

## **Breakfast and Exercise Influence Academic Performance in Adolescents**

Stephen F. Burns, Masato Kawabata and Kerry Lee

### **KEY IMPLICATIONS**

1. Thirty-nine per cent of 365 Singaporean adolescents surveyed reported not regularly consuming breakfast before school and 64% reported insufficient quantities of moderate-to-vigorous physical activity.
2. Combining breakfast and exercise reduced emotions associated with negative mood states and increased emotions associated with positive mood states.
3. Adolescents who consumed a breakfast and took exercise in the morning showed a decrease in the time taken to answer questions correctly on a maths test compared with those who fasted and remained sedentary in the morning.

### **BACKGROUND**

Regular breakfast intake and exercise are implicated in improved academic outcomes in adolescents. Breakfast may increase satiety and blood glucose (sugar) levels thereby increasing concentration and attention. Exercise can influence activity and excite areas of the brain which facilitate cognitive functions such as attention in adolescents. Combining breakfast with exercise may have a stronger influence on academic or cognitive performance than their individual contributions alone.

### **FOCUS OF STUDY**

There were two aims to this study. Firstly, to conduct a survey to examine breakfast and exercise habits of adolescents in local junior colleges, high schools and institutes of further education. Secondly, to perform an experimental study to examine academic and cognitive performance on a morning where junior college and high school adolescents ate breakfast and completed a bout of exercise compared to when adolescents remained fasted and sedentary.

### **KEY FINDINGS**

Thirty-nine per cent of adolescents never consumed breakfast or ate breakfast on an irregular basis on weekdays. 64% of adolescents reported insufficient quantities of moderate-to-vigorous physical activity (<60 minutes per day) on weekdays. Adolescents who consumed breakfast reported lower negative mood scores compared with irregular breakfast consumers. Conversely, adolescents who reported meeting exercise guidelines showed higher positive mood scores than those who did not meet the guidelines. The experimental data demonstrated that adolescents assigned to consume breakfast and exercise showed a decrease in time taken to answer questions correctly on a maths test

over the course of a morning compared with adolescents who remained fasted and sedentary. Consuming breakfast and taking exercise may better prepare students for learning and improve academic outcomes.

## **SIGNIFICANCE OF FINDINGS**

### **Implications for Practice**

As the data supports better academic outcomes in adolescents who consume breakfast and exercise regularly, schools can consider the introduction of breakfast clubs. Physical education lessons can be scheduled for early in the morning. Time should be provided for adolescents to incorporate these behaviours into their day.

### **Implications for Policy and Research**

Stronger recognition of the importance of a healthy lifestyle on academic outcomes may influence future policy.

### **Proposed Follow-up Activities**

Interventions translating laboratory data into improved academic or learning outcomes in children and adolescents attending primary and secondary schools over extended periods of time.

## **PARTICIPANTS**

365 adolescents aged 14–19 years from 5 schools, junior colleges and institutes of further education returned valid survey data from 638 surveys conducted. 83 adolescents aged 15–19 years completed the experimental study held at the National Institute of Education.

## **RESEARCH DESIGN**

A survey of breakfast and exercise habits in 365 adolescents conducted at five local schools, junior colleges and institutes of further education.

An experimental study examined changes in academic and cognitive performance over a morning in 83 adolescents randomised to four groups: (i) a group who fasted and were sedentary over a morning; (ii) a group who ate breakfast and were sedentary; (iii) a group who fasted but completed a bout of exercise; and (iv) a group who ate breakfast and completed a bout of exercise.

## **About the authors**

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