

Struggling with 5 day?

Dr Tim Crowe

#5adaywebinar

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On the menu today

- ✓ Vegetables: how much we're eating
- ✓ The health benefits – oh so boring
- ✓ How to make the message more attractive (with science!)



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You say fruit, I say vegetable

Vegetables are defined by their culinary use, not their botanical origins because...

If it is from a plant and has seeds, it's a fruit – it's the other parts of the plant (roots, stems, leaves) that are the 'vegetable'



Identity crisis

Tomatoes, olives, peas, eggplant, nuts, grains and cucumbers are all 'fruits'

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Life > Health > **Four in five Australians not eating enough fruit and vegetables: CSIRO** Updated: 4:37 pm, Monday, 3 April 2017



sky NEWS.COM.AU > Top Stories > National > Local > World > Politics > The People's Agenda

NEWS > NATIONAL

Adults not eating enough fruit and vegetables

Updated: 4:37 pm, Monday, 3 April 2017

ABC NEWS LOCATION: Canberra, ACT (Energy)

just in Australia World Trump's America Business Sport Arts Analysis

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Four in five Australians not eating enough fruit and vegetables: CSIRO

By Ineva Celentano
Updated: 3 Apr 2017, 4:32pm

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What is a serve of vegetables*?

A standard serve is about 75g (100-350kJ) or:

- 1/2 cup cooked green or orange vegetables (for example, broccoli, spinach, carrots or pumpkin)
- 1/2 cup cooked dried or canned beans, peas or lentils
- 1 cup green leafy or raw salad vegetables
- 1/2 cup sweet corn
- 1/2 medium potato or other starchy vegetables (sweet potato, taro or cassava)
- 1 medium tomato



*With canned varieties, choose those with no added salt

A standard serve is about 75g (100-350kJ) or:

- 1/2 cup cooked green or orange vegetables (for example, broccoli, spinach, carrots or pumpkin)
- 1/2 cup cooked dried or canned beans, peas or lentils (preferably with no added salt)
- 1 cup green leafy or raw salad vegetables
- 1/2 cup sweet corn
- 1/2 medium potato or other starchy vegetables (sweet potato, taro or cassava)
- 1 medium tomato

www.eatforhealth.gov.au/food-essentials/how-much-do-we-need-each-day/serve-sizes

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What is a serve of fruit?

A standard serve is about 150g (350kJ) or:

- 1 medium apple, banana, orange or pear
- 2 small apricots, kiwi fruits or plums
- 1 cup diced or canned fruit (no added sugar)

Or only occasionally:

- 125ml (1/2 cup) fruit juice (no added sugar)
- 30g dried fruit (for example, 4 dried apricot halves, 1 1/2 tablespoons of sultanas)



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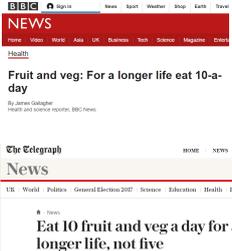
Ten a day? Really?

Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality – a systematic review and dose-response meta-analysis of prospective studies

Dagfinn Aune, Edward Giovannucci, Paolo Buffetta, Lars T. Fadnes, NaNa Keum, Teresa Norat, Darren C. Greenwood, Elio Riboli, Lars J. Vatten, Serena Tonstad

Int J Epidemiol 2014;43:1039-1050

Published: 22 February 2017



800 grams per day of F&V linked with greatest benefit in reducing risk of CVD, cancer and premature deaths

800 g = 2 fruit and 6.5 veg or 3 fruit and 4.5 veg

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The more the better?

Research

Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer: systematic review and dose-response meta-analysis of prospective cohort studies

BMJ 2014;349:doi:https://doi.org/10.1136/bmj.g4490 (Published 29 July 2014)

Cite this as: BMJ 2014;349:g4490

For every additional serving per day of fruits and vegetables, a person's earlier mortality risk ↓ by 5 percent. A lower rate of death from CVD being the standout link

“There was a threshold around five servings of fruit and vegetables a day, after which the risk of all cause mortality did not reduce further.”

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Enter the Blue Zone

Areas of the world that have remarkably long-lived and healthy populations

Much lower rates of CVD, cancer and dementia than nearby regions

 A thumbnail for a National Geographic article titled "The Secrets of Long Life". The image shows a person in a blue jacket holding a plant. The text on the thumbnail includes "FEATURE The Secrets of Long Life" and "Longevity".

An infographic titled "BLUE ZONES" showing longevity hotspots on a world map. The hotspots are labeled: Oahu, Hawaii; Okinawa, Japan; Sardinia, Italy; Nicotiana, Costa Rica; and Crete, Greece. Below the map, it lists "BLUE ZONE LIFE LESSONS": Move Naturally, Right Time, Right Diet, and Eat Wisely.

<http://journal.aarpinternational.org/explore-by-topic/infographics/Blue-Zones-Longevity>

What they do well

1. Move naturally
2. Have a sense of purpose
3. Stress less
4. **More plants, less meat**
5. Eat to 80% full
6. A glass of wine with friends and family
7. Are part of a community
8. Put their loved ones first
9. Find their tribe of people with a similar outlook



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Eat fruit and veg, be happy



Am J Public Health. 2014 August; 104(8): 1504-1510. PMID: PMC4949663
 Published online 2016 August doi: 10.2195/AJPH.2016.303269

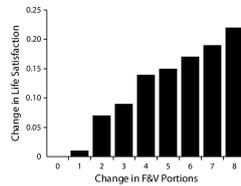
Evolution of Well-Being and Happiness After Increases in Consumption of Fruit and Vegetables

Redzo Mujic, PhD and Andrew J. Coward, DPH¹
 Author information • Article notes • Copyright and License information ▶

12,000 Australians had their diet, health, happiness, life satisfaction and well-being tracked over 2007, 2009 and 2013
 Allowance made for changing incomes and personal circumstances

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Improvements in mental health were seen within 24 months of increasing the amount of fruits and vegetables eaten



Also looked at the effect of a pro-active F&V consumption campaign on dietary habits and found a link between the intensity of the campaign, its outcomes in people eating more F&V, and positive mental health benefits

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Putting it into perspective

- ✓ Motivation to eat healthy food can be lessened by the fact that many health benefits, such as reducing the risk cancer, take decades to reap a benefit
- ✓ Compared to a 'decades time-scale', the mental health benefits linked to eating more fruits and vegetables are closer to immediate
- ✓ Improved mental health would help to reinforce the positive dietary change

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You are what you eat

Using digitally enhanced photos, 76% of people rated the yellow glow from eating lots of brightly coloured fruits and vegetables (top right) as more attractive than the brown glow achieved through a sun tan (bottom right)



Lefevre CE and Perrett D. *Quart J Exp Psych* 2015;68:284-293

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You are what you eat

Two extra servings of fruit and veg a day for six weeks is enough to cause a detectable change in skin tone

Those whose diet went the other way, with less fruit and veg, showed a ↓ in skin tone

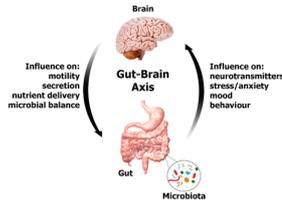


www.medicalnewstoday.com/articles/242679.php

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Go with your gut

- The microbiome-brain connection is a two-way street with gut bacteria linked to a role in stress-related disorders like anxiety, depression and IBS
- Prebiotics are 'food' for good bacteria already present in the gut



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Psychopharmacology
 May 2015, Volume 232, Issue 10, pp 1793-1801

Prebiotic intake reduces the waking cortisol response and alters emotional bias in healthy volunteers

Authors: Kristin Schmidt, Philip J. Cowen, Catherine J. Harmer, George Tzortzis, Steven Errington, Philip W. J. Barwee

- Healthy volunteers took two different types of prebiotic or a placebo for 3 weeks
- Prebiotic found to have an anti-anxiety effect with less attention to negative information and more attention to positive information
- Lower levels of salivary cortisol

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Food swap sees microbe changes in < 2 weeks

- Study with African Americans who swapped their meat-heavy, highly processed diet for a diet typical of African foods rich in beans and vegetables saw a positive change gut microbes within 2 weeks
- The reverse swap that saw rural Africans switch to a typical American diet gave them a microbe profile that was more in line with a higher risk of colon cancer

O'Keefe SJ et al. Fat, fibre and cancer risk in African Americans and rural Africans. *Nature Communications* 2015;6:6342

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Top prebiotic foods



- ✓ Aromatic vegetables including onions, leeks, celery, garlic and Jerusalem artichokes are high in inulin
- ✓ Barley and oats are a rich source of the fibre beta-glucan
- ✓ Foods high in resistant starch such as cooked and then cooled potatoes, legumes and green bananas are a great fermentable fuel source for bacteria

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What's stopping you?

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"But eating healthy is expensive"

- Review of 27 research studies from 10 different countries
- Looked at price difference of very healthy dietary pattern (Mediterranean-style) vs unhealthy diet pattern



- Based on nutrient-based patterns, price difference just **USD0.04** per day
- Based on per 2000 kcal, difference was **USD1.56** per day

Rao M et al. Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. *BMJ Open* 2013;3:e004277

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Research Article

An Apple a Day Brings More Apples Your Way: Healthy Samples Prime Healthier Choices

Aner Tal, Brian Wansink

First published: 20 April 2015 Full publication history

DOI: 10.1002/mar.20801 View on ResearchGate



120 shoppers randomly given an apple, biscuit or no sample at start of their shopping trip. People given apple sample bought **28 percent more fruits and vegetables** compared to those given the biscuit samples or nothing

In a virtual shopping environment, same result seen with 'apple priming' making person more likely to choose the healthier option for similar foods

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Vegetables by stealth



- Volunteers at a range of entrées before each main meal over a day
- Some of the entrées were 'adulterated' with pureed vegetables at 3 or 4.5 times the amount of the standard entrée
- Ate 850 kJ and 1500 kJ less over the day with the 3 and 4.5 serve 'vegetable adulterated' entrées
- Feelings of hunger and fullness after the vegetable-rich entrées were the same as that for the regular dish
- Palatability of the different entrée dishes rated as comparable whether vegetables were added or not

Blatt AD et al. Hidden vegetables: an effective strategy to reduce energy intake and increase vegetable intake in adults. *Am J Clin Nutr* 2011;93:756-763

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Soup's up



- 12 volunteers consumed a solid meal, a chunky soup and a smooth soup
- Measurements made on gastric emptying and subjective feelings of satiety
- Smooth soup gave highest rating for satiety and had slowest rate of stomach release

Clegg ME et al. Soups increase satiety through delayed gastric emptying yet increased glycaemic response. *Eur J Clin Nutr* 2013;67:8-11

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Fresh is best, but so is the rest

American Journal of Lifestyle Medicine

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Nutrition and Cost Comparisons of Select Canned, Frozen, and Fresh Fruits and Vegetables

Steven R. Miller, MD, William A. Krudson, MD

First Published February 27, 2014

Vol 8, Issue 6, 2014

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Examined the nutrition delivered in 8 common vegetables and 10 common fruits across multiple packaging options (fresh, frozen, and canned) relative to average costs

“The evidence from this study suggests that fruits and vegetables packaged as frozen or canned are cost-effective and nutritious options for meeting daily vegetable and fruit recommendations in the context of a healthy diet.”

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Use your creative juices

- 12 wk RCT with 90 healthy volunteers receiving advice on DASH diet
- Drank 0, 1 or 2 glasses of vegetable juice each day (per glass: 210 kJ, 2 g protein, 8 g CHO, 2 g fibre, 480 mg Na, 470 mg K, 20 mg lycopene)
- Vegetable intake less than recommended in all groups
- People pre-hypertensive in the vegetable juice groups saw a fall in BP

Group	Wk 0	Wk 6	Wk 12
0 glasses vegetable juice	~2.5	~2.8	~3.0
1 glass vegetable juice	~3.0	~3.5	~3.8
2 glasses vegetable juice	~3.5	~4.2	~4.5

Shenoy SF et al. The use of a commercial vegetable juice as a practical means to increase vegetable intake: a randomized controlled trial. *Nutrition Journal* 2010;9:38

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Be a role model



Dietary behaviours and food choices start in childhood

Parents are the 'gatekeepers' for food and act as role models – especially for younger children

Where there is parental encouragement, role modelling and family rules, there is an increase in fruit and vegetable consumption

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Public Health Nutrition



Article Metrics
Volume 12, Issue 2 February 2009, pp. 267-283 Cited by 234
Family correlates of fruit and vegetable consumption in children and adolescents: a systematic review
Natalie Pearson¹, Stuart J. Brade¹ and Trish Gately¹
DOI: <https://doi.org/10.1017/S144688909000249> Published online 01 February 2009

“Parental modelling and parental intake were consistently and positively associated with children’s fruit, juice and vegetable (FJV) consumption. There were also positive associations between home availability, family rules and parental encouragement and children’s fruit and vegetable consumption. Parental intake was positively associated with adolescents’ fruit and vegetable consumption.”

“Our findings highlight the importance of targeting the family environment for the promotion of healthy eating behaviours among children and adolescents.”

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Get on board for the challenge each National Nutrition Week

“Make a pledge to eat more veg”

www.nutritionaustralia.org/national/news/2016/09/take-try-5-challenge-during-national-nutrition-week

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