

# Adult Learning Open University Determinants study (ALoud): Biological lifestyle factors associated with study success

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# Association between biological lifestyle factors and study success in adults

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## Background

Research suggests that healthy lifestyles have positive effects on cognition and learning (Barenberg, Berse, & Dutke, 2011; Dauncey, 2009; Hobson & Pace-Schott, 2002). However, little is known about how lifestyles are associated with study success in adult distance learners. **Aim** is to examine the associations between the biological lifestyle factors physical activity, sleep, and nutrition on the one hand and cognition and study success on the other hand in the Adult Learning Open University Determinants study.

## Methods

6000 new OU students will be approached. Expected response rate is 30%. A baseline survey will measure lifestyle factors using digital questionnaires on:

- ✓ physical activity (SQUASH, one-item question)
- ✓ sleep (PSQI, MCTQ (partly), ESS, FAS)
- ✓ nutrition (breakfast, fish consumption, caffeine, and supplements).

Digital neuropsychological tests (TMT, SDMT, and N-back) measure cognitive function. Study success is determined by results provided the exam registration office of the OU. This procedure will be repeated after 6 and 12 months. Multiple regression analysis will be used to analyze the data.

Hillman, Erickson, & Kramer (2008)

Hobson & Pace-Schott (2002)

Dauncey (2009)

## Support for physical activity, sleep, and nutrition

Physical activity, sleep, and nutrition have positive effects on, or, are positively associated with, measures related to learning such as cognition, neuroplasticity, and academic achievement. These biological lifestyle factors are also related to more distant measures such as self-esteem, motivation, and health which in turn can influence learning via different mechanisms (i.e. physical state or motivation).

Physical activity leads to increased cerebral blood flow, neuronal repair and plasticity modulated by neurotrophins, and upregulation of particular neurotransmitters (i.e. norepinephrine and dopamine).

Sleep is related to plasticity. The storage and consolidation of information acquired during the previously waking period is promoted by sleep.

Nutrition provides the body with important building blocks for parts such as cell membranes, enzymes, and neurotransmitters, that maintain correct functioning of the brain. Neurotropic and neuroendocrine factors are affected by nutritional status.

## Keywords

Lifestyle factors, physical activity, sleep, nutrition, cognitive function, study success, adults, distance education

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