



# RATIONALE FOR YOGA IN SCHOOLS

---

## COST BENEFIT AND POLICY RECOMMENDATIONS

DR NICHOLAS KEARNEY, RESEARCH DIRECTOR, TEENYOGA

Teen Yoga Foundation, Red Hill House, Red Hill, BA2 0NY

[info@teenyogafoundation.com](mailto:info@teenyogafoundation.com) 01761 470 658

Reg charity no: 1165236

## 1. INTRODUCTION

### The purpose of this document

This document focuses on the transformative benefits of yoga and yoga-based techniques for young people. These benefits are so important and cost effective, that it would be valuable to incorporate yoga into a range of areas of society, particularly education. This document sets out the key mental, physical, and academic benefits and makes policy recommendations that would facilitate young people's access to these benefits.

### What yoga does

Yoga is becoming increasingly familiar in the UK. An estimated 500,000 people practice it every week, and schools are increasingly offering yoga in some form, usually as after school classes. Many of the schools we talk to are aware of the benefits yoga could bring, though curriculum and timetables make it hard to implement. However, in 2019, Birkenhead School in the Wirral, was the first school in the UK to create the post of Head of Yoga.

Most of the people who do yoga affirm that they feel calmer, sleep better and are happier after a yoga class. Yoga based techniques (postures, breathing, meditation) stimulate the vagus nerve (Porges, 2011), and lower cortisol levels, decreasing the stress response. (<https://www.igi-global.com/chapter/overview-of-yoga-for-teenagers-in-the-uk/261158>). This involves a shift in the nervous system from “fight or flight” mode to the “rest and digest” mode. This allows the prefrontal cortex control of the executive function and emotional self-regulation.

By helping the individual to achieve an optimal mental state, yoga facilitates learning and social participation. The most recent research led by Westminster University indicates an interesting new aspect which links yoga to increased resilience. Our own research in the Hippocampus project ([www.hippocampusproject.eu](http://www.hippocampusproject.eu)) which ended in 2019, showed important reductions in stress, and significant improvements in sleep quality and overall well-being. We used a research instrument based on the WEMWEBS scale, which is very commonly used in psychiatry and psychology circles.

There is a long tradition of research into the benefits of yoga that provides scientific evidence of these benefits. A variety of methods have been used for measurement, ranging from psychological approaches to more bio-medical approaches measuring heartbeat, breathing levels or the levels of different hormones such as the stress hormone cortisol, or neurotransmitters such as gamma-aminobutyric acid (GABA) which helps to regulate the communication of stress and anxiety in the brain. An example of this is the work we did in the BBC program Ouch in 2018 where we measured the level of cortisol in saliva before and after a yoga session and showed that yoga not only reduced cortisol levels during the session, but also that people who regularly do yoga have lower baseline cortisol levels, which makes them calmer, and more focused.

## What yoga does for young people

Young people are particularly at risk from stress. Chronic stress (which leads on from long term anxiety) inhibits the functioning (and indeed the development) of the prefrontal cortex in the brain, which is strongly implicated in executive functions, and linked to learning, partly due to its role in short term memory and emotional regulation. It also inhibits the capacity to focus on activities and decision making. Unless stress is addressed, the learning process and our social behaviours are inhibited. Many of the problems identified in young people (low mood, academic issues, concentration, depression, disciplinary issues) have their roots in the inability to deal with emotional effects of stress.

This is a problem that affects all young people to a greater or lesser degree. For some it develops into serious mental health issues, (75% of adult mental illness has its genesis during adolescence - Chief Medical Officer's Report, 2013) but for all young people the ability to manage stress would be a very substantial benefit. Though the family environment can provide support to help, unfortunately not all family environments do, which makes it especially important to provide children and young people with approaches to self-management of stress.

Yoga provides powerful ways of dealing with stress in personal, family and social lives, reducing tension and increasing calm, so that young people can achieve the balance and focus they need for their academic personal and social development. The key is that yoga helps young people *come to calm* without the need for a professional session. This *capacity to self-regulate* that yoga helps them to develop gives them *greater autonomy* in relation to their mental health.

In addition to this, a review of over 45 research studies of yoga in school settings concluded that “*the published evidence to date suggests that school-based yoga interventions hold promise for enhancing student mental state, health, performance, and positive behaviors...The widespread implementation of yoga in schools could have substantial implications not only for student health but also for society as a whole*”. (Khalsa, S. and Butzer, B. 2016).

## 2. KEY EVIDENCE

While the impact of yoga on adult health and well-being are well documented, there was less clear evidence of the specific impact of yoga on young people until recently. Here are some examples from recent research which cover **health, social and academic impacts**.

### WELL-BEING

As part of a BBC programme looking at ways of reducing stress for young people (BBC Ouch 2018) three groups were compared: a yoga group, a singing group and a control group. The experiment chose 3 groups of young people aged 13-17 who had been doing the activity over a 3-month period). They measured the levels of the stress hormone

cortisol before and after a session. In both the singing group and the yoga group cortisol levels dropped substantially during the session, but more importantly the yoga group had much lower baseline cortisol level (0.12 compared to 0.20 control and 0.16 singing) due to their continued practice of yoga, indicating that the benefits of yoga are sustained over time.

### MENTAL HEALTH

At Ralph Allen school in North Somerset the school had been measuring a broader range of indicators than is usual, for one specific cohort. These indicators included the number of referrals to the Child and Adolescent Mental Health Service (CAMHS). In Year 9, this group had 14 referrals to CAMHS. In Year 10 they did a ten-week yoga course. CAMHS referrals for the cohort dropped to 0. According to the vice-principal, who was in charge of the monitoring of the cohort, there had been no other new activities or changes, so he attributed the drop to the yoga. A CAMHS referral costs the NHS around £14000 over the life of the referral, without factoring personal costs to the child and the school prior to the referral as the child mental health steadily worsens. The yoga for a group of 15 had an overall cost of £850.

### BEHAVIOUR

At Foxwood Academy, Nottingham, in 2020, in the autumn term just after the lockdown ended, the school introduced yoga in the form of a short series of yoga-based practices (chair-based postures, breathing and some meditation) to be implemented within each secondary classroom for ten minutes at the start of the first class after lunch. The total number of students was 75 of ages between 11 and 18.

The previous autumn term the secondary school had had just over 80 behavioural incidents during the term. When the yoga-techniques were introduced, this figure dropped by 52%. This improved class and school atmosphere and allowed for greater focus on teaching and learning.

### ACADEMIC

In addition to the behavioural effects, the students at Foxwood showed substantial improvements in their focus and concentration; 100% of the teachers affirmed that their “*readiness to learn*” was better, much better or excellent. There were also indications of direct academic improvement. Among the Key Stage 3 students the percentage of students on track for English Reading increased from 52% to 72% while other indicators maintained similar levels to the previous year, which was viewed as very positive given the negative effects of the lockdown.

## 3. A COST-EFFECTIVE SOLUTION

The benefits mentioned above are valuable in themselves; the benefits of greater well-being, and calmer more focused young people with greater capacity for self-regulation are self-evident, but the policy perspective always

needs to consider the costs involved in specific interventions and strategies. Yoga in itself is an inexpensive intervention in comparison to many others; a ten-week course for 15 young people can cost between £700 and £900 depending on the context. More importantly, however, it has important impacts, both through the prevention of increased costs (secondary benefits), and due to the direct social, educational and health-related (primary) benefits it generates.

### Prevention

One of the most obvious areas in which the value of yoga can be seen is in the prevention of healthcare and disciplinary costs. In the case of Ralph Allen school above, if the average cost of a CAMHS referral (over the lifetime of the treatment) can be put at around £14000, the estimated potential saving to the NHS of that single ten-week yoga course is around £195000. In addition to this, within schools, the reduction in behavioural incidents indicates a potential for a 50% reduction in the staffing costs relating to these incidents, in addition to other costs relating to reduced teacher absence due to stress, etc... A calmer environment is simply less expensive.

### Direct benefits

The potential savings from prevention are important, but the direct benefits are perhaps more impressive. However, given their nature these benefits are harder to measure, however social impact measurements methods can help to quantify these benefits. We applied the Fujiwara and Campbell model (used in Public Health England since 2011) to calculate the social impact of the EU-funded Hippocampus project (2017-2019) which provided a yoga intervention for 750 students and teachers in 5 EU countries. The results showed reductions in stress, improved wellbeing and sleep, and increased social cohesion. The total funding for the pilot was £170000, which included initial development of the programme, monitoring and other project-related costs in addition to the actual delivery of the intervention.

Using the Fujiwara and Campbell approach, the impact of the intervention came to £899 per student per annum per ten-week course. The impact for the groups averaged out at £11000 due to variance in group sizes. A conservative estimate put the total social impact of the yoga intervention at £268000. This is a difference of almost £100000 compared to the cost of the project. If all the development and project related costs were deducted, the difference would be much higher, coming to over £200000.

These calculations indicate **substantial potential for social impact** if yoga can reach larger numbers of young people across the UK. What follows below are a series of policy recommendations that could help to facilitate this.

## 4. POLICY RECOMMENDATIONS

The policy recommendations that derive from this evidence relate principally to healthcare and education. There is clearly some potential overlap as any policy aimed at reducing mental health issues in schools will also save

money for the NHS. Equally, actions directed at healthcare related provision of yoga for young people will indirectly relieve some of the burden on schools. However, there are some policy recommendations that relate to each specific area.

### EDUCATION POLICY

The evidence set out above, as well as the wellbeing aspects already mentioned, includes behavioural, academic and social aspects. In short, calmer kids get on with each other better, behave better, focus better, and as a result learn better. Policy recommendations that would facilitate young people's access to these benefits include

- Curricular recognition of yoga and yoga-based techniques as part of the range of educational options available to schools and teachers (used within PHSE, PE, or transversally)
- OFSTED recognition of yoga and yoga-based techniques as an indicator of quality within a school
- Inclusion of yoga on PGCE curriculum to make yoga part of the teacher's "toolkit" for improvement of focus and balance and readiness to learn
- Funding for yoga training for current in-service teachers
- Funding within schools' budget for yoga provision (after school, within school day, during assembly, or as part of tutoring provision)

### HEALTH POLICY

As we have mentioned above there are both mental and physical health benefits to yoga. It improves physical flexibility, sleep and has beneficial effects on mental wellbeing, developing resilience, focus and emotional self-regulation. The low cost of yoga provision makes it an ideal option both for physical improvements, especially for those not attracted to competitive sport, and mental benefits, as it can be used to prevent incipient mental health issues becoming more serious (and requiring greater outlays). The policy recommendations include

- Inclusion of yoga on NHS lists for social prescribing
- Funding of awareness-raising regarding benefits of yoga in GP training
- Availability of yoga therapists as part of CAMHS provision

## 5. REFERENCES

Chen, D., and Pauwels, L. (2014) *Perceived Benefits of Incorporating Yoga into Classroom Teaching*. Advances in Physical Education, 2014, 4, 138-148

Daly, L.A., et al. (2015) *Yoga and Emotion Regulation in High School Students: A Randomized Controlled Trial* Hindawi Publishing Corporation, Evidence-Based Complementary and Alternative Medicine, Volume 2015, Article ID 794928,

- Davies, S.C., Annual Report of the Chief Medical Officer 2013, Public Mental Health Priorities: Investing in the Evidence [Internet]. 2014. Available from: gov.uk
- Department of Health, (2016) *No health without mental health: A cross-Government mental health outcomes strategy for people of all ages. Supporting document – The economic case for improving efficiency and quality in mental health.* 2016: London
- Edwards, A., N. Miller, and T. Cartwright, *The impact of yoga on adolescent wellbeing: A naturalistic, mixed-methods study.* Positive Psychology under review
- Fujiwara, D., and R. Campbell. 2011. *Valuation Techniques for Social Cost-Benefit Analysis: Stated Preference, Revealed Preference and Subjective Well-Being Approaches.* HM Treasury/DWP
- Hagen, I. and Nayar, U. (2014) *Yoga for children and young people's mental health and well-being: research review and reflections on the mental health potentials of yoga.* Frontiers in Psychiatry
- Kearney, N. et al. (2019) *Hippocampus Project Executive Summary (2019)* Available from: <https://hippocampusproject.eu/programme/>.
- Khalsa, S. and Butzer, B. (2016). *Yoga in school settings: a research review.* Annals of the New York Academy of Sciences, 1373(1).
- Khalsa, S.B.S., et al (2017)., *The principles and practice of yoga in health care.* SAGE Publications Incorporated.
- Martinus, C. (2018). *Teen Yoga For Yoga Therapists: A Guide to Development, Mental Health and Working with Common Teen Issues.* Jessica Kingsley Publishers.
- Miller, S., et al., *Systematic Review of Randomized Controlled Trials Testing the Effects of Yoga with Youth.* Mindfulness, 2020: p. 1-18.
- NHS Digital. *Mental Health of Children and Young People in England, 2017 [PAS]. 2018* 2018 [cited 2019 June 10]; Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017>.
- Pearcey, S., et al., *Report 05: Changes in children and young people's mental health symptoms and 'caseness' during lockdown and patterns associated with key demographic factors.* Co-Space study COVID-19: Supporting parents, adolescents and children during epidemics 2020.
- Rashedi, R., et al. (2020) *Supporting positive behaviors through yoga: An exploratory study.* Journal of Positive Psychology 2020, Vol. 15, No. 1, 122–128
- Reindl, D. , el al. (2020) *Elementary student and teacher perceptions of a mindfulness and yoga-based program in school: A qualitative evaluation* Explore 16 (2020) 90-93