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EFECTO DE LA MODALIDAD DE TIEMPO DE LAS ACTIVIDADES FÍSICAS BASADAS EN EL AULA SOBRE LOS DESCANSOS CEREBRALES SOBRE LA SEGURIDAD DEL PLAN DE ESTUDIOS PRIMARIO ARGELINO

EFFECT OF BRAIN BREAKS CLASSROOM-BASED PHYSICAL ACTIVITIES TIME MODALITY ON THE SAFETY OF ALGERIAN PRIMARY CURRICULUM

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Resumen:

A pesar de que el aula de la escuela primaria se sienta como sedentaria durante el día. Establecido por las similitudes como un factor crítico que disminuye la movilidad causada por los síntomas de sobrepeso y obesidad. Solicitar empleos de Brian Break Actividades físicas en el aula BBC-PA como recomendaciones innovadoras puntiagudas para mejorar las aulas cotidianas con más actividad física durante el día escolar. Propuesto en esta investigación, bajo 3 modelos piloto con una diferencia implicada a través de sus implicaciones de tiempo. Un grupo con 3 minutos de BBC-PA participó después de cada 20 minutos de aprendizaje estático en el aula. Frente a un grupo con 4 minutos aplicados después de cada sesión estática de clase de una hora. En comparación con un grupo que usa BBC-PA tradicional con 9 minutos implicado en períodos escolares de recreación y un grupo sin BBC-PA

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por día. Según el grupo de control, los resultados posteriores a la prueba se archivaron en gramo de aptitud. Nuestros resultados recomiendan la intervención de video-ejercicio en la escuela BBC-PA como una estrategia práctica para ayudar a que los niños sean más activos físicamente durante el día escolar. Las afirmaciones a través de este estudio sobre los beneficios del modelo 3mn de BBC-PA implican después de cada sesión de 20 millones de clases. Como un enfoque eficiente en el tiempo, factible y atractivo para la promoción de la actividad física para las escuelas.

Palabras Clave: Escuelas primarias, niños, actividad física, videojuegos, ejercicio, Brain Breaks

Abstract:

Despite the primary school classroom sitting as sedentary daytime. Set by similarities as a critical factor decreasing mobility caused by overweight and obesity symptoms. Asking employments of Brain Breaks Classroom-Based Physical Activities BBC-PA as innovative recommendations pointy to improve everyday classrooms with more physically active through the school day. Proposed in this investigation, under 3 pilot models with a difference implicated via their time implications. A group with 3min BBC-PA involved after every 20min of static classroom learning. Versus a group with 4min applied after every one-hour class static sitting. Compared with a group using traditional BBC-PA with 9min implicated in recreation school periods and a group with no BBC-PA a day. Based on the control group, post-test results archived in fitness gram. Our outcomes recommend school-based video-exercise intervention BBC-PA as a practical strategy to help make children more physically active during the school day. Proclaims via this study in the profits of model 3mn BBC-PA implies after each sitting 20mn classroom. As a time-efficient, feasible and appealing approach to physical activity promotion for schools.

Key Words: Primary schools, children, physical activity, video games, exercise, Brain Breaks.

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1. INTRODUCTION

Research suggests that between 6 and 12 years are documented as a golden 'period of motor development', especially when children acquired the healthiest habits used in adulthood (Chin, et al., 2012). While this stage of age in Algeria coincides with the entry of our children to primary school. Requiring new educational responsibilities adjustments, like the reducing of playtimes and lesser physical time activities after school.

Claims by Algerian studies via student seats that exceed 6 hours a day. Indicated by similarities to be about 30% to 50% of each day. Agreement as daily sedentary time (Mohammed, Z, 2017). Judged by our teachers as most methodical classroom settings implied for the discipline pedagogical aspect of successful learning behaviour. Denied by scientists from the developed countries as a significant factor causing declines in child's mobility, overweight and obesity (Glapa, et al., 2018).

The opposed to playing method that permits children to utilise their intelligence cognitive, and emotional strength. Essential for developing a healthy brain (Alicia, et al., 2018).

Recommended in recent years below school-based –video-exercise intervention. Called Brain Breaks® Physical Activity Solutions by HOPSports. As short videos integrated at three to five minutes during the teacher-ordered break between lessons, specifically designed to encourage PA in the classroom (Mantzaria, et al., 2019).

Reported by recent studies via contemporary technology, which encouraged the active lifestyle looks to be an appropriate idea to marvel time constraints and other environmental challenges in the education system (Feng, et al., 2018).

Purpose in this study via 3 experimental groups with 3 pilots' programs of Brain Breaks® Physical Activity compared by a group with no physical activity at everyday school. Challenged toward classroom PA over a four-week intervention video exercises program.

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Modelling by the researchers, according to model proposed by (Watson A., Timperio A., Brown H., Best K., and Hesketh K.D, 2017) at last 30 to 60 minutes per day or 8 – to 10min with bouts movement, Push, pull, OH squat, or assessment sitting and standing into a chair single-leg balance Flexibility Self-myofascial release and static stretching implements in curriculum primary school. Investigated as advantageous applications. Adopted by the United States of America (USA) educational system with an average of 35 h per week (Edeltraud, et al., 2011).

Applied by the volunteer teachers chosen for this pilot Algerian research. Through 3 proposed models (Group with 3mn BBC-PA practised after etch 20mn static classroom setting. Versus Group with 4mn BBC-PA implemented after each-one-hour theatrical learning and group with 9mn BBC-PA involved in 10min of daybreak periods), controlled by a group with no BBC-PA a day. See **Table 1&2**.

2. METHOD

In this experimental study, we investigated four weeks of Brain Breaks® Physical Activity Solutions by HOPSports. Designed by Research Team through 3 models: (a group with 3mn BBC-PA practised after etch 20mn static classroom setting. Versus Group with 4mn BBC-PA implemented after each-one-hour theatrical learning and group with 9mn BBC-PA involved in 10min of daily-break periods), controlled by a group with no BBC-PA a day. The only role of the teachers employed in this experience was the motivation of their students to be engaged and saving time depending on the group modality.

Participants

We tested 180 children (100 girls and 80 boys) without apparent abnormalities who participated in the study; they were about 10 to 11 years old ($\bar{X}$ = 10.4, SD = 0.61, minimum = 10.3, maximum = 11.2).

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Table 1. shows the general characteristics of participants in the pre-test.

Variables	Total n = 180	20mn n=45	One hour n=45	Recreation n=45	No ABPA n=45	F	P≤ 0.05
Age (years)	10 ± 1.41	10.2 ±0.82	10.4 ±0.68	10.31 ± 0.86	10.32 ± 0.76	75.54	0.25
Body height (cm)	142 ± 4.02	143.2 ±4.29	143.5 ±4.26	143 ± 3.75	143.42 ± 3.09	132.47	0.36
Body weight (kg)	35.42 ± 3.92	35.18 ±4.82	36.91 ±3.67	36.58 ± 3.02	36.75 ± 3.45	480	0.52
Male	80	20	21	22	22	72.64	0.54
Female	100	25	25	24	23	94.45	0.42
Aerobic capacity	43.28 ± 2.55	43.49 ± 2.78	43.55 ± 2.22	43.24 ± 3.22	43.89 ± 2.41	42.82	0.46
Body composition	22.83 ± 2.05	21.86 ± 2.12	22.33 ± 1.95	22.41 ± 1.77	22.27 ± 2.24	18.66	0.68
Muscular strength upper	2.40 ± 2.05	2.42 ± 2.22	2.54 ± 2.32	2.65 ± 3.02	2.64 ± 2.05	20.42	0.66
Muscular strength lower body	10.12 ± 1.52	11.41 ± 1.06	11.74 ± 1.02	11.78 ± 1.12	12.08 ± 0.45	74?06	0.44
Endurance Abdominals	7.86 ± 2.36	7.82 ± 2.18	7.22 ± 2.45	7.96 ± 1.22	8.04 ± 2.66	11.02	0.54
Flexibility	13.05 ± 2.48	13.09 ± 2.88	14.03 ± 1.98	14.02 ± 1.62	14.02 ± 2.08	102	0.95

Notes: All class student in 4-grade level, 20mn = Group BC-PA for etching 20mn siting classroom; one hour = BC-PA after each one-hour sitting; recreation =. BC-PA implies for 10mn in recreation periods and without PA= group with no PA daily school.

Test Items and Materials

The test battery consists of Fitness Gram known as a significant battery to assess three general components of health-related physical fitness (Cooper Institute for Aerobics Research, 2017).

- Aerobic capacity: We based on reducing Cooper test. The child runs or walks around a marked rectangle measuring 9 × 18 meters (the size of a volleyball field) for 6 minutes. Both running and walking are allowed. The test item score is the distance covered in 6 minutes (measured in meters).

- Body composition: We based on Body mass index (calculated from height and weight)

- Muscular strength upper and lower body, endurance Abdominals and flexibility trunk:

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- Muscular strength Upper body: We based on pushing a medicine ball (1kg) with two hands as far as possible. The starting position is with the feet parallel to each other and shoulder-width apart, with the ball held against the chest. Test item score (better of two attempts) is the distance achieved (measured in meters).

- Muscular strength lower body: We based on Vertical Jump test the student high wall, such as the outside of a building and leaps vertically as high possible using both arms and legs to assist in projecting the body upwards.

- Flexibility: We based on the sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. The score is recorded to the nearest centimetre or half inch as the distance reached by the hand.

- Endurance Abdominals: We based on Abdominal Curl-Sit Up endurance tests usually conducted over a one-minute period, and measure the maximum number of correctly performed sit-ups in that time.

Procedure

Tested before and after the achievement of programs. For the program, we depended on the exercise video protocol showed in schedule **Table 2** as BBC-PA models exercise contents. In **Figure 1** as global exercises. **Figure 2** as total time PA practised for each experimental group.

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Figure 1 Presents the global BBC-PA programs with the numbers of the exercises proposed

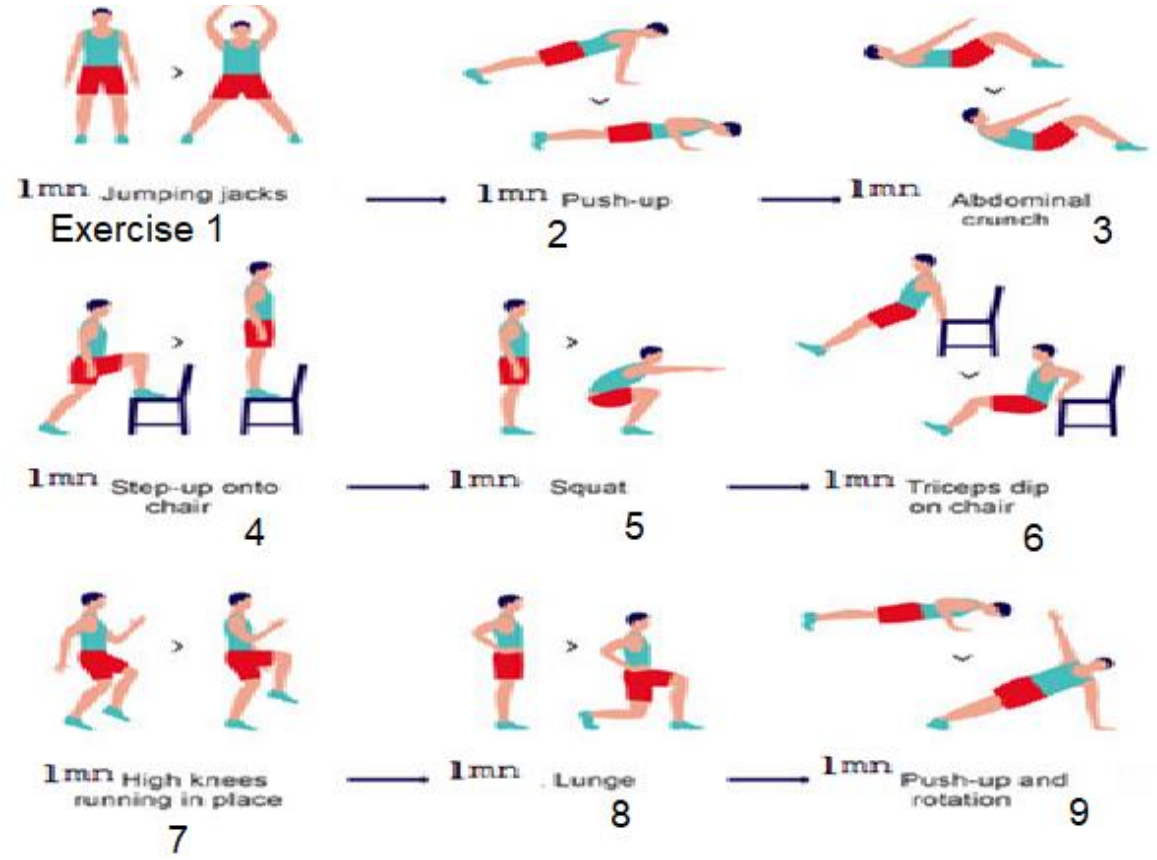

Table 2. Present the protocol-based video-based Brain Breaks applied in three models.

3mn PA After each 20mn	4mn PA After each one hour	9mn PA During 10mn Recreation
Repeat 1,2 and 3 for the first unit	Repeat 1,2, 3 and 4 for the first unit	all exercises
Repeat 4,5 and 6 for the second unit		
Repeat 7,8 and 9 for the third unit	Repeat 5,6,7 and 8 for the second unit	
Repeat 1,2 and 3 for the fourth unit		
Repeats 4,5 and 6 for the fifth unit	Repeat 9,1, 2and 3 for the third unit	
Repeat 7,8 and 9 for the sixth unit		
Repeat 1,2 and 3 for the seventh unit	Repeat 4,5,6 and 7 for the fourth unit	
Repeat 4,5 and 6 for the eighth unit		

All the exercises proposed have been practised for one minute.

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Analyse statistically

All statistical analyses were performed with SPSS, version 16.0.1, * and consisted of Pearson correlation, LSD and Anova one-way at p-value ≤ 0.05.

3. RESULTS

According to the pre-test participants results, set in Table 1. Our samples are homogeneous in all pre-test studied. Support by the insignificance of ANOVA one way. The opposed of post-test outcomes. Where all the results analyses are in the advanced of the BBC-PA activity groups looking at results archived by the group with no BBC-PA, agreement by LSD post-Hoc reported in Table 3.

Table 3. Present the post-test physical fitness results based on the protocol used.

Variables	20mn	One hour	Recreation	No ABPA	F/P≤ 0.05
Aerobic capacity	44.88±2.45	44.58±2.09	44.55±2.42	42.94±1.05	6.14/0.00
Body composition	20.76 ± 1.44	21.08 ± 1.04	21.41 ± 1.82	23.55 ± 3.17	6.56 / 0.00
Muscular strength upper body	2.44 ± 2.62	2.46 ± 2.42	2.94 ± 2.28	2.18 ± 1.42	5.42 / 0.00
Muscular strength lower body	16.05 ± 2.38	15.72 ± 2.78	15.88 ± 2.79	11.09 ± 2.08	6.26 / 0.00
Endurance Abdominals	21.48 ± 4.68	18.99 ± 1.78	17.85 ± 2.84	6.04 ± 2.75	5.29 / 0.00
Flexibility	18.05 ± 3.82	17.08 ± 2.43	16.88 ± 4.22	13.96 ± 2.52	5.38 /0.00

In benefits of the model, 3min BBC-PA integrated after etch 20mn siting classroom; followed by the model 4min BBC-PA applied after each-one-hour schooling sitting, at the last position the recreation model As an estimation confirmed by the results achieved by the group with no PA daily school records in this study at-risk factor of insufficient physical activity levels conducting the children to multiple causes health risks. Data showed by Watson, et al., (2017) through 23% of scholars gained up to 5% of their body weight during their first year in school. Set through the excess of body composition as an issue associated with activities of daily living. Admit by (Heneghan, et, al., 2017) via school life physical limitations. Confirmed via this study founded on LSD Table 4

and the correlation analyse between Brain Breaks activity and other components of Fitness Gram' battery test. Set in Table 5.

Table 4: Show the Multiple Comparisons between Brain Breaks 20mn compared to other investigations.

Dependent Variable	(I)	(J)	Mean Difference (I-J)	P≤0.05
Aerobic capacity	**20mn**	**One hour**	1.31	0.82
		Recreation	1.34	0.28
		Without PA	3,48*	0,00
Body composition	**20mn**	**One hour**	1,14*	0,00
		Recreation	1,28*	0,00
		Without PA	2,68*	0,00
Muscular strength upper body	**20mn**	**One hour**	3.42*	0.00
		Recreation	2.55*	0.00
		Without PA	4.98*	0.00
Muscular strength lower body	**20mn**	**One hour**	3,44*	0,00
		Recreation	3,48*	0,00
		Without PA	4,66*	0,00
Endurance Abdominals	**20mn**	**One hour**	2,86*	0,00
		Recreation	2,84*	0,00
		Without PA	3,95*	0,00
Flexibility	**20mn**	**One hour**	3,64*	0,00
		Recreation	3,82*	0,00
		Without PA	5,82*	0,00

***. The mean difference is significant at the 0.05 level.**

Admitted by our hypothesis via the indication confirmed by (Alicia C. S and Laura F. P, 2018) to find new ways to promote PA and encourage behaviour change to increase participation in PA among children by making it interactive, fun and engaging in the school environment.

Table 5: Present the Pearson correlation between Brain Breaks 20mn and other interventions according to physical levels calculate based on 'Fitness Gram' battery test.

Pearson Correlation	One hour	Recreation	No ABPA	20mn
Aerobic capacity	0.86**	0.84**	-0.96**	0.98**
Body composition	0.74**	0.78**	-0.86**	0.96**
Muscular strength upper body	0.74**	0.76**	-0.82**	0.88**
Muscular strength lower body	0.82**	0.84**	-0.96**	0.92**
Endurance Abdominals	0.82**	0.85**	-0.94**	0.94**
Flexibility of the lower back and hamstring muscles	0.86**	0.88**	-0.94**	0.96**
N=180	P≤0.05**. Correlation is significant at the 0.01 level (2-tailed)			

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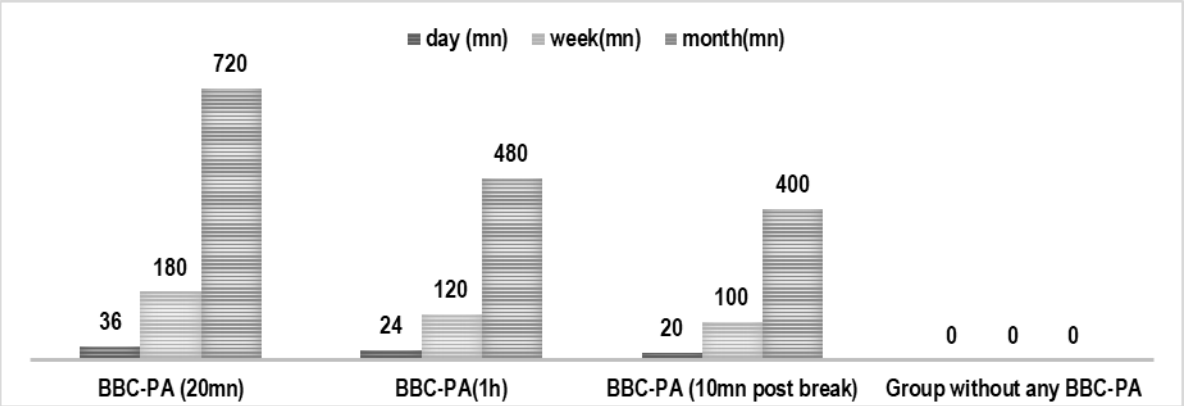
Suggests via this study in favour of model 3mn BBC-PA combined after etching 20min static classroom seat, records as an optimal level with the demanded daily BBC-PAPA. Flowed by BBC-PA model one hour, at last, practised the BBC-PA 10 minutes recreational break program. Finding supported by (Alicia, et al., 2018) within physical activity time needs in primary school. Which necessity to be implicated around 30 to 60 minutes per day as moderate physical activity.

Discussion

Figure 1. Present protocol used based on PA time investigated.



The primary objective of this study was to test the influence of Brain Breaks® Physical Activity as solutions to break up long sitting time classroom Algerian Primary Curriculum (Mohammed, Z, 2017). Studied in the present investigation below 3 pilots, models of Brain Breaks® Physical Activity programs. Their outcomes in pre-test and post-test were controlled by a group with no active break daily programs. Our results confirm the judgment admits by (Glapa et, al., 2018) that primary school requires to imply at last 30 to 60 minutes of physical activity per day.

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Confirm by (Krause, et, al., 2014) via the active video-based physical, as a popular alternative to lifetime PA than traditional sports exercises. Recorded via this study in the profits of model 3mn BBC-PA implies after each sitting 20mn classroom. Followed by one hour at least 10 minutes of recreation breaks practised. Appreciate in the interest of Brain Breaks® program as a new, efficient approach to increase children's levels of PA in school environments (Watson, et al., 2017). Admit by (Chin, et al., 2012) as an approach specifically designed for the classroom settings to motivate students to enhance their PA at theoretical schoolings and provide a platform not only to be physically active during breaks. But also learn new motor skills, coordination, dance, movements of highly integrated functional muscle groups in movement activity, language, art, music, and different cultures (Nancy, et al., 2005).

Although the main finding of this study supports that low PA-based school, is a common feature of the metabolically unhealthy obese phenotype, PA or exercise programs could play an influential role in this population (Virginia, et al., 2016). Approve by physical activity (PA) guidelines of the World Health Organization (WHO), which recommend moderate- or vigorous-intensity PA for 150- or 75-minutes weekly, respectively. Evidence claimed by (Feng, et al., 2018) through weight gain preventing that required 150 minutes of moderate-intensity PA or lesser amounts of vigorous-intensity PA per week. Allow in this study by 20min Brain Breaks Classroom-Based Physical Activity. Repeats after every 20 minutes of prolonged static setting. Indicate in this study as a suitable program to enhance PA levels among Algerian Primary Curriculum. Support by evidence recorded via reducing of thoracic mobility in individuals, who spend >7 hours/day sitting and <150 min/week of physical activity (Bania, et al., 2016). The case of scholars with no physical activity allied to prolong static sitting in a classroom associated with cardio-metabolic health risk markers (obesity, blood pressure, cholesterol, and insulin), fitness, cognitive development and academic achievement. In the opposite of Brain breaks as police recognised as short mental and physical breaks incorporated in intervals during classroom instruction for bouts, positively affect academic results allied

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with increased of PA (Heneghan, et al., 2017). Well-known in literature as safe practice, education-based intervention to reduce sitting time associated with a decrease in functional and physical activities (Zerf M, 2019). Appreciated in this study by the increments of time-frequency break program practised as based school physical fitness amount of health benefits, including the prevention of chronic diseases, diabetes, obesity, and some cancer types (Feng, et al., 2018).

4. CONCLUSION

The study showed that the level of PA is proportionally higher when children may play active based physical activity. Records in the benefits of BBC-PA 3mn for each 20min prolonged static sitting in a classroom. Claims as the suitable time-frequency Brain Breaks Physical Activity program recommends for everyday Algerian Primary Curriculum. Accord in this study as a useful tool to promote the recommended PA among our school establishments.

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