



Relevance of yoga in modern education system

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Abstract

We are living in a global world. We have multiple task to perform at our workplace at the sometime we are trying to balance our body and mind so that we could remain peaceful and humble to the world. Our Utility decides our place in the world. For that we perform our duties day and night. This extra workload changes our lifestyle. Where we have to handle technology, human resource, and diverse environment etc. All these stuff causes mental illness sometimes. So the only way to avoid health issue is that we need to maintain the balance between mind and body. Yoga helps us in this regard. There are many asana and pranayama which prevent us from mental illness. Aim of this paper is to explain the possibilities of applying yoga in education. We have seen the schools that introduced yoga as part of the curriculum, there has been a reduction in stress, improved mood, increased attention and calm in some children, which are prerequisites for successful learning. Possible benefits have been demonstrated through the use of yoga exercises during breaks, during classes, and as a separate activity. So we can say that yoga could play a significant role in education by helping to achieve outcomes and encourage psychosocial development.

Key Words: Education, Yoga, Discipline, Mental health.

Introduction

Education is increasingly becoming a challenge in the world we live in. Surrounded by mobile phones and other forms of modern technology that bring something new every day, accustomed to speed, frequent activity changes and bombarded with stimuli, children come to schools where the most common method is listening and transcribing from the blackboard while sitting at a desk for six hours. Excessive demands and too high expectations that are often put on children result in increasing stress and anxiety. Difficulties in meeting teachers and parents' expectations are often a cause of stress in children. At the same time, those same parents and teachers are often under stress themselves. We teach children, for example, about the reproduction of annelids, while no one teaches them how to breathe properly and thus reduce stress. Young people are increasingly under stress.

For example, in a Finnish study by Santalahti et al (2005), as many as 50% of adolescents have symptoms of emotional and psychosomatic disorders. In a Croatian study, Vulić Prtorić and Lončarević (2016) found that 13 – 17% of students aged 11 to 15 experience intense internalized symptoms (stress, anxiety, depression). Stress levels are even higher in younger people compared to older people (Hagen, Nayar, 2014). Chronic stress can result in many health problems such as anxiety, insomnia, muscle pain, high blood pressure and weakened immunity, heart disease, depression and others. (Hagen, Nayar, 2014). Attention levels are also strongly influenced by stress levels (Stueck and Gloeckner, 2005). Stress reduces the amount of norepinephrine, in charge of attention and mental vitality, and dopamine, which causes weakening of the enjoyment of activities that were previously enjoyable. It also reduces the amount of serotonin, which is responsible for good mood (Hagen, Nayar, 2014).

On the other hand, it increases the level of cortisol, which is associated with the death of dendritic cells, atrophy of hippocampus, and thus with memory difficulties (Lupien et al., 1998). In our Croatian education system, movement is limited to a physical education class. In addition, children are allowed to move during breaks, while during classes movement is prohibited or very restricted. Paradoxically, modern research suggests a direct link between movement and learning. Muscle activity, particularly coordinated, balanced movements, stimulate the production of neurotrophins, such as dopamine, which stimulate the growth of existing neurons and increase the number of new neurons and neural connections in the brain (Fotuhi, 2013; Hanaford, 1995).

Meaning of Yoga

The word “yoga” comes from Sanskrit and has the original meaning of “unite, connect” (Paramhans Swami Maheshwarananda, 2006). In its original meaning, the word “yoga” means “an all-pervasive, eternally awake consciousness that keeps the entire universe in balance” (Paramhans Swami Maheshwarananda, 2006, 11). Yoga refers to the goal, unity and harmony with oneself and others, but also to the methods by which that goal is achieved. The first written sources date, according to some sources, to around 3000 BC, but according to the scriptures, it can be assumed that the knowledge of yoga originates from much earlier, from the time when it was transmitted by the word of mouth (Kumar, 2008).

One of the fundamental works of the philosophy of yoga is “Yoga Sutra of Patanjali”. Patanjali shaped the eight degrees of yoga: yama, niyama, asana, pranayama, pratyahara, dharana, dhyana, samadhi (Paramhans Swami Maheshwarananda, 2012). Yama and niyama relate to learning self-control and discipline, pranayama is a breathing exercise, pratyahara is a sensory withdrawal exercise, dharana are concentration exercises, dhyana is meditation, and samadhi is a state of unity consciousness. In accordance with Patanjali’s “Yoga Sutras”, it is still practiced all over the world today.

In a broader sense, yoga is a lifestyle that involves practicing awareness and achieving harmony using a variety of methods. A typical yoga class begins with relaxation exercises. We consciously relax each part of the body for five to ten minutes. During relaxation, we focus on breathing and practice proper breathing, which, in addition to chest and clavicular breathing, also includes diaphragm breathing (so-called abdominal breathing). This is followed by dynamic exercises to

warm up the joints, warm up and relax the muscles. Next are asanas. Asana means “position” (Paramhans Swami Maheshwarananda, 2012). Asanas are such positions that are the least tiring, and are beneficial for the psycho-physical state. Movement is aligned with breathing, while being aware of the motion. This is followed by a conscious breathing exercise (pranayama) and meditation.

Relaxation at the beginning of exercises is very important because it brings a number of benefits. Conscious relaxation activates the circles of the parasympathetic system and thus strengthens them (Hanson, Mendius, 2014). It also calms the sympathetic nervous system (Hanson, Mendius, 2014). The relaxation response can even alter gene reflection and thus alleviate cell damage due to chronic stress (Hanson, Mendius, 2014). Relaxation can be achieved through conscious techniques of relaxation, breathing and meditation. Breathing in yoga is conscious, which means controlled; it is deeper than during usual exercising. If, for example, we inhale and exhale five times, each time a little deeper than usually, it raises the energy level and relaxes; it first activates the sympathetic and then the parasympathetic nervous system, and can lead to the so-called flow or a meditative state known to athletes, artists, etc. (Hanson, Mendius, 2014).

Yogic practice for children

Yoga exercises, the way of performing and duration should be adapted to the psycho-physical abilities of children (Paramhans Swami Maheshwarananda, Maheshwarananda, Puchnarová, 1998). Exercises last less time, and the time can be gradually extended. Since the skeletal and hormonal systems are still developing, children should not stay in certain positions for too long. Practicing yoga also requires certain prerequisites, such as knowing the main parts of the body, knowing the breathing process, and distinguishing the state of tension from the state of relaxation. Graduality in the introduction of new exercises is also important; certain exercises can be performed only when the previous steps have been mastered. So, for example, pranayama exercises in children are performed only when they had mastered the process of proper breathing and can, to some extent, control that process.

Effect of Yoga on psycho- physical health

A review of available research indicates that practicing yoga can improve the general physical condition, posture, strengthen immunity, and reduce and eliminate certain symptoms. Yoga can be an anti-stress technique and help reduce anxiety and depression, as well as affect psychological well-being which will now be briefly documented by available research.

Asanas help to adjust the vertebrae, increase flexibility, strengthen muscles and tendons, and thus contribute to proper posture (Khalsa, 2007). By practicing asanas and pranayama, internal organs are being regenerated, the epidermal, digestive, and cardiovascular systems are being cleansed of toxins and wastes, the nervous and endocrine systems are being balanced, and brain cells nourished (Khalsa, 2007). Exercise stabilizes blood pressure and heart rate in adults, children and adolescents (Bhargava et al., 1988; Birdee et al., 2009). The capacity of lungs is higher, breathing becomes more regular, and there is a fewer number of inhales and exhales per minute (Joshi, Joshi, Gokhale, 1992; Raub, 2002). The potential effect of yoga on reducing stress, anxiety and depression, which are increasingly present in adults, but also in children, has been studied in several papers. Some research included self-assessments as a measure of emotional states, and some included physiological

indicators. Yoga has shown to be an effective anti-stress technique in both adults and children (Granath et al., 2006; Kalayil, 1988). Positive effects on anxiety and panic states have also been recorded (Telles, Gaur, Balkrishna, 2009; Kozasa et al., 2008; Kuttner et al., 2006; So, Orme-Johnson, 2001).

Practicing yoga, unlike walking, increases the level of the GABA neurotransmitter, which plays a role in anxiety disorder (Karri, Yakhkind, Jensen, 2010). Yoga exercises have helped elementary school children reduce situational anxiety (Kalayil, 1988), whereas high school students became better at controlling anger, were less tired, reduced their anxiety, and improved their mood compared to the control group (Khalsa et al., 2012). The conclusion of a meta-analysis of 124 studies that dealt with the effects of yoga, practicing asanas, meditation and breathing, is that yoga can reduce depression (Balasubramaniam, Telles, Doraiswamy, 2013). By practicing the “Siddha Samadhi Yoga” programme which includes meditations and pranayama, there were higher scores on the psychological wellbeing scale in adults (Kozasa et al., 2008). In a study involving 200 students aged 17, a group practicing yoga reported higher levels of happiness and mental balance (Gupta, Singh, Singh, 2016). Meditation has been shown to increase empathy (Lazar et al., 2005; Lutz et al., 2008).

Yoga and learning

Many studies confirm the effects of yoga practice on cognitive functions in both adults and children. Improvements in attention, perception, and memory have been confirmed, and some research indicate the possibility of influencing the speed of problem-solving and executive functions. One of the first studies on the effects of yoga on attention in children was in the 1970s (Hopkins, Hopkins, 1979). The study involved 34 children aged six to 11. The children were divided into groups; one group exercised for 15 minutes, the other group had psychomotor exercises during that time. Concentration was measured through the score of one concentration game. Both groups significantly improved concentration. The disadvantage of the research is that there was no control group that did not do anything during that time. Several studies that included a control group confirmed the effect of yoga on improving attention in both adults and children (Hopkins, Hopkins, 1979; Razza, Bergencico, Raymond, 2015; Pradhan, Nagendra, 2010; Manjunath, Teles, 2001; Tang et al., 2007; Telles et al., 1993; Valentine, Sweet, 1999). Attention was measured by performance on tests, questionnaire assessments, and observation. Nilsoge et al. (2016) found beneficial effects on working memory on a sample of 40 children without disabilities aged eight to 14 who practiced yoga, compared to the control group of children. In another study, after one month of daily yoga programme lasting 75 minutes, the completion time of the mental health test in girls aged 10 to 13 decreased (Manjunath, Telles, 2001). In their review paper, Murphy, Donovan and Tailor (1997) point out that meditation, in addition to attention, also has a beneficial effect on perception and creativity, and reduces reaction time and field dependence. Similar conclusions were reached by So and Orme-Johnson (2001) studying the effects of TM meditation. As many as 154 students from a Chinese high school were divided into a meditation group and a control group. After six months of daily exercise for 20 minutes, there were significant shifts in the results of practical intelligence, field dependence, creativity, and information processing speed, compared to the control group.

Yoga and discipline

The effects of yoga on executive functions, such as planning, learning regulation, and self-monitoring, which play a very important role in the learning process, were also studied. In a study by Manjunatha and Telles (2004), there was an improvement in planning, task-solving speed, and memory in a group of children who practiced yoga, while there was no improvement in a group of children who engaged in other physical activity. Self-regulation is one of the most important components of school readiness (Blair 2002; Raver 2004), as it affects peer acceptance and school success (Blair, Razza 2007; Ladd Birch, Buhs, 1999; McClelland, Morrison, Holmes, 1999). It is also associated with self-esteem, health, and achievement (Moffitt et al., 2011; Shoda, Mischel, Peake, 2000). Razza et al. (2015) examined the effectiveness of a yoga-based intervention on improving self-regulation in preschool children (aged three to five). Significantly greater progress was made on all measures of selfregulation, delay of gratification, and inhibition control in the experimental group, compared to the control group. Ramadoss and Bose (2010) found significant improvements in self-control in a group of 190 high school students who practiced yoga, compared to the control group. Similar results were obtained by Khalsa et al. (2012) and Noggle et al. (2012); groups of high school students who practiced yoga were significantly better at controlling anger.

Yoga for disable children

Practice and research have shown that children with disabilities are able to practice yoga and benefit from the exercise. A recent study examined the possibilities and impact of practicing yoga in 29 children with autism spectrum disorder (Sotoodeh et al., 2017). A yoga instructor had practiced with each child individually for 30 minutes, three times a week for eight weeks. There have been significant shifts in The Autism Treatment Evaluation Checklist (ATEC) in all areas except spoken language communication. Uma et al. (1989) investigated the effect of yoga in children with intellectual disabilities. Ninety children were divided into an experimental group that practiced yoga, and a control group that participated in normal school activities for one hour each day for one school year. The group that practiced yoga made significant progress on intelligence tests, psychomotor and social skills, as opposed to the control group.

It was further found that meditation can reduce anxiety, improve social skills, and academic achievement in adolescents with specific learning difficulties (Beauchemin, Hutchins, Patterson, 2008). Possibilities of introducing yoga as part of the school curriculum for children with mood and behavioral disorders were also explored. After three and a half months of exercising one hour, twice a week during class, teachers reported better attention and reduction in symptoms of mood and/or behavioral disorders (Steiner et al., 2013). Yoga is increasingly practiced by children with cerebral palsy. In one case study, there was a shift in posture, balance control, flexibility, and functional mobility in a nine-year-old girl who practiced yoga following a six-week programme tailored for people with motor impairments (Bugajski et al., 2013). A number of studies have confirmed that practicing yoga reduces the symptoms of attention deficit and hyperactivity disorder (ADHD), i.e. it improves attention while reducing hyperactivity and impulsivity. There have also been significant shifts in parent and teacher assessments (Boeshansz, 2009; Grosswald et al., 2008; Chou, Huang, 2017; Hariprasad et al., 2013; Harrison, Manocha, Rubia, 2004; Jensen, Kenny, 2004; Shannahoff-Khalsa, 2004) and in attention and reaction time tests (Chou, Huang, 2016).

Some research has found that – in addition to attention – organizational skills, reading, and writing in children with ADHD can be improved (Mehta Shah et al., 2012), and oppositional behaviour can be reduced (Redfering, Bowman, 1981). By practicing yoga together, parents and children have opportunities to improve their relationship as well. This was demonstrated by Harrison, Manocha and Rubia (2004) investigating the effect of Sahaja meditation on families with 48 children with ADHD. There have been significant shifts in self-esteem, school success, parent-child relationship, and reduction in ADHD symptoms in children. Anxiety has also decreased. Some children have discontinued medical therapy or reduced the dose of medication. These children had even greater effects by meditating. Many children stated that they fall asleep and concentrate more easily. They reported fewer problems with peers. Ninety-two percent (92%) of parents reported significant changes and their satisfaction with the programme. There was no progress in the control group while they waited for the programme; there were also significant changes after the programme. Hariprasad et al. (2013) showed that yoga can also be practiced by children with very pronounced symptoms of ADHD. Nine children aged five to 16 with very pronounced ADHD symptoms exercised each day with their parents during their hospital stay. They continued to exercise at home three times a week for one month. They all progressed in performing the exercises and the symptoms decreased. A couple of months later, when they stopped exercising, the symptoms worsened.

Yoga in educational institution

Based on the review of research on the effects of yoga so far, it can be assumed that yoga could be very much welcome as part of the school curriculum helping to achieve the planned outcomes. Yoga is already a part of the curriculum in nine thousand US schools. More than 5,400 yoga instructors have been trained for conducting yoga programmes in schools (Khalsa, Butzer, 2016). The number of yoga programme evaluation studies as part of the school curriculum is growing exponentially. Six studies were published in the period from 2005 to 2009, the number increased to 30 in the period from 2010 to 2014, while in 2015 there were 11 studies published (Khalsa, Butzer, 2016). Most studies have been conducted in the US and India. One available study is from Israel and one from Germany. Although yoga has been practiced in European schools for more than 30 years, according to the programmes of various schools, there are no European research in the available databases. The “Research on Yoga in Education” programme founded by Flak (<http://www.ryeuk.org/>) is present in some European countries (France, UK, Italy, Belgium, etc.). According to the “Yoga in daily life” system by Paramhans Swami Mahewswarananda, it is also practiced in many countries in Europe, America, Australia, Asia, and even Africa. Many teachers in Croatia have completed their education according to the “Yoga in daily life” system and use their knowledge in working with students. Yoga as a programme was most often offered at a time when other students were having physical education classes, but on multiple occasions some teachers incorporated exercises during or after classes. Most yoga programmes are conducted by trained yoga instructors, and in some programmes, teachers are trained by yoga instructors. Based on the available data, three systematic review papers related to the area of yoga-based school interventions have been conducted so far. The last systematic analysis was in 2016 (Khalsa, Butzer, 2016). Subsequently, a number of other papers in this field were published, only some of which met strict methodological criteria, meaning that they included experimental and control groups in which participants were selected randomly (so-called randomized controlled trials).

A systematic analysis of 12 studies (Serwacki, Cook-Cottone, 2012) indicates multiple benefits of practicing yoga during classes for healthy children, but also for children with autism, intellectual

disabilities, learning difficulties, and emotional difficulties. Attention, concentration, and self-esteem have increased in students, stress coping strategies have improved, and stress, anxiety, and emotional arousal have decreased (Serwacki, Cook-Cottone, 2012). The authors state that although yoga-based interventions show some positive outcomes, methodological limitations of some research (quasi-experimental plans, cohort studies, insufficiently described intervention programmes) prevent definitive conclusions from being drawn. The following systematic analysis of nine studies that met methodological criteria (Ferreira-Vorkapic et al., 2015) found small- to medium-size effects for measures of mood, tension, anxiety, self-esteem, and memory. Two studies state that there was a higher level of stress during and after practicing yoga (Haden, Daly, Hagins, 2014; White, 2012), compared with the control group and the group that had a normal physical education class. They give possible explanations for these negative effects. They state that yoga exercises are new to children and require adjustment and effort in the initial period which can be stressful.

Therefore, they recommend that the impact of yoga on stress is examined after the initial period, that is, after the intervention. As another possible reason for the increased stress, they cite the inadequacy of certain techniques, such as breathing exercises for children, and emphasize the need to adjust the yoga programme with regard to children's age. Breathing exercises can also be practiced by children, but it is necessary to achieve the prerequisites previously described in this paper. The authors of research in which there was greater stress in individual children (Haden, Daly, Hagins, 2014; White, 2012) as a possible explanation suggest that students with awareness training through yoga became more aware of emotions, which may initially result in greater stress, but ultimately in finding better ways to deal with emotions. Ferreira-Vorkapic et al. (2015) further argue that the positive effects of practicing yoga were shown in shorter programmes lasting 15 to 30 minutes, and that programmes of longer duration are too demanding for children. However, there are studies that speak in favor of the positive effects of practicing yoga in 45-minute programmes as well (Telles et al., 2013; Verma et al., 2014).

Although most programmes include exercises that traditionally belong to yoga, they differ in the choice and order of exercises, as well as the way they are performed and the approach of the instructor. Due to that, the outcomes of individual programmes may differ. Many programmes, not having knowledge of how to perform and effects, have taken some yoga exercises from the traditional corpus while excluding some exercises without which the effect is not complete. Many programmes that were a part of individual research lasted very short. Given the duration of the programme, it is logical to expect that programmes that last longer will produce greater changes in the practitioners. It is unrealistic to expect a short-term programme to lead to complex and process changes on the cognitive and socioemotional level. Research also differ in the selected measuring instruments. Certain subtle changes can only be captured by appropriately selected assessment methods, and the conclusion that there are no changes after the programme may be incorrect. Some research has failed to determine the effectiveness of yoga, while most have confirmed the specific contribution of yoga to stress, self-regulation, and cognitive abilities found in evaluations of yoga programmes in centers outside of school. From the research above, it can be concluded that replacing physical education or some other leisure activity with yoga is not a good way of introducing yoga into the school curriculum. It seems that practicing yoga as a separate activity in school and practicing some yoga techniques several times a day, for example at the beginning of a class, can yield good results.

Conclusion

By reviewing a series of research, this paper sought to contribute to answering the question of the role of yoga in education. Interest in researching the possibilities of yoga as a therapy for various conditions and diseases, as a form of prevention and intervention in children with disabilities, and as part of the school curriculum is growing. Previous research confirms the effects of yoga on health condition, cognitive functions, emotions, and self-regulation. In schools that introduced yoga as part of the curriculum, there has been a reduction in stress, improved mood, increased attention and calm in some children, which are prerequisites for successful learning. Possible benefits have been demonstrated through the use of yoga exercises during breaks, during classes, and as a separate activity. Following the above, we can conclude that yoga could play a significant role in education by helping to achieve outcomes and encourage psychosocial development.

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