Proceedings of the Nutrition Society (2025), **84 (OCE1)**, E48 doi:10.1017/S0029665125000588

The 48th Annual Scientific Meeting of the Nutrition Society of Australia, 3-6 December 2024

Effect of egg consumption on cognition in healthy young adults: findings from a randomised controlled trial

N. Sultan[1], N. Kellow[1], C. MacMahon[2], M. Raab[3], C. Pennaneach[1], E. Cheng[1], C. Tuck[4] and J.R. Biesiekierski[1]

[1]*Department of Nutrition, Dietetics & Food, Monash University, Notting Hill, Victoria, Australia*
[2]*School of Allied Health, Human Services, and Sport, La Trobe University, Bundoora, Victoria, Australia*
[3]*Institute of Psychology, German Sport University, Cologne, Germany*
[4]*Department of Nursing and Allied Health, Swinburne University of Technology, Hawthorn, Victoria, Australia*

Eggs contain several nutrients that are positively linked to neurological function, including phospholipids (regulate neurotransmitter receptors), choline (produces acetylcholine, involved in memory and learning[1]), tryptophan (produces serotonin, reduces depression-like symptoms[2]), and docosahenaenoic acid (DHA, important for neurogenesis and synaptic plasticity[3]). However, most studies examining egg intake and cognition have been observational, primarily focusing on cognitive decline with aging. Few studies have explored the impact of egg consumption on cognition in young people, with a paucity of high-quality study designs used. This randomised controlled trial (RCT) aimed to examine the impact of egg consumption on cognition, including interoception, risk-taking, decision-making and reaction-time in young adults. Ninety healthy young adults (aged 18–40) were recruited to a 6-week parallel-arm RCT. Participants were randomised to either the intervention group (n = 45) who consumed 2 whole eggs/day or the control group (n = 45) who avoided eating eggs. Participants completed 4 computer-based validated cognitive tests at baseline and end-of-study. The Schandry task measured interoception (heartbeat perception (Hb) in 25s, 35s and 55s rounds), the balloon analogue risk task (BART) measured risk-taking, the Iowa Gambling Task (IGT) assessed decision-making, and the Deary-Liewald test measured simple reaction time (SRT) and choice reaction time (CRT). Changes in cognitive task results between groups were analysed via linear mixed models analysis using SPSS, with results controlled for sleepiness (measured by Karolinska Sleepiness Scale) and gender. Continuous data is presented as mean ± *SD* where parametric, or median (IQR) where non-parametric. Of the n = 90 participants enrolled, n = 89 completed the 6-week program and were included in data analysis (Egg n = 45, Control n = 44). Participants were 71% female, aged 24.0 (9) y with a mean BMI of 23.2 ± 3.4 kg/m^2. Most individuals reported a prior habitual egg intake of 2–4 times/week (49.4%). At baseline, cognitive task results between groups were not significantly different. At study completion, interoception was not impacted by egg consumption (Hb: 25s p = 0.931; 35s p = 0.936; 55s p = 0.679), nor was risk-taking (BART p = 0.828), decision making (IGT p = 0.923), or reaction-time (SRT p = 0.625, CRT p = 0.839). Consuming 2 eggs/day for 6-weeks did not affect cognitive test results in healthy young adults, when compared to those who avoided eggs, suggesting no detrimental effect of regular egg consumption (14 eggs per week). This is the first RCT to explore the impact of egg consumption on the above parameters of cognition. Given the null findings, future research should explore longer intervention durations or alternative cognitive assessments to fully understand the potential cognitive effects of egg consumption.

References

1. Haam J, Yakel JL (2017) *J Neurochem* **142** Suppl 2, 111–121.
2. O'Mahony SM, Clarke G, Borre YE *et al.* (2015) *Behav Brain Res* **277**, 32–48.
3. Weiser MJ, Butt CM, Mohajeri MH (2016) *Nutrients* **8**(2), 99.