# Classroom Routine Frequency and their Timing practice as Critical Factor to Build the Recommended Primary School Active Break Program Frecuencia de rutina en el aula y su práctica de tiempo como factor crítico para construir el programa de descanso activo de la escuela primaria recomendado 

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#### Abstract

This study invests Active Break Physical Classroom Routine (ABC-PA) as a solution to break up Algerian time sitting which surpass 6 hours a day. Encouraged in this study by video-based physical activity program, applied for 4 weeks under two frequency and times modalities. A group with 2 min for every 20 min classroom sitting (ABC-PA-20-min). Recommended by physical medicine and rehabil itation to rest postural positioning, after every 20 to 30 minutes of prolonged static selting Versus a group with 5 min at the beginning of every 2 -hours of classroom-sitting (ABC-PA-2h). Recommended by primary active break programs through $3 \times \quad 5$-min of moderate-intensity per day to help increasedaily PA. To examine their effectiveness, our sample included 2 teachers 4 -grade class levels boys' school, 64 boys, 36 in each class. Controlled by 34 of their peers, engaged in sports combat association with a rate of one hour per day. Power by Fitness-G ram battery as a comprehensive health-related fitness education program, applied before and after the realizations of two programs. Based on the study design protocol and statistical applied. O ur results confirmed active breaks' classroom proposed as an optimal strategy to reduce sitting time and promote the $30 \mathrm{~min} /$ day school physical activity guidelines. Their comparisons with recommending 60 min a day. Supported the use of ABC-PA- 2 min for every 20 min compared toABC-PA-5min for each 2 h . Admit in this study as more suitable intervention able to reduce inactivity and gain the goal of 60 min daily amongAlgerian primary school children.


Keywords: classroom-based physical activity, physical activity guidelines, exercise, break program, school.
Resumen: Este estudio invierte la rutina de descanso físico en el aula activa (ABC-PA) como una solución para romper el tiempo de argelia sentado que superalas 6 horas al día. Animado en este estudio por un programa de actividad físicabasado en video, aplicado durante 4 semanas bajo dos modalidades de frecuenciay tiempos. Un grupo con 2 minutos por cada sesión de clase de 20 minutos (ABC-PA-20-min). Recomendado por la medicina física y la rehabilitación para descansar el posicionamiento postural, después de cada 20 a 30 minutos de configuración estática prolongada. Frente a un grupo con 5 minutos al comienzo de cada 2 horas de clase (ABC-PA-2h). Recomendado por los programas de descanso activo primario a través de $3 \times 5$ minutos de intensidad moderada por día para ayudar a aumentar la PA diaria. Para examinar su efectividad, nuestra muestra incluyó 2 maestros de 4 grados de la escuela de niños, 64 niños, 36 en cada clase. Controlado por 34 de sus pares, participan en una asociación de combate deportivo con unatasa de una hora por día. Labatería Power by Fitness-Gram como un programa integral de educación para la salud relacionada con la salud, aplicado antes y después de la realización de dos programas. Basado en el protocolo de diseño del estudio y estadística aplicada. Nuestros resultados confirmaron que el aula de descansos activos se propuso como una estrategia óptima para reducir el tiempo de sesión y promover las pautas de actividad físicaescolar de 30 minutos/ día. Suscomparaciones con recomendar 60 minutosal día. Admitió el uso deABC-PA2 min por cada 20 min en comparación conABC-PA-5min por cada 2 h . Admita en este estudio como una intervención más adecuada capaz de reducir la inactividad y alcanzar el objetivo de 60 minutos diarios entre los niños de primaria deA rgelia. Palabras clave : actividad física en el aula, pautas de actividad física, ejercicio, programa de descanso, escuela.

## Introduction

Physical inactivity is one of the determinants of overweight and obesity and a risk factor for developing chronic non-transmissible diseases (M aría, et al., 2018). Recommending the children and adolescents to

[^0]accumulate đ least 60 min of PA each day, composed of activities that stimulate both the cardiovascular and musculoskeletal systems, at both moderate and vigorous intensities (Nicole, et al., 2019).

Hypothesises in this study by the implementation of Active Break Physical Classroom Routine (ABC-PA) to enhance the recommended physical activity during the school day (Glapa, et al., 2018). Admitted by topical studies as a strategic opportunity to promote physical
activity during the school day (Harold, et al., 2020). Recommended recently through $3 \times 5$ minute of moderate-intensity (Alicia and Laura, 2018). Integrated into their classroom routines, daily (Heneghan, et al., 2017). Invested in this study through model 5 min at the beginning of every 2 -hours of classroom-sitting (ABC-PA-2h) for a total of 15 min per day video-based physical activity (Feng, et al., 2018) set in figure 1. Controlled by the same program with a model of 2 min invested after every 20 min classroom sitting (ABC-PA-20-min). Advised by physical medicine and rehabilitation to rest postural positioning after every 20 to 30 minutes of prolonged static setting (James, et al., 2011).

Appraised in this study as minor modifications in terms of frequency, duration, and intensity. Inspected in this study as a critical factor to build the recommended primary school active break program. Claim by researchers in this area through the intervention period and objective measure of physical activity to determine intervention fidelity and effects on overall physical activity levels, according to (Watson, et al., 2017).

Advocated in this study by a control group with 60 min of PA each day to establish the recommended frequency, time implications and intensity optional to promote the recommended physical activity among primary school (Chin, et al., 2012) and (Glapa, et al., 2018).

Power by Fitness-Gram battery test as a comprehensive heal th-related fitnesseducation program [8]. Designed by Cooper scientists based on age and gender to promote physical activity with the vision of improving the efficiency and effectiveness of school-based physical education (Kenneth, et al., 2016). Admit in similarities as the most battery used in many countries to prevent non-communicable diseases arising from an unhealthy lifestyle (Jacqueline and Dan, 2014). Implicated in the present study to predict the optional intervention period and intensity that can meet the recommended 60 minutes of moderate- to vigorousintensity physical activity daily (Hills, et al., 2015). M ore suitable in the case of school environments to improve child health status, functional abilities and sitting time adjustment that surpasses6 hourspre-day in our primary schools(M ohammed, Z, 2017). Reported in similarities as a risk factor for various negative health outcomes like obesity, blood pressure, high blood sugar, excess body fat around the waist and abnormal cholesterol levels that make up metabolic syndrome. Requesting from scientists' numerous investigations to understand the
best strategies that can reduce inactivity and contribute to reach the goal of 60 min daily (M ichelle, et al. , 2020).

## M aterials and M ethods

To determine the optional total time and daily frequencies classroom physical activity breaks as decisive factors to build the recommended Primary School Active Break Program. N eeded to meet the recommended 60 minutes of daily physical activity. This experimental study tests the efficacy of the two model's classroombased physical activity. Apply toward four-week by our two experimental groups. Using the pull-ups, push-ups, lunges, and squats as easy workouts that involve only 24 sets or higher repetition schemes (12-20 repetitions) according to N ational Academy of Sports Medicine (M icheal, A. C and National A cademy of Sports M edicine, 2008). Shown in Figure 1 as exercises content and Figure 2 as time and frequency applications.

Implicated in this study below two modalities (physical medicine and rehabilitation versus primary active break programs):

Physical medicine and rehabilitation:
The model consists of 2 min after every 20 minutes of static classroom long sitting (ABC-PA 20 min ). Requesting the sampleABC-PA (20min) to repeats the program set in Figure 1. By 1 repetition for every $20-$ minute classroom static sitting, equivalent to 6 minutes per hour and 36 minutes per day.

Primary active break programs:
Themodel consists of 5-minABC-PA (2h) performed at the beginning of every 2 -hours theoretical course. $U$ sing the program set in Figure 1. By 1 repetition for every 2 hours, equivalent to 3 repetitions a day and a total of 15 minutes per day.

For evaluation, we based on Fitness-Gram battery test assignificant health-related physical fitness batteries. Established by the Cooper Instituteto assess the student's fitness levels associated with everyday school physical activity or inactivity (Cooper Institute for Aerobics Research, 2017).

## Participants

The samples included 2 teachers and 100 male students of 4-grade class levels boys' school, 64 experimental groups, 36 in each class. Controlled by their peers, representing one trainer and 34 males engaged in sports combat association at the rate of one hour per day. All participants provide their written consent to attend the study. Their characteristics before
experimentation beginning, are shown inTable 1.
The unique role of two teachers, who voluntarily accepted to be engaged in this contribution, was limited through the exposition of video content and the encouragement of their students to repeat their daily base-physical-activity proposed. For students, we insisted on the same levels (age-gender-grade - school- social class- health and mobility). For the control group, we base on the same levels (age-gender-grade - schoolsocial class- health and mobility) with experimental groups and their presence during the experience.

The ethics committee Physical Education Institute, Hassiba Benbouali, University of Chlef had also given its approval under the code'25/ EPS/ 2017’.


## Test Items and Materials

The test battery consisted of Fitness Gram battery test. Recently identified as a significant battery to assess health-related fitness. Recorded from the personal aerobic capacity (VO 2max) accomplishments. Body Composition (BMI). Muscular strength (U pper body M.S.U.B - and lower body - M.S.L.B). Abdominal endurance (E.A) and flexibility (F. L. B).

- Aerobic capacity (V02max): We based on the reduced Cooper test. The child runs or walks around a marked rectangle measuring $9 \times 18 \mathrm{~m}$ (the size of a volleyball field) for 6 minutes. Both running and walking are allowed. The test item score remains the distance
traversed in 6 minutes (measured in meters).
- Body Composition (BMI): webased on body massindex (calculated from height and weight).
- M uscular strength upper and lower body, endurance Abdominal and flexed trunk:
- Muscular strength upper body (M.S.U.B): we based on pushing a medicine ball ( 1 kg ) with two hands as far 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) keeps the distance achieved (measured in meters).
- M uscular strength of the lower body (M.S.L.B): we based on Vertical Jump Test. The student jumped vertically as high possible. Using both arms and legs to assist in projecting the body upwards.
- Flexibility (F. L. B): we based on tests sit and reach to measure lower back and hamstring muscle flexibility. The score is recorded to the nearest centimetre or halfinch. As the distance reached by the hand.
- Endurance Abdominal (E.A): we based on Abdominal Curl-Sit Up endurance tests typically conducted over a one-minute period and measure themaximum numbers of correctly performed sit-ups in that time.

Procedure
All samples were trained and evaluated individually. Each test item was clarified and demonstrated before the child started. Tested before and after the realisations of the active break programs proposed for each sample. Practice by experimental groups based on video exercises. Set in Figure 1 as content and Figure 2 as $\mathrm{ABC}-\mathrm{PA}$ frequencies with their complimentary time proposed. For the progress of participants, we based on child max repetitions and relaxations estimate in postexercise to improve strength, endurance, flexibility (Jacqueline and Dan, 2014).


## Data Analysis

The collected data were tabulated and statistically analysed using IBM SPSS Statistics 16.01 (Armonk, NY, USA). Computing arithmetic average (X), standard deviation (SD), ANOVA 0 ne-Way and LSD as the sample's entire multiple comparison tests (M asanovic, et al., 2019). The results were considered significant at p 0.05 .

## Results

O ur samples are not homogeneous in all pre-test Tables 1 . Support by the significance of ANOVA one way in the pre-test in the interest of group control with PA ( 60 min ) confirmed by LSD in all multiple comparisons pre-test practised at $P$-value 0.05 . Shown by the programme SPSS more significant at P -value 0.01 . The inverse of LSD post-test mentioned inTable 2 where the significance between the control group and ABC-PA ( 20 min ) are significant at $P$ value 0.05 the opposite of ABC-PA (2h) that are significant at P -value 0.05 .

| ANOVA one way |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Variables | $\begin{gathered} \text { Total } \\ \mathrm{n}=98 \end{gathered}$ |  | $\begin{gathered} A B C-P A(20 \mathrm{~min}) \\ n=36 \end{gathered}$ |  | $\begin{gathered} \mathrm{ABC}-\mathrm{PA}(2 h) \\ \mathrm{n}=36 \end{gathered}$ |  | W ith PA ( 60 min ) $\mathrm{n}=34$ |  |
| $\begin{aligned} & \text { V0 2max } \\ & \text { F at } p=0.05 \end{aligned}$ | $43.98 \pm 5.03$ |  | $43.72 \pm 2.65$ |  | $42.08 \pm 2.54$ |  | $45.79 \pm 2.78$ |  |
| $\begin{aligned} & \mathrm{BMI} \\ & \mathrm{~F} \text { at } p=0.05 \end{aligned}$ | $22.44 \pm 2.05$ |  | $22.24 \pm 1.06$ |  | $23.28 \pm 2.82$ | $\pm 2.82$ | $21.68 \pm$ | 2.24 |
| $\begin{aligned} & \text { M.S.U. B } \\ & \text { F at } p=0.05 \end{aligned}$ | $2.66 \pm 2.42$ |  |  | $87 \pm 1.47$ $F=40.42$ | $2.32 \pm 2.65$ | $\pm 2.65$ | $3.22 \pm$ | 2.62 |
| M.S.L. B <br> F at $p=0.05$ | $11.36 \pm 1.44$ |  |  | $\begin{array}{r} 62 \pm 2.27 \\ F=31.22 \end{array}$ | 10.2 | $\pm 2.15$ | $12.89 \pm$ | 2.44 |
| E. A <br> F at $p=0.05$ | $9.12 \pm 2.42$ |  |  | $\begin{aligned} & 36 \pm 2.04 \\ & F=33.33 \end{aligned}$ | 8.33 $p=0$. | $\begin{aligned} & \pm 2.44 \\ & 04 \end{aligned}$ | $10.84 \pm$ | 3.36 |
| F. L. B <br> F at $p=0.05$ | $14.84 \pm 3.66$ |  |  | $14.22 \pm 1.94$ | $13.08 \pm 2.41$ |  | $16.78 \pm 1.33$ |  |
| LSD |  |  |  |  |  |  |  |  |
| DependentVar | iable |  |  | (J) |  | Mean Dif | ference ( $\mathrm{I}-\mathrm{J}$ ) | $\mathrm{P}=0.05$ |
| V02max | W ith PA (60 min) |  |  | ) $\mathrm{ABC}-\mathrm{PA}(20 \mathrm{~min})$ |  | $2.14{ }^{*}$ |  | 0.04 |
|  |  |  |  | ABC-PA |  |  | 68** | 0.00 |
| BMI | W ith PA ( 60 min ) |  |  | ) $\mathrm{ABC}-\mathrm{PA}(20 \mathrm{~min})$ |  |  | $73^{*}$ | 0.02 |
|  |  |  |  | ABC-PA |  |  | $22^{* *}$ | 0.00 |
| M.S.U. B | W ith PA ( 60 min ) |  |  | ) $\mathrm{ABC}-\mathrm{PA}(20 \mathrm{~min})$ |  |  | $48^{* *}$ | 0.02 |
|  |  |  |  | ABC-PA |  |  | 18** | 0.00 |
| M.S.L. B | W ith PA ( 60 min ) |  |  | ABC-PA | min) |  | $36^{*}$ | 0.04 |
|  |  |  |  | ABC-PA |  |  | 48** | 0.00 |
| E. A | W ith PA ( 60 min ) |  |  | ABC-PA | min) |  | $21^{*}$ | 0.04 |
|  |  |  |  | ABC-PA |  |  | $27^{* *}$ | 0.00 |
| F. L. B | W ith PA (60 min) |  |  | ABC-PA | min) |  | $78^{*}$ | 0.03 |
|  |  |  |  | ABC-PA |  |  | $56^{* *}$ | 0.00 |

Established by Fitness Gram battery test in the benefits of control group ( 60 min ) flowed by groupABCPA (20 min) at last group ABC-PA (2h). Confirmed by LSD post-test in the interest of children accumulate at least 60 min of PA each day (Nicole, et al., 2019). Results support the encouragement of physical activity facilities and opportunities, under the school environment by encourages teenagers to be active around day school or after time school. Below its administration, that allows $60+$ minutes per school day for physical activities

$\Perp A B C \cdot P A(2 \mathrm{~h}) \quad \mathrm{ABC} \cdot \mathrm{PA}(20 \mathrm{~min})$
Figure 3. Present $A B C-P A$ arithmetic mean of experimental groups in post-test
(Reguig, et al., 2019).
W hereas based on differences in arithmetic means records between ABC-PA post-test set in figure 3.0 ur resultsare in the interestsofABC-PA ( 20 min ) compared to ABC-PA (2h). Interpret due to the total times of interventions and frequencies. Shown in Figure 2 in the interest of approach commended by physical medicine and rehabilitation studies, permitting a total of 36 min a day with 12 frequencies compared to 15 min with 3 frequencies allocated by Primary active break programs to increase school-based physical activity. Understand by some authors through a total of $30 \mathrm{~min} /$ day classroom-based activity school (Jordan, et al., 2015). Admitted in their studies as guidelines to structure the valued classroom-based activity school. Support in this study by the effectiveness of physical medicine and rehabilitation studies instructions. Claims to be done after every 20 or 30 minutes long sitting, as essential physical tasks to improve body alignment, preventing posturing, appropriating pelvic adjustment and functional fitness necessary for the well-being of the upper body and low back flexibility. Estimated in this study as a beneficial time standing more adequate with the total time ABC-PA modality (total time- frequencies). Agreed by fitness heal th public studies as policymakers for improving body everyday living activities (Feng, et al., 2018).

## Discussion

This study evaluated the feasibility and effectiveness of $A B C$-PA interventions, in terms of physical
activity level. Conducted to estimate the best strategies that can reduce inactivity and contribute to reach the goal of 60 min daily (Michelle, et al., 2020).

Appraised in thisstudy under two modalities, Physical medicine and rehabilitation which based its investigation on the rest of postural positioning, after every 20 to 30
minutes of prolonged static setting versus the short ABC-PA less than 5 -min with 3 repetitions per day (Aliciaand Laura, 2018). Admitted as required frequency and intensity (Watson, et al., 2017) to meet the recommended 60 minutes daily physical activity that enhances growth and development of children (M antzaria, et al., 2019). Commended by Physical Activity Counselling in Primary Care Settings as the amount of physical activity needed to prevent weight gain and the development of obesity, especially among Algerian primary schools seen they are not meeting the 60 min of PA each day (Alicia and Laura, 2018).

According to the statistical apply and study design. Our results highlight all the ABC-PA time's and frequencies modalities proposed. Admit as the ideal settings recommend for Algerian educational systems to promote meaningful classroom routine bodily activity, considering the results archived by two experimental groups in the post-test.

Approved in this study by the validity of FitnessGram, as a comprehensive battery of health-related fitness assessments (Cooper Institute for Aerobics Research, 2017). U sed in thisstudy to inspect the optional model able to meet the suitable health-related fitness of 60 min of PA each day. $O$ ur results confirmed the recommended 60 min of PA each day, as multiple short and long-term health-related fitness benefits. Support by scientist's literacy through brain development, bone strength, muscle control, balance and coordination, and helpsto achieve and maintain ahealthy weight (M ichelle, et al., 2020). As well as cardiovascular, metabolic and musculoskeletal health, and plays a critical role in the prevention and treatment of non-communicable diseases (M aría, et al., 2018). Admitted in this study by results, records by group controls in the pre-test or post-test. Flowed by ABC-PA Physical medicine and rehabilitation recommendations to be done after each 20 to 30 minutes long static sitting. M aintained in this study owed to its frequency and the total time that surpasses $30 \mathrm{~min} /$ day classroom-based activity. Recommended as comprehensive school physical activity programs guideline (Jordan, et al., 2015). Estimated in this study as fusible total time activities sending desks able to improve energy expenditure, cardio-metabolic outcomes and amount of a child'sclassroom long sitting (Virginia, et al., 2016), which surpass 6 hours per day at our primary schools, accordingto (M ohammed, Z, 2018).

Upkeep by Krause, et al., as PA promotion in the school setting could be a good strategy aimed at contrasting sedentary behaviours and improving physical
skills and fitness (Krause, et al., 2014). Including the improves in functional capacity, and skeletal muscle capacity (cardiorespiratory endurance, strength, flexibility, muscular endurance, reaction and movement times, balance) (Türk, et al., 2017).

Whereas their applications in the classroom compared to the control group modality request more frequency and intensity that could improve their feasibility and effectiveness (Watson, et al., 2017).

Support in this study by the feasibility of ABC-PA 2minute, frequently employed after every 20 minutes per day classroom staic-sitting. Tolerated by their total additional time and frequencies implicationsaim as policy marked to structure the adequate classroom-based physical activity that can meet the 30 min / day school physical activity guideline (Jordan, et al., 2015). Advocated in this study by its frequency and time applications 6 min by one hour, 36 min , equivalent to 6 minutes per hour and 36 minutes per day in comparison to 3 repetitions a day and 15 min assured by ABC-PA (2) placed at the beginning of every two hours.

Therefore, as a limit, we agreeActive Break physical programs are good strategy aimed at contrasting sedentary behaviours and improving physical skills and fitness (Guy, et al., 2017). Encouraged by results, records by experimental samples in the post-test compared to their results in the pre-test. Whereas compared their feasibility with the 60 min recommended by national physical activity guidelines, guides us to recommend other studies within the last 60 min classroom-based physical activity. Although based on $30 \mathrm{~min} /$ day classroom-based activity school as a guideline, we approve the use of Physical M edicine and Rehabilitation studies subjections. As guidelines to structure the optional and recommended classroom-based physical activity. Reports via this study as a requested frequency and time physical activity policy to build the recommended Primary School Active Break Program, able to overall energy expenditure (M ohammed, Z, 2017), sitting time and cardio-metabolic outcomes (Mantzaria, et al., 2019). Compared to 15 min assured by Primary active break programs studies (Glapa, et al., 2018).

## Conclusions

Highlight the results of our experimental groups in the post-test compared to their results in the pre-test. O ur advice to our academic system to recommend the use of active break programs. Admitted in this study by
the modality proposed by Physical medicine and rehabilitation not $3 \times 5$-minute of moderateintensity subjected by Primary active break programs. Advocated in the present study owed to their time applications and frequency that promote the $30 \mathrm{~min} /$ day school physical activity guideline. Admit in this study by the feasibility and the effectiveness ABC-PA 2minute, frequently employed after every 20 minutes per day classroom static-sitting, Estimate to reach the total time implications standing or working about 36 min a day. Compared to 15 min assured by ABC-PA (2) placed at the beginning of every two hours.

## Acknowledgements

The results confirmed that classroom-based physical activity at school must meet the 30 min / day school physical activity guideline. M ore suitable in the present study by Physical medicine and rehabilitation break program protocol compared to3 $\times 5$-minute of moderate-intensity proposed by Primary active break programs.

## Conflicts of Interest

The authors declare there is no conflict of interest.

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