

Dear Parents,

Top tips for revision from Mrs McGauley... eating and drinking to improve brain power!

Firstly, brains need fats! But no ordinary fats, it needs superstar fatty acids Omega 3 and 6. These essential fatty acids are linked to preventing a decline in mental skills, memory loss and, must come from what we eat and drink. Eating, **nuts, seeds, oily fish** or drinking **fish oil** supplements (like cod liver oil) are all seen to be crucial to the creation and maintenance of brain cells. Those who consume more of these fats in their diet have sharper minds and do better at mental skills tests.

Salmon is an excellent source of these essential fats. Fresh, **canned or frozen salmon** is fabulous in fish cake patties. A good vegetarian alternative includes **pumpkin seeds** and **walnuts** or **frozen soya beans** are a good cheap source too and are great in a stir fry.

While Omegas are good fats for brains, eating other high fat foods containing artificial trans or partially hydrogenated fats do not just compromise brain health, but can impair memory, and lower brain volume. Thankfully most of these bad fats have been removed from supermarket and the big fast food brands but they are still common place in cheaper backstreet independent takeaways and imported American supermarket sweets and snacks (like the Reese, Hershey's, and Flipz). Give the body junk food, and the brain is certainly going to suffer.

There's a huge amount of chemical processing in the brain which can make it highly susceptible to something called 'oxidative' damage but there are things called 'antioxidants' that are thought to protect against the harmful effects. Fortunately there is a wide variety of good antioxidants to be found in **fruits and vegetables** that enables brains to work well for longer periods of time. Different colour fruit and vegetables provide the body with different types of antioxidants, with purple and blue particularly linked to a reduction in mental decline and other benefits. **Blueberries** for example have an antioxidant capacity significantly higher than vitamins C or E and studies have shown improved memory with **blueberries** and **strawberries** (plus the seeds from berries are also another great source of Omega-3). In general, when it comes to berries the more intense the colour, the more nutrition in the berry. So, why not try adding some **fresh berries** to yogurt or a bowl of oats in the morning.

The brain needs a steady supply of other micronutrients and without powerful vitamins B6, B12 our brains are susceptible to brain disease and mental decline. Also small amounts of the minerals iron, copper, zinc and sodium are also fundamental to brain health and cognitive development. All dairy foods are packed with protein and the B vitamins needed for the growth of brain tissue and neurotransmitters and **milk** and **yogurt** are a great source. Whereas **lean beef** is one of the best absorbed sources of iron, and also contains zinc, which helps with memory. For vegetarian, **beans** are a good choice of iron (plus they contain yet more omega-3 fatty acids). For zinc, the mineral vital for enhancing memory and thinking skills, **pumpkin seeds** are richer than many other seeds.

To enable the brain to efficiently perform it needs lots of the right type of fuel, most of which comes from carbohydrates, but specific carbohydrates effect how the brain responds. What we call 'high glycemic' food like white breads causes a rapid release of glucose into the blood followed by a big dip as blood sugar shoots down and with it attention span. On the other hand oats, wholemeal bread, and **'brown' rice** and **pasta** have far slower glucose release enabling a steadier level of attentiveness. Low- fat popcorn, switching bread to **wholemeal** and **oats** make from cheap easy options. **Oats** also are good sources of vitamin E, B vitamins, potassium and zinc - which make our bodies and brains function at full capacity. You could also try dry oats in a fruit smoothie to thicken it.

Choline, neither vitamin nor mineral, is another micronutrient that is essential in tiny amounts for brain development and memory function, and concentration. You'll find it in beans, broccoli, lean beef, yogurt and eggs (especially the yolk). Eggs are great brain food also being vitamin B rich, but stick with poached or boiled or why not have scrambled eggs on wholemeal toast?



For sustained brain power opting for a varied balanced diet of nutrient rich foods in three separate meals a day is critical but as is drinking the equivalent of between 6-8 glasses of water a day (between 1.9 and 2.25 litres) or you will suffer dehydration, tiredness, and lack of concentration and short-term memory (brains are 73% water). Avoid caffeinated drinks as they can leave you irritable, sleepless, and anxious and have diuretic properties that can lead to further dehydration, instead try un-caffeinated relaxing herbal chamomile tea shown to improve cognitive function.

Don't forget that as well as a healthy diet, aiming for eight hours **sleep** and **exercising** helps to keep brains sharp. Research suggests that regular exercise improves cognitive function, slows down the mental aging process and helps us process information more effectively.

Good luck with your examinations!

Regards,

A handwritten signature in black ink, appearing to read "M. McGauley".

Mrs McGauley
Head of Year 11/Head of Food Technology

1 Warner, Anthony New Scientist 2017 July 12

2 Bradbury, Joanne An Ancient Nutrient for the Modern Human Brain 2011 10 May

3 Tan ZS1, Harris WS, Beiser AS, Au R, Himali JJ, Debette S, Pikula A, Decarli C, Wolf PA, Vasan RS, Robins SJ, Seshadri S. Fatty acid levels and markers of accelerated brain aging 2012 Feb 28

4 Golomb, Beatrice Alexandra A Fat to Forget: Trans Fat Consumption and Memory 2015 June 17 5 Thayer, Bethany, MS, RD, American Dietetic Association (ADA) 2008 August 26

6 Gómez-Pinilla, Fernando Brain foods: the effects of nutrients on brain function 2008 July 9 7 Krieger, Sarah MPH, RD, American Dietetic Association (ADA) 2010 August 4

8 Hornby, Alison, British Dietetic Association (BDA) 2015 August 28

9 DeGregori, Nancy Ph.D. Stronger and Smarter: Top Brain Foods 2012 April 20 10 Nacamulli, Mia How the food you eat affects your brain 2016 June 21

11 Godman, Heidi Regular exercise changes the brain to improve memory, thinking skills 2014 April 9