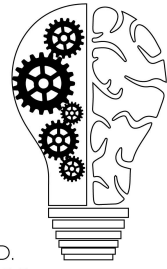


Episode 009: Diet Optimization for Cognitive Function and Brain Optimization

David Puder, M.D.



DAVID PUDER, M.D.

**PSYCHIATRY &
PSYCHOTHERAPY**

This PDF is a supplement to the podcast “Psychiatry & Psychotherapy” found on [iTunes](#) or [Google Play](#): “Episode 9 Diet on Cognitive Function and Brain Optimization, Sensorium Part 2”

There are no conflicts of interest for this podcast.

Review:

- Sensorium is the total brain capacity for focusing, processing, and interpreting. It is not a static state—it can fluctuate throughout the day.
- It can be influenced by sleep, food, stress, exercise, drugs, medications, and long term, through epigenetic phenomenon.
- Chronic psychological stress caused hippocampal-dependent cognitive deficits; in particular, the neurons that looked like trees had fewer branches after 21 days in rats restrained in metal wire 6 hours per day for 21 days.¹

How do we optimize our diet for Total Brain Function?

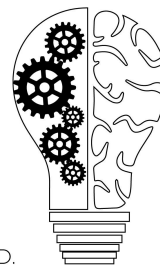
- **Optimize Diet**
 - Diet both can optimize day to day sensorium and long term ability to increase or prevent dementia which has lower sensorium.
 - Judges court ruling and snack hour: judges were found to be more lenient when well fed.²

¹ [McLaughlin, K. J., Gomez, J. L., Baran, S. E., & Conrad, C. D. \(2007\). The effects of chronic stress on hippocampal morphology and function: an evaluation of chronic restraint paradigms. *Brain research*, 1161, 56-64.](#)

² [Danziger, S., Levav, J., & Avnaim-Pesso, L. \(2011\). Extraneous factors in judicial decisions. *Proceedings of the National Academy of Sciences*, 108\(17\), 6889-6892.](#)

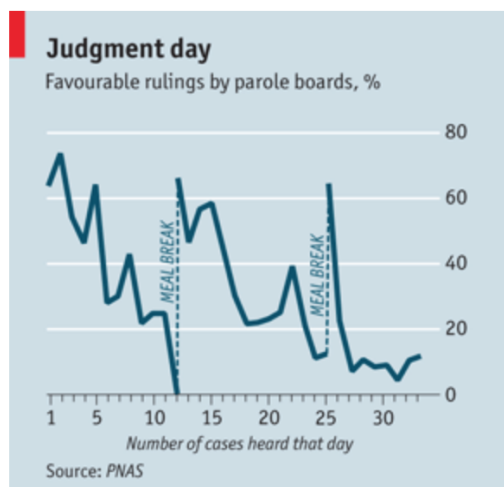
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- Lean into a more **mediterranean diet** (high fruits, high vegetables, high cereals, high legumes and low saturated fats with olive oil as the main source of fat, low to moderate consumption of fish, low to moderate intake of dairy products, and low amounts of red meat and meat products)
 - Associated with lower rates of depression
 - Associated with better cognitive function, lower rates of cognitive decline and reduced Alzheimer disease³
 - Associated with lower self-reported subjective cognitive function in study of 27,842⁴
- In a cohort from 40 countries, of 27,860 people, followed for 56 months, showed that those eating the most nuts, veggies, fruit, fish higher relative to meat and eggs, and whole grains (high fiber) had lower rates of cognitive decline. When they separated the people into groups, the most healthiest diet compared to the least healthy had a hazard ratio of 0.76 (95% CI 0.66-0.86)⁵
- 6183 nurses studied over 5 years with serial cognitive testing showed the ones with the high saturated fat diets had more significant decline in cognitive function compared to those with high monounsaturated fat diets (avocados, peanut butter,

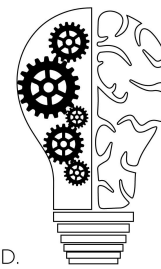
³ [Lourida, I., Soni, M., Thompson-Coon, J., Purandare, N., Lang, J. A., Ukoumunne, O. C., & Llewellyn, D. J. \(2013\). Mediterranean diet, cognitive function, and dementia: a systematic review. *Epidemiology*, 24\(4\), 479-489.](#)

⁴ [Bhushan, A., Fondell, E., Ascherio, A., Yuan, C., Grodstein, F., & Willett, W. \(2017\). Adherence to Mediterranean diet and subjective cognitive function in men. *European journal of epidemiology*, 1-12.](#)

⁵ [Smyth, A., Dehghan, M., O'donnell, M., Anderson, C., Teo, K., Gao, P., ... & Yusuf, S. \(2015\). Healthy eating and reduced risk of cognitive decline A cohort from 40 countries. *Neurology*, 84\(22\), 2258-2265.](#)

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- nuts, seeds, olive oil, peanut oil). Total fat and Polyunsaturated fats (soybean oil, corn oil) was not associated with cognitive trajectory.⁶
- In a study with 1449 people followed for 21 years, high saturated fat diets were associated with poorer global cognitive function and prospective memory compared to high intake of polyunsaturated fats. Also frequent fish was associated with better cognitive function and semantic memory. Higher PUFA-SFA ratio was associated with better executive function and psychomotor speed.⁷
 - Take **omega-3 supplementation** (flax seed, chia seed, salmon, fish oil)
 - One animal study showed higher omega-3 diet had better working memory and reference memory.⁸
 - One meta-analysis found that high omega-3 intake helped with those with cognitive impairment but not dementia in terms of attention and processing speeds and immediate recall.⁹
 - Age 7-9 children with lower DHA and EPA (2 different types of Omega-3) in their blood had a small associated poorer reading ability and working memory performance¹⁰
 - One study of 1416 patients in France found that of those who had fish weekly had decreased incidence of developing dementia over 7 years of follow up (HR .66 95% confidence interval 0.47 to 0.93). No significant association was found between meat consumption and risk of dementia.¹¹
 - **High sugar diets not recommended**

⁶ Okereke, O. I., Rosner, B. A., Kim, D. H., Kang, J. H., Cook, N. R., Manson, J. E., ... & Grodstein, F. (2012). Dietary fat types and 4-year cognitive change in community-dwelling older women. *Annals of neurology*, 72(1), 124-134.

⁷ Eskelinen, M. H., Ngandu, T., Helkala, E. L., Tuomilehto, J., Nissinen, A., Soininen, H., & Kivipelto, M. (2008). Fat intake at midlife and cognitive impairment later in life: a population-based CAIDE study. *International journal of geriatric psychiatry*, 23(7), 741-747.

⁸ Chung, W. L., Chen, J. J., & Su, H. M. (2008). Fish oil supplementation of control and (n-3) fatty acid-deficient male rats enhances reference and working memory performance and increases brain regional docosahexaenoic acid levels. *The Journal of nutrition*, 138(6), 1165-1171.

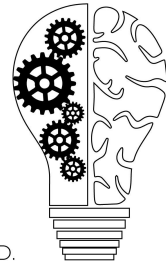
⁹ Mazereeuw, G., Lancôt, K. L., Chau, S. A., Swardfager, W., & Herrmann, N. (2012). Effects of omega-3 fatty acids on cognitive performance: a meta-analysis. *Neurobiology of aging*, 33(7), 1482-e17.

¹⁰ Montgomery, P., Burton, J. R., Sewell, R. P., Spreckelsen, T. F., & Richardson, A. J. (2013). Low blood long chain omega-3 fatty acids in UK children are associated with poor cognitive performance and behavior: a cross-sectional analysis from the DOLAB study. *PloS one*, 8(6), e66697.

¹¹ Barberger-Gateau P, Letenneur L, Deschamps V, Pérès K, Dartigues J-F, Renaud S. Fish, meat, and risk of dementia: cohort study. *BMJ: British Medical Journal*. 2002;325(7370):932-933.

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- High fat and refined sugar diet in rats decreased BDNF and neuroplasticity¹²
- Study following 937 subjects for 3.7 years found that those in the highest grouping for total carbohydrate had almost double the risk for developing cognitive impairment, whereas those with high protein or fat had lower risk.¹³ The highest carbohydrate group had the highest refined sugar and fruit but not vegetables.

Some Recommendations:

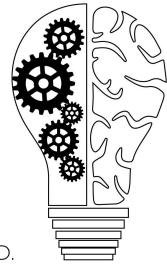
1. Eat more vegetables, 2-3 times per day, and when you do think about your brain saying “thank you!” I try to eat salads 2 meals a day, and when going all out eat a smoothie in the morning and throw in some spinach...
2. Find ways to consistently eat monounsaturated fats: avocado, almonds, nuts, and olive oil.
3. Increase your omega-3 fatty acids: salmon 1-2 times per week, 1-2 tablespoons of ground flaxseed in oatmeal, throw some chia seed in your smoothies...
4. Stay away from frequent and consistent refined sugar (soda, ect...)
5. Eat slow burning fuels: oats, lentils, beans...

¹² [Molteni, Raffaella, et al. "A high-fat, refined sugar diet reduces hippocampal brain-derived neurotrophic factor, neuronal plasticity, and learning." *Neuroscience* 112.4 \(2002\): 803-814.](#)

¹³ [Roberts, R. O., Roberts, L. A., Geda, Y. E., Cha, R. H., Pankratz, V. S., O'Connor, H. M., ... & Petersen, R. C. \(2012\). Relative intake of macronutrients impacts risk of mild cognitive impairment or dementia. *Journal of Alzheimer's Disease*, 32\(2\), 329-339.](#)

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