friendly

INGREDIENTS

- ½ cup oats
- 1 cup water/milk
- 1 banana
- 1 tbsp peanut butter
- Honey, cinnamon

METHOD

1. Cook oats in water/milk 3-4 min
2. Slice banana, stir half in
3. Top with peanut butter, honey, banana, cinnamon

Per serve (385 kcal) — Protein: 11g | Iron: 2mg | Calcium: 42mg | Folate: 32mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 68mg

---

Ricotta & Tomato Toast

High calcium, high protein. Light & fresh.

$1.10/serve • 5 min prep • Quick

INGREDIENTS

- 2 slices bread
- 4 tbsp ricotta
- 2 tomatoes, sliced
- Oregano, olive oil, salt and pepper

METHOD

1. Toast bread
2. Spread ricotta
3. Top with tomato
4. Season, drizzle oil

Per serve (320 kcal) — Protein: 16g | Iron: 2mg | Calcium: 220mg | Vit D: 8IU | B12: 0mcg | Folate: 65mcg | Omega-3: 0.1g

---

Microwave Egg Mug

Fastest protein hit. Hidden spinach for kids.

$0.70/serve • 3 min prep • Quick | Hidden Nutrients | Kid Friendly

INGREDIENTS

- 2 eggs
- 2 tbsp milk
- 1 tbsp frozen spinach
- 2 tbsp cheese
- salt and pepper

METHOD

1. Spray mug
2. Whisk eggs+milk in mug
3. Add spinach+half cheese
4. Micro 60 sec, stir, 30-45 sec
5. Top remaining cheese

Per serve (240 kcal) — Protein: 19g | Iron: 2mg | Calcium: 185mg | Vit D: 100IU | B12: 1mcg | Folate: 70mcg | Omega-3: 0.2g

---

Canned Salmon Omelette

Highest vitamin D breakfast. Bones = calcium.

$1.55/serve • 8 min prep • Omega 3 | Calcium

INGREDIENTS

- 3 eggs
- Tin pink salmon (with bones)
- 1 tbsp milk
- Frozen corn
- Butter

METHOD

1. Microwave corn 60 sec
2. Whisk eggs+milk
3. Melt butter in pan
4. Add egg mix
5. When set, add salmon+corn to half
6. Fold, cook 1 min

Per serve (390 kcal) — Protein: 40g | Iron: 2mg | Calcium: 260mg | Vit D: 560IU | B12: 5mcg | Folate: 85mcg | Omega-3: 1.8g

---

Baked Beans on Toast

Classic Aussie brekkie. Budget staple.

$0.65/serve • 5 min prep • Quick | Kid Friendly | Budget

INGREDIENTS

- ½ tin baked beans
- 2 slices bread
- Butter
- salt and pepper, hot sauce

METHOD

1. Toast bread, butter
2. Heat beans 90 sec microwave
3. Pile on toast
4. Season

Per serve (310 kcal) — Protein: 14g | Iron: 3mg | Calcium: 80mg | Folate: 85mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 58mg

---

Cheese & Egg Toastie

Melted cheese + scrambled eggs. Protein bomb.

$0.95/serve • 8 min prep • Quick | Calcium | Kid Friendly

INGREDIENTS

- 2 slices bread
- 2 eggs
- 40g cheese
- Butter, salt and pepper

METHOD

1. Scramble eggs
2. Toast bread
3. Pile eggs on toast, top cheese
4. Press in hot pan 30sec/side to melt

Per serve (450 kcal) — Protein: 28g | Iron: 2mg | Calcium: 340mg | Vit D: 100IU | B12: 1mcg | Folate: 68mcg | Omega-3: 0.2g

---

Cheesy Baked Beans & Egg

Ultimate protein breakfast. Aussie classic.

$1.10/serve • 10 min prep • Calcium | Iron | Kid Friendly

INGREDIENTS

- ½ tin beans
- 2 eggs
- 30g cheese
- 2 toast
- Butter, salt and pepper

METHOD

1. Heat beans
2. Fry/poach eggs
3. Toast bread, butter
4. Pile beans, eggs, cheese on toast

Per serve (520 kcal) — Protein: 32g | Iron: 4mg | Calcium: 320mg | Vit D: 100IU | B12: 1mcg | Folate: 110mcg | Omega-3: 0.2g

---

Cheese & Tomato Omelette

Quick protein breakfast.

$1.05/serve • 8 min prep • Quick | Calcium

INGREDIENTS

- 3 eggs
- 1 tomato, diced
- 40g cheese
- Milk, butter, herbs

METHOD

1. Whisk eggs+milk
2. Melt butter in pan
3. Pour eggs, add tomato+cheese when set
4. Fold, cook 1 min

Per serve (420 kcal) — Protein: 30g | Iron: 2mg | Calcium: 380mg | Vit D: 120IU | B12: 2mcg | Folate: 88mcg | Omega-3: 0.3g

---

Mega Breakfast Burrito

Freezer-friendly breakfast. Make 5, freeze 4.

$1.20/serve • 10 min prep • Freezer | Batch Cook

INGREDIENTS

- 1 wrap
- 2 eggs
- ¼ tin beans
- 30g cheese
- Salsa

METHOD

1. Scramble eggs
2. Warm beans
3. Layer eggs, beans, cheese in wrap
4. Roll tight
5. Toast in pan for crispy exterior
6. Wrap in foil, freeze up to 2 months

Per serve (520 kcal) — Protein: 30g | Iron: 4mg | Calcium: 320mg | Vit D: 100IU | B12: 1mcg | Folate: 125mcg | Omega-3: 0.2g

---

Lunches

26 lunches — filling midday meals under $1.50

Red Lentil Soup

Thick lentil+carrot soup. Makes 6.

$0.90/serve • 35 min prep • Freezer | Vegan | Kid Friendly

INGREDIENTS

- 300g lentils
- 3 carrots
- Onion, garlic
- Tin tomatoes
- Cumin, turmeric

METHOD

1. Cook onion+spices
2. Add lentils, carrots, tomatoes
3. Simmer 25 min, blend

Per serve (310 kcal) — Protein: 18g | Iron: 4mg | Calcium: 50mg | Folate: 180mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 60mg

---

Egg Fried Rice

Leftover rice + eggs + veg.

$1.10/serve • 15 min prep • Quick | Kid Friendly

INGREDIENTS

- 1 cup cold rice
- 2 eggs
- Frozen veg
- Soy sauce

METHOD

1. Fry veg
2. Scramble eggs
3. Add rice+soy sauce

Per serve (450 kcal) — Protein: 18g | Iron: 2mg | Calcium: 60mg | Vit D: 40IU | B12: 0mcg | Folate: 50mcg | Omega-3: 0.3g

---

PB Spinach Smoothie

Hidden spinach smoothie.

$1.00/serve • 3 min prep • Quick | Kid Friendly

INGREDIENTS

- Banana
- Milk
- peanut butter
- Spinach
- Flaxseed

METHOD

1. Blend everything

Per serve (420 kcal) — Protein: 17g | Iron: 2mg | Calcium: 300mg | Vit D: 40IU | B12: 0mcg | Folate: 100mcg | Omega-3: 2.0g

---

Chickpea Cabbage Slaw

Cold crunchy no-cook bowl. Chickpeas + cabbage + seeds.

$1.30/serve • 10 min prep • Quick | No Cook | Vegan

INGREDIENTS

- ½ tin chickpeas

- 2 cups cabbage, shredded
- 1 carrot, grated
- 2 tbsp sunflower seeds
- Lemon, olive oil, cumin

METHOD

1. Combine cabbage, carrot, chickpeas
2. Dress with oil, lemon, cumin
3. Top with seeds

Per serve (380 kcal) — Protein: 15g | Iron: 3mg | Calcium: 80mg | Folate: 140mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 70mg

---

Bean & Cheese Quesadilla

Mashed beans + cheese in a toasted tortilla. $1, 8 min, done.

$1.00/serve • 8 min prep • Quick | Kid Friendly | Vegetarian

INGREDIENTS

- 1 tortilla
- ½ tin beans, mashed
- ¼ cup cheese, grated
- Optional: corn, capsicum, spinach

METHOD

1. Spread beans on half the tortilla
2. Add cheese and extras
3. Fold in half
4. Cook in dry pan 2-3 min each side

Per serve (380 kcal) — Protein: 18g | Iron: 3mg | Calcium: 250mg | Vit D: 3IU | B12: 0mcg | Folate: 80mcg | Omega-3: 0.0g

---

Bean & Veg Wrap

Canned beans + whatever veg you have in a wrap. Zero cooking if using canned.

$1.20/serve • 5 min prep • Quick | No Cook | Kid Friendly | Vegetarian

INGREDIENTS

- 1 tortilla
- ½ tin beans (any type)
- Handful spinach
- Grated carrot
- 2 tbsp cheese or yoghurt
- Hot sauce (optional)

METHOD

1. Drain beans, lightly mash
2. Layer beans, spinach, carrot, cheese on tortilla
3. Add hot sauce if wanted
4. Roll up

Per serve (350 kcal) — Protein: 16g | Iron: 3mg | Calcium: 180mg | Vit D: 2IU | B12: 0mcg | Folate: 100mcg | Omega-3: 0.1g

---

3-Bean Salad

3 tins of beans, onion, vinaigrette. Makes 6 serves. Lasts all week in the fridge.

$0.90/serve • 10 min prep • No Cook | Batch Cook | Vegan

INGREDIENTS

- 1 tin kidney beans
- 1 tin chickpeas
- 1 tin cannellini beans
- ½ red onion, diced
- 1 carrot, diced
- Parsley or coriander

- Dressing: olive oil, lemon, cumin, salt

METHOD

1. Drain and rinse all beans
2. Combine with onion, carrot, herbs
3. Dress with oil, lemon, cumin, salt
4. Keeps 5 days in fridge

Per serve (280 kcal) — Protein: 14g | Iron: 4mg | Calcium: 80mg | Folate: 160mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 70mg

---

Baked Beans on Toast

The simplest hot lunch. Surprisingly decent nutrition for almost nothing.

$0.80/serve • 5 min prep • Quick | Vegan | Kid Friendly

INGREDIENTS

- 1 tin baked beans (or plain beans)
- 2 slices wholegrain toast
- Butter
- Optional: grated cheese on top

METHOD

1. Heat beans in pot or microwave
2. Toast bread, butter it
3. Pour beans on toast
4. Add cheese if using

Per serve (350 kcal) — Protein: 16g | Iron: 3mg | Calcium: 80mg | Folate: 80mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 55mg

---

Tuna & Bean Salad

Tin of tuna + tin of beans + whatever veg. High protein, omega-3.

$1.50/serve • 5 min prep • Quick | No Cook | High Protein

INGREDIENTS

- 1 tin tuna, drained
- ½ tin cannellini or kidney beans
- Handful spinach or lettuce
- ½ capsicum or tomato, diced
- Lemon juice, olive oil, salt

METHOD

1. Combine tuna, beans, and veg
2. Dress with lemon and oil
3. Season and eat

Per serve (380 kcal) — Protein: 30g | Iron: 3mg | Calcium: 40mg | Vit D: 15IU | B12: 2mcg | Folate: 80mcg | Omega-3: 0.3g

---

Black Bean & Corn Soup

Thick, smoky bean soup. Freezes brilliantly. Serves 6.

$0.85/serve • 25 min prep • Freezer | Vegan | Batch Cook

INGREDIENTS

- 2 tins black beans
- 1 tin tomatoes
- 1 cup frozen corn
- 1 onion, diced
- 2 garlic cloves
- 2 tsp cumin, 1 tsp smoked paprika
- Lime juice, salt

METHOD

1. Cook onion 4 min, add garlic+spices
2. Add beans, tomatoes, corn, 1 cup water

3. Simmer 15 min
4. Mash half roughly with spoon for thickness
5. Season with lime and salt

Per serve (300 kcal) — Protein: 15g | Iron: 4mg | Calcium: 70mg | Folate: 180mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 75mg

---

Hummus & Veg Plate

Homemade hummus (or bought) with raw veg and bread. Cheap and nutrient-dense.

$1.20/serve • 5 min prep • Quick | No Cook | Vegan | Kid Friendly

INGREDIENTS

- ½ tin chickpeas, blended with tahini/lemon/garlic
- Carrot sticks
- Cucumber sticks
- Capsicum slices
- Wholegrain bread or crackers

METHOD

1. Blend chickpeas with 1 tbsp tahini, lemon, garlic, salt, splash of water
2. Serve with veg and bread for dipping

Per serve (340 kcal) — Protein: 12g | Iron: 3mg | Calcium: 70mg | Folate: 100mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 50mg

---

Chicken & Lentil Soup

Shredded chicken + lentil soup. Serves 6.

$1.20/serve • 40 min prep • Batch Cook | Freezer | Kid Friendly | Chicken

INGREDIENTS

- 500g chicken thigh
- 200g lentils
- 2 carrots, 2 potatoes
- Onion, garlic, stock
- Spinach, turmeric, cumin

METHOD

1. Brown chicken, add veg+spices
2. Add lentils, stock, simmer 25 min
3. Shred chicken, add spinach

Per serve (420 kcal) — Protein: 28g | Iron: 4mg | Calcium: 60mg | Vit D: 5IU | B12: 0mcg | Folate: 150mcg | Omega-3: 0.1g

---

Liver Sausage Rolls

Hidden liver in pastry. Perfect lunchboxes. Makes 12.

$1.50/serve • 40 min prep • Batch Cook | Freezer | Kid Friendly | Hidden Nutrients | Organ Meat

INGREDIENTS

- 300g mince
- 100g beef liver, minced
- Onion, carrot, grated
- Egg, breadcrumbs, herbs
- 2 sheets puff pastry

METHOD

1. Mix mince, liver, veg, egg, crumbs
2. Shape along pastry
3. Roll, seal, cut into 12
4. Egg wash, bake 200°C 25 min

Per serve (280 kcal) — Protein: 14g | Iron: 2mg | Calcium: 20mg | Vit D: 5IU | B12: 8mcg | Folate: 60mcg | Omega-3: 0.0g

---

White Bean & Tuna Salad

No-cook protein lunch. High fibre.

$1.30/serve • 5 min prep • Quick | Omega 3

INGREDIENTS

- ½ tin white beans
- Tin tuna
- Celery, red onion
- Olive oil, lemon
- Parsley, salt and pepper

METHOD

1. Rinse beans
2. Mix beans, tuna, celery, onion
3. Dress with oil, lemon, parsley

Per serve (375 kcal) — Protein: 35g | Iron: 4mg | Calcium: 110mg | Vit D: 20IU | B12: 2mcg | Folate: 140mcg | Omega-3: 0.8g

---

Lentil & Veg Soup

Budget vegan soup. Freezer-friendly. Serves 4.

$0.90/serve • 30 min prep • Vegan | Batch Cook | Freezer

INGREDIENTS

- 1 cup red lentils
- 2 carrots, 2 celery
- 1 onion
- Tin tomatoes
- Stock, cumin, turmeric

METHOD

1. Sauté veg 5 min
2. Add lentils, tomatoes, stock
3. Simmer 20 min
4. Season

Per serve (245 kcal) — Protein: 14g | Iron: 4mg | Calcium: 72mg | Folate: 175mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 62mg

---

Sardine & Avo Rice Cakes

Omega-3 + calcium snack lunch.

$1.20/serve • 5 min prep • Quick | Omega 3 | Calcium

INGREDIENTS

- 4 rice cakes
- Tin sardines
- ¼ avocado
- Lemon, salt and pepper, chilli
- Cucumber slices

METHOD

1. Mash avo with lemon
2. Spread on cakes
3. Top with sardines
4. Add cucumber, chilli

Per serve (340 kcal) — Protein: 28g | Iron: 3mg | Calcium: 310mg | Vit D: 260IU | B12: 7mcg | Folate: 65mcg | Omega-3: 1.6g

---

Spiced Chickpea Wrap

Vegan protein wrap. Kid-friendly spices.

$1.10/serve • 10 min prep • Quick | Vegan | Kid Friendly

INGREDIENTS

- 1 wrap

- ½ tin chickpeas
- Cumin, paprika
- Olive oil
- Lettuce, carrot, yoghurt

METHOD

1. Toss chickpeas with oil+spices
2. Cook 3-4 min until crispy
3. Mix yoghurt with cumin
4. Load wrap with lettuce, carrot, chickpeas, yoghurt

Per serve (385 kcal) — Protein: 14g | Iron: 3mg | Calcium: 125mg | B12: 0mcg | Folate: 145mcg | Omega-3: 0.2g | Zinc: 2mg

---

Egg & Sweet Potato Hash

Vitamin A powerhouse. Serves 2.

$1.35/serve • 20 min prep • Kid Friendly

INGREDIENTS

- 2 sweet potatoes
- 4 eggs
- Onion, capsicum
- Olive oil
- Paprika, salt and pepper

METHOD

1. Dice sweet potato, microwave 4-5 min
2. Heat oil, cook onion+capsicum 4 min
3. Add sweet potato+paprika, cook 3-4 min
4. Make 4 wells, crack eggs
5. Cover, cook 3-4 min

Per serve (320 kcal) — Protein: 16g | Iron: 2mg | Calcium: 90mg | Vit D: 100IU | B12: 1mcg | Folate: 90mcg | Omega-3: 0.2g

---

Greek-Style Chickpea Salad

Vegan salad. Serves 2. Batch-friendly.

$0.95/serve • 10 min prep • Vegan | Batch Cook | Quick

INGREDIENTS

- Tin chickpeas
- Cucumber, tomato, onion
- Olive oil, lemon, oregano
- Optional feta

METHOD

1. Combine veg + chickpeas
2. Dress with oil, lemon, oregano
3. Season
4. Top with feta if using

Per serve (320 kcal) — Protein: 12g | Iron: 3mg | Calcium: 85mg | Folate: 145mcg | Omega-3: 0.2g | Zinc: 1mg | Mg: 62mg

---

Chicken Caesar-ish Salad

High protein salad. Serves 2.

$1.45/serve • 15 min prep • Chicken | Calcium

INGREDIENTS

- 300g cooked chicken
- Lettuce
- 40g parmesan
- Bread cubes for croutons
- Yoghurt, lemon, garlic dressing

METHOD

1. Mix yoghurt, lemon, garlic, half parmesan
2. Toss lettuce with dressing
3. Top chicken, croutons, parmesan

Per serve (380 kcal) — Protein: 32g | Iron: 2mg | Calcium: 320mg | Vit D: 16IU | B12: 0mcg | Folate: 65mcg | Omega-3: 0.2g

---

Cheese & Apple Salad

Sweet + savoury quick lunch.

$0.85/serve • 5 min prep • Quick | Calcium | Kid Friendly

INGREDIENTS

- 60g cheese cubed
- 1 apple sliced
- Lettuce
- Walnuts
- Oil+vinegar

METHOD

1. Arrange lettuce
2. Top apple, cheese, nuts
3. Drizzle dressing

Per serve (380 kcal) — Protein: 16g | Iron: 1mg | Calcium: 420mg | Vit D: 8IU | B12: 0mcg | Folate: 45mcg | Omega-3: 0.8g

---

Chicken & Cabbage Slaw

High protein slaw. Serves 2.

$1.30/serve • 12 min prep • Chicken | Batch Cook | Quick

INGREDIENTS

- 300g chicken, shredded
- ¼ cabbage, shredded
- Carrot, grated
- Yoghurt-lemon-honey dressing

METHOD

1. Mix dressing
2. Toss cabbage + carrot
3. Top with chicken

Per serve (280 kcal) — Protein: 28g | Iron: 1mg | Calcium: 95mg | Vit D: 12IU | B12: 0mcg | Folate: 68mcg | Omega-3: 0.2g

---

Cheesy Pasta Salad

Kid-friendly pasta salad. Serves 4.

$1.10/serve • 20 min prep • Calcium | Kid Friendly | Batch Cook

INGREDIENTS

- 300g pasta
- 100g cheese cubed
- Frozen peas
- Tomatoes
- Mayo-lemon dressing

METHOD

1. Cook pasta, cool
2. Mix mayo + lemon
3. Combine pasta, cheese, peas, tomato
4. Toss with dressing

Per serve (380 kcal) — Protein: 16g | Iron: 2mg | Calcium: 240mg | Vit D: 4IU | B12: 0mcg | Folate: 68mcg | Omega-3: 0.1g

Chicken & Bean Salad

Protein + fibre salad. Serves 2.

$1.25/serve • 10 min prep • Chicken | Batch Cook

INGREDIENTS

- 200g chicken diced
- Tin white beans
- Cherry tomatoes
- Red onion
- Oil+vinegar, parsley

METHOD

1. Combine beans, chicken, tomato, onion
2. Dress with oil+vinegar
3. Season, garnish parsley

Per serve (420 kcal) — Protein: 32g | Iron: 4mg | Calcium: 95mg | Vit D: 8IU | B12: 0mcg | Folate: 125mcg | Omega-3: 0.3g

---

Grilled Cheese & Tomato

Classic grilled cheese with tomato.

$0.75/serve • 8 min prep • Quick | Calcium | Kid Friendly

INGREDIENTS

- 2 slices bread
- 60g cheese
- 1 tomato sliced
- Butter, salt and pepper

METHOD

1. Butter outside of bread
2. Layer cheese + tomato inside
3. Cook 3 min/side in pan until golden

Per serve (380 kcal) — Protein: 18g | Iron: 1mg | Calcium: 420mg | Vit D: 8IU | B12: 0mcg | Folate: 52mcg | Omega-3: 0.1g

---

Chicken & Cheese Quesadilla

Quick protein lunch.

$1.35/serve • 10 min prep • Quick | Chicken | Calcium | Kid Friendly

INGREDIENTS

- 2 wraps
- 150g chicken shredded
- 50g cheese
- Salsa
- Cumin, paprika

METHOD

1. Season chicken with spices
2. Layer chicken+cheese on wrap
3. Top with salsa, second wrap
4. Cook 2-3 min/side
5. Cut into wedges

Per serve (580 kcal) — Protein: 42g | Iron: 2mg | Calcium: 380mg | Vit D: 12IU | B12: 0mcg | Folate: 65mcg | Omega-3: 0.2g

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Dinners

34 dinners — complete evening meals, many freezer-friendly

Lentil Potato Curry

One-pot curry. Serves 6.

$1.40/serve • 40 min prep • Freezer | Vegan | Pregnancy Safe

INGREDIENTS

- 250g lentils
- 4 potatoes
- Onion, garlic, ginger
- Tin tomatoes, spinach
- Curry spices

METHOD

1. Cook onion+spices
2. Add potatoes, lentils, tomatoes
3. Simmer 25 min
4. Add spinach

Per serve (380 kcal) — Protein: 18g | Iron: 4mg | Calcium: 80mg | Folate: 200mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 90mg

---

Sardine Pasta

Sardines+tomato+cabbage pasta. Serves 2.

$1.60/serve • 20 min prep • Quick | Omega 3

INGREDIENTS

- 200g pasta
- Tin sardines
- Tin tomatoes
- Cabbage, garlic

METHOD

1. Cook pasta+cabbage
2. Make sauce
3. Add sardines, toss

Per serve (550 kcal) — Protein: 30g | Iron: 4mg | Calcium: 280mg | Vit D: 250IU | B12: 8mcg | Folate: 60mcg | Omega-3: 1.2g

---

Liver Stir-Fry

Most nutrient-dense dinner. Serves 4.

$1.50/serve • 20 min prep • Organ Meat

INGREDIENTS

- 400g chicken liver
- 2 onions
- Soy sauce, cumin
- Rice, broccoli

METHOD

1. Cook onions
2. Sear liver 2 min/side
3. Add soy sauce
4. Serve with rice+broccoli

Per serve (480 kcal) — Protein: 35g | Iron: 9mg | Calcium: 60mg | Vit D: 15IU | B12: 60mcg | Folate: 400mcg | Omega-3: 0.1g

---

Hidden Liver Bolognese

Kids can't detect liver. Serves 6.

$1.80/serve • 55 min prep • Freezer | Kid Friendly | Hidden Nutrients

INGREDIENTS

- 300g beef mince
- 150g liver, minced
- Onion, carrots
- 2 tins tomatoes
- Herbs

METHOD

1. Cook veg
2. Brown mince+liver
3. Add tomatoes, simmer 30 min

Per serve (520 kcal) — Protein: 32g | Iron: 5mg | Calcium: 60mg | Vit D: 10IU | B12: 15mcg | Folate: 160mcg | Omega-3: 0.1g

---

Chicken Tray Bake

Roasted thighs with veg. Serves 4.

$2.20/serve • 45 min prep • Kid Friendly | Chicken

INGREDIENTS

- 8 chicken thighs
- Potatoes, carrots, onions
- Paprika, cumin

METHOD

1. Toss veg with spices
2. Top with chicken
3. Roast 200°C 40 min

Per serve (480 kcal) — Protein: 35g | Iron: 2mg | Calcium: 30mg | Vit D: 10IU | B12: 0mcg | Folate: 30mcg | Omega-3: 0.1g

---

Chicken Curry

Budget chicken curry. Serves 4.

$1.80/serve • 35 min prep • Freezer | Chicken

INGREDIENTS

- 600g chicken thigh
- Tin tomatoes
- Onion, garlic, ginger
- Spinach, curry spices

METHOD

1. Cook onion+spices
2. Seal chicken
3. Simmer 20 min
4. Add spinach

Per serve (450 kcal) — Protein: 32g | Iron: 3mg | Calcium: 60mg | Vit D: 5IU | B12: 0mcg | Folate: 80mcg | Omega-3: 0.1g

---

Bean & Veg Stew

Plant-based stew. Serves 6.

$1.20/serve • 40 min prep • Freezer | Vegan

INGREDIENTS

- 2 tins beans
- Tin tomatoes
- Potatoes, carrots
- Spinach, paprika

METHOD

1. Cook onion+spices
2. Add veg, beans, tomatoes
3. Simmer 25 min

4. Add spinach

Per serve (340 kcal) — Protein: 16g | Iron: 4mg | Calcium: 100mg | Folate: 180mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 80mg

---

Hidden Liver Meatballs

20% liver in meatballs. Makes 20.

$1.60/serve • 40 min prep • Freezer | Kid Friendly | Hidden Nutrients | Organ Meat

INGREDIENTS

- 400g mince
- 100g liver
- Egg, oats, onion
- Tomato sauce

METHOD

1. Mix mince+liver+egg+oats
2. Roll 20 balls
3. Brown, simmer in sauce

Per serve (440 kcal) — Protein: 30g | Iron: 5mg | Calcium: 30mg | Vit D: 8IU | B12: 18mcg | Folate: 130mcg | Omega-3: 0.1g

---

Liver Cottage Pie

Liver hidden under mash. Serves 6.

$1.70/serve • 60 min prep • Freezer | Kid Friendly | Hidden Nutrients | Organ Meat

INGREDIENTS

- 400g mince
- 100g liver
- Carrots, peas
- Tin tomatoes
- Mash topping

METHOD

1. Cook veg, brown meat+liver
2. Simmer with tomatoes
3. Top with mash, bake 25 min

Per serve (460 kcal) — Protein: 28g | Iron: 4mg | Calcium: 50mg | Vit D: 8IU | B12: 14mcg | Folate: 120mcg | Omega-3: 0.1g

---

Heart Stir-Fry

Beef heart sliced thin. Tastes like steak.

$1.60/serve • 20 min prep • Quick | Organ Meat

INGREDIENTS

- 400g heart
- Onion, cabbage, capsicum
- Soy, sesame oil, ginger

METHOD

1. Sear heart 1-2 min
2. Stir-fry veg
3. Return heart, add sauce

Per serve (420 kcal) — Protein: 32g | Iron: 6mg | Calcium: 15mg | Vit D: 3IU | B12: 9mcg | Folate: 15mcg | Omega-3: 0.1g

---

Heart Bean Chilli

Heart minced into chilli. Serves 6.

$1.40/serve • 45 min prep • Freezer | Organ Meat | Hidden Nutrients

INGREDIENTS

- 500g heart, minced

- 2 tins beans
- Tin tomatoes
- Cumin, paprika, chilli

METHOD

1. Cook onion+spices
2. Brown heart
3. Add tomatoes+beans
4. Simmer 30 min

Per serve (400 kcal) — Protein: 30g | Iron: 7mg | Calcium: 70mg | Vit D: 3IU | B12: 8mcg | Folate: 100mcg | Omega-3: 0.1g

---

Heart+Liver Burger

50% heart, 30% mince, 20% liver. Makes 8.

$1.30/serve • 25 min prep • Freezer | Kid Friendly | Organ Meat | Hidden Nutrients

INGREDIENTS

- 250g heart
- 150g mince
- 100g liver
- Onion, egg, crumbs

METHOD

1. Mix all meat+binders
2. Shape 8 patties
3. Cook 3-4 min/side

Per serve (380 kcal) — Protein: 28g | Iron: 7mg | Calcium: 15mg | Vit D: 5IU | B12: 20mcg | Folate: 100mcg | Omega-3: 0.1g

---

Shakshuka

Eggs in spiced tomato sauce. Serves 2.

$1.30/serve • 20 min prep • Quick

INGREDIENTS

- 4 eggs
- Tin tomatoes
- Onion, spinach
- Paprika, cumin
- Bread

METHOD

1. Cook onion+spices
2. Add tomatoes+spinach
3. Crack eggs in
4. Cover 5-7 min

Per serve (380 kcal) — Protein: 18g | Iron: 3mg | Calcium: 100mg | Vit D: 80IU | B12: 0mcg | Folate: 120mcg | Omega-3: 0.1g

---

Peanut Noodles

peanut butter sauce noodles + veg. Serves 2.

$1.20/serve • 20 min prep • Quick | Kid Friendly | Vegan

INGREDIENTS

- 200g noodles
- Cabbage, carrots, spinach
- peanut butter, soy, vinegar

METHOD

1. Cook noodles
2. Whisk peanut butter sauce
3. Toss with veg

Per serve (520 kcal) — Protein: 20g | Iron: 3mg | Calcium: 80mg | Folate: 100mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 90mg

---

Classic Dal

Indian lentils. Serves 6.

$0.80/serve • 30 min prep • Freezer | Vegan

INGREDIENTS

- 300g lentils
- Onion, garlic, ginger
- Tomatoes, garam masala

METHOD

1. Boil lentils 20 min
2. Make tadka
3. Combine

Per serve (280 kcal) — Protein: 17g | Iron: 4mg | Calcium: 40mg | Folate: 200mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 55mg

---

Bean Tacos

Spiced beans in tortillas with cabbage, cheese, lime. Serves 4.

$1.20/serve • 15 min prep • Quick | Kid Friendly | Vegetarian

INGREDIENTS

- 2 tins beans (kidney or black)
- 1 onion, diced
- 2 tsp cumin, 1 tsp paprika, chilli
- 8 small tortillas
- Shredded cabbage, grated cheese
- Lime, yoghurt or sour cream

METHOD

1. Cook onion 3 min, add spices
2. Add beans, mash roughly, cook 5 min
3. Warm tortillas
4. Load with beans, cabbage, cheese, lime

Per serve (360 kcal) — Protein: 18g | Iron: 4mg | Calcium: 200mg | Vit D: 2IU | B12: 0mcg | Folate: 160mcg | Omega-3: 0.0g

---

Chickpea & Potato Bake

Roasted chickpeas and potatoes with spices. One tray. Serves 4.

$1.10/serve • 45 min prep • Vegan | Batch Cook

INGREDIENTS

- 2 tins chickpeas, drained
- 4 potatoes, cubed
- 2 carrots, chunked
- 1 onion, quartered
- 2 tbsp oil
- Cumin, paprika, turmeric, garlic powder
- Frozen spinach to serve

METHOD

1. Preheat 200°C
2. Toss chickpeas, potatoes, carrots, onion with oil+spices
3. Spread on tray, roast 35-40 min
4. Serve with wilted spinach and yoghurt

Per serve (350 kcal) — Protein: 14g | Iron: 4mg | Calcium: 70mg | Folate: 140mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 70mg

---

Sausage & Bean Casserole

Cheap snags + 2 tins beans in tomato sauce. Hearty comfort food. Serves 6.

$1.80/serve • 35 min prep • Freezer | Kid Friendly

INGREDIENTS

- 6 beef or pork sausages
- 2 tins beans (cannellini or mixed)
- 1 tin tomatoes
- 1 onion, diced
- 2 garlic cloves
- 1 tsp smoked paprika, 1 tsp oregano
- Splash Worcestershire

METHOD

1. Brown sausages in pot, remove and slice
2. Cook onion 3 min, add garlic+spices
3. Add beans, tomatoes, Worcestershire
4. Return sliced sausages, simmer 20 min
5. Season and serve with bread or rice

Per serve (420 kcal) — Protein: 24g | Iron: 4mg | Calcium: 80mg | Vit D: 3IU | B12: 0mcg | Folate: 100mcg | Omega-3: 0.1g

---

Chicken & Veg Congee

Asian comfort food. Batch-cook. Serves 4.

$1.20/serve • 40 min prep • Batch Cook | Freezer | Kid Friendly | Chicken

INGREDIENTS

- 1 cup rice
- 6 cups chicken stock
- 300g chicken thigh
- Carrots, peas
- Garlic, ginger, soy, sesame
- Spring onions

METHOD

1. Boil rice, stock, chicken, garlic, ginger 25-30 min
2. Remove chicken, shred
3. Add carrot, peas, cook 5 min
4. Return chicken, add soy
5. Serve with sesame oil, spring onion

Per serve (310 kcal) — Protein: 24g | Iron: 2mg | Calcium: 55mg | Vit D: 12IU | B12: 0mcg | Folate: 62mcg | Omega-3: 0.2g

---

Black Bean Quesadillas

Vegan calcium + fibre. Kid-friendly. Serves 2.

$1.05/serve • 15 min prep • Quick | Kid Friendly | Vegetarian

INGREDIENTS

- 4 wraps
- Tin black beans
- ½ cup cheese
- Frozen corn
- Cumin, paprika, salt and pepper

METHOD

1. Mash beans with spices
2. Spread on 2 wraps
3. Top with corn+cheese
4. Place 2nd wrap on top
5. Cook 2-3 min/side in dry pan
6. Cut into wedges

Per serve (510 kcal) — Protein: 20g | Iron: 4mg | Calcium: 280mg | Vit D: 8IU | B12: 0mcg | Folate: 190mcg | Omega-3: 0.2g

---

Baked Eggs in Tomato

Shakshuka-style. Easy dinner for 2.

$1.15/serve • 20 min prep • Quick | Kid Friendly

INGREDIENTS

- 4 eggs
- Tin crushed tomatoes
- Onion, garlic
- Cumin, paprika, chilli
- Bread
- Optional feta

METHOD

1. Sauté onion
2. Add garlic+spices
3. Add tomatoes, simmer 5 min
4. Make 4 wells, crack eggs
5. Cover, cook 4-5 min
6. Top with feta if using

Per serve (355 kcal) — Protein: 20g | Iron: 3mg | Calcium: 145mg | Vit D: 100IU | B12: 1mcg | Folate: 115mcg | Omega-3: 0.3g

---

Tuna Fried Rice

Leftover rice + tuna. Quick dinner for 2.

$1.10/serve • 15 min prep • Quick | Omega 3 | Kid Friendly

INGREDIENTS

- 2 cups cooked rice
- Tin tuna
- 2 eggs
- Peas+corn mix
- Garlic, soy, sesame oil

METHOD

1. Heat oil in wok
2. Add garlic 30 sec
3. Add rice, stir-fry 2 min
4. Push aside, scramble eggs
5. Add tuna+veg, stir-fry 2 min
6. Add soy+sesame oil

Per serve (420 kcal) — Protein: 34g | Iron: 2mg | Calcium: 65mg | Vit D: 40IU | B12: 2mcg | Folate: 68mcg | Omega-3: 0.8g

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Split Pea & Ham Soup

Budget classic. Batch-cook. Serves 6.

$0.95/serve • 60 min prep • Batch Cook | Freezer

INGREDIENTS

- 500g split peas
- Ham hock or bacon
- Carrots, celery, onion
- Garlic, bay leaves
- 8 cups water

METHOD

1. Combine all in pot
2. Boil, then simmer 60-90 min
3. Remove hock, shred meat, return

4. Season
5. Thickens when cool

Per serve (310 kcal) — Protein: 22g | Iron: 3mg | Calcium: 58mg | B12: 0mcg | Folate: 155mcg | Omega-3: 0.1g | Zinc: 2mg

---

Hidden Liver Shepherd's Pie

20% liver hidden in lamb. Serves 6.

$1.45/serve • 50 min prep • Freezer | Batch Cook | Hidden Nutrients | Organ Meat

INGREDIENTS

- 500g lamb mince
- 150g chicken liver, minced
- 800g potatoes
- Carrots, peas, onion, garlic
- Tomato paste, stock
- Butter+milk for mash

METHOD

1. Boil potatoes, mash with butter+milk
2. Brown lamb+liver together
3. Add veg, tomato paste, stock
4. Simmer 10 min, add peas
5. Transfer to dish, top with mash
6. Rough up surface, bake 200°C 20 min

Per serve (390 kcal) — Protein: 30g | Iron: 7mg | Calcium: 68mg | Vit D: 20IU | B12: 12mcg | Folate: 185mcg | Omega-3: 0.3g

---

Chickpea & Spinach Curry

Vegan iron bomb. Serves 4.

$1.05/serve • 25 min prep • Vegan | Batch Cook | Freezer

INGREDIENTS

- 2 tins chickpeas
- Tin tomatoes
- Coconut milk
- Frozen spinach
- Onion, garlic, ginger
- Cumin, coriander, turmeric, garam masala, chilli

METHOD

1. Cook onion 5 min
2. Add garlic, ginger, spices 1 min
3. Add tomatoes, coconut milk
4. Add chickpeas, simmer 10 min
5. Add spinach, cook 2-3 min
6. Season

Per serve (420 kcal) — Protein: 15g | Iron: 5mg | Calcium: 145mg | Folate: 185mcg | Omega-3: 0.3g | Zinc: 2mg | Mg: 85mg

---

Beef Mince Tacos

Classic tacos. Serves 4.

$1.45/serve • 20 min prep • Kid Friendly | Quick | Batch Cook

INGREDIENTS

- 500g beef mince
- Onion
- Cumin, paprika, chilli
- Tin tomatoes
- Taco shells, toppings

METHOD

1. Brown mince
2. Add onion, cook 3 min
3. Add spices, cook 1 min
4. Add tomatoes, simmer 10 min
5. Serve in shells with toppings

Per serve (420 kcal) — Protein: 28g | Iron: 4mg | Calcium: 85mg | Vit D: 8IU | B12: 2mcg | Folate: 45mcg | Omega-3: 0.1g

---

Beef Mince & Potato Bake

Layered bake. Serves 6.

$1.55/serve • 50 min prep • Batch Cook | Freezer | Kid Friendly

INGREDIENTS

- 500g beef mince
- 800g potatoes sliced
- Onion, garlic
- Tin tomatoes
- Stock
- Cheese

METHOD

1. Brown mince + onion + garlic
2. Add tomatoes + stock, simmer 10 min
3. Layer potatoes, mince, potatoes in dish
4. Cover, bake 180°C 35 min
5. Top cheese, bake 10 min

Per serve (380 kcal) — Protein: 24g | Iron: 3mg | Calcium: 95mg | Vit D: 4IU | B12: 1mcg | Folate: 42mcg | Omega-3: 0.1g

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Beef & Cabbage Stir-Fry

Quick budget stir-fry. Serves 4.

$1.20/serve • 20 min prep • Quick | Budget

INGREDIENTS

- 500g beef mince
- ½ cabbage shredded
- Carrots
- Garlic, ginger
- Soy, sesame oil

METHOD

1. Brown mince, remove
2. Stir-fry cabbage + carrot 4 min
3. Add garlic + ginger 1 min
4. Return mince, add soy + sesame
5. Toss well

Per serve (320 kcal) — Protein: 26g | Iron: 3mg | Calcium: 75mg | Vit D: 4IU | B12: 2mcg | Folate: 68mcg | Omega-3: 0.2g

---

Whole Baked Fish

Whole fish market bargain. Serves 4.

$1.80/serve • 35 min prep • Omega 3 | Budget

INGREDIENTS

- 800g whole fish (snapper/bream)
- Lemon sliced
- Garlic
- Herbs
- Olive oil, salt and pepper

METHOD

1. Score fish 3 times each side
2. Stuff cavity with lemon, garlic, herbs
3. Rub with oil, salt and pepper
4. Bake 200°C 25-30 min

Per serve (280 kcal) — Protein: 38g | Iron: 1mg | Calcium: 85mg | Vit D: 340IU | B12: 3mcg | Folate: 22mcg | Omega-3: 1.4g

---

Fish Tacos

Whole fish fillets in tacos. Serves 4.

$1.95/serve • 25 min prep • Omega 3 | Quick | Kid Friendly

INGREDIENTS

- 600g fish fillets
- Tortillas
- Cabbage
- Lime
- Yoghurt
- Cumin, paprika

METHOD

1. Cut fish into strips, season
2. Pan-fry 2-3 min/side
3. Mix yoghurt + lime
4. Warm tortillas
5. Fill with cabbage, fish, sauce

Per serve (320 kcal) — Protein: 28g | Iron: 1mg | Calcium: 85mg | Vit D: 240IU | B12: 2mcg | Folate: 48mcg | Omega-3: 1.0g

---

Refried Beans (Dry)

500g dry beans → 6 serves. Freezer gold.

$0.60/serve • 150 min prep • Vegan | Batch Cook | Freezer | Budget

INGREDIENTS

- 500g dry pinto beans
- Onion
- Garlic
- Cumin, paprika
- Oil, salt

METHOD

1. Soak beans overnight
2. Drain, boil 60-90 min until soft
3. Sauté onion + garlic + spices
4. Add beans, mash roughly
5. Season
6. Freeze portions

Per serve (280 kcal) — Protein: 16g | Iron: 4mg | Calcium: 70mg | Folate: 185mcg | Omega-3: 0.2g | Zinc: 2mg | Mg: 88mg

---

Bean Burrito Bowls

Vegan bowl with dry beans. Serves 4.

$1.15/serve • 35 min prep • Vegan | Batch Cook

INGREDIENTS

- 2 cups cooked beans (from dry)
- Rice
- Capsicum
- Corn
- Avocado
- Salsa, lime

METHOD

1. Cook rice, cook beans
2. Season beans with cumin
3. Sauté capsicum + corn
4. Assemble bowls: rice, beans, veg, avo, salsa

Per serve (420 kcal) — Protein: 14g | Iron: 4mg | Calcium: 68mg | Folate: 165mcg | Omega-3: 0.2g | Zinc: 2mg | Mg: 95mg

---

Chicken & Rice One-Pot

Complete meal in one pot. Serves 6.

$1.60/serve • 45 min prep • Chicken | Batch Cook | Kid Friendly

INGREDIENTS

- 800g chicken thighs
- 2 cups rice
- Onion, carrots, peas
- Stock
- Garlic, paprika, thyme

METHOD

1. Brown chicken, remove
2. Sauté onion, carrot, garlic
3. Add rice, stir
4. Add stock + spices
5. Return chicken, cover, simmer 25 min
6. Add peas, cook 5 min

Per serve (420 kcal) — Protein: 32g | Iron: 2mg | Calcium: 55mg | Vit D: 16IU | B12: 0mcg | Folate: 68mcg | Omega-3: 0.2g

---

Honey Garlic Chicken

Sticky chicken thighs. Serves 4.

$1.80/serve • 35 min prep • Chicken | Kid Friendly | Batch Cook

INGREDIENTS

- 8 chicken thighs
- Garlic
- Honey
- Soy sauce
- Oil, ginger

METHOD

1. Mix garlic, honey, soy, ginger
2. Place chicken in dish, pour sauce
3. Bake 200°C 30-35 min, basting halfway

Per serve (380 kcal) — Protein: 34g | Iron: 1mg | Calcium: 28mg | Vit D: 16IU | B12: 0mcg | Folate: 18mcg | Omega-3: 0.2g

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Snacks & Extras

20 snacks — targeted for common nutrient gaps

Yoghurt Berry Bowl

Calcium + vitamin C gap-filler.

$0.80/serve • 2 min prep • Quick | Snack | Kid Friendly

INGREDIENTS

- 200g Greek yoghurt
- Frozen berries
- Seeds, honey

METHOD

1. Top yoghurt with berries+seeds

Per serve (220 kcal) — Protein: 15g | Iron: 0mg | Calcium: 250mg | Vit D: 5IU | B12: 0mcg | Folate: 15mcg | Omega-3: 0.1g

---

Orange & Seeds

100% vitamin C + vitamin E + zinc.

$0.60/serve • 2 min prep • Quick | Snack | Vegan

INGREDIENTS

- 1 orange
- 30g mixed seeds

METHOD

1. Peel and eat

Per serve (180 kcal) — Protein: 5g | Iron: 1mg | Calcium: 55mg | Folate: 40mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 70mg

---

Loaded Yoghurt Bowl

Ultimate gap-filler: calcium, omega-3, potassium.

$1.20/serve • 3 min prep • Quick | Snack

INGREDIENTS

- 200g yoghurt
- Flaxseed
- Seeds
- ½ banana
- Honey

METHOD

1. Layer everything

Per serve (300 kcal) — Protein: 16g | Iron: 1mg | Calcium: 260mg | Vit D: 5IU | B12: 0mcg | Folate: 25mcg | Omega-3: 1.8g

---

Milk + Fruit

Calcium + vitamin C + iodine.

$0.70/serve • 1 min prep • Quick | Snack | Kid Friendly

INGREDIENTS

- 250mL milk
- 1 piece fruit

METHOD

1. Pour milk, eat fruit

Per serve (200 kcal) — Protein: 9g | Iron: 0mg | Calcium: 300mg | Vit D: 40IU | B12: 0mcg | Folate: 15mcg | Omega-3: 0.1g

---

Banana PB Bites

Potassium + magnesium.

$0.50/serve • 3 min prep • Quick | Snack | Kid Friendly | Vegan

INGREDIENTS

- Banana
- 2 tbsp peanut butter

METHOD

1. Slice banana, add peanut butter

Per serve (250 kcal) — Protein: 8g | Iron: 0mg | Calcium: 15mg | Folate: 25mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 65mg

---

Boiled Eggs & Veggies

Simple protein snack with veggie sticks.

$0.75/serve • 10 min prep • Quick | Snack | Kid Friendly

INGREDIENTS

- 2 eggs
- Carrot sticks
- Celery sticks
- Optional hummus

METHOD

1. Boil eggs 7-8 min
2. Transfer to cold water, peel
3. Serve with veg sticks

Per serve (195 kcal) — Protein: 14g | Iron: 1mg | Calcium: 85mg | Vit D: 100IU | B12: 1mcg | Folate: 75mcg | Omega-3: 0.2g

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Pumpkin Seeds & Fruit

Zinc + magnesium + iron powerhouse.

$0.60/serve • 1 min prep • Quick | Snack | Vegan

INGREDIENTS

- 3 tbsp pumpkin seeds
- 2 tbsp raisins
- Optional dark chocolate square

METHOD

1. Combine in container
2. Eat

Per serve (220 kcal) — Protein: 8g | Iron: 3mg | Calcium: 22mg | Folate: 18mcg | Omega-3: 0.1g | Zinc: 2mg | Mg: 98mg

---

Cottage Cheese & Pineapple

Retro classic. High protein + calcium.

$0.70/serve • 2 min prep • Quick | Snack | Kid Friendly

INGREDIENTS

- ½ cup cottage cheese
- ½ cup tinned pineapple
- Cinnamon

METHOD

1. Spoon cottage cheese in bowl
2. Top with pineapple
3. Sprinkle cinnamon

Per serve (155 kcal) — Protein: 14g | Iron: 0mg | Calcium: 110mg | Vit D: 4IU | B12: 0mcg | Folate: 22mcg | Omega-3: 0.1g

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Cheese & Crackers

Classic cheese snack.

$0.70/serve • 2 min prep • Quick | Calcium | Kid Friendly

INGREDIENTS

- 50g cheese
- 6 crackers
- Apple sliced
- Grapes

METHOD

1. Arrange cheese, crackers, fruit on plate

Per serve (320 kcal) — Protein: 14g | Iron: 1mg | Calcium: 360mg | Vit D: 8IU | B12: 0mcg | Folate: 28mcg | Omega-3: 0.1g

---

Cheese & Veggie Sticks

Cheese cubes + veg sticks.

$0.65/serve • 3 min prep • Quick | Calcium | Kid Friendly

INGREDIENTS

- 50g cheese cubed
- Carrot sticks
- Celery
- Hummus

METHOD

1. Cut cheese into cubes
2. Cut veg into sticks
3. Serve with hummus

Per serve (220 kcal) — Protein: 13g | Iron: 0mg | Calcium: 360mg | Vit D: 8IU | B12: 0mcg | Folate: 42mcg | Omega-3: 0.1g

---

Cheese & Tomato Rice Cakes

Quick savoury snack.

$0.55/serve • 3 min prep • Quick | Calcium

INGREDIENTS

- 3 rice cakes
- 40g cheese
- Tomato sliced
- Oregano, salt and pepper

METHOD

1. Top rice cakes with cheese
2. Add tomato
3. Season
4. Optional: microwave 20 sec to melt

Per serve (210 kcal) — Protein: 12g | Iron: 0mg | Calcium: 280mg | Vit D: 8IU | B12: 0mcg | Folate: 18mcg | Omega-3: 0.1g

---

Sardine & Avocado Rice Cakes

Omega-3 + B12 + calcium in 3 minutes. Surprisingly good.

$1.10/serve • 3 min prep • Quick | Snack | Omega 3

INGREDIENTS

- 4 rice cakes
- ½ tin sardines (95g)
- ¼ avocado
- Squeeze of lemon
- Salt and pepper, chilli flakes

METHOD

1. Mash avo with lemon + salt
2. Spread on rice cakes
3. Top with sardine pieces
4. Add chilli flakes

Per serve (290 kcal) — Protein: 22g | Iron: 2mg | Calcium: 280mg | Vit D: 220IU | B12: 7mcg | Folate: 48mcg | Omega-3: 1.4g

---

Brazil Nut Trail Mix

1 Brazil nut = your full day of selenium. Add seeds + dark choc.

$0.70/serve • 1 min prep • Quick | Snack | Vegan

INGREDIENTS

- 2 Brazil nuts
- 2 tbsp pumpkin seeds
- 1 tbsp sunflower seeds
- 2 squares dark chocolate (70%+)
- Small handful raisins

METHOD

1. Combine in a container or zip bag
2. Eat

Per serve (260 kcal) — Protein: 7g | Iron: 3mg | Calcium: 38mg | Folate: 22mcg | Omega-3: 0.2g | Zinc: 2mg | Mg: 115mg

---

Tuna Rice Cakes

High protein + selenium snack. Beats chips every time.

$0.90/serve • 3 min prep • Quick | Snack | High Protein

INGREDIENTS

- 4 rice cakes
- Tin tuna, drained
- 2 tbsp yoghurt or mayo
- Lemon, celery, salt and pepper

METHOD

1. Mix tuna with yoghurt/mayo + lemon
2. Season with salt and pepper
3. Pile on rice cakes
4. Add diced celery for crunch

Per serve (240 kcal) — Protein: 26g | Iron: 1mg | Calcium: 55mg | Vit D: 15IU | B12: 2mcg | Folate: 12mcg | Omega-3: 0.4g

---

Hummus & Veggie Dip Plate

Iron + folate + fibre. Vegan and kid-friendly.

$0.75/serve • 5 min prep • Quick | Snack | Vegan | Kid Friendly

INGREDIENTS

- 4 tbsp hummus (bought or from tin chickpeas)
- Carrot sticks
- Celery sticks
- Capsicum strips
- Cucumber slices
- Wholegrain crackers

METHOD

1. Cut veg into sticks
2. Serve with hummus and crackers
3. Optional: add za'atar or paprika on hummus

Per serve (220 kcal) — Protein: 8g | Iron: 2mg | Calcium: 62mg | Folate: 95mcg | Omega-3: 0.1g | Zinc: 1mg | Mg: 48mg

---

Boiled Egg & Vegemite Toast

B12 from egg + folate from Vegemite. Classic Aussie combo.

$0.65/serve • 8 min prep • Quick | Snack | Kid Friendly

INGREDIENTS

- 1 egg
- 1 slice wholegrain toast
- Vegemite
- Butter

METHOD

1. Boil egg 7-8 min
2. Toast bread
3. Butter and spread Vegemite
4. Eat egg alongside or sliced on toast

Per serve (215 kcal) — Protein: 11g | Iron: 2mg | Calcium: 48mg | Vit D: 50IU | B12: 0mcg | Folate: 85mcg | Omega-3: 0.1g

---

Frozen Banana Nice Cream

1-ingredient ice cream. Kids go wild for it. Add peanut butter for protein.

$0.40/serve • 5 min prep • Quick | Snack | Vegan | Kid Friendly

INGREDIENTS

- 2 bananas, frozen in chunks
- Optional: 1 tbsp peanut butter
- Optional: splash of milk for creamier texture

METHOD

1. Freeze bananas in chunks (at least 2 hours)
2. Blend in food processor until smooth
3. Add peanut butter or milk if using
4. Eat immediately or refreeze 20 min for firmer texture

Per serve (200 kcal) — Protein: 4g | Iron: 0mg | Calcium: 14mg | Folate: 28mcg | Omega-3: 0.1g | Zinc: 0mg | Mg: 60mg

---

Miso Soup with Egg

Iodine + umami hit. Warming snack for winter.

$0.70/serve • 5 min prep • Quick | Snack

INGREDIENTS

- 1 tbsp miso paste
- 1.5 cups hot water
- 1 egg (soft-boiled or poached)
- Spring onion
- Optional: silken tofu

METHOD

1. Dissolve miso in hot (not boiling) water
2. Soft-boil egg 6-7 min or poach 3 min
3. Slice spring onion
4. Serve egg in miso broth, top with onion

Per serve (120 kcal) — Protein: 9g | Iron: 1mg | Calcium: 32mg | Vit D: 50IU | B12: 0mcg | Folate: 28mcg | Omega-3: 0.1g

---

Apple, Cheese & Walnuts

Omega-3 + calcium + fibre. Satisfying afternoon snack.

$0.85/serve • 3 min prep • Quick | Snack | Kid Friendly | Calcium | Omega 3

INGREDIENTS

- 1 apple, sliced
- 40g cheddar, sliced
- 30g walnuts

METHOD

1. Slice apple and cheese
2. Arrange on plate with walnuts

Per serve (330 kcal) — Protein: 12g | Iron: 1mg | Calcium: 310mg | Vit D: 8IU | B12: 0mcg | Folate: 28mcg | Omega-3: 1.4g

---

Dates & Almond Butter

Iron + fibre + energy. Better than a muesli bar.

$0.80/serve • 2 min prep • Quick | Snack | Vegan

INGREDIENTS

- 4 Medjool dates (or 8 dried)
- 2 tbsp almond butter
- Pinch of sea salt

METHOD

1. Remove date pits if needed
2. Fill each date with almond butter
3. Add a pinch of salt on top

Per serve (280 kcal) — Protein: 5g | Iron: 2mg | Calcium: 68mg | Folate: 15mcg | Omega-3: 0.1g | Zinc: 0mg | Mg: 55mg

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Part 11: Cuisine Variations

Indian-Inspired

I1. Classic Dal Tadka (Tempered Lentils) — Serves 6

Cost: ~$0.80/serve | Prep: 5 min | Cook: 25 min

Ingredients:

300g red/yellow lentils

1L water, 1 tsp turmeric, salt

TADKA: 2 tbsp oil, 1 tsp cumin seeds, 1 onion diced, 3 garlic cloves, 1 thumb ginger, 2 tomatoes, 1 tsp chilli, 1 tsp garam masala, coriander/spinach

Method:

1. Boil lentils with turmeric 20 min until porridge-like.
2. Make tadka: heat oil, pop cumin seeds, cook onion 4 min, add garlic/ginger/chilli 1 min, add tomatoes 3 min, add garam masala.
3. Pour tadka into lentils. Add spinach. Season. Serve over rice.

Key Nutrients: Folate (50%), Protein 17g, Fibre 11g, Iron (22%), Potassium (18%), Manganese (25%), Thiamin (18%)

I3. Egg Curry (Anda Curry) — Serves 4

Cost: ~$1.20/serve | Prep: 5 min | Cook: 20 min

Ingredients:

8 eggs, hard-boiled and peeled

1 onion, 2 tomatoes (or 1 tin), 2 garlic cloves, 1 thumb ginger

2 tbsp oil

1 tsp each: turmeric, cumin, coriander, garam masala, ½ tsp chilli

200mL water, handful frozen spinach

Method:

1. Cook onion 5 min. Add garlic/ginger/spices 1 min.
2. Add tomatoes and water. Simmer 10 min.
3. Halve eggs, nestle into sauce. Add spinach. Simmer 5 min. Serve over rice.

Key Nutrients: B12 (45%), Choline (45%), Selenium (30%), Protein 16g, Vitamin A (30%), Riboflavin (30%), Iron (15%)

I4. Chana Masala (Chickpea Curry) — Serves 4

Cost: ~$0.90/serve | Prep: 5 min | Cook: 20 min

Ingredients:

2 tins chickpeas, drained
1 tin canned tomatoes
1 onion, 3 garlic cloves, 1 thumb ginger
2 tbsp oil
2 tsp coriander, 1 tsp cumin, 1 tsp turmeric, 1 tsp garam masala, ½ tsp chilli
Juice of 1 lemon

Method:

1. Cook onion 5 min. Add garlic/ginger/spices 1 min.
2. Add tomatoes. Simmer 5 min.
3. Add chickpeas. Simmer 10 min, mashing some to thicken.
4. Finish with lemon and salt. Serve over rice.

Key Nutrients: Protein 14g, Fibre 12g, Folate (35%), Iron (20%), Manganese (40%), Vitamin C (25%), B6 (20%)

Asian-Inspired

A1. Congee (Rice Porridge) with Egg — Serves 4

Cost: ~$0.60/serve | Prep: 2 min | Cook: 30 min (or 10 min with leftover rice)

Ingredients:

1 cup raw rice (or 2 cups cooked)
6 cups water/stock
1 tbsp soy sauce, 1 tsp sesame oil, salt
Toppings: soft-boiled egg, spring onion, soy sauce

Method:

1. Rinse rice. Combine with water. Boil then simmer 25–30 min, stirring occasionally, until thick porridge.
2. Season with soy sauce, sesame oil, salt.
3. Ladle into bowls. Top with egg and spring onion.

Key Nutrients: Protein 12g (with egg), B12 (20%), Selenium (20%), Choline (20%) — extremely easy to digest

One of the best foods for young children, fussy eaters, and morning sickness.

A4. Peanut Noodle Bowl — Serves 2

Cost: ~$1.20/serve | Prep: 10 min | Cook: 10 min

Ingredients:

200g dried noodles

2 cups shredded cabbage, 2 carrots grated, 100g frozen spinach thawed

SAUCE: 3 tbsp peanut butter, 2 tbsp soy sauce, 1 tbsp rice vinegar, 1 tsp honey, 1 garlic clove, 2–3 tbsp warm water, chilli flakes

Method:

1. Cook noodles. Drain.
2. Whisk all sauce ingredients until smooth.
3. Toss noodles with vegetables and sauce. Serve cold or warm.

Key Nutrients: Vitamin A (100%+), Vitamin K (100%+), Protein 20g, Fibre 8g, Niacin (25%), Magnesium (25%), Folate (25%), Vitamin C (30%)

Extremely popular with kids.

Mediterranean-Inspired

M1. Shakshuka (Eggs in Spiced Tomato Sauce) — Serves 2

Cost: ~$1.30/serve | Prep: 5 min | Cook: 15 min

Ingredients:

4 eggs

1 tin canned tomatoes

1 onion, 2 garlic cloves

1 tsp smoked paprika, 1 tsp cumin, ½ tsp chilli

100g frozen spinach

1 tbsp olive oil, salt, pepper, bread

Method:

1. Heat oil. Cook onion 4 min. Add garlic/spices 30 sec.
2. Add tomatoes and spinach. Simmer 5 min.
3. Make 4 wells. Crack an egg into each.
4. Cover, cook low 5–7 min until whites set, yolks runny. Serve with bread.

Key Nutrients: Vitamin K (100%+), Vitamin A (40%), B12 (30%), Protein 18g, Vitamin C (35%), Choline (30%), Folate (30%), Iron (18%)

M3. Sardine & Potato Bake — Serves 4

Cost: ~$1.80/serve | Prep: 10 min | Cook: 30 min

Ingredients:

4 medium potatoes, thinly sliced

2 tins sardines, drained

1 tin canned tomatoes

1 onion, thinly sliced
2 garlic cloves, 1 tsp smoked paprika
1 tbsp olive oil, dried oregano, salt, pepper

Method:

1. Preheat oven 200°C. Layer sliced potatoes in baking dish. Top with onion.
2. Mix tomatoes with garlic, paprika, oregano. Pour over potatoes.
3. Drizzle oil. Cover with foil. Bake 20 min.
4. Remove foil. Lay sardines on top. Bake uncovered 10 min.

Key Nutrients: B12 (100%+), Selenium (50%), Calcium (25%), Omega-3, Vitamin D (25%), Protein 22g, Potassium (25%), Vitamin C (30%)

Part 12: Pregnancy & Lactation Meal Plan

Nutrients That Increase Most During Pregnancy

Nutrient	Non-Pregnant	Pregnant	Increase	Why It Matters
Folate	400 µg	600 µg	+50%	Neural tube development
Iron	18 mg	27 mg	+50%	Blood volume, placental growth
Iodine	150 µg	220 µg	+47%	Fetal brain development
Choline	425 mg	450 mg	+6%	Brain/spinal cord development
Protein	46 g	71 g	+25 g	Fetal growth (2nd/3rd tri)
DHA	250 mg	300+ mg	Important	Brain and eye development
Energy	~2,000 kcal	+340–452	Modest	Not “eating for two”

What Traditional Cultures Knew: Pre-Conception and Pregnancy Nutrition

Modern prenatal care focuses almost entirely on the period after conception is confirmed. Traditional cultures understood something we are only now rediscovering through nutritional science: the nutritional status of both parents in the months before conception is at least as important as nutrition during the pregnancy itself.

Across vastly different cultures, Weston A. Price documented remarkably consistent practices: specific nutrient-dense foods were reserved for young women of reproductive age and were increased in the 6-12 months before marriage (the pre-conception window). The foods were invariably the most nutrient-dense available:

Japanese coastal communities: Seaweed (iodine), fish roe (DHA, zinc, vitamin D, K2), shellfish (zinc, B12, iron), fermented soy (K2, probiotics).

Ayurvedic tradition (India): Ghee, sesame, dates, almonds, warm spiced milk -- providing fat-soluble vitamins, essential fatty acids, iron, and calcium. Pre-conception rasayana (rejuvenating foods) were a formalised medical practice.

African pastoralist cultures: Liver, blood, marrow bones, and raw milk from grass-fed cattle -- covering vitamin A, D, K2, iron, B12, omega-3, and complete protein.

Mediterranean traditional diets: Liver once or twice weekly, abundant seafood, olive oil, legumes, fermented dairy, organ-based broths and stews.

Indigenous Australians: Kangaroo liver, witchetty grubs (exceptionally high in iron, zinc, and fatty acids), freshwater mussels, bush tucker fruits with extraordinary vitamin C content.

Maori and Polynesian tradition: Fish roe, liver, shellfish, fermented foods, and coconut cream -- all providing the fat-soluble vitamins and DHA that Price identified as central to fetal development.

Why supplements alone are not enough:

Standard prenatal vitamins typically provide: folate, iron, calcium, iodine, and some B vitamins. What they typically do NOT provide in meaningful amounts:

Choline: The recommended intake in pregnancy is 440-550mg/day. Most prenatal vitamins contain 0-55mg. Yet choline is essential for neural tube development, fetal liver function, and placental blood flow. Eggs (125mg each) and liver (400mg per 100g) are the practical solutions.

DHA: Optimal pregnancy intake is 200-300mg/day. Most prenatal vitamins have none, and those that do typically have 100-200mg. Oily fish 2-3 times per week or an algae-based DHA supplement is essential.

Vitamin K2: Almost entirely absent from supplements. Grass-fed butter, hard cheese, egg yolk, and liver are the practical sources.

Preformed Vitamin A (retinol): Required for organ development. Conversion from beta-carotene is highly variable. Liver (chicken liver is safer -- one serve per week is manageable; beef and lamb liver

are far higher in retinol and many guidelines recommend avoiding them entirely in pregnancy due to teratogenic risk above 3000 mcg RAE/day) and pasteurised cod liver oil are direct sources.

The practical recommendation is to treat prenatal supplements as a safety net, not a nutritional strategy. A structured eating plan rich in eggs, oily fish (sardines, salmon, mackerel), colourful vegetables, grass-fed dairy, legumes, and modest amounts of organ meat provides what supplements cannot replicate. Start this plan 6+ months before you plan to conceive -- for both partners.

Foods to Avoid During Pregnancy

Food	Reason	Alternative
Liver (1st trimester)	Extremely high vitamin A — teratogenic risk	Eggs, spinach, carrots (beta-carotene is safe)
High-mercury fish	Mercury damages fetal nervous system	Sardines, canned salmon (low mercury)
Raw/undercooked eggs	Salmonella risk	Cook eggs fully
Soft cheeses	Listeria risk	Hard cheeses, cottage cheese
Excess caffeine	>200mg/day linked to low birth weight	1–2 cups coffee/day max

Sample Pregnancy Day

This daily pattern targets: 71g protein, 600µg folate, 27mg iron, 220µg iodine, 450mg choline, 1,000mg calcium, 300mg DHA

Egg & Spinach Scramble (B2) + glass of milk — folate, choline, B12, calcium, iron Breakfast:

Banana + 1 tbsp peanut butter Snack:

Red Lentil Soup (L1) + bread — folate, iron, fibre, vitamin A Lunch:

2 Egg Muffin Cups (S3) Snack:

Sardine Pasta (D2) — omega-3 DHA, calcium, B12, iron, vitamin C Dinner:

Recommended Supplements During Pregnancy

Even with an excellent diet, most pregnant women benefit from:

containing 400–800µg folic acid, 150µg iodine, and iron (~27mg) Prenatal multivitamin

— 1,000 IU/day, especially in winter Vitamin D

— if not eating oily fish 2–3 times/week, consider algae-based or fish oil supplement (300mg DHA min)DHA/Omega-3

Morning Sickness Strategies

When nausea makes eating difficult (typically weeks 6–14):

Congee (A1) — bland, easy to digest

Plain oats with banana — mild, filling

Toast with peanut butter — small, calorie-dense

Small, frequent meals — 5–6 small meals instead of 3 large

Ginger tea — grate fresh ginger into hot water

Don’t stress about perfect nutrition during peak nausea — the fetus draws on your body’s stores. Resume the full plan once nausea subsides.

Lactation Adjustments

Add 1–2 extra snacks per day (+330–400 kcal)
Increase water to 3.5–4L/day
Boost vitamin A — carrots, sweet potato, spinach (target 1,300µg/day)
Continue omega-3 — at least 2 serves of sardines/salmon per week
Continue calcium — 3 serves of dairy or calcium-rich foods daily

Part 13: Kid-Friendly Meals for Fussy Eaters

The Fussy Eater Strategy

Blend, mince, or grate nutrient-dense foods into meals where they're invisible Hide it:
Use formats kids already like (nuggets, pasta, wraps, dips) Make it familiar:
Involvement in cooking increases acceptance Make it fun:
Children need 10–15 exposures to accept a new food Repeat without pressure:
If they'll eat pasta, make the pasta nutritious Anchor on what they eat:

K1. Hidden Veggie Pasta Sauce (Makes 8 serves, freezer-friendly)

Cost: ~$0.80/serve | Prep: 10 min | Cook: 25 min

Ingredients:

2 tins canned tomatoes
2 large carrots, chopped
1 onion, chopped
2 garlic cloves
100g red lentils
100g frozen spinach
500mL water
1 tbsp oil
1 tsp basil, 1 tsp oregano, pinch sugar, salt

Method:

1. Heat oil. Cook onion 4 min. Add garlic 30 sec.
2. Add carrots, lentils, tomatoes, water. Simmer 20 min.
3. Add spinach. Cook 3 min.
4. Blend until completely smooth — should look like regular tomato sauce.
5. Add herbs, sugar, salt. Use on pasta, pizza toast, rice, or with bread.

Key Nutrients: Per child serve: Vitamin A (50%+), Folate (25%), Iron (12%), Vitamin K (40%), Protein 6g, Fibre 5g, Vitamin C (20%)

Freeze in ice cube trays for instant portions. Kids never know what's hidden inside.

K2. Chicken Nugget Upgrade (Makes ~20 nuggets, freezer-friendly)

Cost: ~$1.50/serve (5 nuggets) | Prep: 15 min | Cook: 20 min

Ingredients:

400g chicken thigh mince
100g chicken liver, very finely minced (food processor)
1 carrot, finely grated
30g oats blitzed to flour
1 egg
½ tsp garlic powder, ½ tsp onion powder, salt, pepper
Coating: 1 cup breadcrumbs (or blitzed Weet-Bix), spray oil

Method:

1. Combine mince, liver, carrot, oat flour, egg, seasonings. Mix well.
2. Shape into nugget-sized patties (~2 tbsp each).
3. Roll in breadcrumbs, pressing to coat.
4. Place on lined tray. Spray with oil.
5. Bake 200°C for 18–20 min, flipping halfway.

Key Nutrients: B12 (200%+), Vitamin A (100%+), Protein 25g, Iron (20%), Zinc (20%), Riboflavin (40%), Folate (30%), Choline (25%)

Freeze uncooked on a tray, then bag. Bake from frozen — add 5 min. Better than any shop-bought nugget.

K3. Mac & Cheese with Hidden Cauliflower — Serves 4

Cost: ~$1.20/serve | Prep: 5 min | Cook: 15 min

Ingredients:

300g macaroni pasta
200g frozen cauliflower
200mL milk
150g cheddar cheese, grated
1 tbsp butter
Pinch mustard powder (optional), salt

Method:

1. Cook pasta. In last 5 min, add frozen cauliflower to pasta water.
2. Drain, reserving ½ cup pasta water. Set pasta aside.
3. In same pot, add cauliflower, milk, butter. Blend smooth with stick blender.
4. Return to low heat. Stir in cheese until melted and creamy.
5. Add pasta and toss. Thin with pasta water if needed. Season.

Key Nutrients: Calcium (35%), Protein 18g, Vitamin C (30%), B12 (20%), Phosphorus (25%), Riboflavin (20%)

K4. Banana Oat Pancakes — Makes ~8 small

Cost: ~$0.60 | Prep: 5 min | Cook: 10 min

Ingredients:

2 ripe bananas
2 eggs
50g rolled oats
Pinch cinnamon
Optional: 1 tbsp ground flaxseed or frozen blueberries

Method:

1. Mash bananas. Mix in eggs and oats. Let sit 5 min.
2. Heat non-stick pan with tiny bit of butter over medium heat.
3. Drop tablespoons of batter. Cook 2–3 min per side until golden.
4. Serve with honey or yoghurt.

Key Nutrients: Protein 12g, B12 (20%), Choline (20%), Manganese (30%), B6 (20%), Selenium (18%), Fibre 4g

The “Only Eats 5 Things” Emergency Plan

If your child currently eats a very narrow range of foods:

1. **Don’t remove their safe foods. Add to them instead.**
2. **Hidden Veggie Sauce (K1) on whatever pasta/bread they already eat.**
3. **Hidden Liver Bolognese (D6) if they eat pasta with meat sauce.**
4. **Milk — covers calcium, B12, riboflavin, protein.**
5. **A children’s multivitamin as a safety net while you expand their diet.**
6. **Peanut butter on anything — adds protein, niacin, magnesium, vitamin E.**
7. **Frozen fruit smoothies — disguise spinach, flaxseed, oats in fruit flavours.**

Progress takes weeks to months. Consistency and zero pressure at mealtimes are more effective than any single recipe.

Part 14: Movement, Exercise & Physical Activity

Nutrition and movement are inseparable — each amplifies the benefits of the other. Australia's physical activity guidelines were developed by the Department of Health and apply to all Australians regardless of background or fitness level.

4.1 Australian Physical Activity Guidelines Summary

Two types of activity are required for optimal health: aerobic (cardio) and muscle-strengthening (resistance training). Both have distinct and non-interchangeable benefits.

Age Group	Weekly Target	Cardio / Aerobic	Strength Training	Sedentary Behaviour
Children 5–12	60 min/day	Moderate-to-vigorous activity daily (sport, active play, cycling)	3×/week: muscle & bone strengthening (running, jumping, climbing)	Max 2 hrs recreational screen time/day
Teens 13–17	60 min/day	Moderate-to-vigorous most days; some vigorous activity each week	3×/week: resistance & bone-loading activities (weights, sport, gymnastics)	Break up sitting; limit leisure screen time
Adults 18–64	150–300 min mod OR 75–150 min vigorous/week	Brisk walking, swimming, cycling, jogging, group fitness, sport	2×/week: muscle-strengthening (weights, resistance bands, heavy gardening, yoga)	Break up long sitting as often as possible
Older Adults 65+	150–300 min moderate/week	Walking, swimming, water aerobics, cycling, dancing, tai chi	2×/week strength + balance exercises (vital for fall prevention)	Move more, sit less; any activity counts

Children under 5: Infants should be physically active several times daily. Toddlers and pre-schoolers need at least 3 hours of physical activity spread throughout the day. Screen time is not recommended under 2 years, max 1 hr/day ages 2–5.

4.2 Why Strength Training Matters

Australian guidelines explicitly require muscle-strengthening activity, not just cardio. The evidence is clear:

Muscle mass is the single strongest predictor of healthy ageing and longevity in adults over 40. More muscle = better glucose regulation, better bone density, and lower fall risk. Sarcopenia (age-related muscle loss) begins in your 30s at ~1% per year if not actively counteracted. Weight training directly reverses this.
Resistance training improves insulin sensitivity independently of weight loss. Even 2 sessions per week reduces type 2 diabetes risk by 30–35%.

Bone density responds to mechanical loading — weight-bearing resistance exercise is the most effective non-pharmacological treatment for osteoporosis risk.
You don't need a gym. Bodyweight exercises (push-ups, squats, lunges, planks) are free and fully effective for most people.

Budget Tip: A park, a backpack filled with books (makeshift weight), and a set of resistance bands (~$15 one-time cost) gives you everything needed for an effective strength programme at zero ongoing cost.

4.3 How Exercise Changes Your Nutrient Requirements

Regular exercise — particularly strength training and endurance work — changes the quantity and sometimes timing of nutrients you need. The table below summarises the key adjustments:

Nutrient	Target for Active Adults	Why It Matters	Budget Strategy
Protein	1.2–1.7g/kg/day (active adults) vs 0.75g/kg sedentary	Weight training: upper end (1.5–1.7g/kg) Endurance: lower-mid (1.2–1.4g/kg) Older adults active: 1.2–1.4g/kg	Eggs + lentils + sardines ~$1.50/day covers most needs
Carbohydrates	4–7g/kg/day (performance level)	Before long sessions: 1–4g/kg 1–4hrs prior During 60+ min exercise: 30–60g/hr Post-exercise recovery: 1–1.5g/kg	Oats, banana, rice, bread — cheapest fuel source
Iron	+Extra vigilance for female athletes	Foot-strike haemolysis raises turnover Sweat losses add up over time Female athletes up to 30% higher need	Weekly liver or red meat; combine with Vit C foods
Magnesium	May need 10–20% more than sedentary RDI	Muscle contraction & energy production Lost in sweat — becomes depleted in hot Aus summers	Pumpkin seeds (100g = 534mg), leafy greens, lentils
Vitamin D	Same RDI but more consequential if deficient	Supports muscle fibre development Deficiency impairs strength gains & recovery	15–30 min sun on arms/legs most days (more in winter)
Electrolytes (Na, K, Mg)	Increases with sweat loss in hot conditions	Replace after intense >60 min sessions or heavy sweating Heat & humidity dramatically increase losses	Banana + pinch of salt + water beats sports drinks at 1/20th the cost
Omega-3	1.6g ALA/day (men) 1.1g ALA (women) +EPA/DHA beneficial	Anti-inflammatory; supports muscle repair post-exercise May reduce DOMS and improve recovery	Sardines, flaxseed, walnuts — all budget-friendly
Protein Timing	20–40g protein within 2 hrs post-workout	Maximises muscle protein synthesis Distribution across meals matters as much as total daily intake	2 boiled eggs + glass of milk = ~$0.90 recovery meal

4.4 Practical Budget Active Person — Weekly Blueprint

Meeting both the nutritional and physical activity guidelines doesn't require expensive equipment or supplements. Here's what a week looks like on minimal cost:

Movement (free or near-free)

Monday / Thursday: 30–40 min bodyweight strength circuit (push-ups, squats, lunges, rows, planks, hip hinges). Progressive — add reps weekly.
Daily: 30 min brisk walk. This alone achieves the 150 min/week moderate cardio target, costs nothing, and accumulates vitamin D.
Weekend: One longer active session — bushwalk, swim at the beach, bike ride, sport. Enjoyable activity is more sustainable than joyless exercise.

Nutrition adjustments for active people (budget-aligned)

Post-workout protein: 2 boiled eggs + 250mL milk = ~25g protein, complete amino acid profile, ~$0.90. Better than any protein bar.
Weekly sardine meal: covers omega-3, Vitamin D, and protein in one ~$1.50 meal. Anti-inflammatory and supports recovery.
Daily banana (post-exercise or any time): potassium replacement, quick carbs, ~$0.30.
Pumpkin seeds on oats or yoghurt: addresses the magnesium gap that exercise opens up. ~$0.25/serve.
Stay hydrated: add a small pinch of salt to water after hot-weather sessions to replace sodium lost in sweat. Costs nothing.

4.5 Sedentary Behaviour — the Hidden Risk

Physical inactivity is the fourth largest risk factor for global mortality. But separate from exercise, prolonged sitting is an independent risk factor — even in people who exercise regularly. Australian guidelines explicitly address this:

Break up sitting every 30–60 minutes. Even a 2-minute walk to the kitchen substantially improves metabolic markers.
Work from home? Set a hourly movement reminder. Stand-up desks help but aren't necessary.
TV time: consider light stretching, resistance band work, or balance exercises during shows rather than static sitting.
The 'exercise snack' concept: three 10-minute bouts of brisk walking provides similar cardiovascular benefit to one 30-minute bout.

4.6 Exercise for Special Populations

Older Adults (65+)

Balance training is mandatory — it's the single most effective intervention to prevent falls, which are the leading cause of injury-related death in Australians over 65.
Tai chi meets both balance and moderate activity requirements simultaneously and has strong evidence for fall prevention.
Chair-based exercises are appropriate for those with mobility limitations — the key is regular movement, not intensity.

Children & Teenagers

Organised sport is excellent for meeting activity guidelines AND social development, but free play, active transport (walking/cycling to school), and unstructured outdoor activity also count.
Screen time displacement of physical activity is the primary driver of inactivity in Australian children. Active transport to school adds 20–30 min/day.

During Pregnancy

Exercise is strongly encouraged throughout low-risk pregnancy. Australian guidelines recommend 150–300 min/week moderate activity.
Swimming and walking are ideal — low impact, comfortable as belly grows. Avoid supine (lying on back) exercise after 16 weeks.
Strength training is safe and beneficial with appropriate modifications. Avoid heavy valsalva manoeuvres (breath-holding under load).
Exercise during pregnancy reduces gestational diabetes risk by 38%, reduces caesarean risk, reduces excessive gestational weight gain, and improves infant outcomes.

Budget options: resistance bands ($10-20), bodyweight exercises (squats, push-ups, lunges), water walking, council gym concessions for pensioners. No expensive gym membership required.

The Australian Physical Activity Guidelines recommend 2+ sessions per week of muscle-strengthening activities for adults over 65. The evidence suggests 3-4 sessions per week with adequate protein timing (25-40g within 2 hours of exercise) produces the best outcomes for muscle preservation.

Protein alone cannot prevent sarcopenia. The anabolic signal from resistance exercise (weight training, resistance bands, bodyweight exercise) sensitises muscle tissue to protein for 24-48 hours post-exercise. Without this signal, even high protein intake produces minimal muscle protein synthesis in older adults.

Resistance Exercise is Non-Negotiable

Example: A 70kg woman at age 70 should aim for 84-112g protein per day at minimum -- compared to the RDI of ~59g. At 85kg, a 75-year-old man should target 102-136g per day. Most older Australians consume far less than this.

- **2.0-2.5g/kg/day for older adults recovering from illness, surgery, or sarcopenia**
- **1.6-2.0g/kg/day for older adults undertaking resistance exercise**
- **1.2-1.6g protein per kg bodyweight per day for healthy older adults (65+)**

The current Australian RDI for protein is 0.84g/kg/day for adults -- established to prevent deficiency, not to preserve muscle in ageing. The evidence for older adults now consistently points to:

Evidence-Based Protein Targets for Older Adults

High-leucine foods: Whey protein (the gold standard -- 11g leucine per 100g protein), chicken breast (8g/100g protein), canned tuna/salmon (8g/100g), beef (8g/100g), eggs (8.5g/100g). Greek yoghurt is an excellent practical option -- one cup (200g) provides 20g protein and approximately 2g leucine.

The leucine connection: Leucine is the essential amino acid that directly triggers muscle protein synthesis via the mTOR pathway. The leucine threshold for maximal muscle protein synthesis is approximately 3g per meal in young adults but rises to 3.5-4g in older adults. This means that not only is total protein important, but the leucine density of protein sources matters.

In young adults, approximately 20g of high-quality protein per meal maximally stimulates muscle protein synthesis. In older adults, that threshold is typically 35-40g per meal -- nearly double. Below this threshold, the stimulus is insufficient and muscle breakdown continues to outpace rebuilding.

What Anabolic Resistance Means Practically

Sarcopenia -- the progressive loss of muscle mass and strength with age -- affects an estimated 10-20% of Australians over 65, rising to 30-50% over 80. It is the leading cause of falls, fractures, disability, and loss of independence in older adults. Its annual economic cost in Australia exceeds $2.5 billion.

After approximately age 65, the muscle-building response to protein becomes significantly blunted -- a phenomenon called anabolic resistance. The muscle protein synthesis machinery is still present but requires a higher protein stimulus to activate. This has profound practical implications.

Protein and Older Adults: Sarcopenia, Anabolic Resistance, and What to Do About It

Part 15: Batch Cooking & Meal Prep Guide

The Sunday Prep Session (~2.5 hours)

This session produces building blocks for an entire week of meals.

Time	Action	Produces
0:00	Put big pot of brown rice on (2 cups dry)	6+ serves cooked rice
0:05	Start Red Lentil Soup — double batch	12 serves soup (freeze half)
0:10	Hard-boil 8 eggs	8 ready-to-eat eggs
0:15	Start Bean Stew or Lentil Curry in 2nd pot	6 serves dinner (freeze half)
0:20	Make Hidden Veggie Sauce (K1)	8+ serves pasta sauce
0:40	Mix Overnight Oats × 5 jars	5 instant breakfasts
0:50	Make Baked Oat Bars — into oven	12 bars
1:00	Make Egg Muffin Cups — into oven after bars	12 muffin cups
1:15	Prep vegetables: shred cabbage, grate carrots	Ready-to-use veg
1:30	Make Liver Pâté (if eating liver this week)	8 serves
1:45	Portion and label everything	Ready for fridge/freezer

Freezer Strategy

Recipe	Freeze Method	Reheat
Lentil Soup, Bean Stew, Curries	Containers or zip-lock bags	Microwave 4 min or stovetop 8 min
Hidden Veggie Sauce	Ice cube trays then bags	Microwave or stovetop
Hidden Liver Bolognese	Containers or bags	Microwave or stovetop
Chicken Nuggets (K2)	Freeze uncooked on tray, then bag	Bake from frozen, add 5 min
Oat Bars	Wrap individually, then bag	Thaw at room temp 30 min
Egg Muffin Cups	Bag when cooled	Microwave 60–90 sec
Liver Pâté	Small containers	Thaw overnight in fridge

Emergency Freezer Stash

Always keep at least 3–4 serves of different frozen meals on hand. Suggested minimum:

- 4 serves lentil soup
- 4 serves bean stew or curry
- 4 serves hidden veggie sauce
- 12 chicken nuggets (K2)
- 6 oat bars

This is the difference between good intentions and actually eating well consistently.

Part 16: Shopping Lists & Budget

Weekly Shopping List — Single Adult (~$47/week)

Item	Qty	Est. Cost (AUD)
Free-range eggs	1 dozen	$6.50
Full cream milk	2 L	$3.20
Wholegrain bread	1 loaf	$3.50
Bananas	1 kg	$3.00
Seasonal fruit	1 kg	$3.00–5.00
Seasonal vegetables	~1 kg	$3.00–5.00
Frozen spinach	500g (fortnightly)	$1.25/wk
Frozen mixed veg	1kg (fortnightly)	$1.40/wk
Cabbage	1 head (fortnightly)	$1.50/wk
Carrots	1kg (fortnightly)	$1.00/wk
Potatoes	2kg (fortnightly)	$2.00/wk
Onions	1kg bag (fortnightly)	$1.25/wk
Cheese	500g (fortnightly)	$2.50/wk
Oats, lentils, rice, canned goods	Monthly (weekly equiv.)	$12.16/wk
	TOTAL	~$47/week

Weekly Shopping List — Family of 4 (~$107/week)

Category	Items	Weekly Cost
Eggs, milk, bread, yoghurt	2 dozen eggs, 4L milk, 2 loaves, 1kg yoghurt	~$31
Fresh produce	Bananas, seasonal fruit, seasonal veg	~$22
Fortnightly produce (weekly equiv.)	Frozen veg, cabbage, carrots, potatoes, onions, cheese	~$27
Monthly staples (weekly equiv.)	Oats, lentils, rice, pasta, canned goods, oil, seeds, PB	~$28
	TOTAL	~$108/week

Seasonal Produce Guide (Victoria)

Season	Cheapest Produce	Key Nutrients
Summer (Dec–Feb)	Tomatoes, zucchini, corn, stone fruit, berries, watermelon	Vitamin C, vitamin A, potassium
Autumn (Mar–May)	Pumpkin, sweet potato, apples, pears, broccoli, cauliflower	Vitamin A, fibre, vitamin C, K
Winter (Jun–Aug)	Citrus, silverbeet, broccoli, cauliflower, kale	Vitamin C, folate, vitamin K
Spring (Sep–Nov)	Asparagus, peas, spinach, strawberries, beans	Folate, vitamin C, vitamin K

Top 10 Money-Saving Tips

1. **Buy homebrand for canned goods, dried goods, and frozen veg — nutritionally identical, 30–50% cheaper.**
2. **Buy meat on markdown (yellow stickers) — cook or freeze immediately.**
3. **Buy dried lentils and beans from Indian/Asian grocers — often 40–60% cheaper.**
4. **Buy seasonal produce — can be half the price of out-of-season.**
5. **Buy in bulk when on special — oats, rice, lentils, canned goods all last indefinitely.**
6. **Freeze overripe bananas — free smoothie/baking ingredient.**
7. **Save sardine/tuna oil — use as cooking oil (free flavour + omega-3).**
8. **Regrow spring onions in a glass of water on the windowsill.**
9. **Cook in batches — saves time, energy costs, and reduces impulse takeaway.**
10. **Never shop hungry — reduces impulse purchases by 20–25%.**

Appendix A: Five Daily Habits & Weekly Blueprint

Meeting both the NRV nutritional targets and the Australian physical activity guidelines simultaneously — at minimal cost — is entirely achievable. The strategies below tie both together:

5.1 The Five Daily Habits That Cover Most Gaps

2 eggs — covers B12, choline, selenium, Vitamin D, and protein. ~$0.60
Dairy (yoghurt or 250mL milk) — covers calcium and iodine. ~$0.40–0.70
Citrus fruit or capsicum — covers Vitamin C (enables iron absorption). ~$0.30
30 min brisk walk — covers PA guidelines, bone loading, Vitamin D synthesis. Free.
Leafy greens (handful, any preparation) — covers folate, Vitamin K, magnesium, Vitamin A. ~$0.20

5.2 Weekly Habits That Cover the Rest

Organ meat once weekly (chicken liver stir-fry or hidden in bolognese) — one serve covers B12 for the week, Vitamin A, folate, iron. ~$1.00/serve
Sardines once weekly — Vitamin D, omega-3, calcium (eat the bones), B12. ~$1.50/serve
2× strength training sessions — preserves muscle mass, bone density, insulin sensitivity. Free.
Legumes 3–4 times per week — plant protein, fibre, magnesium, zinc, folate. ~$0.25/serve

5.3 Weekly Budget Summary

Single adult meeting all NRVs + PA guidelines: ~$47–55/week on food
Family of 4: ~$107–125/week following this framework
Gym membership or supplements: not required. Sun, eggs, sardines, liver, lentils, and a park cover the vast majority of needs.

Sources: NHMRC Australian Nutrient Reference Values (2006, updated 2017) · NZ Ministry of Health Nutrient Reference Values (2006) · Department of Health Australian Physical Activity & Sedentary Behaviour Guidelines (2021) · ABS National Nutrition & Physical Activity Survey 2023 · ACSM Position Stand on Nutrition and Athletic Performance · Australian Institute of Sport High Performance Nutrition Framework

Appendix B: Nutrient Absorption Tips

Absorption Enhancers

Eating vitamin C-rich foods (tomatoes, cabbage, potatoes) alongside iron-rich foods (lentils, beans, spinach) dramatically increases non-heme iron absorption. Iron + Vitamin C:

Always consume with a source of fat. Eggs, olive oil, or peanut butter alongside vegetables helps absorb these vitamins. Fat-soluble vitamins (A, D, E, K):

Vitamin D is essential for calcium absorption. Sardines uniquely provide both. Calcium + Vitamin D:

Coffee and Tea: The Mineral Blocker Most Australians Don't Know About

Tannins in tea and chlorogenic acid in coffee bind to non-heme iron and zinc in the gut, reducing iron absorption by 60–90% and zinc absorption by 15–30% when consumed with a meal or within 1 hour either side.

Which is worse? tea is generally more potent than coffee for iron inhibition. Black tea with a meal can reduce iron absorption by up to 90%. Coffee reduces it by approximately 40–60%.

Heme iron (from meat) is much less affected — about 10–15% reduction. Plant-based iron (lentils, spinach, fortified cereals) bears the full brunt.

Does milk in coffee help? No — the calcium in milk adds a competing inhibitor. One issue compounds the other.

The fix: wait 1 hour before or after meals before having tea or coffee. Have your morning coffee before breakfast or after. This alone can meaningfully improve iron and zinc absorption, particularly for women of reproductive age and vegetarians.

Vitamin C is the counterbalance: a glass of orange juice, half a capsicum, or any high-Vitamin C food with a plant-iron meal can increase absorption by 2–4×, largely offsetting tannin inhibition.

Absorption Inhibitors

Tannins reduce iron absorption by up to 60%. Wait 1 hour after meals before drinking tea or coffee. Tea/coffee + iron:

High-calcium foods compete with iron. Don’t take calcium supplements with iron-rich meals. Calcium + iron:

Reduce mineral absorption. Soaking, sprouting, or cooking significantly reduces phytate content. Phytates (beans, grains, nuts):

Bind calcium. Spinach is great for folate and vitamin K but NOT a reliable calcium source. Oxalates (spinach, silverbeet):

Special Considerations

B12 supplementation is essential (no reliable plant sources). Consider supplementing iron, zinc, iodine, and omega-3 (DHA from algae). Vegetarians/Vegans:

B12 absorption from food declines — consider 100–400µg/day supplement. Vitamin D recommended especially in winter. Increase protein to 1.0–1.2 g/kg. Older adults (50+):

Require an additional 35 mg/day of vitamin C above the standard RDA. Smokers:

Part 18: The Weston A. Price Legacy — What Traditional Diets Knew

Dr Weston A. Price (1870-1948) was a Canadian-American dentist who, in the 1930s, undertook one of the most remarkable self-funded research expeditions in nutritional history. Disturbed by the deteriorating dental and physical health he was seeing in his Cleveland practice, he travelled to isolated communities around the world to study people still eating traditional diets -- before the influence of industrialised food had reached them.

What he found was documented in his 1939 masterwork, Nutrition and Physical Degeneration (still in print), with thousands of photographs comparing traditional and modernised populations within the same ethnic group, often within the same family.

What Price Documented

Dental arch width and cavity rates:

Traditional populations consistently showed broad dental arches, full sets of straight teeth with no crowding, and cavity rates of 0-2%. The moment these same populations adopted refined flour, sugar, and vegetable oils -- sometimes within a single generation -- cavity rates climbed to 20-40%, and children born after the dietary switch showed narrow dental arches, crowded and crooked teeth, reduced jaw width, and pinched nasal passages.

Facial bone structure:

Traditional-diet children showed full cheekbone development, wide nostrils, broad palates, and prominent jaw lines. Their first-generation modernised peers -- same parents, same genetics -- showed narrow faces, recessed jaws, crowded teeth, and an epidemic of mouth-breathing. Price argued (and modern research has confirmed) that these are nutritional developmental issues, not genetic ones.

Physical health:

Traditional populations had exceptional physical endurance, fertility, ease of childbirth, resistance to tuberculosis (then epidemic), and low rates of chronic disease. These advantages eroded within one to two generations of adopting the 'displacing foods of modern commerce' (Price's term).

The Traditional Diets He Studied

Price studied over a dozen distinct traditional dietary cultures including:

Swiss mountain villages (Loetschental Valley): Rye bread, raw dairy, organ meats, bone broth. Virtually zero dental caries. Robust skeletal development.

Gaelic island communities (Outer Hebrides, Scotland): Oats, cod and other seafood, cod liver oil, shellfish. Cavity rate under 1%.

Indigenous Peoples of North America: Organ meats (especially liver), bone marrow, dried fish roe, berries, fermented foods. Superb physical development and fertility.

Polynesian islanders: Seafood, coconut in many forms, taro, fermented products. Outstanding dental and skeletal development.

Maasai, Dinkas, and other African pastoralists: Raw milk, blood, meat, organ meats. Among the tallest and most physically robust populations Price encountered.

Japanese coastal communities: Seafood including shellfish, fish roe, seaweed, fermented soy. Among the lowest caries rates of any group studied.

The Activator X -- Now Proposed to be Vitamin K2

Price identified a fat-soluble compound he called 'Activator X' that appeared to be the key driver of skeletal and dental development in traditional diets. It was present in high concentrations in: grass-fed dairy fat (butter, cream), certain organ meats, and fish roe.

By the 2000s, researchers proposed that Activator X is most likely Vitamin K2 (specifically the MK-4 form -- not MK-7). This identification remains a well-supported hypothesis rather than

formally confirmed science, but the mechanistic fit is compelling. Vitamin K2 directs calcium to bones and teeth (via osteocalcin activation) and simultaneously removes calcium from soft tissues -- arteries, kidneys, joints. It works in concert with Vitamins A and D, which Price also identified as synergistic 'fat-soluble activators'.

This explains why traditional cultures that consumed significant amounts of grass-fed dairy fat, organ meats, and fermented foods had superior bone and dental development compared to populations eating the same amount of calcium but from lower-K2 sources.

Price, Pregnancy, and Pre-Conception Nutrition

One of Price's most significant findings -- and the one most relevant to modern epigenetics research -- was his documentation of deliberate pre-conception nutritional preparation in traditional cultures.

Across cultures as different as the Maasai, the Pacific Islanders, and Indigenous Canadian communities, Price found that traditional societies had specific foods reserved for pregnant and soon-to-be-pregnant women. These were without exception the most nutrient-dense foods available:

- Fish roe (extremely high in DHA, fat-soluble vitamins A, D, E, K2, zinc, and iodine)
- Liver and organ meats (the most nutrient-dense foods on earth by virtually any measure)
- Bone marrow (fat-soluble vitamins, essential fatty acids, collagen precursors)
- Raw or fermented dairy from grass-fed animals (K2, fat-soluble vitamins, calcium, B12)
- Shellfish and seafood (iodine, zinc, omega-3, B12)

Price's observation was that these cultural practices -- developed over millennia of observed outcomes, not laboratory science -- systematically loaded mothers with exactly the fat-soluble vitamins (A, D, K2) and essential fatty acids (DHA) that modern nutritional science now recognises as critical for fetal skeletal development, brain formation, and epigenetic programming.

Modern prenatal vitamins provide folate, iron, and some B vitamins -- important, but a fraction of what Price's traditional diets delivered. Choline, DHA, vitamin K2, and preformed vitamin A (retinol) are almost entirely absent from standard prenatal supplements. These were the very nutrients traditional cultures prioritised.

The lesson is not that we should return to historical practices wholesale, but that the supplementation-only approach to pregnancy nutrition is fundamentally inadequate. A supplement is a safety net, not a replacement for structured, nutrient-dense eating for the 6-12 months before and throughout pregnancy.

Price's Legacy in Modern Research

Price's work was largely dismissed for decades. It is now experiencing a significant rehabilitation as modern developmental biology, epigenetics, and nutritional science converge on exactly the conclusions he reached empirically:

- Fat-soluble vitamins (A, D, K2) are essential for skeletal and facial development -- confirmed by multiple modern trials and observational studies.
- Pre-conception nutrition matters as much as gestational nutrition -- confirmed by epigenetics research showing paternal and maternal nutritional epigenetic marks are both transmitted to offspring.
- Industrialised food (refined flour, sugar, seed oils, processed foods) displaces nutrient-dense whole foods and generates the deficiency patterns that drive degenerative disease -- a core thesis now supported by decades of epidemiology.

For further reading: Nutrition and Physical Degeneration by Weston A. Price (1939, available free online from the Price-Pottenger Foundation). Also: Price-Pottenger Nutrition Foundation at ppnf.org and the Weston A. Price Foundation at westonaprice.org -- note that the Foundation's current recommendations should be evaluated critically alongside mainstream nutritional science.

Part 19: Sleep, Nutrition, and the Bidirectional Relationship

Sleep and nutrition exist in a two-way feedback loop that most people are entirely unaware of. Specific nutrient deficiencies impair sleep quality. And poor sleep drives the appetite and food choices that lead to further deficiency. Breaking this cycle through nutrition is one of the most underutilised interventions for sleep improvement.

How Nutrient Deficiencies Impair Sleep

Magnesium: Perhaps the most clinically significant sleep-nutrition connection. Magnesium activates GABA receptors (the brain's main inhibitory neurotransmitter), regulates the hypothalamic-pituitary axis, and modulates melatonin synthesis. Deficiency increases cortisol at night, reduces sleep efficiency, increases arousal frequency, and worsens restless leg syndrome. Studies in deficient individuals show magnesium supplementation (300-400mg glycinate or malate before bed) significantly improves sleep onset, duration, and quality within 4-6 weeks.

Tryptophan and protein: Tryptophan is the dietary precursor to serotonin, which is converted to melatonin in the pineal gland. Inadequate protein intake -- particularly in the evening -- reduces tryptophan availability and impairs melatonin synthesis. Low-protein diets are associated with lighter, less restorative sleep.

Vitamin D: Vitamin D receptors exist throughout the brainstem sleep centres. Deficiency is associated with shorter sleep duration, higher rates of sleep disorders, and increased daytime sleepiness. Blood vitamin D levels below 20 nmol/L are strongly correlated with poor sleep architecture.

Calcium: Works synergistically with tryptophan for melatonin production. Calcium deficiency is associated with difficulty falling asleep and fragmented sleep. The traditional warm milk before bed is not a myth -- it delivers both tryptophan and calcium simultaneously.

Iron: Iron deficiency is the primary nutritional cause of restless leg syndrome (RLS), affecting an estimated 15% of the population. RLS causes irresistible urges to move the legs at night, dramatically fragmenting sleep. Ferritin above 75 mcg/L significantly reduces RLS symptoms in most sufferers.

B vitamins (B6, B12, folate): Required for the conversion of tryptophan to serotonin and melatonin. B12 deficiency is associated with disrupted circadian rhythms and vivid, disturbing dreams. B6 deficiency impairs serotonin synthesis directly.

How Poor Sleep Drives Poor Nutrition

The relationship is strongly bidirectional. After just one night of poor sleep (under 6 hours):

Ghrelin (hunger hormone) increases by 24%. Leptin (satiety hormone) decreases by 18%. The result: an additional 300-500 calories consumed the following day on average, predominantly from high-carbohydrate, high-fat, ultra-processed foods.

Prefrontal cortex activity (executive function, impulse control) decreases, while the amygdala's food-reward response increases. Sleep-deprived individuals show significantly greater activation to images of junk food than well-rested controls.

Insulin sensitivity decreases by 20-30% after 4-6 nights of restricted sleep -- driving blood sugar dysregulation that further disrupts sleep architecture in a self-reinforcing cycle.

Blood Sugar and Sleep Architecture

Blood sugar instability is one of the least-discussed causes of poor sleep. When blood glucose drops significantly during the night (reactive hypoglycaemia), the adrenal glands release cortisol and adrenaline to raise it -- waking you up at 2-4am, often with a racing heart and mind.

Dietary drivers of nocturnal blood sugar instability: high-glycaemic dinners, alcohol (disrupts glucose regulation for 4-6 hours), excess refined sugar and processed carbohydrates, and inadequate protein and fat at the evening meal.

Fix: Ensure the evening meal includes adequate protein (25-35g), moderate healthy fat, and a significant vegetable component. Reduce refined carbohydrate load at dinner. A small protein-rich snack (Greek yoghurt, cheese, a boiled egg) an hour before bed can prevent nocturnal hypoglycaemia in susceptible individuals.

Practical Nutritional Sleep Protocol

Evening meal: Include 30g+ protein, significant vegetables, moderate complex carbohydrates. Avoid high-sugar desserts. Finish eating 2-3 hours before bed.

Daily: Ensure adequate magnesium (pumpkin seeds, dark leafy greens, dark chocolate, legumes), calcium (dairy, sardines, fortified foods), and vitamin D (sun exposure or supplementation in winter).

Address iron deficiency: If you wake at 2-3am with an urge to move your legs, ask your GP to test serum ferritin (not just haemoglobin). Target ferritin above 75 mcg/L.

Consider magnesium glycinate 300-400mg 1 hour before bed if sleep is consistently poor. This is one of the safest and most evidence-backed sleep supplements available.

Reduce caffeine: caffeine has a half-life of 5-7 hours. Coffee at 2pm means half the caffeine is still circulating at 9pm. Cut off at noon for most people, 10am for caffeine-sensitive individuals.