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YOGA AND MEDITATION BENEFITS IN DEVELOPMENTAL AGE: AT SCHOOL, TO RELAX THE BODY AND MIND*

Introduction: This paper aims to explore the positive correlation between practicing yoga and meditation at school and an increase in academic performance with a reduction in states of anxiety and stress.

Research Aim: The systematic review aims to confirm the theory that the practice of yoga and meditation is beneficial for children and can help them in the school context.

Evidence-based Facts: Ten articles were carefully analyzed to find out which yoga and meditation techniques were most used and what benefits they brought in developmental age. Thanks to breathing techniques and meditation, studies indicate that children learn to recognize their emotions and strategies to manage them in the best way.

Summary: Protocols demonstrate that there are positive correlations between practicing yoga and meditation at school and a decrease in stress levels and an increase in attention span and memory. These benefits help children improve their academic performance, develop greater balance and flexibility, and avoid bad postures.

Keywords: yoga benefits, school, developmental age, meditation, *pranayama* (breathing techniques).

INTRODUCTION

It happens to see stressed and exhausted children at school because teachers ask very much of commitment and attention from them and sometimes there is a

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competitive atmosphere in the classroom. The little ones can find difficulties because they do not know how to manage their emotions and their states of stress.

Based on the studies carried out in this paper, in the school context, yoga for children and practicing meditation can be useful and effective in helping children to work with/on their emotions, to understand them, and to master some strategies, learning how to manage them in the best way. Among the different yogic techniques used at school, meditation is the most effective to relax and achieve greater concentration.

Mindfulness is a practice that derives from meditation and is increasingly popular in the Western world. Snel states that “Mindfulness is directing one’s loving awareness to the here and now, to each and every moment. Mindfulness for children meets a great need on the part of parents and children, who, in our demanding age, wish to find physical and mental calmness” (Snel, 2019, p. 19). In the systematic review *Mindfulness-Based Interventions for Improving Cognition, Academic Achievement, Behavior, and Socio-Emotional Functioning of Primary and Secondary School Students*, it is stated that “the use of mindfulness-based interventions (MBI) in schools has been on the rise. Schools are using MBIs to reduce student stress and anxiety and improve socio-emotional competencies, student behavior, and academic achievement” (Maynard et al., 2017, p. 5).

The relationship between yoga and meditation activities and concentration at school has been the subject of some research projects for the last fifteen years on how much exercise time should be dedicated in the day school life, in order to increase school performance.

In this study, ten articles/systematic reviews were analyzed to check the effect of yoga practice, in a daily routine during school time, on children’s concentration in primary school and in preschool ages. Yoga can also be chosen by Physical Education teachers as an activity that acts to educate the body on basic motor patterns, by doing yogic positions, which imitate animals and their movements: walking slowly and quickly, running, crawling, rolling, and moving like four legs animals.

The *asanas* (yoga posture), breathing techniques, and the development of proprioception work synergistically to maintain a healthy, strong, and flexible back. As explained in Morelli’s (2008) book:

The spine of a child is a structure in evolution, wonderfully elastic but, at the same time, fragile and easy to damage, sometimes in an irreparable way. It should be exercised regularly without being too forced or overloaded and without forgetting that psychological tensions affect posture. It should be considered a primary task by parents, educators, and institutions, to keep this precious asset (the children’s spine) always healthy, but unfortunately this not happens. The greatest damage is done by the school, because of sitting too many hours on uncomfortable chairs, that lead to wrong and incorrect positions, leading to vertebral deviation and manages. (Morelli, 2008, p. 14)

It will also be very important to balance theoretical explanations with active pauses, with elementary yoga postures or simple physical exercises that can be done in the classroom to recover motivation and attention, which can easily fail with young children. A mind/body combination of sense and meaning is useful for the global formation of the pupil/child personality – unique and indispensable. Mindfulness is being aware of what is happening, observing other people, and observing oneself, which for the youngest is better internalized with the body. A reflection, recollection, and meditation that must be topics, and contents educated from an early age. Mindfulness passes through perception, knowledge, and awareness of the body in its entirety.

What comes out from the critical analysis of some of the systematic reviews and experiments carried out, related to meditation and yoga for children, become a subject in scientific research due to the benefits, which are verifiable and demonstrable, even in the school context. However, further research will be needed, particularly in schools, to contribute to more scientific results in terms of quality and quantity.

RESEARCH AIM AND QUESTION

In the study of yoga it is necessary to arrive at an answer, as clear and rational as possible, to the following question: How useful are yoga and meditation in the school context? What is the contribution to school performance, attention span, decreased stress, anxiety, and self-awareness? School proves to be a cause of stress and anxiety for many children, due to excessive requests for performances and results. The needs and times, required for a healthy development in childhood, are often not considered.

The aim of this work is, therefore, to clarify the possible beneficial effects on physical, emotional, and academic performance, in carrying out yogic activities and practicing meditation in pre-school and primary school ages. It is also important to understand which methodologies are most effective and which benefits are related to them. Keywords used in the search include: “the benefits of yoga at school”, “children”, “primary and kindergarten”, “systematic review”, “meditation”, *pranayama* (breathing techniques), and “mindfulness”.

The systematic review examines studies published between the years 2008 and 2020, starting with an in-depth reading of Morelli’s (2008) text. The search for systematic reviews and articles was meticulous and involved several databases, in particular Eric, Scopus, ResearchGate, and PsycInfo. In the first step, 450 studies were found and, by performing a screening, only ten of them were selected through inclusion and exclusion criteria.

The screening carried out using the exclusion criteria, had the following steps:

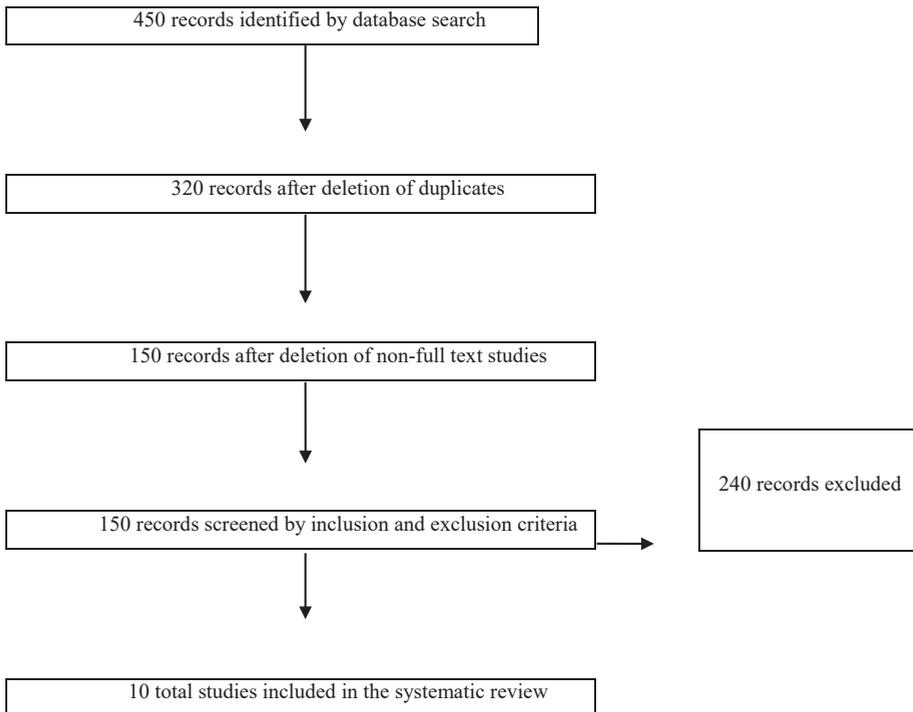
- 1) elimination of duplicates,
- 2) exclusion of non-full text studies,
- 3) school age range is not relevant.

The inclusion criteria, on the other hand, were the following:

- 1) presence of the above-mentioned keywords in the title and abstract,
- 2) articles that would also consider mindfulness as there is synergy, encounter, and union with yoga,
- 3) the age of the subjects taken into consideration and participants of the projects carried out (only students aged between 3 and 11 as subjects),
- 4) articles that had, as their object, only children attending kindergarten and primary schools.

Thanks to the inclusion and exclusion criteria, ten studies were selected and included in Table 1, which highlights the characteristic elements, such as the number of children involved, their age, and the fundamental aspects of the proposed activities and the results obtained (summarized in Figure 1).

Figure 1.
Flowchart



Source: Authors' own study.

EVIDENCE-BASED REVIEW

Article 1: Thomas, L. (2008). *Being Present: Mindfulness and Yoga at Westminster Center School*. Oakland: Coalition of Essential Schools.

This study describes useful activity called “cookie ceremony” that is proposed to children, during which students are invited to have lunch in silence and chew slowly to make mealtime more aware and relaxing. Thanks to this proposal, children live the experience of eating with greater attention in the “here and now”, drastically reducing the opportunities for distraction due to chatting with their peers. This type of activity is included in meditation and conscious breathing techniques since attention is also placed on breathing, which becomes an integral and motivating part of chewing. This work takes time and becomes feasible and effective when teachers and educators are trained and experience the difficulties that pupils may encounter and the benefits of this practice. Children, who have carried out the proposed activities, experience greater self-esteem and confidence in their own resources, which allows them to complete tasks and projects in a more serene way. They explore new ways of acting, learning to take responsibility and act more consciously.

Article 2: Ferreira-Vorkapic, C., Feitoza, J.M., Marchio, M., Simões, J., Kozasa, E., Telles, S. (2015). *Are There Benefits of Teaching Yoga in Schools? A Systematic Review of Randomized Control Trials of Yoga-Based Interventions*. Brasile: Vernon A. Barnes (Academic Editor).

In this study it is specified that initially there was an increase in stress and only later, after the first weeks of work, did it begin to decrease, resulting in an improved ability to manage emotions. According to the researchers, this is due to a greater awareness of their emotions at the beginning of work, which led to a clearer and more sincere manifestation of the discomfort that some students feel in the school context, especially when academic performance does not coincide with the aspiration of parents or the pupil himself. At the end of the twelve weeks of activity, the researchers noted that the children achieved an increase in self-esteem and concentration at school and significant changes in cognitive functions were noticed. The research explains that unfortunately the traditional school curricula focus only on intellectual development and not on mental health; it is, therefore, necessary to adopt programs that enrich the traditional ones.

Article 3: Donnelly, J.E., Hillman, C.H., Castelli, D., Etnier, J.L., Lee, S., Tomporowski, P., Lambourne, K., Szabo-Reed, A.N., Amanda N. (2016). *Physical Activity, Fitness, Cognitive Function, and Academic Achievement in Children: A Systematic Review*. USA: American College of Sports Medicine.

The researchers wanted to focus on cognitive processes and how they can be improved through simple physical activity exercises, including yoga. The aim of this study was to answer the following questions: Does physical activity, including yoga, affect cognition, learning, brain structure, and brain function among chil-

dren aged 5–13? Can such activity also affect performance and concentration? The activity called “breaks” consists of moments of pause between one lesson and another, for example, between Mathematics and Foreign Languages, in which carrying out physical activity frees the mind from overwhelming thoughts and gives greater clarity and lightness in order to facilitate the mind in welcoming new learning. Based on the available evidence, the authors concluded that physical activity has a positive influence on cognition as well as on brain functions; however, more research is needed to determine the mechanisms and the long-term effect.

Article 4: Evans, B., Ling, M., Hill, B., Rinchart, N., Austin, D., Sciberras, E. (2017). *A Systematic Review of Meditation-Based Interventions for Children with ADHD*. Berlin – Heidelberg: Springer.

This study focuses on cases of ADHD (attention deficit hyperactivity disorder) and it shows that it was not possible to verify if the effects of yogic activities proposed, such as meditation, are long-lasting since the level the quality of the survey methodologies is not adequate. This study claims that most children with ADHD exhibit measurable forms of executive function deficits (working memory, inhibitory control, and cognitive flexibility), which do not appear among peers without ADHD. These children appear to be at high risk with regard to social, mental, and educational health which is lower than their peers. Yoga-based interventions, such as meditation, lead to greater awareness and presence. They also increase attention spans and improve the ability to regulate emotions. From this systematic review, it appears that meditation and relaxation activities are recommended in cases of ADHD as components of psychological interventions.

Article 5: Gibson, G.L., Cornell, M., Gill, T. (2017). *A Systematic Review of Research into the Impact of Loose Parts Play on Children’s Cognitive, Social and Emotional Development*. Cambridge (UK): School Mental Health.

The social component appeared predominant in the specific objectives of study number 6, in which it is essential to allow children the freedom to express themselves during physical activity in schools, such as dance and yoga, which is included among the activities proposed in its more dynamic form as exercises of a succession of positions, the *asanas*. For example, during *Surya Namaskar* (Sun Salutation), students perform 12 consecutive poses to develop greater flexibility and improve balance. These activities were effective not only on a cognitive and emotional level but also on a social one as they facilitated greater openness towards their peers, sharing the experience in a pleasant way, there being no constraints but giving the children freedom of choice about which activity to carry out between those proposed. The objectives of this review focus on prosocial behaviors, cooperation, and the fight against bullying.

Article 6: Maynard, B.R., Solis, M.R., Miller, V.L., Brendel, K.E. (2017). *Mindfulness-Based Interventions for Improving Cognition, Academic Achievement, Be-*

havior, and Socio-Emotional Functioning of Primary and Secondary School Students. Saint Louis, USA: The Campbell Collaboration Education Coordinating Group.

In this study, as in article 3, activities are proposed at specific times of the school day, mainly before class, to have greater results in the cognitive area, dissolving mental tensions before starting learning, to place the mind in a situation of greater receptivity and possible opening. The interventions of interest include activities carried out at school, both during school hours and during extracurricular activities. Achieving greater awareness, after carrying out the practices, was defined as the self-regulation of attention paid to the conscious awareness of one's immediate experiences, and at the same time, an attitude of curiosity, openness, and acceptance of situations and proposals was noted.

Article 7: Piotrowski, S.A., Marni, J., Binder, K, Krmpotić Schwind, J. (2017). *Primary Teachers' Perceptions of Mindfulness Practices With Young Children.* South Ontario: School Mental Health.

This study takes into consideration breathing techniques such as "Take 5" – "an exercise that required students to breathe in for five seconds, hold their breath for five seconds, and breathe out for five seconds" (Piotrowski et al., 2017, p. 5). This breathing technique carried out for four weeks at various times of the school day, improved the attention levels among the pupils, who were calmer, kind, and receptive, as four primary school teachers have observed. Teachers claim the importance to include the practice of meditation and yoga in the school routine, explaining that it can be an excellent strategy to avoid burnout in the classroom and anxiety and stress problems during childhood. Each participant/teacher "guided mindful breathing using concrete associations, such as smelling a flower or blowing out a candle or making connections to how animals would breathe" (p. 10).

Article 8: Andermo, S., Hallgren, M., Nguyen, T.-T.-D., Jonsson, S., Petersen, S., Friberg, M., Romqvist, A., Stubbs, B., Elinder, L.S. (2020). *School-Related Physical Activity Interventions and Mental Health among Children: A Systematic Review and Meta-Analysis.* USA and UK: Sports Medicine.

It is, therefore, clear that physical activity, specifically yoga, in order to have clear and lasting results should be done daily in the school context, at least for a few minutes. For example, in study number 8, the result of such activities was an increase in the resilience and mental health of the pupils. At the same time, there was a reduction in stress and anxiety during questioning in primary school pupils. The researchers, thus, hope that physical activity will be increased in schools in favor of the psycho-physical well-being of learners.

Article 9: Espil, F.M., Rettger, J.P., Weems, C. F., Neill, E.L., Carrion, V.G. (2020). *Measuring the Fidelity of a School-Based Yoga and Mindfulness Curriculum for Youth: A Transdisciplinary Feasibility Study.* Stanford (USA): Springer Nature.

The feasibility of yogic activities in the school context was tested by the researchers of study number 9, who verified the survey methodologies and found

that there are some gaps and limitations to be improved in order to obtain clearer and more verifiable results. Researchers, after improving survey methodologies, indicated that yoga and awareness interventions for young people can be practically implemented and reliably measured within school settings. According to this study, mindfulness practices and yoga have the potential for the prevention of behavioral and emotional problems in young people, as well as to promote well-being and develop resilience.

Article 10: Vazou, S., Webster, C.A., Stewart, G., Candal, P., Egan, C.A., Pennell, A., Russ, L.B. (2020). *A Systematic Review and Qualitative Synthesis Resulting in a Typology of Elementary Classroom Movement Integration Interventions*. USA and UK: Sports Medicine.

The importance of inserting breaks between lessons is reiterated in order to give children moments of relaxation and release from mental tensions, giving them relief and well-being. The interventions all took place during school hours in some primary schools and, thanks to the variety of types of intervention, the researchers noted an increase in the active participation of students in physical activity. This review, which analyzes 72 studies, provides a unique contribution to the literature, due to the breadth of interventions carried out.

SUMMARY AND CONCLUSIONS

The results of this paper confirm that proposing yoga-related at school, in particular conscious breathing techniques, improves the ability to manage emotions, decrease states of stress and anxiety that can interfere with school performance, and alter the levels of attention and assimilation of information. There has been an increase in self-esteem and resilience in hyperactive and attention-deficit children, with ADHD, thanks to exercises that promote greater awareness of the actions and their duration. It is also evident that inserting time intervals between school lessons, with physical activity, yoga in particular, considerably reduces mental tensions and consequently increases concentration during the following lesson. Paying attention to body and breath, yoga and meditation help the child not to be distracted by external inputs, which could distract him/her from the present reality. This promotes learning and greater development of cognitive, social, and emotional activity.

To sum up, the union between body and mind improves self-esteem and self-reflective processes for the development and mental and existential well-being of future generations. Certainly, research will have to focus further on this topic in order to increasingly confirm the valuable contribution for the developmental age and beyond. Among the strengths that have emerged, one can mention the use of methodologies to analyze and avoid the risk of bias, for example, through graphs

called “funnel plots” to measure the feasibility of proposed projects in the school context. Some studies have also placed importance on changes in pro-social behavior in pupils, e.g. greater ease in socializing and creating friendships and reducing levels of sedentary lifestyle. Limitations include a lack of resources and funding to implement the projects and a lack of clarity in the survey methods used. There is also the possibility of errors and distortions in studies that have been financed by parties interested in the success of the object being evaluated. In cases where heterogeneous results were found, however, the authors explained that they should be interpreted with caution. The described activities related to yoga turn out to be useful breathing techniques for calming mental tensions, helping adolescents to achieve greater attention and concentration, experience self-esteem and self-confidence, perform tasks in a calmer way, and act more consciously.

Table 1.
Presentation of the analyzed studies

Author(s), Year, Title, Source	Number, Age, Period, Country	Activity	Results
Thomas (2008) <i>Being Present: Mindfulness and Yoga at Westminster Center School</i> Horace	210 students 3–10 years Once a week for 12 weeks USA	Experimental research. Activities that help focus on only one interest at a time. E.g. „cookie ceremony”, eating very slowly, feeling the taste, and experiencing the experience). In kindergarten, activities with yoga positions promote relaxation.	In kindergarten, yoga proved to be a relaxing game for children, especially after hectic activities. In primary school, concentration and attention during lessons improved. In both schools, the activity has also brought benefits for teachers, helping to maintain a relaxed and receptive atmosphere during lessons. According to the researcher, it is not possible to do yoga in the classroom unless the educator/teacher experiences it first.
Ferreira Vorkapic et al. (2015) <i>Are There Benefits of Teaching Yoga in Schools? A Systematic Review of Randomized Control Trials of Yoga-Based Interventions.</i> Scopus PMC (US National Library of Medicine).	1,144 students 5–18 years 12 weeks Brazil	Yoga is done in the classroom daily, before the start of classes, to experience the benefits of yoga in the academic, psychological, and cognitive fields.	Comparison of 9 studies showing conflicting results. After school practices, initially, children may experience increased stress but later they experience greater control and ability to manage emotions. This is due to a greater awareness of one's emotions which are more recognized and observed. Results: improves self-esteem, concentration, and memory. Promotes good habits and a reduction in stress and anxiety.

<p>Donnelly et al. (2016)</p> <p><i>Physical Activity, Fitness, Cognitive Function, and Academic Achievement in Children: A Systematic Review.</i></p> <p>Scopus</p>	<p>1,350 students</p> <p>5–13 years</p> <p>9 months</p> <p>USA</p>	<p>Breaks of physical activity in the classroom during math, literature, and foreign language lessons. Among the proposed activities is the practice of yoga.</p>	<p>Most research supports the view that breaks in motor activity promote cognitive functioning in children. There is limited evidence of the effects of physical activity on learning, with only one cross-sectional study meeting the inclusion criteria. Evidence indicates that physical activity has a relationship with areas of the brain that support complex cognitive processes.</p>
<p>Evans et al. (2017)</p> <p><i>Systematic Review of Meditation-Based Interventions for Children with ADHD.</i></p> <p>PsycoInfo</p>	<p>320 children, of which 34 with a parent</p> <p>8–12 years</p> <p>1–20 weeks</p> <p>Germany</p>	<p>Studies indicate a program of 45 or 60 minutes per week of yoga and mindfulness (meditation) practices during school hours. Parents were also involved in some studies.</p>	<p>The review includes 16 studies, in 8 of which only children are involved while in the remaining 8 also parents. The researchers state that, although the quality levels of the methods used were low, “mindfulness appears to be a growing component of psychological treatment for people with ADHD. More research is needed to understand the therapeutic benefits” (p. 18).</p>
<p>Gibson et al. (2017)</p> <p><i>A Systematic Review of Research into the Impact of Loose Parts Play on Children’s Cognitive, Social and Emotional Development.</i></p> <p>ResearchGate</p>	<p>690 students</p> <p>4–12 years</p> <p>1 hour/day for 13 weeks</p> <p>UK</p>	<p>Children are offered daily physical activities at school, during breaks, in the form of a game, including practicing yoga.</p>	<p>The review talks about the importance for children to have moments of play or other activities, within the school timetable, that go beyond the lesson. Leaving children free to express themselves in the ways set out in the review leads to a greater development of cognitive, social, and emotional activity.</p>
<p>Maynard et al. (2017)</p> <p><i>Mindfulness-Based Interventions for Improving Cognition, Academic Achievement, Behavior, and Socio-Emotional Functioning of Primary and Secondary School Students.</i></p> <p>The Campbell Collaboration Education Coordinating Group</p>	<p>6,207 students</p> <p>6–14 years</p> <p>13 weeks</p> <p>USA</p>	<p>This experimental research by Campbell examines the effectiveness of mindfulness activities at school on items of cognition, behavior, socio-emotional outcomes, and academic achievement. This work summarizes 61 studies and synthesizes 35 studies.</p>	<p>Studies carried out in primary schools, in which positive results emerge: an increase in school results and greater awareness of one’s emotions.</p>

<p>Piotrowski et al. (2017) <i>Primary Teachers' Perceptions of Mindfulness Practices with Young Children.</i></p> <p>ResearchGate</p>	<p>56 students</p> <p>4–8 years</p> <p>4 weeks</p> <p>Canada</p>	<p>In this experimental research, four teachers proposed meditation activities in a kindergarten and in a primary school. For example, the “Take 5” exercise, during which children have to inhale for 5 seconds, hold their breath for 5 seconds, and exhale for 5 seconds. At the beginning of the activities, the Tibetan bell is rung.</p>	<p>It is important to include mindfulness and yoga practices in the daily routine of the group, as children, by practicing, find a way to remove stress from their lives and make them more calm and attentive during lessons.</p>
<p>Andermo et al. (2020) <i>School-Related Physical Activity Interventions and Mental Health Among Children: A Systematic Review and Meta-Analysis.</i></p> <p>Scopus</p>	<p>2,300 students</p> <p>6–13 years</p> <p>12 months</p> <p>USA and UK</p>	<p>Daily physical activity, including yoga sessions and breathing techniques, is offered in some primary and lower secondary schools (at least two hours per week).</p>	<p>Research results highlight how physical activity interventions at school can reduce anxiety, increase resilience, improve well-being and increase positive mental health in children and adolescents. These findings can strengthen school initiatives to increase physical activity at school.</p>
<p>Espil et al. (2020) <i>Measuring the Fidelity of a School-Based Yoga and Mindfulness Curriculum for Youth: A Transdisciplinary Feasibility Study.</i></p> <p>PsycInfo</p>	<p>256 observations in the classrooms (165 in the first study and 91 in the second study).</p> <p>6–11 years</p> <p>4–33 weeks</p> <p>USA</p>	<p>This study developed and tested the feasibility of measurement procedures for a yoga and mindfulness curriculum implemented in schools. This was achieved by carrying out two studies.</p>	<p>The results of both studies indicated that yoga and mindfulness interventions for young people can be implemented feasibly and reliably measured within school settings. Although there were some limitations in measuring both the content and the process thereof interventions.</p>

Vazou et al. (2020) <i>A Systematic Review and Qualitative Synthesis Resulting in a Typology of Elementary Classroom Movement Integration Interventions.</i> Scopus	2,870 students 6–10 years 10–60 minutes a day USA and UK	Integration of physical activity into the daily routine in the classroom. A wide range of interventions have succeeded in increasing children's participation in physical activity, including yoga exercises for children.	There are different approaches that are used more often to promote the use of physical activity at school. This research can be useful for better understanding and studying physical activity interventions in the classroom.
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Source: Authors' own study.

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KORZYŚCI Z JOGI I MEDYTACJI W WIEKU ROZWOJOWYM PRAKTYKOWANEJ W SZKOLE, ABY ZRELAKSOWAĆ CIAŁO I UMYŚŁ

Wprowadzenie: Niniejszy artykuł ma na celu zbadanie pozytywnej korelacji między praktykowaniem jogi i medytacji w szkole a wzrostem wyników w nauce przy jednoczesnym zmniejszeniu stanów lękowych i stresu.

Cel badań: Systematyczny przegląd ma na celu potwierdzenie teorii, że praktyka jogi i medytacji jest korzystna dla dzieci i może pomóc im w kontekście szkolnym.

Stan wiedzy: Dziesięć artykułów/przeglądów systematycznych zostało dokładnie przeanalizowanych, aby dowiedzieć się, które techniki jogi i medytacji były najczęściej stosowane i jakie korzyści zapewniały w wieku rozwojowym. Dzięki technikom oddechowym i medytacji badania wskazują, że dzieci uczą się rozpoznawać swoje emocje i strategie radzenia sobie z nimi w najlepszy sposób.

Podsumowanie: Protokoły pokazują, że istnieje pozytywna korelacja między praktyką jogi i medytacji w szkole a obniżonym poziomem stresu, zwiększeniem koncentracji uwagi i pamięci. Korzyści te pomagają dzieciom poprawić wyniki w nauce i rozwinąć większą równowagę, elastyczność i unikać złych postaw.

Słowa kluczowe: korzyści jogi, szkoła, wiek rozwojowy, medytacja, *pranajama* (techniki oddechowe).