

Beneficial effects of exercise after morning breakfast on our mental performance and mood

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A recent study by a research team from the Brain, Performance and Nutrition Research Centre of Northumbria University, UK, published in the international peer-reviewed journal *Appetite*, examined the interactions of breakfast consumption and morning exercise on mental performance and mood in a physically active, male population, in a randomised controlled trial. According to the study, mental performance decreased when exercise did not follow breakfast consumption. However, when exercise was integrated in the intervention program, the latter effect was reversed. The authors conclude that the combination of breakfast and morning exercise has a beneficial effect on mental performance and mood during the day.

Performance is a multi-dimensional concept that is related to physical and mental efficiency. Mental performance, also referred to as cognitive performance, refers to the ability to solve problems, make decisions, memorise things and stay alert. Research has shown that both exercise and the consumption of breakfast can enhance mental performance and mood during the day. Dietary guidelines suggest that breakfast is important for health and well-being, and previous studies have observed a beneficial impact on mood and memory. Similarly, exercise improves certain aspects of mental performance, an effect that can be attributed to the increased arousal during a recovery period. The study by researchers from the Brain, Performance and Nutrition Research Centre was the first to examine the interactive effect of breakfast and exercise.

After the initial eligibility screening, 12 healthy and physically active men, aged 21-26 years were selected for the study. Each participant completed four independent trials in a randomised order, consisting of no breakfast with rest, no breakfast with exercise, breakfast with rest, and breakfast with exercise. Trials were separated from each other by a time interval of two days and were performed under similar laboratory conditions. The intervention scheme included the consumption of breakfast (oats with milk) or fasting depending on the trial, two hours rest, exercise (a treadmill run until 700 kilocalories had been used up), or equivalent rest, consumption of a snack (chocolate milk), 90 minutes rest, and finally consumption of lunch until full. Mental performance (reaction time, speed and accuracy of processing information, selective attention, memory, mental fatigue and tension) and mood were recorded frequently throughout each trial and data were analysed as post-breakfast or post-fasting, post-exercise or post-resting, and post-drink.

Significant effects on mental performance were found only for measurements following consumption of the drink. The authors reported lower accuracy and increased reaction time when breakfast was consumed, as opposed to fasting, in the absence of physical exercise. However, exercise seems to have a beneficial role in reversing the effect. The study also showed that breakfast consumption helped to decrease post-exercise mental fatigue. In addition, higher tension ratings were reported in the absence of breakfast or when exercise was done, and tension improved when the two were combined.



The study findings suggest that breakfast consumption and exercise interact to influence some aspects of mental performance. Exercise seems to have a critical role in determining what the effect of breakfast consumption will be on mental performance, the study showed. The researchers argue that the detrimental effects of breakfast in this study were only observed at least three hours after the intake of a chocolate drink. Furthermore, these results may show the positive effect of the snack in the absence of breakfast, or may reflect the negative outcome resulting from the interaction between breakfast and the drink. In addition to this, the authors state that breakfast with different composition from that which is normally consumed can negatively affect mood.

Keeping in mind the negative effects of fasting on brain function and mood, especially after exercise, consumption of breakfast combined with exercise is considered to be the optimal choice. Nevertheless, it should be noted that these findings can be generalised only to habitually active males, while the effects on females or less active people may differ substantially.

For further information, please see:

[Veasey R.C, Gonzalez J.T, Kennedy D.O, Haskell C.F and Stevenson E.J. \(2013\). Breakfast consumption and exercise interact to affect cognitive performance and mood later in the day. A randomized controlled trial. *Appetite* 68:38-44. DOI: 10.1016/j.appet.2013.04.011.](#)