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HEALTH PROMOTION IN PRIMARY SCHOOL THROUGH ACTIVE BREAKS: WHAT TEACHER TRAINING?

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Abstract:
Educational research is increasingly focusing on new areas of interest, including programs and initiatives aimed at promoting health during childhood, reducing sedentary behaviors, and encouraging physical activity, thereby expanding children's learning opportunities. In the school setting, particular attention is given to Active Breaks (AB), which, when introduced within lessons, allow for the interruption of long periods of sitting in the classroom. In line with the main themes of the National Guidelines for the Curriculum (MIUR, 2012), this contribution aims to follow three main directions: combating sedentary behavior; methodologies, classification, and selection of motor tasks and intervention strategies; and teacher training to support the implementation of these practices. Today, more than ever, short physical activity breaks represent a strategy that can be effective in addressing the issues related to poor physical fitness and children's sedentary lifestyles.

Keywords: active breaks; teacher training; health promotion

1. Introduction

Despite the extensive Italian and international literature documenting the numerous benefits associated with physical activity, current scientific evidence points to alarming data regarding the increase in sedentary habits and conditions such as overweight, obesity, and musculoskeletal disorders among children and adolescents. More and more children and young people are experiencing an energy imbalance, where energy intake exceeds energy expenditure (Ali et al., 2024) due to poor lifestyle choices. This trend could serve as a predictor of significant long-term health consequences.

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Therefore, there is a growing need for not only more interventions aimed at promoting regular physical activity and reducing the widespread sedentary behaviors among youth (Bull et al., 2020), but also to implement activities that are well-supported methodologically, in order to promote an improvement in the educational process through physical-motor experiences.

Following this approach, motor activities in primary schools represent a valuable and unavoidable area for the integration of experiences lived through the body and movement.

In recent years, various multicomponent interventions have been developed to increase opportunities for physical activity, through the adoption of practical and effective strategies to promote healthier child development (Bernal et al., 2020). Among the interventions implemented in schools, Active Breaks (AB) represent one of the most integrated teaching strategies in the educational context. Thanks to their ability to effectively increase motivation and engagement levels (Jiménez-Parra et al., 2022), these strategies can also improve classroom behavior and student learning (Mavilidi et al., 2020).

However, despite their potential, the integration of Active Breaks in teaching often encounters several barriers. Among the main challenges, teachers highlight the lack of time and space for performing Active Breaks, as well as the lack of teaching resources or concerns about the limited participation of students (Watson et al., 2019). Additionally, these interventions have been questioned due to disagreements among teachers about interrupting disciplinary activities and the potential interference with the teaching-learning process.

This issue arises when Active Breaks are mistakenly interpreted as interventions detached from the curriculum, isolated from the teaching-learning process, and erroneously regarded as a distraction from learning. Therefore, it is essential to redefine how Active Breaks can be implemented, emphasizing their educational value and reinforcing the importance of a structured methodological approach. In this way, an appropriate structure can generate active student engagement and reduce the likelihood of distraction (Centre for Education Statistics and Evaluation, 2020).

To further enhance and enrich interventions aimed at promoting physical activity in schools, it is essential for teacher training to provide practical and useful guidelines for creating a teaching repertoire of effective strategies that can harmoniously integrate physical activity with the teaching-learning process.

This contribution aims to provide teachers with guidelines to ensure quality physical activity proposals through a portfolio prototype that each teacher should have in order to collect a repertoire of useful proposals for planning Active Breaks integrated into the school curriculum.

1.1 Reference Models

The World Health Organization (WHO, 2020) recommends that children aged 5 to 17 engage in at least 60 minutes of moderate to vigorous physical activity per day, limit sedentary behaviors, and reduce screen time. However, most children and adolescents

do not meet these guidelines, exposing them to the risk of concerning consequences related to the onset of non-communicable diseases, cardio-metabolic, musculoskeletal, and psychosocial conditions (Faigenbaum et al., 2018).

In the European context, the Childhood Obesity Surveillance Initiative (COSI) places Italy among the countries with the highest rates of excess weight (WHO,2024). In fact, as part of the Okkio alla Salute program, the Italian version of COSI, which monitors the prevalence of overweight and obesity among primary school children (2022–2024), data shows that in Italy, 19.8% of girls and 18.3% of boys are overweight, while 9.4% of girls and 10.3% of boys are obese (WHO,2023).

The negative effects and risks related to this scenario encourage the design of new interventions and initiatives aimed at promoting health and healthy lifestyles.

The school context emerges as one of the most favorable environments for promoting interventions to expand, increase, and strengthen opportunities for physical activity (Beets et al., 2016). Thus, the reference to the Active Learning paradigm becomes valuable, which interconnects physical activity proposals within the curriculum, PA, and learning methods through the body (Bailey et al., 2023).

A recent literature review focused on investigating interventions designed to increase physical activity in different school contexts across Europe highlighted the following most commonly used practices (Porter et al., 2024):

- Physical activity interventions anchored to the curriculum;
- Active learning experiences or outdoor active learning proposals;
- Active breaks/recreational activities;
- Active games;
- Active initiatives and movements;
- Physical activity interventions before/after school;
- Assignment of active homework.

Among the reference models, the main frameworks can be identified in the Swiss "School in Movement" framework, structured and designed to introduce the culture of movement within the school context and aimed at motivating students to adopt an active lifestyle, accompany the teaching-learning process through motor experiences, and promote movement awareness.

The planned implementation involves various areas such as family, school, and leisure time and considers the introduction of activities related to physical activity practice before/after school, during the home-school commute, and domestic activities (UFSPO, 2016).

Therefore, in the context of Creating an Active School (CAS), there would be numerous components to consider in order to establish a theoretical framework that helps schools facilitate the implementation of physical activity (Daly-Smith et al., 2020):

1) internal school factors;
2) teacher training;
3) the role of national and international political organizations.

Another model is the Comprehensive School Physical Activity Program (CSPAP), designed to ensure that children reach 60 minutes of physical activity per day (Castelli,

2014). This model is based on the assumption that an active student is more predisposed to the learning process and includes physical activity in the classroom and before and after school, in addition to physical education hours and involving educators and family members.

In Italy, the reference framework aligns with the Schools for Health in Europe (SHE) initiative, which emphasizing the development of knowledge, motor skills, attitudes, and values related to health. It also encourages self-reflection on personal health and actively involves school management, teachers, students, parents, and local administrators in promoting a holistic approach to health and well-being (WHO, 2021).

Similarly, the Health Oriented Pedagogical Project (HOPP), proposed by Fredriksen et al. (2017), aimed to reduce cardio-metabolic risk factors in primary school children by increasing physical activity within the pedagogical approach. Among the strengths of the model, improvements were noted in executive functions and school performance.

Likewise, the DADA (Didactics for Learning Environments) model, introduced in Italy in the 2014/2015 school year, involves moving the class group to different learning environments for different subjects, recognizing the important role of movement in the teaching-learning process. Schools adhering to the DADA model transition from a transmissive knowledge approach to a more student-based one, which includes forms of active learning and co-constructed activities to foster the acquisition of skills (Fattorini, 2023).

Furthermore, a program oriented towards proposing innovative strategies at the behavioral, pedagogical, and environmental levels in both school and home contexts (with active homework and newsletters for parents) is the TransformUs Active Breaks (TAB) program (Natalie J. et al., 2024). This model aims to encourage children's physical activity and further engage them in learning. Among the most tested strategies, the model recognizes active breaks as evidence-based interventions, which can be classified according to their functions, and are capable of enhancing teaching and learning.

2. Active Breaks

According to the American Academy of Pediatrics (AAP), the recess period is the most favored time of the school day for most children.

The Centers for Disease Control and Prevention (CDC - USA) have defined recess as "*regularly scheduled periods within the school day for unstructured physical activity and play*" (Murray & Ramstetter, 2013). This recognizes recess as a fundamental opportunity to increase students' physical activity. Among the most common strategies to increase children's opportunities for physical activity, Active Breaks (AB) are identified as an educational and didactic approach capable of increasing students' motor engagement during school hours (Masini et al., 2022).

Active Breaks (AB) are identified as brief intervals of physical activity (7-10 minutes) that can be carried out at different times during the school day. These interventions can be introduced within lessons, linked to subject-based learning (Bailey,

2023), between two consecutive lessons, or during recess, with the goal of combating the long periods of sedentary behavior that characterize the school day.

Among the proposals, various activities and movement forms can be combined to support lesson content and create moments of physical activity that help reinforce specific concepts or skills in the curriculum. The interruption of lessons should not and cannot be seen as a concern for teachers. Scientific literature highlights how physical activity breaks between educational activities favor student participation, with effects on behavior and attention levels during subsequent lessons (Maiztegi-Kortabarria et al., 2024; Zask et al., 2022), and generate a motivational climate conducive to learning (Monacis et al., 2020), in addition to providing positive effects on many aspects of physical fitness (Yudanto et al., 2024).

In fact, according to the results of some studies, primary school students' enjoyment of Active Breaks is quite high (Gani, Yudanto, Hendra, & Willy, 2023). Therefore, if the implementation of Active Breaks can generate benefits in terms of enjoyment during physical activity (Boutios et al., 2021), it is also plausible that it increases the likelihood of students engaging in physical activity outside of school hours. Active Breaks (AB) can be adapted and implemented in a variety of ways to suit the specific needs of educational contexts and effectively promote physical activity. Some possible adaptations include:

- AB related to motor learning objectives;
- AB of varying intensity and execution difficulty;
- AB linked to curricular learning.

An additional classification divides interventions into:

a) non-curriculum-based,
b) curriculum-based, and
c) cognitively challenging (Salmon et al., 2020).

The TAB model (Natalie J. et al., 2024) also presents a classification of Active Breaks, distinguishing them into:

- Structured – physical activity integrated into the lesson, where students respond to questions through movement;
- Transition – active movement during specific phases of the lesson;
- Management – lesson interruptions with physical activity for 20-30 minutes, either linked to the curriculum or not;
- Energizing – physical activity of medium-high intensity;
- Learning-based – physical activity aimed at consolidating knowledge.

The possibility of linking Active Breaks to the school curriculum represents an opportunity to involve both the quantitative aspect of physical activity (increasing daily motor engagement time) and the qualitative aspect, related to the learning process of students. This approach establishes a connection between the subject content being taught and what will be presented in subsequent lessons. In fact, Active Breaks allow for deep cognitive-motor connections and leverage the intrinsic potential of motor activity, which connects motor, organic, emotional, cognitive, and relational factors. For example, the concepts of space-time-quantity-quality and their reciprocal relationships are

inevitably applied through motor and postural patterns. Additionally, the possibility of designing Active Breaks based on different execution variants of movement, which are accessible, inclusive, and age-appropriate for students (games, activity sheets), is emphasized.

To implement and promote the integration of Active Breaks in schools, the Centers for Disease Control and Prevention (CDC) and the Society of Health and Physical Education America (SHAPE) have collaborated to create a document aimed at providing guidance for schools to develop a PA program to be implemented within the school setting. This document highlights five key strategies for proper implementation, including the importance of safety criteria and creating a supportive environment for physical activity.

The addition of Active Breaks to the already scheduled physical education classes within the curriculum represents a sustainable and feasible intervention that can be carried out both outdoors and indoors, without the need for specific equipment. It is easily realizable within the school environment.

Active Breaks, therefore, are not random or improvised motor actions, but rather view physical activity as an opportunity for mediation with learning and other areas of literacy (linguistic-expressive, logical-mathematical, historical-geographical, musical), integrating curricular school content to promote cognitive, motor, and relational functions and their interconnections.

3. New Pedagogical and Didactic Needs. Teacher Training

A new chapter that adds to the areas of intervention is related to the continuous training of teachers, which includes Active Breaks (AB) in the curriculum. This is not only about studying various contents but, above all, about the methodologies that support learning. The methods for proposing Active Breaks can vary depending on time and objectives, and they respond to specific organizational modalities (Watson, Timperio, Brown, & Heskethet, 2018). Interventions can be carried out in line with the learning objectives of the National Guidelines for the Curriculum (2012) and require a solid methodological structure.

Each intervention requires the analysis of the motor task and the design of the activities. It is possible to propose Active Breaks individually, in pairs, or in groups, with the teacher mediating and intentionally presenting the interventions, adjusting the intensity and cognitive-motor load, stimulating connections with pre-established curricular objectives, and promoting inclusion and respect for individual differences.

Within the structure of Active Breaks, it is possible to select and include motor tasks and execution variants of different intensities and difficulties, considering tasks related to appropriate coordination levels, in relation to students' age and motor repertoire (Monacis & Colella, 2020; Masini et al., 2023a, b).

The content of each individual Active Break can be distinguished and classified into:

- Motor tasks consisting of postural patterns and spatial, temporal, quantitative, and qualitative execution variants, proposed alternately and/or successively or simultaneously;
- Motor tasks aimed at developing motor coordination (rhythm capacity, space-time orientation, motor adaptation and transformation, motor combination, balance, kinesthetic differentiation, etc.);
- Interdisciplinary motor tasks linked to the educational curriculum;
- Motor proposals through the practical use of digital technologies (interactive whiteboards, LED visual-motor stimulus-response devices, etc.).

It follows that, similarly to the didactic programming required for Physical Education, which requires the teacher to prepare content and organizational methods for creating motor proposals that adhere to predefined criteria, the integration of Active Breaks requires some phases to be followed:

- Initial activation (1-2 minutes) to create an optimal atmosphere for activities;
- Central phase, which involves an increase in cognitive-motor load, with proposals for more intense motor tasks and active recovery (6-7 minutes);
- Final relaxation phase (1-2 minutes) to promote the restoration of an environment conducive to subsequent learning.

It is, therefore, the teacher who decides how to present the Active Breaks, using reproductive teaching styles (Mosston & Ashworth, 2008), in which the teacher explains the tasks, defines execution methods, chooses the equipment, and provides feedback, or productive teaching styles, establishing the goal and allowing students to experiment with different solutions.

Through the interaction of teaching styles, different modes of information processing and motor response can be stimulated. This approach can create a non-linear process of teaching and learning, promoting inclusion and allowing each student to express their response to a task according to their abilities.

Each didactic proposal must align with the thematic areas of the National Guidelines for the curriculum (MIUR, 2012) and have a guiding thread with the teaching styles.

It is absolutely necessary to provide teachers with a reasoned selection of motor tasks, a portfolio (Table 1) that collects proposals for the didactic programming of Active Breaks (AB) in order to integrate the physical education curriculum with a chapter on Active Breaks.

Table 1: Active Breaks Portfolio

Postural Patterns + Sequential Variants	Factors Of Motor Coordination	Sensory-Perceptual Abilities	Interdisciplinary
"Journey Through the Galaxy" **Activation:** March in place. With each clap from the teacher, extend your arms upward to reach for the galaxy. **Main Phase:** With each clap, dodge the planets by performing lateral bends of the torso for 10 seconds. ● On the signal SPACE, walk freely around the space. ● On the signal MOON, perform torso twists for 10 seconds. ● On the signal SUN, perform forward arm circles, and alternating arms. **Deactivation:** Return to Earth! Perform arm swings combined with slight bends of the knees.	**"Tightrope Walkers"** **Activation:** March in place. ● On the signal, stop on your heels; ● On the signal, stop on your toes. **Main Phase:** One student, A, has the power to decide, to run in place, and when A stops and balances on one foot, the entire class performs the same task. ● Alternate between the right and left foot at each stop. ● During the game, the teacher may count to 10: imagine walking on a tightrope. **Deactivation:** Perform neck circles.	**"Is It There or Not?"** **Activation:** Students are arranged in pairs (A and B), one behind the other. March in place. When B touches a part of A's body, A performs a movement with the indicated body part. **Main Phase:** The teacher asks student A to experiment with how many different ways they can jump, imagining that the part of the body touched by B becomes a "ghost." ● Switch roles: A and B. ● In groups of three, C touches a different part of A's and B's body. **Deactivation:** Fully extend the arms upward to reach the clouds.	**"Even or Odd?"** **Activation:** March in place while the teacher explains the activity. **Main Phase:** Walk in place. ● If the teacher says an even number: perform jumps by spreading and closing your legs. ● If the teacher says an odd number: perform backward arm circles. ● The number of repetitions for the task matches the number called by the teacher. ● The even or odd number is determined by the sum of the numbers pronounced by the teacher. **Deactivation:** Clap your hands twice if the number is even; three times if it is odd.
"Fantastic Animals" **Activation:** March in place while the teacher explains the activity. **Main Phase:** The teacher assigns different motor tasks to two categories: ● **Vertebrates**: Push arms forward-upward and forward-sideward.	**"North, South, West, East"** Spatial and temporal orientation **Activation:** March in place while the teacher explains the activity. **Main Phase:** When the teacher says:	**"Clay, Model, Sculptor"** **Activation:** March in place while the teacher explains the activity. **Main Phase:** Work in groups of three: A (clay), B (model), and C (sculptor). ● B takes a position without A (the clay) seeing it.	**"In Which Moment?"** **Activation:** March in place while the teacher explains the activity. **Main Phase:** The teacher assigns motor tasks to different times of the day (morning, afternoon, evening, night) and writes them on the board.

• **Invertebrates**: Perform forward arm circles. The teacher shows images of animals, and students perform the corresponding motor task based on whether the animal belongs to the vertebrates or invertebrates. **Deactivation:** Imagine your fingers turning into a millipede, and let the millipede travel across your entire body.	• **Alba (sunrise), the sun rises in the East:** students perform a quarter turn to the right. • **Mezzogiorno (midday), the sun points to the South:** students perform two jumps with feet together, turning a half turn. • Tramonto (sunset), the sun moves to the West: students perform a quarter turn to the left. • Sole Accecante (blinding sun): students perform a full turn, stopping at NORTH. **Deactivation:** Push arms in the order: south, north, west, east.	• C (the sculptor) must position A's body to match the pose taken by B (the model). • The teacher decides the number of contact points the model can have with the ground. **Deactivation:** Perform neck circles.	• When the teacher mentions an activity (e.g., doing homework), students perform the motor task corresponding to their personal response for that time of day. **Deactivation:** Swing arms while performing slight bends of the knees.
"Ball, Little Ball" **Activation:** In pairs (A and B), standing back-to-back, pass a paper ball to your partner by twisting your torso (without moving your feet). **Main Phase:** A and B remain back-to-back with legs apart, performing the following tasks: • Pass the ball to your partner from below by bending your torso forward. • Pass the ball to your partner after an upward push of the arms above your head. • Pass two balls simultaneously to your partner by bending the forearms on the arms.	**"What a Combination!"** **Activation:** March in place while pushing arms forward-upward. • Perform squats (bending the lower limbs). • Combine squats with forward-upward pushes of the arms. **Main Phase:** Run in place. • On command "1," perform jumps with feet together. • On command "2," perform arm circles. • On command "3," perform squats (bending the lower limbs). Watch out for combinations!	**"March, Turn, Stop!"** **Activation:** Students are arranged in pairs (A and B), with one behind the other. March in place. • If B touches A's right shoulder, A turns to the right. • If B touches A's left shoulder, A turns to the left. • If B touches the center of A's back, A stops or restarts. **Main Phase:** In pairs (A and B), run in place. • If B touches A's right shoulder, A turns to the right. • If B touches A's left shoulder, A turns to the left.	**"Planets in the Lane"** **Activation:** Students are divided into rows, and each student takes the name of a planet in order of their distance from the sun (e.g., Mercury, Venus, Earth, Mars, Jupiter, Saturn, etc.). **Main Phase:** Each planet runs in place. • When the teacher announces: • Rotation motion: Perform a full spin around your own axis. • Revolution motion: Perform a half-turn, stopping with your left side facing the "sun." • Crazy planets: Swap places with another planet.

● Pass the ball to your partner by performing a lateral torso bend (to the opposite side of your partner). ● Perform squats while keeping the ball behind your back, in contact with your partner. **Deactivation:** Swing your arms while keeping the ball between your legs. ● Perform neck circles.	● The teacher combines two numbers, and students must execute the corresponding motor tasks in sequence (e.g., 1+2, 3+1, 3+2). **Deactivation:** Perform body percussion by tapping different parts of the body in rhythm with the teacher's lead.	● If B touches the center of A's back, A stops or restarts. ● If B touches A's head, A jumps in place. ● If B touches A's heels, A performs a squat. (Switch roles between A and B). **Deactivation:** In pairs, back-to-back. Reach the maximum extension of the arms upward and hold for 20 seconds.	**Deactivation:** The teacher announces the name of the lead planet, which then decides whether the group performs arm circles, arm swings, or upward pushes of the arms.
		"What Emotion Are You?" **Activation:** March in place while the teacher explains the activity. **Main Phase:** In pairs (A and B). The teacher shows a color in turn to A and then to B, and each student performs a motor task associated with the emotion triggered by the color. ● The partner tries to guess the emotion evoked by the color. **Deactivation:** In pairs, back-to-back, perform a maximum extension of the arms.	

It will be possible to access some free examples of proposals for primary schools through the following QR CODE in Figure 2, where you can also find recommendations to consider when proposing the active breaks.

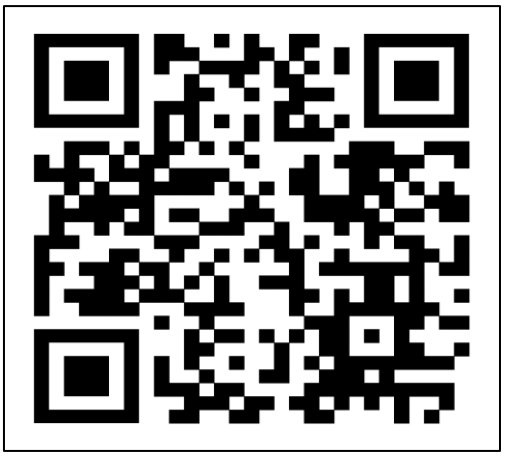

Figure 1: QR Code

4. Conclusions

What emerges from the recommendations of the World Health Organization and the data reported by national and international surveillance systems on the daily habits of children and young people consolidates a concerning scenario.

Several decades have passed since gymnastics in the classroom was a speciality practiced only in Italy. Starting with Baumann and his supporters it was considered an essential starting point for school education, as it helped develop discipline and obedience to school authority in students. The educational process through the body and movement (learning to move and moving to re-learn) takes on new organizational forms, becoming a renewed pedagogical and didactic horizon of meaning.

The school must identify both new areas for disciplinary and interdisciplinary intervention, as well as new pathways for teacher training to counteract sedentary behavior, develop inclusive teaching methods, and promote healthy lifestyles.

The promotion of health through healthy lifestyles and physical activity among children and adolescents represents a priority for all institutions and socio-cultural contexts.

It is important to remember that for every student, the body is, at the same time, the origin and convergence of lived experiences and expresses a dynamic and continuous interaction with the environment, spaces, peers, tools, and technologies.

The school context offers a unique opportunity to implement multi-component interventions, where Active Breaks (AB) are identified as a particularly effective practice to combat sedentary behavior, improve the motivational climate, and enhance classroom learning.

The integration of physical activity in the school context represents a sustainable and effective strategy to generate active, accessible, and inclusive learning environments and opportunities.

Appropriate and continuous teacher training is necessary for the implementation of AB in the school setting so that these interventions can have a solid methodological structure. Indeed, the didactic programming of AB must be well-defined in terms of content and methods to promote increased physical engagement, improvement of motor skills, development of executive-cognitive functions, and relational skills of students. This is made possible not only by the variation and adaptation of motor tasks or task sequences but, above all, by the interaction and variation of teaching styles according to a continuum that progresses from the teacher's didactic choices and decisions to the students' responses in continuous and reciprocal interaction.

Technologies for teaching and inclusion, moreover, particularly with reference to AB, expand and enrich the curricular proposal, re-designing the disciplinary epistemology and generating new interdisciplinary relationships with new and significant impacts on personal growth.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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