Brain, Lifestyle, and Learning in an educational setting

Dr. Renate de Groot

Welten Institute
Research Centre for Learning, Teaching, and Technologies
Open Universiteit

SAN, February 1st, 2014

Fish as smart food?

Omega-3 fatty acids

• However, the human body itself is not able to produce DHA (most important omega-3)

• Nutritional intake is thus essential:

• Fish contains high concentrations DHA

Limitations previous work

• Limited age range
• Limited to boys
• No combination of cognitive performance, academic achievement, and self-report
• Limited fish consumption range

Research question

• What is the association between DHA/EPA intake through fish consumption on the one hand and academic performance, objective and subjective cognitive performance in healthy adolescents aged 12 to 18 years on the other hand?

Methods

• Observational study
• Adolescents in grade 7-12 of higher secondary education or pre-university education
• Healthy (Excl. learning, psychological, or developmental disorders)
• Measures: - Fish consumption questionnaire
  - Amsterdam Vocabulary Test
  - Youth Self-Report
  - Academic performance (Dutch, English, Mathematics)
• Covariates: - Sex
  - Age
  - Level of parental education
• ANCOVA with polynomial contrast analyses
Conclusions

• Higher fish consumption is associated with better vocabulary scores and shows a trend for significance with better academic achievement.

However
As soon as the advised norm of 450 mg EPA/DHA per day has been exceeded, fish consumption was associated with lower academic achievement and lower vocabulary scores.

Thus
It seems prudent to advice adolescents to consume fish twice a week but not more than that! It can make a .23 difference on your exam!

• Explanation for the inverted U-shape?
  - Exposed to too many toxic substances in fish
  - Other confounding factors
  - Too few participants in the respective group

De Groot et al., 2012

Limitations previous work

• Almost no studies in adolescents
• Almost no objective measurement of physical activity
• Accelerometer placed on the hip -> limited capture of cycling activities
• No weekend days included in previous studies

Research question

What is the association between physical activity, measured objectively using accelerometers, and cognitive performance and academic achievement in adolescents?

Active commuting to school
GOALS Study

Academic year: 2011/2012:
389 students
51% boys
Grade 7 and 9
Secondary school in South of the Netherlands

Discussion

Positive association between PA&S and higher-order cognitive functioning in adolescent girls
Associations NOT mediated by depressive symptoms
Sex-specific association?
- (School-related) stress
- Estrogen

Conclusion

Adolescents, walk or cycle to school!
Especially girls
Preferably with a detour!
Bedankt voor jullie aandacht!

Renate.deGroot@ou.nl

Onderwijs- en Leerwetenschappen
Topic brein, leefstijl en leren

h_p://.nl/web/topic-brein-leefstijl-en-leren