

Strategies promoting behaviour change and health promotion during lesson engagement

Active break

What is it?

Physically active lessons is a new teaching technique that introduces the FA in the school learning environment.

(Centers for Disease Control and Prevention 2010, Kibbe et al. 2011)

These sections, driven by the teacher are designed to incorporate physical activity in teaching academic content.

(Bartholomew and Jowers 2011)

- Physically active lessons therefore, are distinguished from the indefinite “activity” or the “brain breaks” that facilitate the break periods in classroom and are based in PE without educational features.
(Bartholomew & Jowers, 2011)
- Making short time intervals of PE may be more effective in an attempt to a more natural active lesson compared to break or physical education expansion.
(Barr-Anderson et al., 2011)

Alternative names for active break in the literature:

Physically active breaks (Norris et al., 2015)

Teacher-led active recess (J Buscemi et al., 2014)

Classroom physical activity breaks (J Buscemi et al., 2014)

Academic curriculum incorporating physical activity (J Buscemi et al., 2014)

In-classroom physical activity (Sirota et al., 2012)

Physically active academic lessons (Bartholomew et al., 2011)

Transition exercises (TE) (Sirota et al., 2011)

Active break

Studies support the correlation of physical activity (PA) with academic achievement in children and adolescents, and reveal that PA is associated either positively or not at all with academic performance.

The literature suggests that little time of incorporated PA in the curriculum does not impede the academic achievement of children

(CDC 2010, Käll LB et al. 2014, Trost G. 2007, Trudeau F & Shephard RJ.,2008)

Moderate to vigorous physical activity (MVPA) stimulates the brain in a positive way according to the brain based learning theory

(Jensen EP 2008)

In the short term, physical activity stimulates direct chemical changes in the brain that increase attention and may enhance cognitive performance

(Best JR 2010)

The combination of physical activity with learning is an easy way for the teacher to invest in both the academic achievement and the physical activity, with time saving and without having to choose between the PA and the teaching of cognitive objects

(Marijke J 2015)

Research data

It has been proven that active breaks improve the execution time of the target-project (time-on-task)

(Whitt-Glover MC et al., 2011) (Grieco LA et al, 2009)

It is likely to affect more positively students who face difficulty in staying focused on the target-project

(Mahar T et al, 2006)

Active breaks can also improve the concentration and the performance on standardized tests

(Donnelly et al, 2009) (Hollar et al, 2010)

The continued use of active breaks for more than two years has led to a lower Body Mass Index (BMI) of the children

(Donnelly et al., 2009)

It was found in a study that intervention lessons with active break proved to be more interesting and more enjoyable for students compared with the control lessons. The perceptions of children for their participation to the lesson increased after the second intervention lesson and not after the traditional lessons

(Vazou et al, 2012)

In 2011, a study showed greater benefits for more than 13 weeks on cognitive function and achievement on mathematics with more time spent in vigorous physical activity (20-40 minutes per day)

(Davis L, Tomporowski et al., 2011)

In 2009, researchers found that children who attend schools where 10 minutes of physically active lessons are applied daily, have significantly greater gains in mathematics and spelling and in overall achievement compared to children in control schools where there is no intervention during the same period

(Donnelly et al., 2009)

The sedentary nature of the lessons conducted in the class has been recognized as a contributing factor to the lack of physical activity in the age group of children attending elementary school

(Martin & Murtagh, 2015)

Take 10!

– A programme of incorporated PE in the class with duration of 10 minutes that implicates the students of elementary school in activities of PE, while at the same time it enhances the cognitive goals in mathematics, reading, arts, language, science, and health.

- ***The idea of the programme started in the congress: Childhood Obesity: Partnerships for Research and Prevention (Trowbridge and Kibbe, 2002) in May of 1999.***
- ***The Take 10! becomes more and more famous all over the world since 2002 and has raised the interest of many scientists.***
- ***Many studies used the Take 10! as an intervention programme.***
- ***Many programmes - projects of active break have as body the Take 10!, as well as the present programme.***

More specifically, in the studies concerning Take 10! the following are discussed:

- The levels of physical activity*
- The levels of energy expenditure*
- The knowledge of children with regard to nutrition, exercise and general health issues*
- The Body Mass Index (BMI)*
- The attraction of students to exercise*
- The academic achievements of students*
- Behaviour issues in the classroom*

RESULTS OF THE REVIEW:

- *The teachers are willing and capable to implement an integrated programme of PE in the classroom, according to the cognitive demands of each class (4.2 days/week).*
- *Children that participate in the Take 10! show higher levels of exercise (13%), reduced time-off-task (20.5%), and improvement in reading, mathematics, spelling and in the grade of the writing (p=0.01).*
- *The levels of energy expenditure were moderate (6.16 to 6.42 METs)*
- *The studies support that the BMI can be affected positively (it is reduced in grade z of the BMI over 2 years [P=0.01]).*

The *Take 10!* proves that:

The incorporation of motion in the programme of school lessons in elementary classes is possible, it helps students to concentrate on learning, facilitates the achievement of higher levels of physical activity, and helps schools fulfill physical and mental wellness policies

Let's have a look at an example:

<https://www.youtube.com/watch?v=--hrKbiINWE>

Texas I-CAN! (Initiatives for Children's Activity and Nutrition)

Training of teachers in order to incorporate physical activities during the lesson (language, mathematics, arts, science).

What the programme evaluated:

- The implementation of the programme by the teachers
- It counted children's steps
- The control of children's attention
- The academic achievement

- The implementation percentages of the programme by the teachers were reinforced based on the Theory of Planned Behaviour (Ajzen 1985) through the provision of active lessons.

The personal levels of physical activity and the BMI of the teacher do not affect significantly the application percentages.

- The lessons resulted in a significant increase in the step count of children, which is consistent with the public health goals.
- Children's attention increases in the active lesson compared to the attention following traditional sedentary lessons.
- There is enhanced spelling ability of children two weeks after the use of active rather than sedentary lessons.

(Bartholomew & Jowers, 2011)

Healthy Schools Healthy Families (HSHF)

A programme of physical activity and nutrition in a predominantly minority community of Spain.

The program includes short active breaks [Transition Exercises (TE)] in the class, in order to appreciate whether these breaks were associated with increased recreational physical activity outside the school context

The students of the HSHF were evaluated for their recreational physical activity at the beginning and at the end of the school year with questionnaires (September 2009-June 2010).

During the school year it was also recorded

- The minutes/ week of TE with average the 10 minutes
- The minutes of the break and the FA by the teachers (and the trainers)

Results: Students were mainly Spanish with an average age of 10 ± 0.03 years. There was an increase in the reported recreational physical activity from the beginning to the end of the school year (73.6% to 82.4%, $P < 0.05$).

Students participating in more active breaks were 2.75 times more likely to participate in recreational activities compared to students who participated in fewer active breaks

Conclusion: the active breaks are significantly related to increased recreational physical activity

(Sirota et al., 2011)

Physical activity and academic achievement across the curriculum (A + PAAC)

Its aim(A + PAAC):

- Training teachers on integrated physical activity lessons
- Prevention of increased BMI of children attending the 2nd & 3rd classes of elementary school
- Correlation of these lessons with academic achievement (Wechsler Individual Achievement Test-II)
- 3-year research (2012-2014)

Intervention: (2 x 10 min/day, 5 days/week) (A + PAAC) activities



Plus 60' of PE/week

Total: 160' of physical activity/ week, surpassing the limit of 150' /week (Healthy People, 2010)

Lessons A+PAAC can be used in a variety of academic sectors:

Mathematics
Language
Arts
Health
Science
Spelling
History
Geography

Examples:

Geography (north, south, east, western) can be taught by having students run to the appropriate area set for one of the four cardinal points. If the teacher calls Texas, students will run to the southern side of the classroom

The A + PAAC simply represents a “concept” in which physical activity integrates with the academic achievement. Thus, the scope of the physically active lessons is limited only by the teacher’s creativity.

The research evaluated:

- The physical activity in the classroom
- The attention to lesson (attention-to-task)
- The academic achievement
- The cognitive function – memory (modified Eriksen flanker task, 1974)
- The daily physical activity [(ActiGraph GT1X portable accelerometer (ActiGraph LLC, Pensacola, FL))]
- Height/weight
- Cardiovascular fitness level [Progressive Aerobic Cardiovascular Endurance Run (PACER)]

Advantages of the programme

The possibility to increase the physical activity of a large number of students in the school context is provided.

The classroom climate is modified in such a way so that even the children who are not exercising, start playing sports because exercise becomes part of the academic lesson.

The possibility of exercising children grows compared to other exercise options in which participation is voluntary.

(e.g. : sport programmes after school hours).

The inclusion of PE in the teaching procedure does not work against the provided time for the academic goals.

The implementation of the programme does not require additional financial resources and time commitment.

If successful, this approach could easily and inexpensively be spread to all elementary schools by using the existing staff and facilities in order to improve both the quality of education and health.

(Donnelly et al., 2013)

CATCH Middle School Project (2009-2012)

This project evaluates a 3-year intervention aiming at the encouragement of teachers to use active breaks.

Middle school teachers from 30 schools in central Texas were randomly divided in 3 educational situations, the one richer than the other.

Physical Education Specialists and Teachers aimed at the development of a review guide from a variety of sources for ease of use and the possibility to produce PE and strengthen the academic content.

Results show that teachers are open-minded to PE integration in the classroom.

This is the first study showing that a brief intervention programme can be effective in encouraging teachers to adopt such a practice.

Findings show that even a basic training can lead to increased use of active breaks (approximately 1 in 4 teachers per week).

(Delk et al., 2014)

Self-regulation practices

Daily lessons

Daily lesson plans