



Promoting Mental Health  
and Wellbeing among Young  
People through Yoga

# Promoting Mental Health and Wellbeing among Young People through Yoga

2017-2-ES02-KA205-009942



HIPPOCAMPUS



Co-funded by the  
Erasmus+ Programme  
of the European Union

## PROGRAMME HANDBOOK

CHARLOTTA MARTINUS (TEEN YOGA FOUNDATION)

HIPPOCAMPUS CONSORTIUM

September 2019 – Version 5



Co-funded by the  
Erasmus+ Programme  
of the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."

Project Number: 2017-2-ES02-KA205-009942



# TABLE OF CONTENTS

TABLE OF CONTENTS .....	1
INITIAL NOTE TO YOGA TEACHERS.....	7
INTRODUCTION.....	8
CHAPTER ONE - Rationale of the project .....	9
In what way is the project innovative and/or complementary to other projects already carried out?.....	11
CHAPTER TWO - The Hippocampus project.....	13
Project partners .....	13
The funding.....	15
The idea.....	15
The phases of the project.....	17
Expected results.....	19
CHAPTER THREE - Yoga and young people .....	22
What do we mean by yoga in this instance? What is it we are sharing?.....	22
Why do we call it Hippocampus? .....	23
CHAPTER FOUR - Main issues facing young people today.....	24
STRESS and adolescence.....	25
How does yoga work?.....	26
What is the current state of yoga in the UK?.....	28
CHAPTER FIVE - Programme to teach teachers .....	29
Core vision .....	29
Our goals with this program.....	30
Class Checklist:.....	31





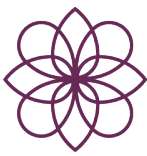
PROGRAMME.....	31
WEEK ONE - Introduction to yoga .....	31
WEEK TWO - De-stress .....	32
WEEK THREE - Building focus .....	34
WEEK FOUR - Clearing the mind .....	34
WEEK SIX - Joy.....	35
WEEK SEVEN - Checking in .....	36
WEEK EIGHT - Release .....	37
WEEK NINE - Teaching.....	38
When needing to deliver on 8 subsequent days .....	39
A CONVERSATION ABOUT RELAXATION – VARIATIONS DEPENDING ON GROUP....	44
Appendix to TEACHING TEACHERS.....	47
From Sasha, the yoga teacher in UK .....	47
From Tove, Norway: .....	49
YOGA TRICKS FOR SCHOOL TEACHERS AND YOUTH WORKERS TO SHARE WITH YOUNG PEOPLE .....	50
Week 1:.....	50
Week 2 .....	51
Week 3 .....	51
Week 4 .....	51
Week 5 .....	51
Week 6 .....	51
Week 7 .....	52
Week 8.....	52
CHAPTER SIX - Preparing to teach young people.....	53
What are we teaching them? .....	53





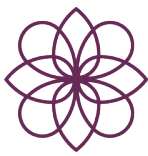
Some thoughts:.....	53
Things you will need .....	53
Troubleshooting.....	54
Flexibility .....	55
Structuring the class .....	55
Things to remember .....	55
Class durations.....	57
Savasana - challenges .....	57
Main mental and emotional benefits of postures: .....	58
Moving towards more challenging postures: .....	58
Postures which need special care and attention .....	59
1. Shoulder stand <i>sarvangasana</i> – .....	59
2. Arm balances .....	59
Corrections.....	60
Demonstrations .....	60
CHAPTER SEVEN - Programme to teach young people.....	61
Core vision .....	61
Sustainability.....	61
Disadvantage .....	61
Important things to think about – creating safety.....	62
PROGRAMME.....	62
WEEK ONE - Nourishing.....	62
WEEK TWO - Building focus.....	63
WEEK THREE - Building trust .....	64
WEEK FOUR - Listening to myself - Compassion.....	64





WEEK FIVE - Optimism.....	65
WEEK SIX - Metta – loving kindness .....	66
WEEK SEVEN - Radical Self-Care.....	67
WEEK EIGHT - Continuing self practise .....	67
APPENDIX – RELECTIONS ON DIFFICULTIES ENCOUNTERED IN FIRST ITERATION OF PROJECT and subsequent amendments .....	68
CHAPTER EIGHT – Yoga Nidra.....	70
Yoga Nidra Script for Young People - Garden of Blossom .....	70
CHAPTER NINE - Socio-psychological changes .....	75
Identity and who are we in relation to the world? .....	75
A time of change.....	76
Grounded and connected.....	78
Online and disconnected.....	78
SUMMARY.....	79
CHAPTER TEN – What goes on in the brain of a teen?.....	81
The neuroscience of adolescence .....	81
Structure of the brain and its development. ....	82
The prefrontal cortex.....	85
Neurodevelopment during Adolescence .....	86
The Effects of Stress and Trauma.....	88
How does the body and brain respond to stress? .....	89
The teen brain and society .....	90
How yoga impacts the brain in adolescence .....	92
CHAPTER ELEVEN- The changing body.....	95
The anatomy and physiology of adolescence .....	95
Anatomical changes.....	95





Growth and postural development.....	96
Flat Feet .....	97
Knock Knees.....	97
Posture.....	98
Back problems .....	98
Lordosis.....	98
Kyphosis .....	99
Scoliosis.....	100
Back problems – why intervene? .....	101
Bone density .....	101
How to increase bone density:.....	102
Athletes and yoga.....	102
General exercises for athletes:.....	103
Osgood Schlatters:.....	103
Hormonal changes.....	104
Menstruation .....	104
Exercise to support healthy menarche: .....	104
Male growth .....	105
Postures to support healthy male development .....	105
Transitions from innocence.....	105
Helping transition .....	107
Sexuality.....	107
Healthy sexuality.....	108
Some diseases that are on the rise among young people.....	108
Exercise to combat bone density .....	108





Exercises to combat obesity.....	109
Diabetes.....	109
Exercises for rheumatoid arthritis.....	109
Self harm.....	110
Exercises for those who self-harm.....	110
SUMMARY.....	110
CHAPTER TWELVE – How to use the app.....	111
Download the app.....	111
Restrictions.....	111
The content.....	111
The classroom.....	114
CHAPTER THIRTEEN - Evaluation.....	118
APPENDIX – Application of the Hippocampus project in out of school contexts.....	119
Bibliography.....	120
Works Cited.....	126





## INITIAL NOTE TO YOGA TEACHERS

Hippocampus is a collaborative process, where we constantly check in with our colleagues and share best practise and also our struggles. Not only does this enrich the work, it is also in line with the philosophy of yoga and the need to explore the approach as it evolves in your hands.

For this reason, it is essential that you keep a journal all the way through the Hippocampus process. We want to document the story of the development and implementation of the programme to make it easier for others to adopt the approach. Your story as a teacher forms a vital part of this. So we would ask you to document all you can. This includes the skype sessions, the training programme, any reflections that you have as homework or otherwise, and also reflections on the classes themselves as you deliver. These notes will form an important part of the development process and will be invaluable for making improvements, and enriching this manual. When they are shared and included in this manual as part of the case studies, you will have the freedom to edit/anonymise your thoughts.

We would also be grateful if you share the process on social media with the #hippocampusproject and @TeenyogaUK and @T\_Y\_Foundation. Also, helpful if you make notes of when you do this.

Please also remember that the more you practise yoga in your life, the more effective you will be. You embody the practise when you keep consistent and research shows conclusively that a teacher who practises yoga has more impact on a class that he/she is not even teaching than someone who is teaching but does not practise her/himself.







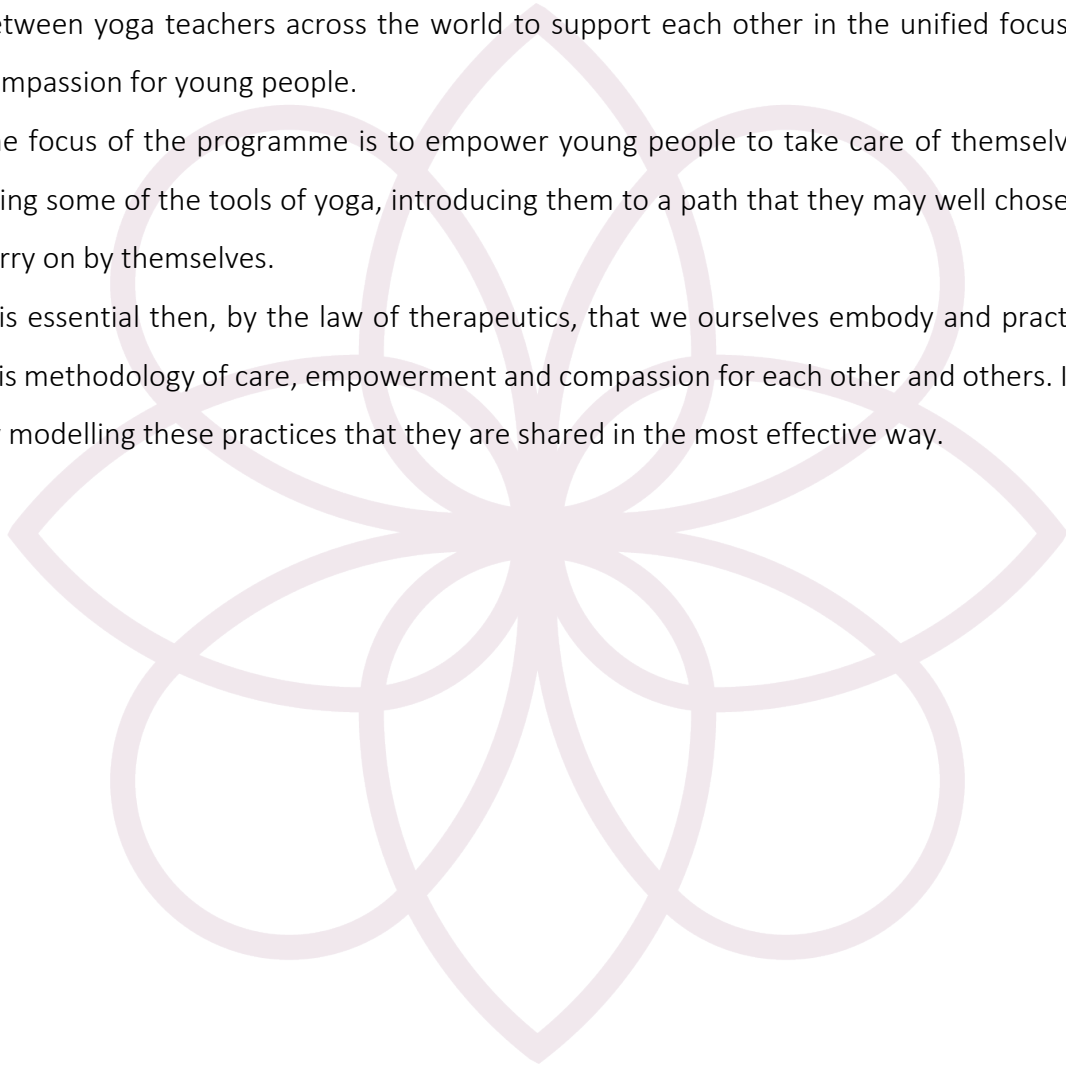
# INTRODUCTION

The purpose of this manual is to guide and inspire the TeenYoga teacher to run effective and uplifting yoga classes with teenagers. I see it as a collaboration across countries and across time.

Through constant communication and feedback, I hope to build the collaboration between yoga teachers across the world to support each other in the unified focus of compassion for young people.

The focus of the programme is to empower young people to take care of themselves, using some of the tools of yoga, introducing them to a path that they may well chose to carry on by themselves.

It is essential then, by the law of therapeutics, that we ourselves embody and practice this methodology of care, empowerment and compassion for each other and others. It is by modelling these practices that they are shared in the most effective way.





# CHAPTER ONE- Rationale of the project

Mental health is a key issue facing adolescents across Europe. The CAMHEE Child and Adolescent Mental Health in Europe report of 2009, stated that one in five children and adolescents in the EU suffers from developmental, emotional or behavioural problems, and these data do not take into account those who while not yet exhibiting clear mental health issues suffer from chronic stress or anxiety. These issues tend to fall under the statistical radar, but appear to be endemic among today's young people. The vertiginous pace of change and development in society and technology particularly affects the young. No previous generation of young people has been as massively exposed to commercial, academic and peer pressure so continuously. "Always on" (Turkle, 2012) means always under stress. This couples with the already substantial pace of change in any young person's life; apart from 0-3 the most accelerated and massive neurological, emotional, physical change in the individual takes place in adolescence, creating a situation where stress appears almost natural.

This has effects in many different areas. Chronic stress and other related issues inhibit the functioning (and indeed the development) of the prefrontal cortex which is fundamental for learning and social interaction. It also inhibits the capacity to focus on activities and decision-making. This is a problem that affects all young people to a greater or lesser degree. For some it develops into serious mental health issues, but for all 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.

The HIPPOCAMPUS project aims to address these issues by promoting the well-being of young people through the practice of a range of techniques derived from yoga. This ancient practice, which has been extensively misunderstood in the West, can be described as a "technology of wellbeing". Derived from a confluence of traditions, it provides a series of techniques for enhancing well-being and promoting a healthy body and mind. It does this through a bottom-up approach, working through the body and





mind to create wellness. To be specific, what yoga techniques do is shift the body and mind from the “fight or flight” state of stress, to the “rest and digest” state of calm, with attendant decreases in cortisol levels and heartbeat. Neuroimaging research shows that these practices (also found to some degree in mindfulness) lead to changes in the areas of the brain responsible for emotional regulation and perspective taking.

Moreover, the physical postures, breath regulation and relaxation techniques practised in yoga are especially relevant and effective in young people. Studies have shown regular sessions of yoga help young people to increase body confidence and health and provide an effective and safe method of dealing with stress, which increases their emotional well-being, with attendant benefits in variety of aspects of their lives, including social interaction and participation and learning. The experience of the partners is that yoga can be particularly effective for disadvantaged young people, who frequently exhibit higher than average levels of stress and ill health.

Extensive evidence already exists from the US and India, both researched and experiential, where yoga has changed the lives of young people. The research evidence, from psychological and medical studies, points especially to the value of yoga in increasing well-being and emotional self-regulation. Examples include the work of Dr Sat Bir Khalsa at Harvard (e.g. <http://tinyurl.com/ouzqj9o>) and Dr. Shirley Telles in Bangalore (<http://tinyurl.com/o39jzdx>).

Yoga-based practices provide important potential for providing young people with the means not only to manage existing situations of stress but also avoiding them. The potential for prevention of mental health issues has value not only from the social and healthcare perspectives but also from an educational point of view. Substantial improvements relating to absenteeism in the NHS in the UK (Harfiel, 2015) indicate that yoga makes substantial improvements in quality of life and these benefits are likely also to accrue to young people. In the case of disadvantaged young people who do not have the benefits of a supportive family background, they are potentially transformative. The aim of the HIPPOCAMPUS project is to develop and implement an appropriate yoga-based approach to bring these benefits to young people in situations of disadvantage.





## In what way is the project innovative and/or complementary to other projects already carried out?

Research into the benefits of yoga has been under way for over twenty years, in countries such as India, the USA, Scandinavia and the UK. Due to the evidence provided by this research work, and the extensive experiential evidence provided by people who have participated in yoga programmes, schools have begun to incorporate it in these countries, most frequently as an extra-curricular activity. However, although schools in these countries are becoming more and more interested in the potential of yoga for enhancing student well-being and preventing mental health issues, misperceptions still exist about the practice, and there is still a lack of awareness of the potential. In other youth contexts than schools, there is less awareness, though some efforts have been made, such as the Youth Yoga Yurt pilot project, run by the Teen Yoga Foundation in the west of the UK in 2015/6 to bring yoga to young people. In other countries, such as Spain Italy and Belgium there is much less awareness of the potential.

Hippocampus aims to complement the existing work and extend it in a variety of ways. Most importantly, the programme will innovate by building attention to disadvantaged groups into the design of the programme, aiming to make it fully inclusive, and the focus of evaluation in the project will be particularly on the degree to which the programme meets the needs of the disadvantaged participants. It is important however also to notice that we also incorporate a fresh perspective on work with disadvantaged groups in the sense that the programme treats these groups as part of the whole rather than as a separate cohort. Though the yoga provided will be available to all, our programme and the evaluation will focus especially on its effects on the disadvantaged young people within the groups, especially from the perspective of emotional self-regulation. Any truly inclusive approach includes!

Another innovative aspect relates to context. Up to now most yoga programmes aimed at young people have focused on the school environment. In Hippocampus, the design aims to take into account the needs of a range of different environments of youth activity so that youth clubs, municipal facilities, cultural centres and other contexts will be taken into account in the design, and schools too. In this way we aim to make the programme





flexible enough to be applied in a large variety of different youth contexts. The innovation is also geographical. As mentioned above, in two of the partner countries (UK, NO), some yoga programmes for young people already exist. However, in the others (BE, ES, IT) the penetration is much more limited, so that in these contexts the programme will be a new departure.

Another innovative aspect is that the vast majority of yoga programmes have focused on the young people, involving them in the sessions, but not the staff. This approach has limited sustainability since it relies on the presence of an external expert, the yoga teacher. The HIPPOCAMPUS approach is more holistic aiming to involve the whole organisation in the long term, which multiplies the benefits. The interventions planned within the programme will focus on both the young people and the staff who work with them, who will also receive yoga training. The staff will also be provided with a series of yoga-based activities (breathing exercises, meditation activities and simple seated and standing postures) to incorporate within their other activities with the young people. In this way, the yoga-based practices become incorporated over time into the everyday activities of the organisation, rather than remaining an external element. This ensures the effectiveness of the programme and its sustainability.

Lastly, the Hippocampus project will introduce a very important innovation that is of particular importance in working with young people. Very recent work, such as that of Harfiel (2016), has shown that the benefits of yoga-based practices are greatly enriched if home practice complements the group sessions provided. In the case of Harfiel a handout was used, in Hippocampus we will develop an innovative support app, which will be used to provide resources about yoga, short videos of postures and the opportunity to create a profile where participants can share pictures and comments about their practice. More importantly it will be used to send reminders about home practice, to increase the benefits of the programme. By facilitating engagement with the programme and interaction between the young users, it will also promote sustainability of the activity, and its benefits.





# CHAPTER TWO - The Hippocampus project

## Project partners

- University of Salamanca (ES)
- Teen Yoga Foundation (UK)
- National University of Science and Technology (NO)
- YEU (BE)
- Oxfam Italia (IT)
- IES Venancio Blanco (ES)

Young people, like adults, inhabit a wide variety of contexts. However, access to young people, in the context of research and innovation especially, tends, for ethical and practical reasons, to be institutionally driven. In this project, we wish to explore how yoga-based practices can benefit young people and improve their well-being across a variety of contexts, both geographical, socio-cultural and organizational.

Furthermore, there is evidence (UK Education Policy Institute, 2016) that interventions aimed to favour disadvantaged young people can be affected by issues such as the percentage they represent in the test population. There are indications that mixed contexts are beneficial, rather than contexts where they are separate. For this reason, we have a variety of population mixes in the pilot contexts.

The project, to function appropriately, requires a combination of expertise that includes expertise in yoga-based practices, psychology and education research with young people, and expertise in work with disadvantaged young people in a variety of contexts including youth clubs, charity organisations, municipal contexts and schools. It also requires some technical expertise for the development of the app. The consortium we have chosen provides this.

- In the UK, the partner is the Teen Yoga Foundation, which has been a pioneer in the context of yoga for adolescents, engaging both in the training of specialist yoga teachers and initiatives to bring yoga to young people such as the Youth Yoga Yurt - a project in the UK West Country in 2015/2016 that used a mobile tent to





travel to teach yoga in public spaces where young people congregate – and various actions relating to disadvantaged young people and mental health, working with the UK National Health Service. The Foundation brings over fifteen years of expertise in yoga work with adolescents to the project, and will be very active in the design of the programme. The TYF works with a range of schools and municipalities and other public bodies, and in this project will work with the local council youth programmes in the towns of Midsomer Norton, and Paulton in Somerset, which have a high proportion of disadvantaged young people, as implementation contexts.

- In Italy, Oxfam Italia has its main focus in work with disadvantaged populations, and especially young people. Oxfam already has programmes for young people which includes an intercultural community center called Casa delle Culture. This focuses especially on social inclusion and integration working to bring together migrants and foreign language communities and the disadvantaged migrant community will be the context in which the programme is implemented in Italy.
- In Belgium, Youth for Exchange and Understanding International are an international youth network who work to promote peace, understanding and cooperation between young people. They engage in a wide range of activities with young people and youth organisations, with a focus on disadvantaged young people as one of their priorities, as well as international youth councils and is part of the European Youth Forum. For this reason, as well as implementing and participating in the design of the Hippocampus programme, it will be instrumental in the dissemination and exploitation activity of the project, ensuring that the results reach as wide a variety of youth contexts as possible. All partners will assist YEU in this role.
- In Norway, the Psychology Department of the Norwegian University of Science and Technology has been researching the benefits of yoga for young people for some years, and will bring their extensive yoga research experience to bear in the design and implementation of the programme. They will also bring to bear their expertise on research into young people and social media in the design of the app.





In the implementation they will work with Skaun ungdomsskole, a local school, who will also contribute to the design of the programme.

- In Spain, the GRIAL research group at the University of Salamanca Faculty of Education have extensive experience working with young people in situations of disadvantage. They also bring to bear long experience in the design of new technological applications. They will focus on the app design and implementation but also work on the design of the programme bringing to bear their experience in education. They will work with the Venancio Blanco secondary school in the implementation and this school will also participate in the design of the programme. Due to internal requirements this organization has requested to be a partner in the project, In the other countries the different organisations where the programme will be implemented have opted not enter to avoid perceived “red tape”.
- As can be seen, the consortium has appropriate experience to bring to bear, and a good range of varied youth contexts in which to implement the programme, as well as a strong capacity to ensure that the results are disseminated effectively.

## The funding

- Erasmus Plus (Spanish Agency)
- Cooperation for innovation and exchange of good practice
- Strategic partnership for the development of innovation
- Total Budget: 192.914 €
- Duration 26 months (01/10/17-30/11/19)
- Hippocampus: Promoting Mental Health and Wellbeing among Young People through Yoga

## The idea

- Last 10-15 years roll out UK/US
  - More extensive in primary (yoga as play)
  - Slower in secondary but consolidating







- Less focus on the vulnerable/disadvantaged (low hanging fruit)
- Extensive benefits of yoga for young people
  - Physical well-being (flexibility, self regulation)
  - Mental well-being (engagement, executive function)
  - Effects on a wide range of areas (academic, social, emotional...)
- Results with young largely experiential, plus some research-based evidence
  - Comparability
  - Sample size
  - Research culture
- Need holistic inclusive approach that caters to vulnerable/disadvantaged
  - Robust and effective
  - Adaptable to different contexts
  - Emotional self-regulation as central

The aim of the HIPPOCAMPUS project is to develop and implement an appropriate yoga-based approach to bring the benefits of yoga to young people in situations of disadvantage.

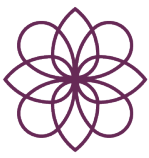
Aspects of innovation:

- Inclusivity, disadvantaged as part of the whole.
- Varied youth environments, not just schools.
- Holistic, including whole organisation.
- Support app for home practice, sustaining the benefits.

Results:

- The Hippocampus programme – collection of documents that give full picture of the programme , so as to enable others to implement it.
  - case studies
  - activities
  - session plans
  - methodology
  - strategic advice
  - other tools (resources and infographics)
- The mobile app – integral part, supports home practice





- profile
- record and share their progress,
- exchange experiences,
- access resources
- receive updates and suggestions, such as daily postures and exercises
- reminders

Other activities:

- Dissemination – raising awareness about the project
- Networking – adoption in other youth contexts beyond the consortium
- Events – supporting networking and dissemination
- Project management
- Quality assurance

## The phases of the project

Phase 1: M1-M6 DESIGN OF THE APPROACH

- Explore and share details of each context so that they can be taken into account in the design of the approach. For this reason, all partners and end users will participate.
- Discussion and development of the approach and its structure
- Design of the implementation process.
- Led by TYF

Phase 2: M1-M18 CREATION OF THE APP.

- Simple but engaging app (also with web interface)
- Prototype identified, to be adapted
- Led by the University of Salamanca, partners and end users will provide input to the development process.

Phase 3: M6 – M24 EVALUATION

- From M6 the focus is on piloting and later wider implementation.
- The effects will be monitored, both for the purpose of making adjustments, but also to gather evidence for the beneficial effects of the approach on young people, with a view to dissemination and exploitation.





- Led by TYF but all partners involved

#### Phase 4: M6-M12 STAFF ROLLOUT

- In this phase the staff at each organisation, youth workers, teachers and administrative staff will begin to participate in yoga-based sessions.
- This is initially to introduce them to the benefits (they cannot pass on something they do not practice themselves) and to familiarise them, after some weeks they will also learn how to lead sessions themselves with a range of activities they can use with young people in a range of contexts, and trial the app.

#### Phase 5: M12-M18 YOUNG PEOPLE ROLLOUT

- The approach is implemented as dedicated sessions to a specific initial age group (likely to be 13/14 year olds)
- After some weeks, the use of the app is introduced.
- Staff sessions continue and are extended.

#### Phase 6: M16-M24 INTEGRATION

- Yoga-based activities are integrated into other sessions throughout the organisation, for example as an introduction to workshops and classes, as a way of centering attention to improve concentration and focus.
- Staff sessions continue and are extended.

#### Phase 7: M1 – M24 SUSTAINABILITY

- Throughout the project attention will be paid to making third parties aware of the project and then its results (dissemination) and to persuading them to adopt the approach (exploitation).
- The aim of this is to ensure the future use of the approach in as many contexts as possible. Ideally the process already implemented with the first groups is extended throughout the organisation, and to other organisations. (We had a phase for this purpose, but it was not funded)
- Raise awareness through a range of local dissemination events (yoga fairs), as well as dissemination events in Brussels and other countries, through our youth networks, and of course through social media channels.
- Publish results through academic channels.
- Events such as Instill (UK), TEEM (ES), NTNU yearly seminar (NO) and others)





It can be seen that all these phases involve all partners. We must be to ensure the input of the end users, young people and staff, throughout.

## Expected results

The issue addressed by the project is clear. The value of developing a yoga-based programme such as Hippocampus that will improve the wellbeing and mental health of young people is substantial. The central overall outcome expected during the project, in addition to the programme itself, and the app that supports it, is evidence that this programme does achieve this for disadvantaged young people in a variety of contexts, and a wide range of elements (previous experience, research evidence, and the clear capacity of the partners) make it clear to us that this can be achieved in the lifetime of the project. On completion of the funding period, we expect to be able to show that not only is the project achieving the objectives in the target contexts, but that it is also starting to be adopted in other youth contexts beyond the consortium, improving the wellbeing of a wider and wider range of disadvantaged young Europeans.

All the work of the project focuses on the two key intellectual outputs, the Hippocampus programme itself and the app that supports it. This will be supported by the networking contributions and in the specific events organised by the project.

The Hippocampus programme is the main intellectual output. This will be an electronic collection of documents that function together as a complete picture of the programme that enable a potential use to implement it. The documents will include:

- Case studies – at each site where we implement the programme. The progress will be documented, using techniques such as journaling, questionnaires and interviews (with teachers, participants and other stakeholders), in order to develop a detailed account of the way the programme has functioned in each context, and identify good practice. These case studies will serve as the starting point for the development of the other documents described below.
- Activities - extensive descriptions of the full range of different yoga-based activities that can be used in the programme, both those that form part of dedicated sessions and those that can integrate into other sessions where staff





in each context are working with young people and incorporate yoga-based activities into their sessions, and for use through the app at home.

- Session plans – extensive descriptions of sequences of activities for different contexts, such as full sessions dedicated to yoga-based activity, preliminary sessions of yoga-based activity at the start of other sessions, short yoga-based breaks, and sequences for use at home through the app.
- Methodology – resources providing advice and guidelines both for the yoga practitioners providing initial yoga sessions for staff and young people in each organisation, and for staff who will incorporate yoga-based practices into their work with young people within their normal activity. These documents will also include information for the young people using the app regarding yoga-based activities at home. These will include advice relating to aspects such as when and where to do it, clothing, effort and so on.
- Strategic advice – these resources will provide advice regarding how best to adopt and implement the programme in different youth contexts. They will include advice relating to spaces and timing and how to integrate the programme into current activities, as well as information about common issues that can arise and strategies for anticipating them and dealing with them if they arise.
- Dissemination – these documents will contain resources about the programme, and infographics about yoga-based practices for dissemination to potential users who are unfamiliar with the Hippocampus programme.

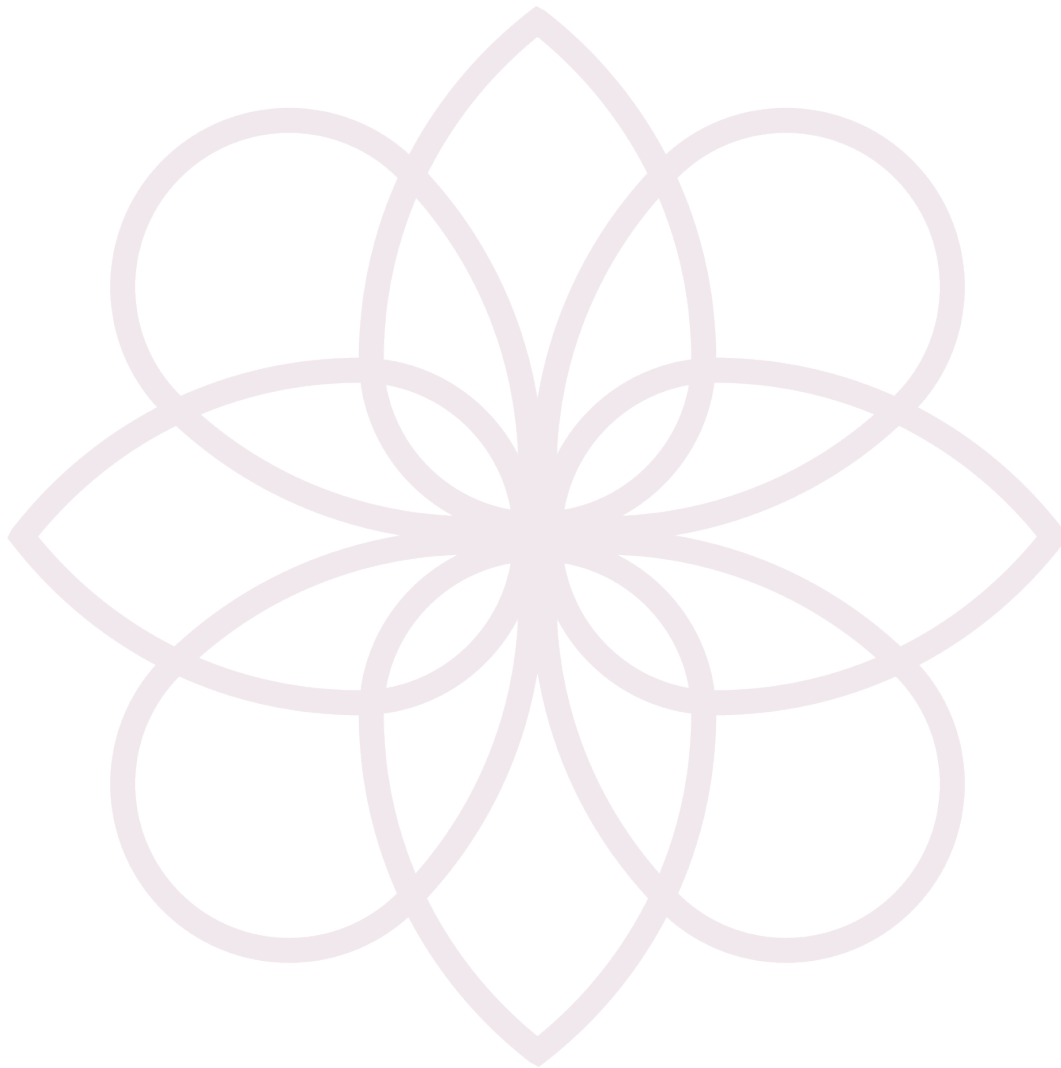
This collection of electronic resources will be available for download, either as a single printable handbook made up of the collection organised into different chapters (excluding video material), or as separate resources for downloading. It will also be available through the app.

The other main output of the project will be the Hippocampus mobile app. This constitutes an integral part of the approach. It will be a simple but engaging app (also with web interface) that allows participants to create a profile and record and share their progress, exchange experiences, access resources and receive updates and suggestions relating to their group, such as daily postures and exercises as well as reminders. Experience with other similar social software indicates that this helps to maintain interest





and motivation, and recent research has indicated that it enriches and consolidates the participant's progress. In this sense the app is a tool for supporting the programme, and providing opportunities for participants to continue their practice at home, in addition to the sessions provided in the programme. The app will also provide the resources of the programme and the reminders will continue suggestions for activities so that the content is regularly refreshed.





## CHAPTER THREE - Yoga and young people

What do we mean by yoga in this instance? What is it we are sharing?

Yoga means unify, union, coming together, community, connection

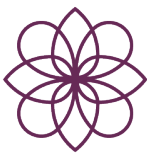
It is integral to this project that teachers disseminate correct information about what yoga is and what it is not, so that we can go some way towards countering the current bias towards physical asana.

**The 8 limbs of yoga include:**

- Yamas and Niyamas, which are Ethical guidelines and prosocial suggestions (you may like to mention these in passing as part of your class, or design handouts for the teachers around them for them to reflect on.
- Pranayama - Breathing techniques, integral to each class
- Asana – Movement, integral to each class
- Pratyahara – Mindfulness, integral to the later classes
- Dharana – Concentration, integral
- Dhyana – Meditation, hopefully this spontaneous state of focus and concentration will come in asana and breathing practice.
- Samadhi - Meta-cognition – becoming aware of our individuality in relation to other, bigger contexts.

It is important that we teach this to our teachers as much as we can as part of the classes, so that they come away with an accurate idea of the grandeur of what yoga has to offer. Not all aspects suit everyone, so when you find out that there are different aspects, it makes yoga much more available to everyone as they can pick and choose which aspect they are drawn to and suits their interests and personality.





## Why do we call it Hippocampus?

The hippocampus lies close to the amygdala at the centre of the limbic region of the brain and is involved in learning and memory. When someone is stressed over a long period of time, this little organ shrinks in size. It grows during yoga and learning.



Above is an illustration of reasons why some young people experience long term, damaging stress and others have a high level of resilience. Maybe look into your own life and those you are teaching to see if you can recognise any factors that might play into their behaviour and development.





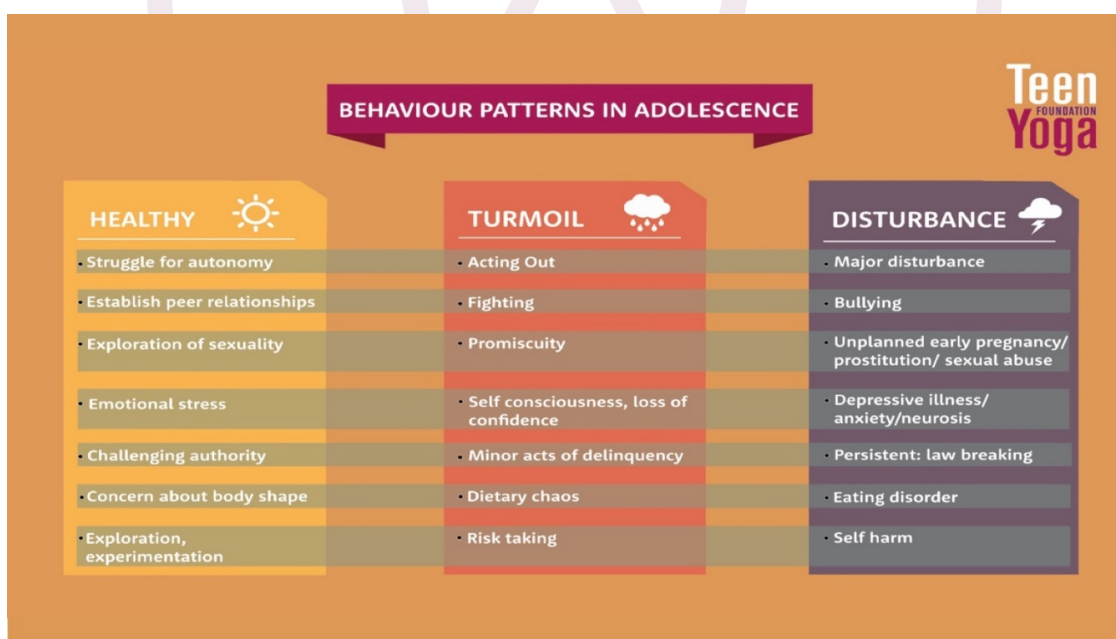


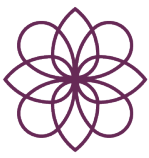
## CHAPTER FOUR - Main issues facing young people today

- Constantly online (never switch off)
- Peer pressure
- Academic pressure
- Financial pressure
- Fear of environmental and climate crisis
- Lack of resilience measures
- Drug experimentation
- Gender confusion
- Sexual orientation confusion

Have a think about how aware you are of these in your life now or in your past or in the lives of young people and what kind of impact each one has on their relationships to themselves and others.

When there is stress and tension in the life of a teen, due to home, school or peer factors, things can go wrong, as is illustrated above. Similarly for the uninitiated, normal and healthy behaviour of an adolescent can seem dangerous and risky. Reflect on whether you have come across anyone who has stumbled into a disturbing behaviour pattern?





## STRESS and adolescence

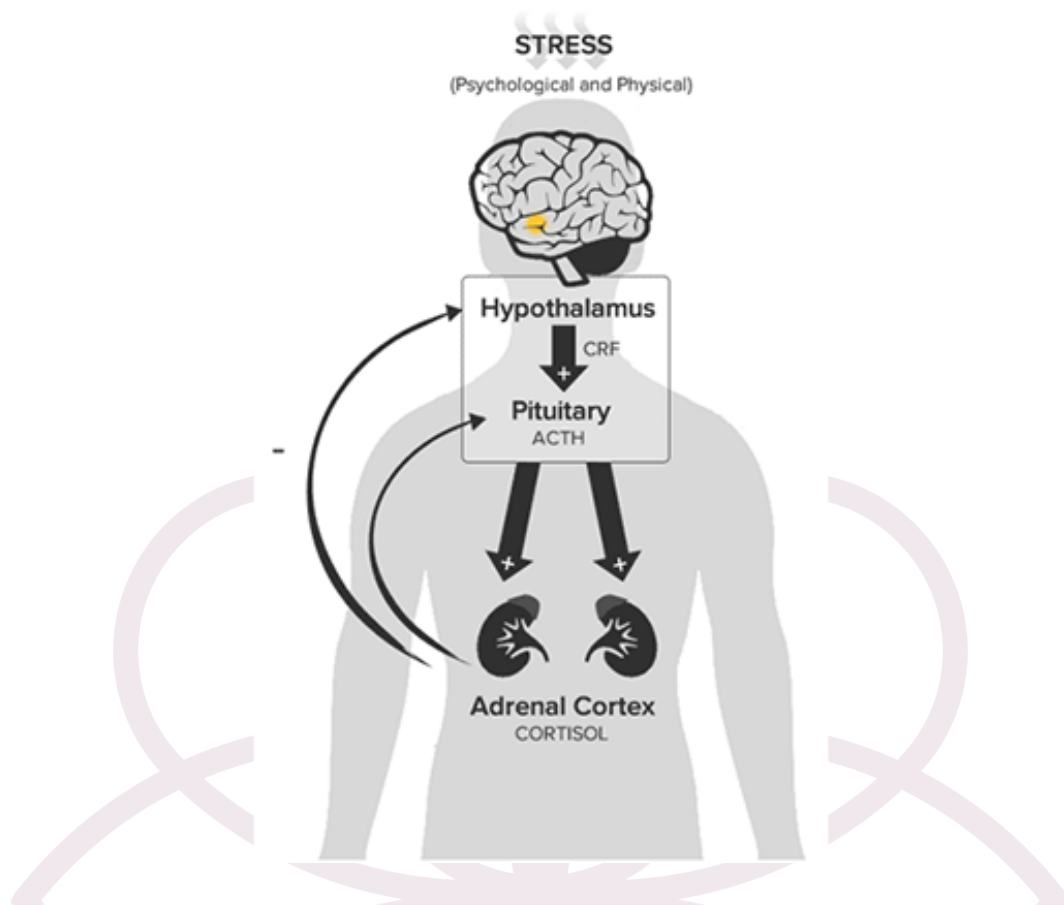
Stress in adolescence is normal and has the potential to build resilience if experienced in small, manageable doses. As with all of us. The neuropathways developed due to coping with stress experienced during this time, can be very useful in dealing with hardships later on in life. However, when the stress becomes overwhelming and is without respite, it damages the brain and the body potentially for life, if nothing is done to stop this process from continuing.

We know what it is to have a fit body, we know how that might look, toned, muscular and in good condition. By the same measure, we can consider a healthy mind to be one that can withstand pressure, stress, adverse circumstances and be able to relax itself completely and refresh itself in downtime. However, this is not necessarily something that we are taught or aware of in our society. We shower our body, but how do we keep our mind clean?

The problem with experiencing constant levels of stress and then dealing with them with alcohol and drugs, is that becomes an intrinsic part of our character growing up. We grow to see the others, life and the world as something threatening, frightening and ill-meaning. Because of the physical elements of ongoing stress, we then face a future of stress-induced illnesses, such as poor digestion, skin problems, heart failure and high blood pressure.

In the image below we can see how the brain releases a cascade of neurotransmitters and hormones which flood the body to prepare it for fight or flight and thereby effect general health and longevity.





## How does yoga work?

There is some evidence that by activating the vagus nerve in backward bends and other yogic practises, we elicit the parasympathetic nervous system which switches on the relaxation response in the body. We teach the body how to reach homeostasis, balancing from one state to another easily and effectively, responding to the outside world. We also know that deep breathing activates the baroreceptors at the base of the lungs, which in turn, triggers the relaxation response in the nervous system.

The golgi tendon body connects tendons to ligaments and when it is stretched and held, also indicates to the brain to switch off and relax.

Dr Benson's seminal work, *The Relaxation response*, published in the 60s in the US indicates without a shadow of a doubt how significant it is to be able to elicit the relaxation response in order to stay well and healthy throughout life.





More recent findings have found that living and acting within a compassionate, open and loving community also adds to wellbeing and long term mental health.

With certain conscious movement and conscious breathing, it has also been found that the Pre frontal cortex connects more readily with the amygdala (the fear centre of the brain, thereby enabling the mind to switch off habitual fear responses, in favour of a more reasonable response.

When we educate ourselves in this embodied literacy, we become aware of how our particular body works, where the tension and stress is located and how specifically to release it, we become more in control of our pain and can manage ourselves in most situations, to maximise our interaction with the world.

## Teen FOUNDATION Yoga

## YOGA PRACTICES

Postures, Breathing, Relaxation, Meditation



Dr. Sat Bir Khalsa PhD. Harvard Medical School



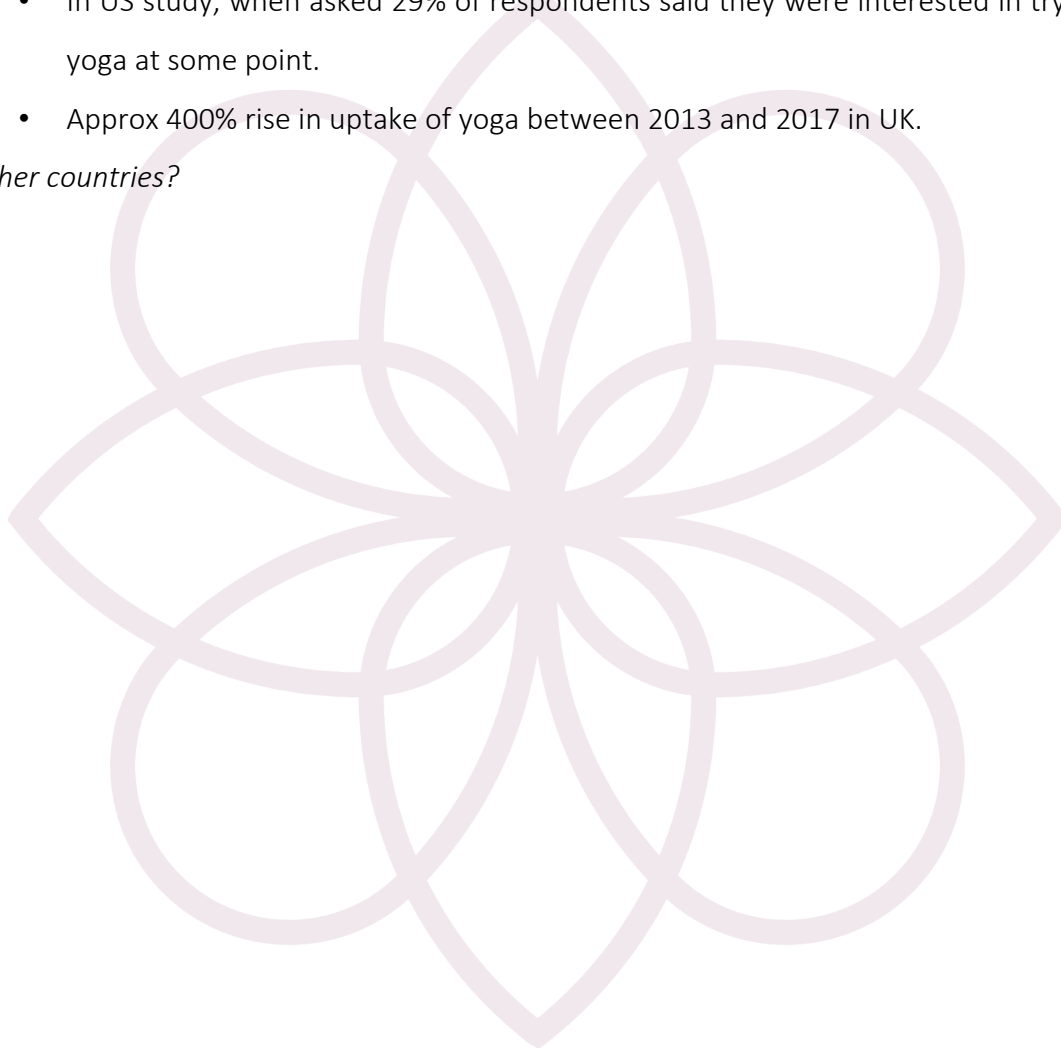


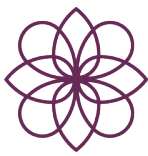
When we feel well and balanced, we become kinder more compassionate, concentrated and pro-social (aka well-behaved)

## What is the current state of yoga in the UK?

- Currently and estimated ½ million young people practise yoga in the UK by choice and approx 7% of the population in general.
- In US study, when asked 29% of respondents said they were interested in trying yoga at some point.
- Approx 400% rise in uptake of yoga between 2013 and 2017 in UK.

*other countries?*





# CHAPTER FIVE - Programme to teach teachers

COLLABORATION

COMPASSION

EMPOWERMENT

## Core vision

In the UK around 50% of school teachers leave the profession after 5 years according to research. Recent studies show that teaching is one of the most stressful professions in the country. This stress directly impacts the young people they are working with in a negative way. It also exacerbates the work environment. Stress causes around 75% of diseases and is the primary cause of death in the Western world. Yoga gives us a unique way of dealing with this pernicious disease which benefits all. In our experience, working with these groups now for over 30 years, a whole school or organisation approach is the most effective way of bringing about a culture of optimal self-care, with yoga at its core. When professionals experience the profound social and health benefits of yoga they are more willing to support young people in their practise and understand how and when it could be the most effective. By giving them the experience of the yoga, they are embodying the practise, which, according to research is even more effective than a teacher who teaches without practising. Further research is indicating that those who practise within a community gain far greater benefits than those who practise individually.

The over-arching goal with this project is to lessen the gap between those less advantaged and those with advantage by teaching self-regulation techniques to them as well as supporting workers who work with less advantaged students to be more tolerant, compassionate and curious in their wellbeing and success.





## Our goals with this program

1. To teach teachers/ workers yoga (ideally to the point where they practise at home)
2. To create a harmonious and collaborative atmosphere in the environment where they work to lessen conflict, to enhance compassion and to empower all parties to express themselves in a helpful way to enhance team spirit and a growth mindset
3. To be able to share small parts of yoga with the young people

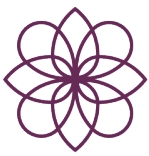
Ideally, we would like the professionals to feel empowered to use yoga as a tool to calm themselves and others and to change mood in general in order to engage disadvantaged students effectively in whatever task they are doing, bringing the young people to the awareness that they are masters of their own destiny.

The writer is fully cogniscent that there are many different paths of yoga and throughout history, yoga has always been tailored to the individual to fit their particular bent, chanting for some, movement for some, breathing for others, meditation for yet others and so on. We are also aware that teachers themselves follow a tradition dear to their own heart and therefore the idea of a strictly adhered to programme is disrespectful and misguided. However, with this in mind, I would like to suggest a programme which I would suggest we all follow in order to make sure that the research and outcomes are comparable.

On the other hand, contexts and cultures differ, which is why I hand back all responsibility and sensitivity to the teachers in the various contexts to do what they see fit in every class.

We are not, however advocating a simple yoga class drill, as you may deliver in a yoga studio scenario, but rather the flexibility lies in meeting your students where they are, always checking in with whatever has gone on through the week and the day and responding to that, as well as recognising temperature and seasonal changes that might impact the practise that you would advocate.





## Class Checklist:

- Be aware of school events (exam weeks, excursions etc)
- Be aware of the weather
- Be aware of the politics among the group
- Be aware of any unwillingness to participate
- Be aware of any physical limitations
- Encourage individual focus, rather than comparison
- Encourage eyes closed if at all possible
- Keep postures simple
- Never practise with them- rather show and then watch
- Always end with something they can share with the young people

## PROGRAMME

With feedback from the course, we have decided to create cards for the teachers as an aide-memoir. Many requested continued classes and some little yoga tricks they could use in the classroom. It appears that this course for the teachers did not give them enough confidence to teach yoga, which is understandable and that they need more ongoing and specific tuition. For this reason I have added an extra chapter on tricks to share with students after this one.

### WEEK ONE - Introduction to yoga

Find out what their preconceptions are and what they want out of the class - sankalpa (an intention) and keep this in mind throughout. Make a note of any injuries/special requirements.

Outline the basics of yoga, maybe offer them a handout on the sun salutation or guide them to a video where they can practise at home. (eg the TeenYoga You Tube site/app)

Teach them the sun salutation (maybe for the older or more stiff, an adapted version)







Depending on the group, either teach them some standing postures, such as triangle and warrior 1, 2, 3 or if they are tired and stressed, maybe relaxing postures, such as legs up the wall and forward bends

Legs up the wall

Body Scan

**Teaching points:**

- Sun salutation
- Legs up the wall
- Body scan
- Mind-body connection (how postures make you feel different)
- History and magnitude of meaning of yoga
- How relaxation works

FOR THE STUDENTS: A basic stretch in a chair (neck, shoulders, spine)

**WEEK TWO - De-stress**

Outline the relationship between body and mind, guiding their awareness to the impact on mood after the class and the relationship between stress and the body, you could share this graphic below.

Practise; recap last week (sun salutation)

Introduce de-stressing techniques:

Belly breathing – 3 part breath?

Supine twist

Warrior 1, 2, 3

Chair posture

Childs pose

Forward bends

Ending in relaxation possibly to music

**Teaching points:**

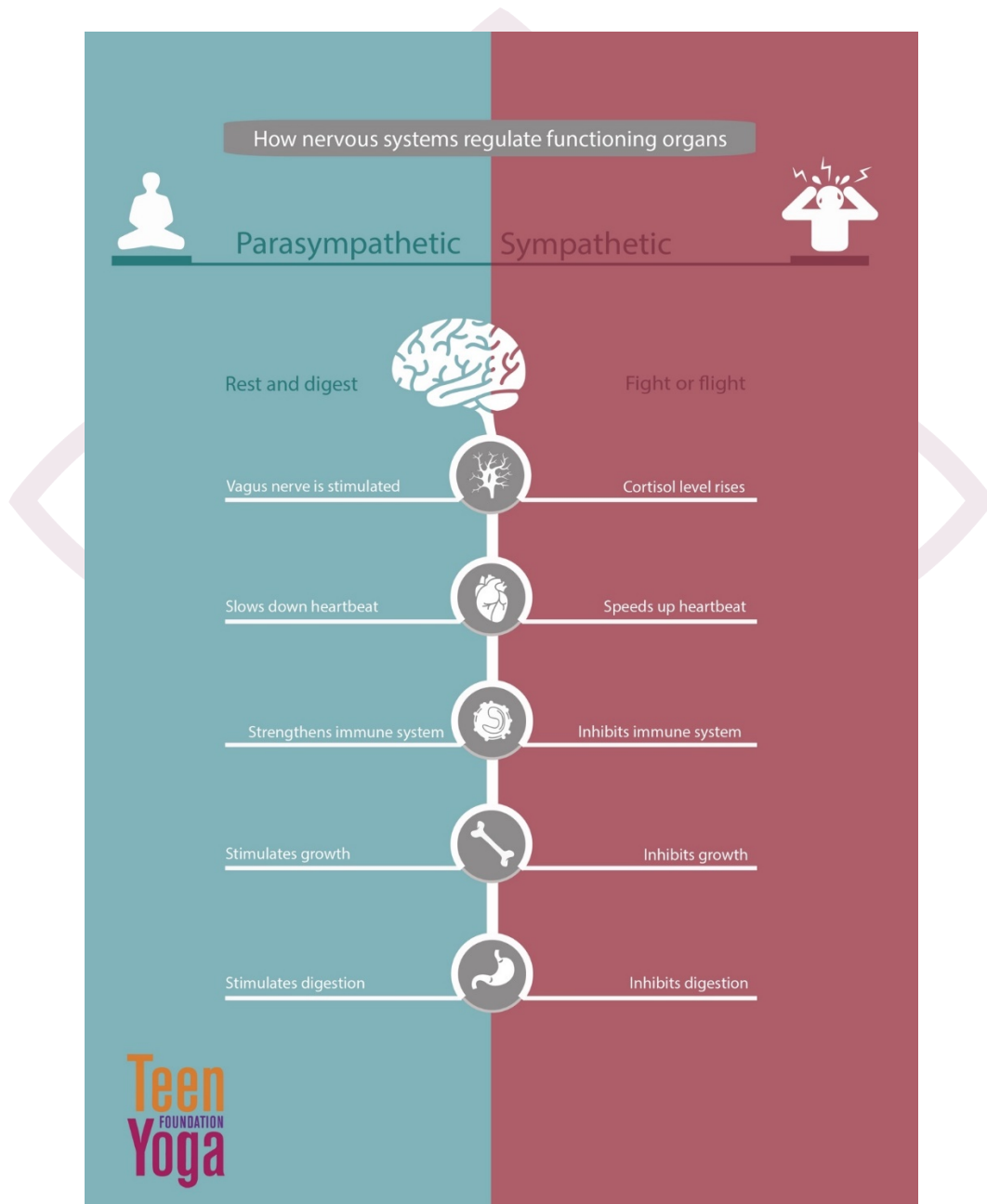
- In order to de-stress, we first need to use our muscles (tighten them)
- Correct alignment for warriors
- Breathing correctly





- Correct alignment for forward bend
- Questions
- Relationship between stress and the body
- Importance of relaxation in order to be well

FOR THE STUDENTS: de-stress techniques- belly breathing, tension release, squeeze legs into stomach





### WEEK THREE - Building focus

Warm ups (maybe cat/cow and then sun salutation, so there are options)

Seated twist

Balancing postures – tree, dancer, eagle,

Square breathing: 3,3,3,3,

Legs up the wall or maybe shoulder stand for some

Relaxation (body scan and then silence, maybe 10 minutes)

#### Teaching points:

- Square breathing to help focus
- Twist to help digestion
- Different warm ups that can be done in the chair
- Intro to shoulder stand
- Importance of silence in relaxation

FOR STUDENTS: square breathing, focus through balance on one leg and one pointed drishti

### WEEK FOUR - Clearing the mind

Warm up

Inversion

Twist

Balance

Brahmari breath

Body scan

Relaxation, intro yoga nidra

#### Teaching points

- How the digestion and the mind are connected
- Twists and forward folds release constipation and help mental clarity
- Other ways of reaching focus such as
- Balancing and focussing on one point
- Brahmari breath





FOR STUDENTS: Brahmari breath, twist in the chair, forward bend in chair

### WEEK FIVE - Compassion

Metta meditation

May I be well and joyful

May I be healthy and at ease

May I meet challenges with determination and courage

Warm up

Warrior

Chair

Twist

Balance

Shoulder stand or legs up the wall

Self-massage

Body scan

Relaxation (maybe 15 minutes) yoga nidra

#### Teaching points

- Becoming aware of “self-talk” and changing it with mantras such as metta visualisation
- Compassion starts at home (start with yourself)
- Physical ways to show yourself and others compassion (massage)
- Yoga nidra, what is it and how it works
- Changing our mindset through repetition

FOR THE STUDENT: metta meditation and body scan

### WEEK SIX - Joy

Breath of Joy

Play with sun salutation

Partner postures





Inversions: shoulder stand or legs up the wall or handstand?

Crow?

Warriors

Finish with challenging posture

Relaxation (15 minutes)

**Teaching points:**

- Learning comes when we are enjoying ourselves, effortlessly
- Joy can be elicited through movement and breathing
- Spontaneity and creativity in the classroom
- Alternate nostril breathing, when not to do it, when to do it
- Visualisation of grounding through feet, in order to focus easier

FOR THE STUDENTS: alternate nostril breath, grounding through feet

**WEEK SEVEN - Checking in**

Starting to empower the students, asking them what they might like – if they are tired introduce them to a yoga nidra, if they are energised, do a nice strong practise, including all the postures that they have learnt so far.

Maybe people want something a little different?

Checking in with themselves the whole time to see if it is right for them

Labelling exercise during postures:

**Labelling**

Labelling is when you notice your thoughts and label them as the quality of what they are rather than engage in the story of the thoughts themselves. So, typically, thoughts can be categorized into the following groups:

- Remembering
- Planning
- Noticing
- Imagining
- Worrying





- Doubting
- Comparing

So, instead of engaging in the story “I wish I hadn’t said .. to her, she obviously didn’t..”, just stop yourself mid-sentence and state “remembering” and keep repeating remembering until you start to notice whatever the next thought is that comes into your head!

#### Teaching points

- Allowing for difference
- A little freedom in the classroom empowers learners to self-regulate and practise
- Using what they have learnt – growth mindset
- Labelling thoughts and feelings during the practise

FOR THE STUDENTS: checking in to empower, mindfulness practise of labelling thoughts and feelings

#### WEEK EIGHT - Release

Shoulder release,

Neck release

Jaw release

Upper back release

Lower back release

Hip release

Hamstring release

Digestion release

Lions breath

relaxation

#### Teaching points:

- How to release tension
- Relationship between tension and pain, in the long term
- Releasing mental tension through breath





- Emotions in yoga (ie sometimes people have emotions during practise and how to deal with it)

FOR STUDENTS: releasing shoulder, neck, upper back, digestion, lion's breath

### WEEK NINE - Teaching

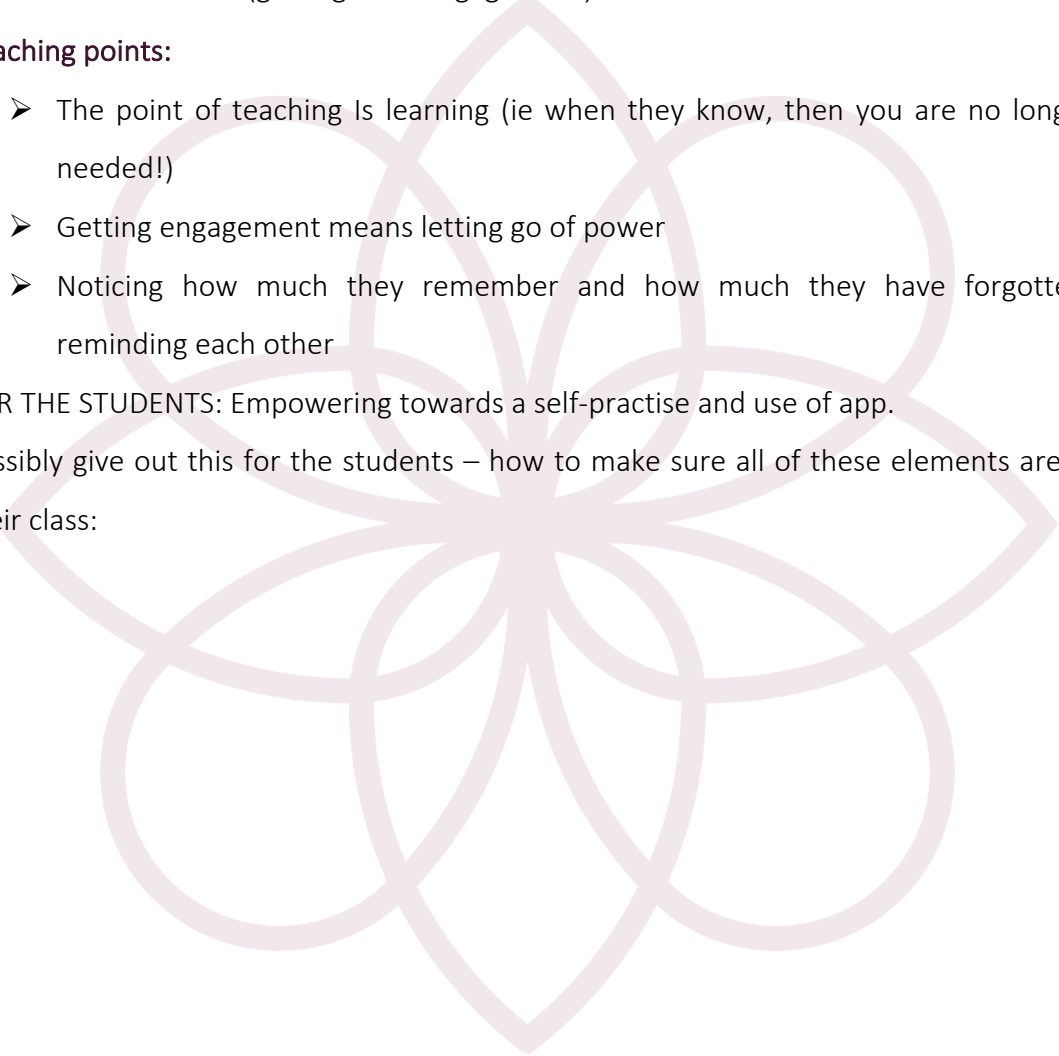
Teachers get to teach parts of the class to the rest of the class, adding anything they have done that feels useful (getting their engagement)

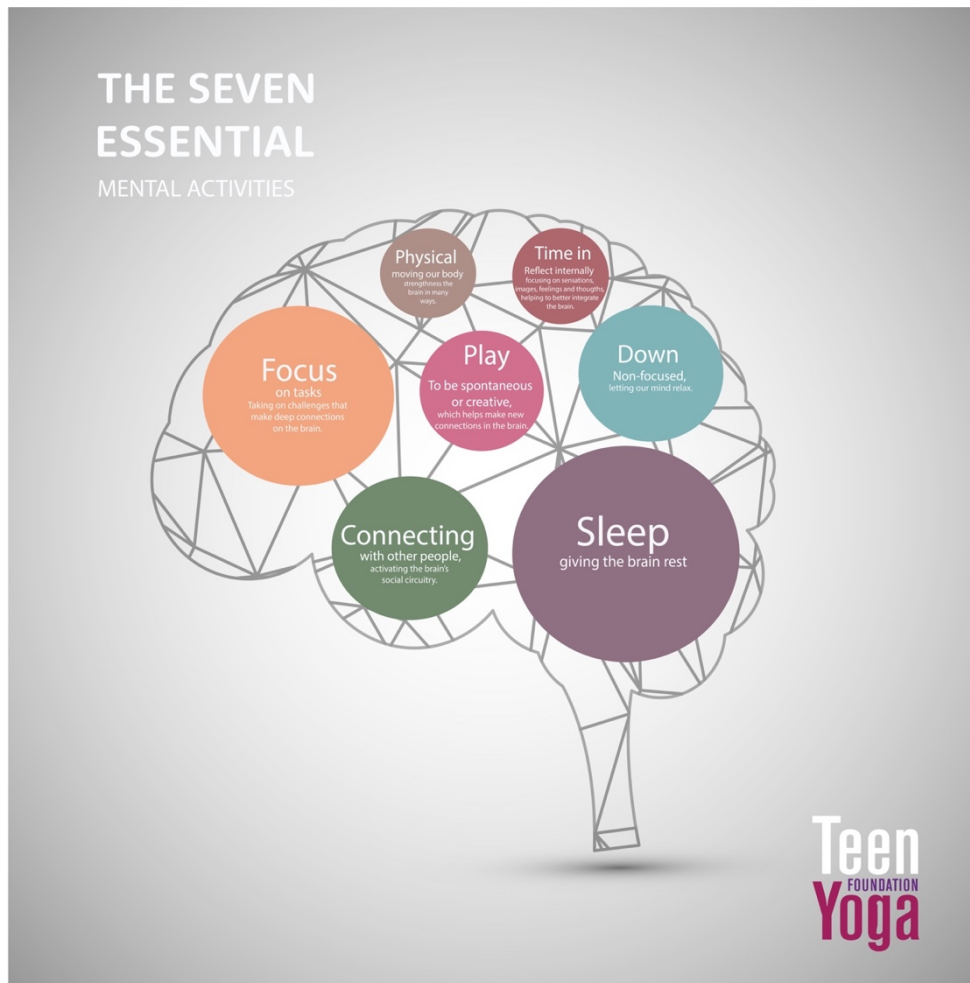
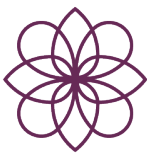
#### Teaching points:

- The point of teaching is learning (ie when they know, then you are no longer needed!)
- Getting engagement means letting go of power
- Noticing how much they remember and how much they have forgotten, reminding each other

FOR THE STUDENTS: Empowering towards a self-practise and use of app.

Possibly give out this for the students – how to make sure all of these elements are in their class:





## When needing to deliver on 8 subsequent days

### DAY ONE – nourishing

Brief check in – what is yoga – what are the preconceptions, name game (stuck in the mud)

Warm up - cat-cow coming into downward facing dog

Stretches – side from seated, child pose, forward bend standing

Strengthening – plank posture, side plank, warrior

Inversion (min 3 mins) – legs up the wall

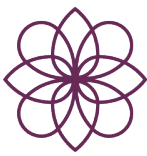
Twist – supine

Forward bends (max 3 mins) – child posture, standing forward bend

Zen (min) – 3 mins on tummy breathing focus







### DAY TWO- Building focus

Warm up – cat-cow, moving towards sun salutation

Balances – one leg forward bend

Warrior 3

Tree

Stretches (as above)

Seated twist

zen and relaxation – on tummy, breathing focus (3 part breath)

body scan

square breathing -3,3,3,3

check in

Implicitly this class is about building trust and working with actively listening to the students. We are building on trust here with focussing skills, using the balancing postures is essential for this. The language you use in this context is focussing on keeping the students as present and aware as possible at all times. The main theme of anxiety is rumination – the mind wandering. When we teach focus, we teach being present, we minimise rumination and therefore anxiety drops.

### DAY THREE - Building trust

Warm up – cat/cow, sun salutation

Partner postures – back to back

Twist

Balance

Legs up the wall

Brahmari breath

Zen & Relaxation

(on tummy)

Check in

Now we are explicitly working with trust. At this point the group is starting to get to know each other and might venture into exercises to deepen trust. Partner exercises will do this and you can encourage engagement and conversation, these classes are playful and





fun and deepen the impact of the postures. Brahmari breath has a very strong impact on lung function and also on relaxation, so is an optimal way to finish off the class.

**SKILL:** BUILDING TRUST

#### **DAY FOUR** - Listening to myself - Compassion

Check in w body and mind, aches and pains (but don't linger)

Warm up – cat/cow

Sun salutation

Gentle postures, feeling into movement, stretching

Backward bends

Forward bends

Three-part breath

Massage each other's shoulders

Check in

Relaxation (7 mins)

The theme of this class is compassion towards myself and others, which is very tricky among many disadvantaged students and can be a massive hurdle, so we may find it easier to consider compassion towards others before we direct it towards ourselves. We are building on the postures but this is a fabulous time to underline or introduce the idea that asanas are in no way competitive but rather, the key to a successful practise is rather knowing what we want and when we want it. So this is the time for them to find their own version of the posture which fits their body and where they are right now. Backward bends can feel vulnerable, so please make this suggestion lightly and do not insist on it. Then make sure that you spend double the time (at least in forward bends to bring back sense of comfort) If appropriate you can prolong the relaxation at this time.

#### **DAY FIVE** - Metta – loving kindness

Warm up

Stretches, partner, playing with postures, repeat pinnacle posture from last week

Mandala postures (group postures)





Group om

Metta visualisation

May I be well and joyful

May I be healthy and at ease

May I meet challenges with determination and courage

Heart meditation

Inversion

Ujjayi

Relaxation

In week six we are introducing some mindfulness exercises, namely the Metta affirmation/mantra which we can introduce as a particularly effective way to control the mind and especially anxiety. We can also do some partner meditation – starting with the inversions here, which encourage us to see things from a different perspective. Ujjayi further relaxes the mind and body. This relaxation could be a yoga nidra or a very long body scan (10 minutes?) (see separate chapter on yoga nidra after this)

### DAY SIX - Optimism

(Building to pinnacle pose)

warm up

stretches

strengthening postures such as warrior 2

pinnacle pose

(wild thing/ firefly/ peacock/ bird of paradise or anything you like that might be a little challenging)

anuloma viloma

deep relaxation

check in

This is a joyful class having established focus, compassion and trust. The theme of this class is optimism, as we are trying to build confidence to achieve something that might





seem tricky, which could be to not do anything at all or could be a physically tricky posture. At this time, hopefully some trust and openness has started to occur and we can encourage a checking in. Don't worry if there is a lot of giggling.

### **DAY SEVEN - Radical Self-Care**

What do you need?

Try and devise your own class together with the others around what you need today taking from previous classes

(minimum teacher involvement)

Here we are starting to hand over autonomy and agency to the young people, asking them to work out what they need today and together devise a class, this way we are getting them to start their own self practise and also giving them confidence to start sharing the practise with others. This is the pivot point, where we are empowering the young people to find their own wellness.

### **DAY EIGHT - Continuing self-practise**

One or several of the students teach the class, including most of following elements:

Warm up

Stretch

Strengthen

Inversion

Side bend

Twist

Relaxation

Breathing

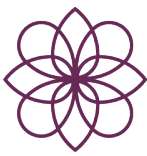
Question

Intro meditation/visualisation

DEVELOP A HOME PRACTISE THAT IS FUN, FUNCTIONAL AND DO-ABLE for each student, together with them.

This class is the segue to their own practise and a more integrated approach. So here we are letting them teach a class, maybe they can choose among them who would like to





run a class or there could be several or if this does not feel appropriate because of the culture of the institution, or the group or the age, then please use this class to build on everything you have done together and maybe introduce the idea and practise of meditation.

Each week builds on the previous week, so rather than starting afresh, we incorporate the postures and some of the values from the previous week. This way the young people will grow in autonomy.

## A CONVERSATION ABOUT RELAXATION – VARIATIONS DEPENDING ON GROUP

### Relaxation – the last 15%

*There are a myriad of mental and emotional states that our students can manifest and in time you will come to recognise the subtle nuances and variations that will help you to decide which is the best practice for the last 15% of your sessions – the all important rest and relaxation part. Below, I have divided these mental/emotional states into three broad categories and offer some suggestions that would be suitable practices that will meet your students where they are at and help lead them to a calm, compassionate, mindful state through rest and relaxation.*

### Chattering minds

There can be many times when your teen students will have chattering minds; something may have happened during the day that means they are simply not going to be able to be silent for meditation, visualisation or even yoga nidra and savasana. It may be that they need to talk as they have had a day full of silent exams, or if something went on during the day that they need to make sense of or communicate their feelings about, it can even be that they are simply over-excited which happens a lot as we approach the end of term or even the weekend. If you recognise this mind state in your students; then some of the following suggestions might be appropriate.

- ❖ **Discussion / talking circles.** You can form a discussion around all kinds of things; yamas, niyamas, gunas, doshas, compassion, tolerance, finding your authentic voice, world issues such as the climate, the seasons, or even talking about what they have gained/ would like to gain from yoga (this could be used as a useful opportunity to gain some invaluable feedback). The topics are endless and there are some great resources out there to provide inspiration.
- ❖ **Activities.** Again, there are so many themes you could use, from mindful colouring or creating a joint visual work. As a couple of suggestions how about; a jar of gratitude (each students writes three things they are grateful for on coloured pieces of paper or post-it notes and share with the group before putting in the jar. Writing their own affirmation on coloured paper and adding





**artwork/doodles to create chakra bunting. Metta statements; this takes some preparation beforehand – each student gets a piece of paper with the name of another students on it and they write things they love about that student.**

- ❖ **Stories/quotes/poems.** Share a yoga story, quote or poem and then open up a discussion about what this means to them.
- ❖ **Chanting/singing.** This could be a yoga chant, OM, chakra/harmonic sounds or a song
- ❖ **Games.** Concentration, trust, memory games can all be a nice way to connect with themselves and each other.

### Wandering minds

The wandering mind is capable of being quiet but is too agitated to remain focused on anything intangible or sustain a point of focus for long. The mind is jumping around all over the place and quite restless; this is often exhibited with fidgety behaviour and you'll certainly notice a wandering mind in balance poses. If your students are exhibiting this mind state, then they will benefit from being given an anchor for their focus and to keep visualisations, etc in the physical realm of the tangible senses; you could try some of the following suggestions:

- ❖ **Body scan.** Often, our body is doing one thing while our mind is elsewhere. This technique is designed to sync body and mind by performing a mental scan of each part of the body, bringing attention to any discomfort, sensations, tensions, or aches that exist. Clench and release technique can be effective for those finding it hard to stay still.
- ❖ **Noting.** Whether you are focusing on the breath or simply sitting in quiet, this technique involves specifically “noting” what’s distracting the mind, to the extent that we are so caught up in a thought or emotion that we’ve lost our awareness of the breath (or whatever the object of focus is). We “note” the thought or feeling to restore awareness, create a bit of space, as a way of letting go, and to learn more about our thought patterns.
- ❖ **Visualization.** This type of meditation invites you to picture something in your mind — we are essentially replacing the breath with a mental image as the object of focus. It can feel challenging to some, but worth the effort. By conjuring a specific visualization, we not only get to observe the mind, but we also get to focus on any physical sensations.
- ❖ **Mantra meditation.** Focus on a mantra (which could be a syllable, word, or phrase). The idea here is that the subtle vibrations associated with the repeated mantra can encourage positive change — maybe a boost in self-confidence or increased compassion for others — and help you enter an even deeper state of meditation.
- ❖ **Reflection.** This technique invites you to ask yourself a question: perhaps something such as, “What are you most grateful for?” (Note that asking yourself a question using the second person — you — will discourage the intellectual mind from trying to answer it rationally.) Be aware of the feelings, and the thoughts, that arise when you focus on the question.
- ❖ **Music/ Sound meditation.** This form uses music or bowls, gongs, and other instruments to create sound vibrations that help focus the mind and bring it into a more relaxed state. You can play music to focus and anchor the mind using the auditory senses; this may be gongs and bowls but equally it could be binaural beats, nature ambient sounds or any piece of soothing music; for example “Clare de Lune”





## **Still minds**

**When the mind and body are capable of sustaining focus and stillness; these are the ideal conditions to introduce your students to some of the more esoteric and slightly more advanced forms of meditation. Go slowly, keep things fairly short at first, perhaps five minutes and then build up to the optimum 15% of the yoga session. And remember to leave time at the end for coming back to their everyday states of awareness, as well as a little time to ask questions or express their thoughts and feelings – just as we check in at the beginning of a session, it is just as important to check in at the end of the session too.**

- ❖ **Metta / Loving kindness.** Focusing on the image of different people — direct positive energy and goodwill first to ourselves, and then, as a ripple effect, to others, which helps us let go of unhappy feelings we may be experiencing.
- ❖ **Resting awareness.** Rather than focusing on the breath or a visualization, this technique involves letting the mind truly rest; thoughts may enter, but instead of distracting you and pulling you away from the present moment, they simply drift away.
- ❖ **Zen meditation.** This ancient Buddhist tradition involves sitting upright and following the breath, particularly the way it moves in and out of the belly, and letting the mind “just be.” Its aim is to foster a sense of presence and alertness.
- ❖ **Yoga nidra.** Just as there are many different types of meditation, so too exist many styles of yoga that are aimed at strengthening the nervous system, so we are better able to cope with everyday stress and problems. In order to integrate the neuromuscular changes that happen during yoga and gain the greatest benefit from the practice, we take time for savasana, to relax the body and relieve tension.
- ❖ **Chakra meditation.** This meditation technique is aimed at keeping the body’s core chakras — centers of energy — open, aligned, and fluid. Blocked or imbalanced chakras can result in uncomfortable physical and mental symptoms, but chakra meditation can help to bring all of them back into balance.
- ❖ **Focused attention.** This form of meditation is fairly straightforward because it uses the object of our breath to focus attention, to anchor the mind and maintain awareness.
- ❖ **Tratak.** A form of meditation similar to focused attention but using a candle or other object to focus on; as this meditation is done in a seated position it is essential that your students are able to maintain stillness both physically and mentally.

Remember, ultimately it doesn’t matter which technique you choose. What does matter, however, is that you choose a style that allows your teen students to integrate the qualities of yoga & meditation practice — calmness, compassion, mindfulness — into their practice and even beyond the mat and into the rest of their day. Meet them where they are at and gently lead them to where they need to be.

**OM**  
**Namaste**





## Appendix to TEACHING TEACHERS

### From Sasha, the yoga teacher in UK

The only main points for making changes to the programme would be that the staff didn't feel confident to teach a class for the final session - so we just used that class to consolidate their understanding and revisited postures that they wanted to do.

I asked them to suggest what they'd like us to do for the final class, so I guess it was more of a collaborative class but were more comfortable with me guiding and leading the class.

They also asked for the 'teaching tips' to be written down on a handy accessible reference card, so they could remember what they could incorporate into the classroom teaching time. (The visual hand outs that you created were helpful - in addition to this, I think the teachers also need simple written instructions to remind them of the inhale/ exhale linked to the movement - so that can feel more confident to teach these exercises to the students).

As a whole school Ralph Allen is prioritising Wellbeing this year and so I have been going into tutor groups for the last two terms, running bitesize 'Yoga toolkit' sessions with simple Yoga exercises that can be done in the classroom.

The teaching staff team seem to be very keen for me to come in to do this - it seems to be a way that the teachers can more easily continue with simple Yoga exercises that can be done in the classroom to either re-energise or relax the students when necessary.

I think this is something that is something that could benefit the programme being implemented into other schools and organisations; particularly where the intention is to change the culture of the whole school.

Ultimately the staff and students alike can begin to incorporate the principles of Mindful movement as part of their everyday experience, until it just becomes something that you do to maintain your healthy in both body + mind - just like brushing your teeth each day!

I think that the teachers could almost benefit from a tutorial / session devoted solely to teaching a bitesize 'master class' of 10 different variations that they could incorporate into the classroom. I think having the confidence to teach some simple Yoga exercises



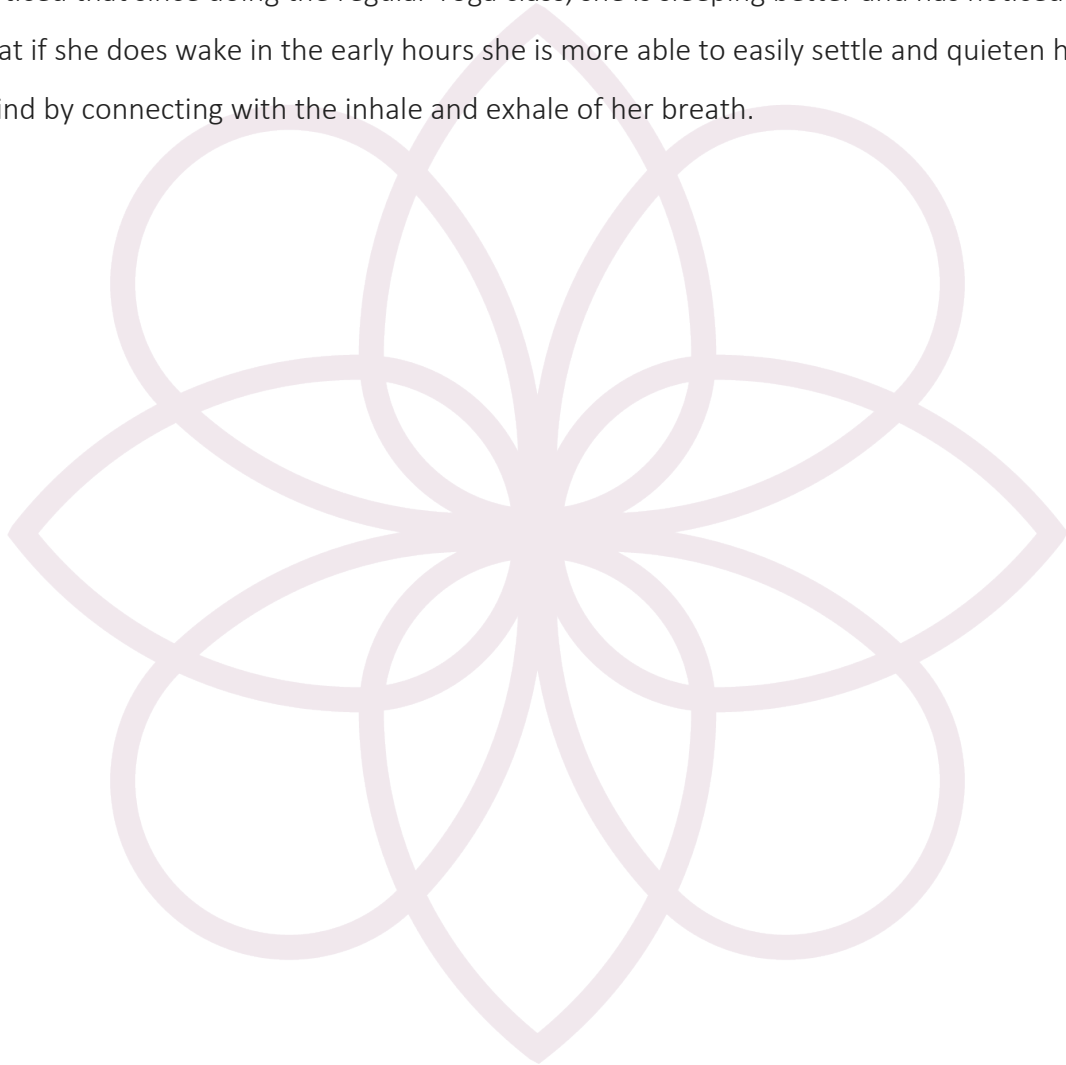


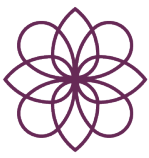


is the sole determining factor as to whether the teachers do actually incorporate some simple breath / movement exercises into their teaching time in the classroom.

Overall the feedback from the teachers who participated with the project was very positive, they really enjoyed attending the classes. For the staff, I pretty much followed the programme of classes as it has been outlined.

Feedback from one of the teachers, who continues to come to my class: She has noticed that since doing the regular Yoga class, she is sleeping better and has noticed that if she does wake in the early hours she is more able to easily settle and quieten her mind by connecting with the inhale and exhale of her breath.

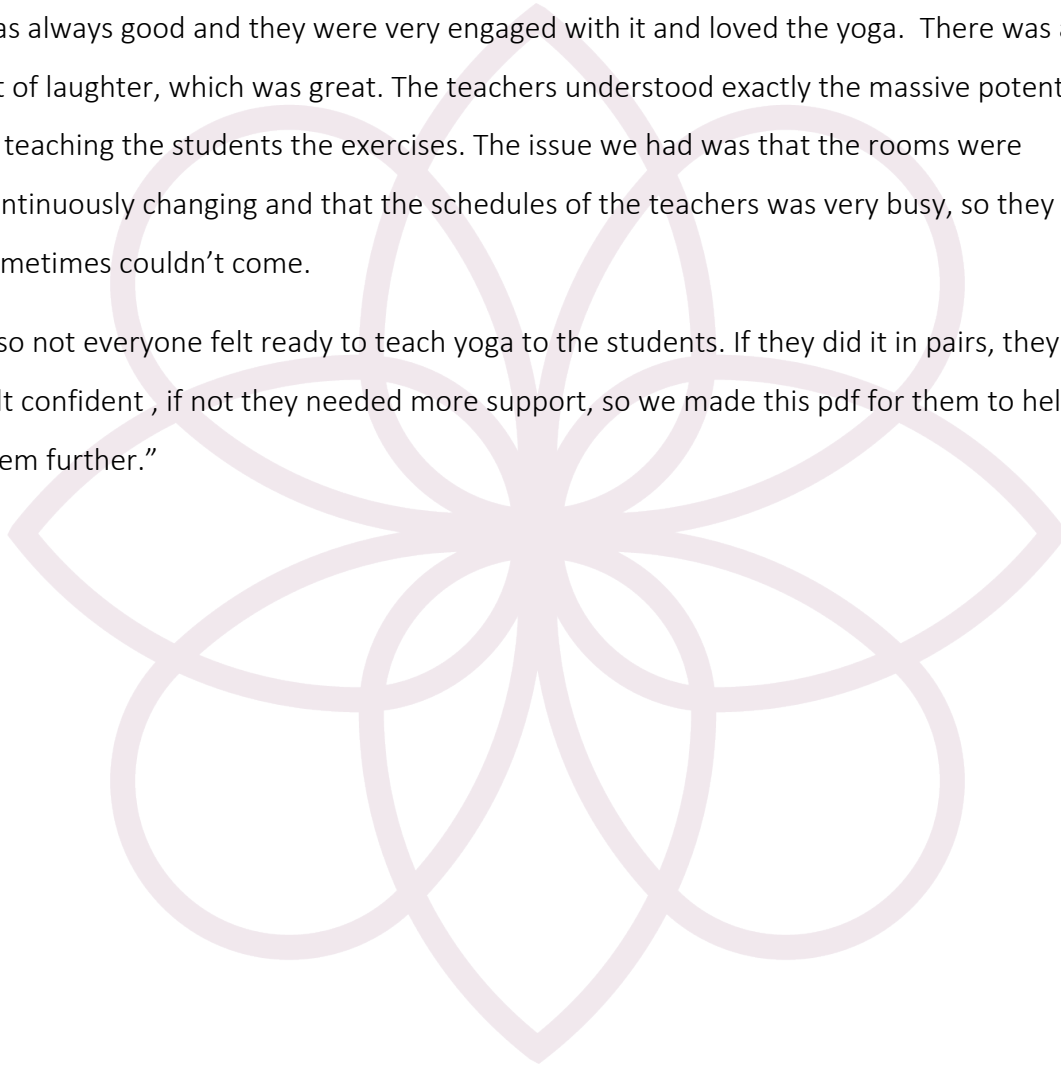




**From Tove, Norway:**

“It was strange to have a goal with the yoga class, it felt completely different for me and took me away from an intuitive response to the students. I am not used to having a series of postures to follow, but rather prefer to follow the needs of the students. It might have been my fault, but the teachers did not find as much peace as I would have liked. Maybe because it felt more like a course than a yoga class. But the atmosphere was always good and they were very engaged with it and loved the yoga. There was a lot of laughter, which was great. The teachers understood exactly the massive potential of teaching the students the exercises. The issue we had was that the rooms were continuously changing and that the schedules of the teachers was very busy, so they sometimes couldn't come.

Also not everyone felt ready to teach yoga to the students. If they did it in pairs, they felt confident, if not they needed more support, so we made this pdf for them to help them further.”





## YOGA TRICKS FOR SCHOOL TEACHERS AND YOUTH WORKERS TO SHARE WITH YOUNG PEOPLE

### Aim of the course:

1. To understand what yoga is and what it isn't. Start some kind of home practise.
2. The goal is to create harmony in the workplace and in the individual through the practise of yoga.
3. To give the adults yoga tools to help students support their optimal health

They decided to change the order of the offering to the students and I think it works better like this, so we will adjust the offering in this way:

### Week 1:

Stretch neck, shoulders and back, sitting in the chair

Cat cow in chair with breath

Forward bend

Forward bend hands on the back

Triangle

Watch breath





## Week 2

Tummy breathing

Chair posture on your own and in partner

Eagle posture with without chair

Flower pose

## Week 3

Bee breath

Twist in chair

Forward bend

## Week 4

Square breathing

Balance – tree pose

Drishti

## Week 5

Describe thought and emotions

Allowing differences in oneself

Give oneself strength to let things be as they are

Mindfulness, observing practise

## Week 6

release shoulders, neck and back

Breathing





### Week 7

Metta meditation

Massage

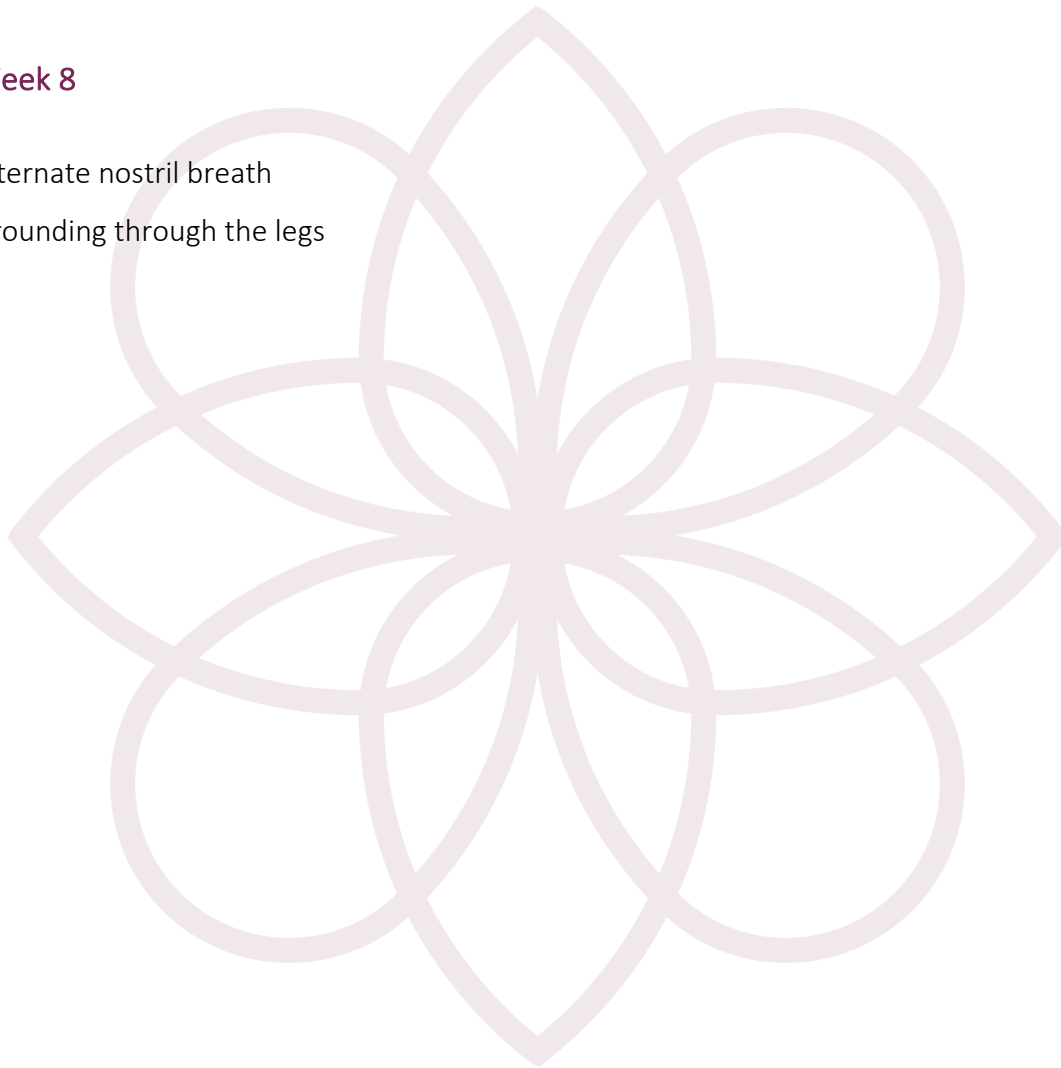
Rainbow meditation

Body scan

### Week 8

Alternate nostril breath

Grounding through the legs





## CHAPTER SIX- Preparing to teach young people

*“You are what your deep driving desire is, as your desire is, so is your will. As your will is, so is your deed. As your deed is, so is your character. As your character is, so is your destiny” (Upanishads)*

### What are we teaching them?

#### Some thoughts:

Hopefully, we are creating a habit; that will create a character; that will create a destiny of a healthy and compassionate being.

Listen with all your heart, your ears and your mind to the children in front of you, put yourself aside and serve them.

You can only teach what you actively practise!

Keep in mind:

- The asanas are only a small part of what yoga is
- The aim of yoga is to reach one-ness, a meditative state of being, where you experience the connectedness of all things.
- Make it clear that the students need to take responsibility for their bodies, never doing anything that feels wrong or painful
- Progress slowly through the asanas.

If you can aim to keep the classes relatively calm and focussed, you are most likely to assist them in reaching this state of one-ness.

### Things you will need

- Mats (it is good to invest in at least 10 mats)





-if you teach regularly at a school, they will invest in some for you, the PE mats are seldom big enough or sticky enough

- Space
- Girls in trousers or PE kit. (skirts can really hinder them)
- Some kind of music system is helpful
- Possibly eye cushions

Yoga works best in groups of 10-15. Any more, and you will do well with an assistant, to avoid behavioural problems and injury. (This can be a TA or your own assistant)

If it is possible, in some cases, it can be beneficial to split the groups up in gender (especially between the ages of 13-15), as the issues for boys and girls are often very different. Also, they tend to be more self-conscious with the opposite sex in the room, as some postures are not considered to be very dignified!

It is possible to teach in almost any environment, including libraries, classrooms and gyms.

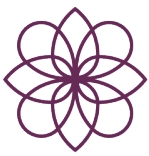
The main issues you need to think about are:

- Cleaning the floor
- Clearing the floor of tables and chairs (students can help with this)
- Any neon lights are switched off (as these stop the students from relaxing)
- Windows are open for a while to allow for fresh air, especially during pranayama
- Check before use of candles or incense (or you can use an essential oil spray)
- If people are likely to be passing through, leave a note on the door asking for "silence please, class in progress"
- Maybe do a small invocation or prayer to make the room special

## Troubleshooting

- If there is not enough space, stick to balancing poses
- If there are no mats, stick to standing postures





- If the girls are wearing skirts, get them to sit at the back and avoid any wide angle postures

## Flexibility

Generally, it is true to say that boys' hips and hamstrings are quite tight, but there tends to be more upper body strength, while girls can be more flexible but lack upper body strength. Similarly, anyone who is quite athletic tends to be tighter than those who are not. Also we often find gamers or those with low mood have a flexibility which the others do not possess. Often those who have practised gymnastics as children are very flexible and have a tendency to push themselves beyond what is safe and good in yoga. (These classes often attract gymnasts)

Be sure to be careful with hyper-mobile students, try and dissuade them from overextending the back in the backward bends in favour of bending in the other direction more and working on flattening the back against the floor. This is particularly true for gymnasts who tend to try too hard.

It is best to assume on a relatively low level of flexibility and strength, so as not to put them off with too many difficult postures and to avoid any damage, although you will get dancers and gymnasts who may show an alarming flexibility.

## Structuring the class

You will find that you will need to speak more in the beginning to keep their attention and less and less as the students become more relaxed and focussed. You will also find that initially the children will need to move from posture to posture quite quickly, to keep their attention, but you can always go back to a posture, having worked into it. So, when you plan your class, always allow for more poses than you normally would in that time.

## Things to remember

- Practice yourself, before the class, so that you are balanced and confident
- Check in at the beginning (*how's the day been?*, can be very casual)







- Make sure to learn everyone's names on the first class (write a plan in your notes so you remember) and use their names all the time to create trust and safety
- How would you like to be called? Let them know.
- Discipline is more important than friendliness
- Develop rules in the room together with them and write them up on a big piece of paper (silence at the end, silent when the teacher speaks, respect each other, don't venture on to each other's mats and so on)
- Introduce the sun salutation quickly
- Do not repeat too much
- Keep postures short to match attention span and then lengthen them
- Do not focus on alignment too much at the beginning
- Make the experience enjoyable
- Invite them to create a playlist and bring it in (give them guidelines, ie no words, gentle and so on)
- Be sensitive to dynamics in the room (friendship issues, attraction and so on) and move the students accordingly
- Flag relaxation; explain what you are going to do and how it works and let people leave if they feel they cannot lie down in complete silence for five or ten minutes. Use music the first few times during relaxation.
- Be aware that some may experience emotions during the practise and make them know silently that it is ok, but do not make a fuss about it.
- Be sure to finish well before any kind of school bell, so that they can gather themselves together before the next class.
- Stay behind for 5 – 10 minutes to chat with anyone who needs reassurance or those with general questions
- If attention is waning, feel free to shorten the class, but be aware of school rules in terms of where they go if not in class.
- Check in after the class (*How are you feeling now?*)
- Be aware of punishment rules of the school
- Enjoy yourself and be yourself, never be fake!





## Class durations

A short class can be the perfect way to get this age group into yoga, as their attention span can be quite short. As the class becomes longer, you can incorporate more theory, relaxation, visualisation, meditation techniques and harder postures.

It is also most rewarding to be able to teach students to hold the postures for longer over time, which is particularly challenging for this age group as they seem to have a very short attention span.

As the students hold the postures for longer, their yoga practise will show more and deeper benefits, particularly in terms of focus and concentration in other areas of their life, but also withstanding pressure, pain and difficulties generally.

## Savasana - challenges

Savasana is surprisingly challenging for some adolescents. Many feel extremely vulnerable lying on their back, maybe because they are worried that others are looking at them, or that they might be tickled or touched by someone (not unusual). They will often cross their legs and keep their eyes open. They often keep their socks on. This may also be related to burgeoning sexual awakening and/or abuse.

In order to deal with this effectively, we have several options:

- Let them lie on their backs with their eyes open, with legs crossed, suggesting that they simply gaze at the ceiling and nowhere else.
- Suggest they may like to uncross their legs.
- Suggest they may like to lie in crocodile (preferred option) with their head on their hands and big toes touching. (This is a wonderful pose for the teenager, as it feels safe, comfortable and the student is able and willing to close their eyes. It is also easier to sense the movement of the body in the breathing exercises)

- Child pose is the perfect posture for the very vulnerable but harder to relax completely as breathing can be compromised.

Always make sure there is plenty of space between the mats for savasana and that the “naughty” ones are kept apart. It is also possible to mention that if it is hard to relax, you





can leave early and get a glass of water or get changed. Some kids are just not ready for it. You could also suggest that if they are next to someone who is giggling then they might want to lie somewhere else. But please do this without punishing.

### Main mental and emotional benefits of postures:

The table below is useful to read from right to left as well as left to right, so you can use the yoga postures and breathing techniques as therapeutic interventions.

Posture	Benefit	Issue
balances	focus, concentration	giggly, unfocussed
forward bends	deep relaxation	stress
backward bends	opening up,	closed down, uncooperative, vulnerability
side bends	calming	anger
inversions	self-control and independence	depression, lethargy, disconnectedness
twists	raises energy calmly	nervous, twitchy
savasana	relaxation	stress, body consciousness, anxiety
analoma viloma	detachment, clarity	over identification with emotions
kapala bhati	energizing	lethargy

### Moving towards more challenging postures:

All inversions should only be taught after approximately three or four classes, when the group can listen and concentrate well and when they can relax completely.





## Postures which need special care and attention

### 1. Shoulder stand *sarvangasana* –

- Too much tension in neck, shoulders and hands causes strain
- Messing about in posture can strain and cause accidents.

Troubleshoot:

- make sure you have practised:
  - bridge (*setubandhasana*)
  - neck rolls
  - shoulder releasing exercises
  - upper body strengtheners
  - abdominal strengtheners (*chaturangandasana*)
  - wrist strengthening (*kakasana*) exercises
- Only practise when the students are focussed and calm
- Do not manually push up or allow student to go too high
- Dissuade the student from swinging up into the posture
- Try it against the wall first
- Do not allow to come out quickly, but keep head on floor

### 2. Arm balances

- please practise press-ups or crow before any arm balances, to strengthen the wrists

Arm balances are a wonderful way to tempt fit adolescent boys into yoga.

Crow is the best posture to start with, as it looks relatively good and is challenging yet possible, if taught correctly. The main problem in this posture, is falling over and bumping the head. There is considerable stress on the wrists as well. When this balance is mastered, there are several fun and powerful arm balances, which boys and some stronger girls will really enjoy.





You may well come across many boys who have experience in street dancing, who can already do Crow.

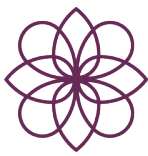
## Corrections

In this world of increasing fear and body-consciousness, it is advisable to take care before touching a pupil in any way. There are strict guidelines around touching. A teacher should never cuddle or hold a student or touch inappropriately. However, if a posture would benefit from a re-alignment, then ask the student first “is it OK if I correct you?” before touching. Please remember some say Yes and mean No. Be vigilant. This is especially true for abused children. If your group is particularly sensitive, it might be useful to devise some easy way to indicate – so let them all know at the beginning of class that if they would rather not be touched, they can fold the corner of the mat over.

## Demonstrations

More often than not, it is useful to use another student to demonstrate. Try not to demonstrate yourself. This age group are particularly keen to see what you can do and have you show off specific postures, but the role of the teacher is to bring home the idea that yoga is absolutely not a competitive sport and that if you feel a stretch you are doing it right. Sometimes seeing you do something perfectly can actually be off-putting.





# CHAPTER SEVEN- Programme to teach young people

COLLABORATION

COMPASSION

EMPOWERMENT

## Core vision

Most importantly, the programme will innovate by building attention to disadvantaged groups into the design of the programme, aiming to make it fully inclusive, and the focus of evaluation in the project will be particularly on the degree to which the programme meets the needs of the disadvantaged participants.

Hippocampus will lead classes in youth clubs, municipal facilities, cultural centres and other contexts

## Sustainability

It is aiming to involve the whole organisation in the long term. The interventions planned within the programme will focus on both the young people and the staff who work with them, who will also receive yoga training. The staff will also be provided with a series of yoga-based activities (breathing exercises, meditation activities and simple seated and standing postures) to incorporate within their other activities with the young people. In this way, the yoga based practices become incorporated over time into the everyday activities of the organisation, rather than remaining an external element. This ensures the effectiveness of the programme and its sustainability.

## Disadvantage

The lack of resources that stems from this can lead to a wide range of other situations, such as nutritional problems, health problems, family breakdown, abuse of different kinds, and neglect. The key outcome for young people is that the central space in their





lives lacks stability of some kind, and support, and this causes considerable stress, which affects their development, their participation in social life and their academic progress. The value of the Hippocampus programme is that the yoga-based activities we propose can help these young people to build this stability in themselves, and acquire a resilience that helps them to overcome the disadvantage of their background.

Yoga teachers are asked to deliver the course as faithfully as possible, to ensure fidelity for research purposes.

## Important things to think about – creating safety

Please try to find a room without windows, which is private. Turn lights down quite low to relax the eyes, explain why you do this. Talk them through exactly what your plans are for the class and why you want to teach them these things. Bring their awareness back to the body again

in and again and make sure you catch any emotions that might come up, so they feel safe and not too vulnerable.

## PROGRAMME

### WEEK ONE - Nourishing

Brief check in – what is yoga – what are the preconceptions, name game (stuck in the mud)

Warm up - head rolls, neck stretches, shoulder releases

Stretches – side from seated, child pose, forward bend standing

Strengthening – plank posture, side plank, warrior

Inversion (min) – legs up the wall

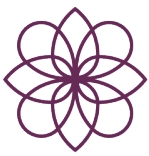
Twist – supine

Forward bends (max) – child posture, standing forward bend

Zen (min) – 3 mins on tummy breathing focus

(Make this class shorter than usual if necessary, so maybe 40mins)





**things to think about:** make sure you are vigilant to those who are disengaged or disinterested and try as much as possible to read the class, so as to involve and engage the greatest amount of students at any one time. The general language and style is that of a friendly and trust-worthy adult. We are introducing yoga here as a nourishing tool which can support and aid young people in their well being. So lots of focus on why we do the postures and the benefits that they give, is always motivating. The relaxation is always on the tummy in adolescent classes, to minimise sense of vulnerability especially among disadvantaged students who may have issues with trust.

### WEEK TWO - Building focus

Warm up – same as last class, with neck rolls and stretches, shoulder tense and release moving towards sun salutation

Balances – one leg forward bend

Warrior 3

Tree

Stretches (as above)

Seated twist

body scan

zen and relaxation – on tummy, breathing focus (3 part breath) – longer than last week

square breathing -3,3,3,3

check in

Implicitly this class is about building trust and working with actively listening to the students. We are building on trust here with focussing skills, using the balancing postures is essential for this. The language you use in this context is focussing on keeping the students as present and aware as possible at all times. The main theme of anxiety is rumination – the mind wandering. When we teach focus, we teach being present, we minimise rumination and therefore anxiety drops.







### WEEK THREE - Building trust

Warm up – cat/cow, sun salutation

Partner postures – back to back

Twist

Balance

Legs up the wall

Brahmari breath if they don't think its too silly (sometimes the silliness can be a great ice breaker!)

Zen & Relaxation

(on tummy)

Check in

Now we are explicitly working with trust. At this point the group is starting to get to know each other and might venture into exercises to deepen trust. Partner exercises will do this and you can encourage engagement and conversation, these classes are playful and fun and deepen the impact of the postures. Brahmari breath has a very strong impact on lung function and also on relaxation, so is an optimal way to finish off the class.

**SKILL:** BUILDING TRUST

### WEEK FOUR - Listening to myself - Compassion

Check in w body and mind, aches and pains (but don't linger)

Warm up – cat/cow

Sun salutation

Gentle postures, feeling into movement, stretching

Backward bends

Forward bends

Three part breath

Massage each other's shoulders

Check in

Relaxation (7 mins)





The theme of this class is compassion towards myself and others, which is very tricky among many disadvantaged students and can be a massive hurdle, so we may find it easier to consider compassion towards others before we direct it towards ourselves. We are building on the postures but this is a fabulous time to underline or introduce the idea that asanas are in no way competitive but rather, the key to a successful practise is rather knowing what we want and when we want it. So this is the time for them to find their own version of the posture which fits their body and where they are right now. Backward bends can feel vulnerable, so please make this suggestion lightly and do not insist on it. Then make sure that you spend double the time (at least in forward bends to bring back sense of comfort) if appropriate you can prolong the relaxation at this time.

### WEEK FIVE - Optimism

(Building to pinnacle pose)

warm up

stretches

strengthening

pinnacle pose

(wild thing/ firefly/ peacock/ bird of paradise)

anuloma viloma

deep relaxation

check in

This is a joyful class having established focus, compassion and trust. The theme of this class is optimism, as we are trying to build confidence to achieve something that might seem tricky, which could be to not do anything at all or could be a physically tricky posture. At this time, hopefully some trust and openness has started to occur and we can encourage a checking in. Don't worry if there is a lot of giggling.





## WEEK SIX - Metta – loving kindness

Warm up

Sun salutation

Stretches, partner

Metta visualisation

May I be well and joyful

May I be healthy and at ease

May I meet challenges with determination and courage

Heart meditation

Inversion

Ujjayi

Relaxation

In week six we are introducing some mindfulness exercises, namely the Metta affirmation/mantra which we can introduce as a particularly effective way to control the mind and especially anxiety. We can also do some partner meditation – starting with the inversions here, which encourage us to see things from a different perspective. Ujjayi further relaxes the mind and body. This relaxation could be a yoga nidra or a very long body scan (10 minutes?) (see separate chapter on yoga nidra after this)





## WEEK SEVEN - Radical Self-Care

What do you need?

Try and devise your own class together with the others around what you need today (minimum teacher involvement)

Here we are starting to hand over autonomy and agency to the young people, asking them to work out what they need today and together devise a class, this way we are getting them to start their own self practise and also giving them confidence to start sharing the practise with others. This is the pivot point, where we are empowering the young people to find their own wellness.

## WEEK EIGHT - Continuing self practise

One or several of the students teach the class, including most of following elements:

Warm up

Stretch

Strengthen

Inversion

Side bend

Twist

Relaxation

Breathing

Question

Intro meditation/visualisation

DEVELOP A HOME PRACTISE THAT IS FUN, FUNCTIONAL AND DO-ABLE for each student, together with them.

This class is the segue to their own practise and a more integrated approach. So here we are letting them teach a class, maybe they can choose among them who would like to run a class or there could be several or if this does not feel appropriate because of the culture of the institution, or the group or the age, then please use this class to build on





everything you have done together and maybe introduce the idea and practise of meditation.

Each week builds on the previous week, so rather than starting afresh, we incorporate the postures and some of the values from the previous week. This way the young people will grow in autonomy.

## APPENDIX – RELECTIONS ON DIFFICULTIES ENCOUNTERED IN FIRST ITERATION OF PROJECT and subsequent amendments

It is absolutely clear from the journaling of the teachers that the more you empower the students to vocalise their needs, the more effective the class is. The overall headings were very useful for the yoga teachers, to have something to focus on. The teachers needed to vary each class according to gender balance and age. Week 6 had too many new things to teach, so that has been cut by half. Many students loved that there was such a variation week on week. The younger years (11-12) lved self and group massage and incorporated it in every class.

The breathing exercises were really helpful for the students. Square breathing was particularly popular among students of all ages.

“because I’m thinking of just the breathing – the sequence of it, you don’t think of anything else, so you come out of life” says one student.

*Brahmari breath was also really effective and also became something that the students continued to request in further sessions. Some of the student comments following*

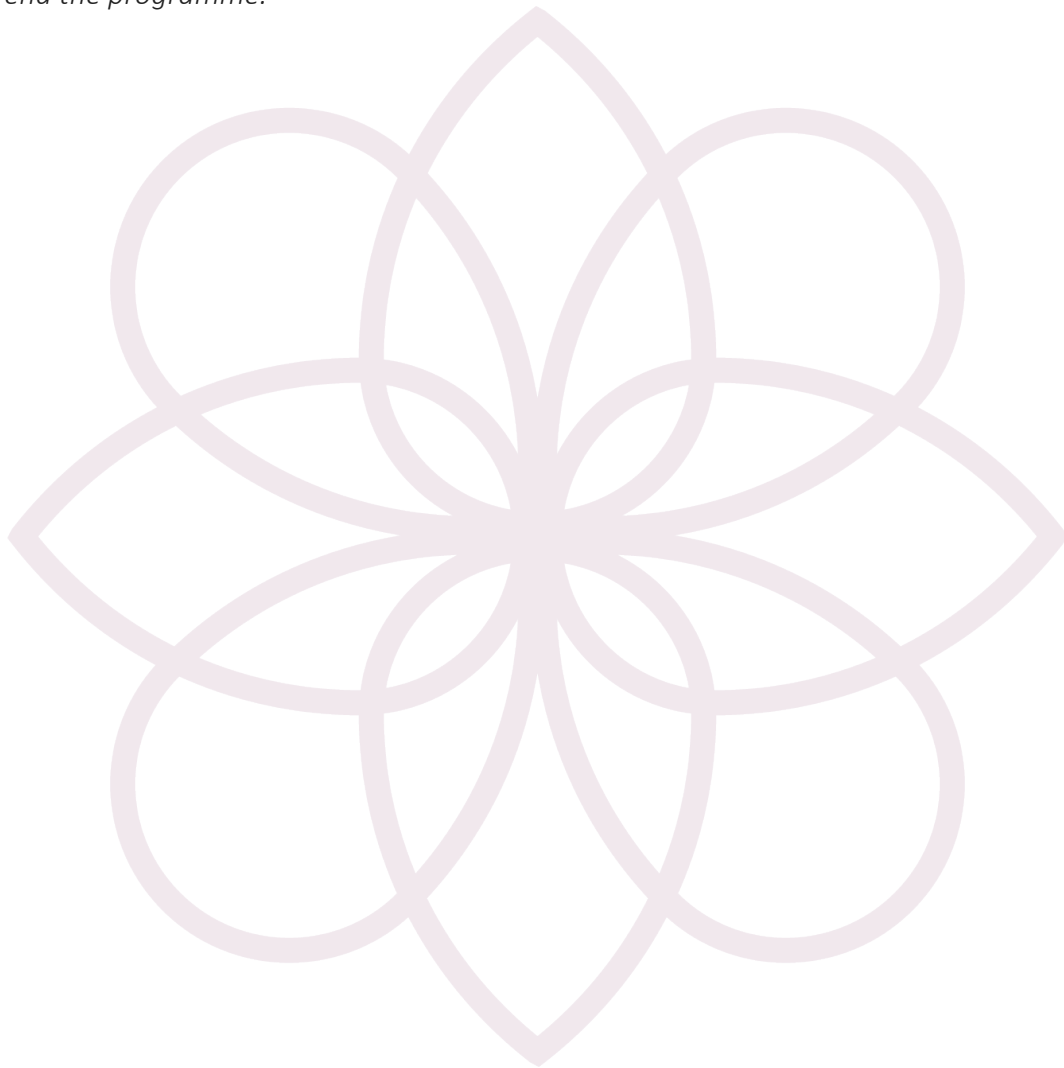
*Brahmi breath: “I feel relaxed but like I also have more energy”*

*“I feel clear, I can’t quite describe it”. “I feel calmer in myself and clear”.*





*In most cases it seems that the final 2 classes of the programme work very well, where the students have the opportunity to devise the class together - paying attention to what they need on that particular day. Once a sense of cohesiveness has been established within the group, they engage well with listening to each other and are able to make suggestions as to what they need and are also happy to either make requests or lead a particular sequence/ posture to the rest of the class. This is a fun and empowering way to end the programme.*





## CHAPTER EIGHT – Yoga Nidra

### Yoga Nidra Script for Young People - Garden of Blossom

*Welcome home*

*Lay flat, feeling the earth beneath you, like the roots of interlaced flowers that you spread out, reaching down into the earth, that belongs to you and your body.*

*Close the eyes*

*Exhale and allow the body to settle*

*Feel the breath becoming spacious, slow and steady*

*Allow the body to be breathed by the trees and the air around you, pulsating in unison with all life*

*As you breathe out, the trees breathe in, as the tree breathes out you breathe in, belonging to nature*

*Settling the body into effortless stillness, deep stillness*

*Be aware "I am practising Yoga Nidra, I am practising Yoga Nidra, I am practising yoga nidra*

*Repeat your intention or you can use this one:*

*I belong, I belong, I belong*

*Let this be a form of awareness,*

*Be held by this state of consciousness*

*Be safe within the vessel of the form of awareness which is yoga nidra*

*Exhale – drop the mind down into the heart*

*Let the awareness be deep in the heart*

*"I am my heart, I am my heart, I am my own true heart, my heart is wide open"*

*Welcome the feelings and insights that arise in the heart*

*Welcome the voice of the inner teacher*

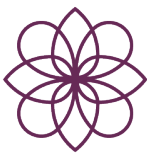
*Guide now the light of conscious awareness around the body,*

*The body remains still but the awareness moves from point to point*

*It is as if the body belongs to the ground*

*The light of mental attention shines at each point*





*Awakening the shining presence of a new growth in the ground  
So the the body becomes a web of interlaced flowers and opening blooms  
Inhale, the breath moves out to all the flowers  
Let a flower blossom at each point  
At the crown of the head  
Between the eyebrows, in the throat, between the collarbones  
Shine the bright light of awareness down the right arm and watch how the blooms open  
along the arm  
Shoulder, elbow, wrist, thumb, index finger, middle finger ring finger, little finger and back:  
Inside the right wrist, elbow, shoulder.  
Bring the awareness back to the throat, between the collarbones,  
Shine the bright light of awareness down the left arm  
Shoulder, elbow, wrist, thumb, index finger, middle finger ring finger, little finger and back:  
Inside the left wrist, elbow and shoulder.  
Bring the awareness back to the throat, between the collarbones,  
Shine the awareness down into the heart space  
A bright full flower in the middle of the chest, behind the breastbone, a deep red rose  
Drop the awareness down to the navel, let the awareness shine there and watch a blossom  
bloom  
Drop the awareness to your pelvis, let the awareness shine there, watch the flower bloom  
Shine the awareness over the right hip, and feel a trail of flowers opening down the right  
leg  
Knee ankle, big toe, second toe, third toe, fourth toe, little toe  
And back inside flowers blooming in the right ankle, knee and hip  
Bring the awareness back to the blossom in the yoni  
Shine the awareness over the left hip, and feel a trail of flowers opening down the left leg  
Knee ankle, big toe, second toe, third toe, fourth toe, little toe  
And back inside blossoms blooming in the left ankle, knee and hip  
Bring the awareness back to the blossom in the pelvis  
Bring the awareness back to the navel and the shining light allowing the flower to blossom  
there*







*Bring the awareness back to the deep heart and the flower there*

*Be aware "I am practising Yoga Nidra, I am practising Yoga Nidra, I am practising yoga nidra*

*Be aware of the whole body and the garden of flowers growing and blossoming in every space, a garden of blossoms, the whole body*

*Inhale the space between the flowers open*

*So more flowers fill the space*

*Exhale the petals fall to the earth, settling in a pattern on the body*

*Inhale, flowers rise and spread, spacious open dark between them*

*Exhale, light allows the petals to drop like light rain*

*Landing on the garden of the body, resting on the earth*

*Light dawns*

*Feel the petal drops warmed on the body as the sun shines*

*Inhale the earth is warmed*

*The petals on the body, released by the fire in the sky*

*Exhale petals to the earth*

*Inhale flowers reach for the sky*

*Exhale into the roots*

*Pause between the breaths*

*With awareness in the magnificent rose at the centre of the heart space*

*Awareness in the anchor roots, heels, hands*

*Awareness in the anchor roots – legs and arms*

*Awareness in the spine and the head*

*Breathing on the web of roots, anchored in the earth, breathing flowers into being*

*Let the bright light of consciousness travel triangles in the body web of roots*

*Exhale; breath moves down from the pelvis to the heels*

*Inhale: breath move up from heels to pelvis*

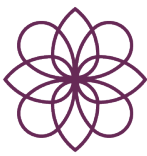
*Upward-pointing triangle*

*Pause to exhale, awareness at the pelvis*

*Inhale, breath moves up from yoni to chest*

*Exhale, breath moves down from chest to pelvis*





*Inhale, breath returns to chest*

*Pause to exhale, awareness at chest*

*Downward pointing triangle*

*Inhale, breath moves up from chest to eyebrow centre, like a rhizome finding its way*

*Exhale, breath moves down from eyebrow centre to chest*

*Inhale, breath moves up to eyebrow centre*

*Upward pointing triangle*

*Let conscious awareness join the upward pointing triangle*

*To the downward pointing triangle*

*They meet at the chest*

*Let the breath move in the diamond of the body root web*

*Blossoming diamond of flowers*

*Exhale from the eyebrow centre to the chest*

*And pause to inhale*

*Exhale from the breasts to the pelvis*

*Inhale from the chest to the pelvis*

*And pause to exhale*

*Inhale from the chest to eyebrow centre*

*Exhale back to chest*

*Breath awareness consciousness in the diamond*

*Diamond breath makes the shape vivid*

*A shining diamond of awareness*

*I am practising yoga nidra, I am practising yoga nidra, I am practising yoga nidra*

*Then*

*Exhale all awareness, from the edges of the diamond into the heart space*

*In the centre of the diamond*

*Inhale awareness outward to the edges of the diamond of flowers*

*And back to the full rose of the heart space*

*Being in the heart space in the diamond, in the web*

*Feeling the flowers blossoming*

*I am my heart I am my heart, I am my own true heart, and my heart is open!*





*Breathe awareness into the heart space*

*Welcome the insights of the inner teacher, carried on the silent voice of the inner teacher*

*Welcome home to yourself*

*Repeating your intention again:*

*I belong, I belong, I belong*

*Woman on the web of dreams*

*Integrated*

*Laying like a web of flowers*

*Safe in the consciousness that is yoga nidra*

*Securely held by this state of awareness*

*Safe within the vessel of the form of awareness which is yoga nidra*

*Know that this practise of yoga nidra is coming to an end*

*Carry the blessings of the practise, the awareness of connection out with you*

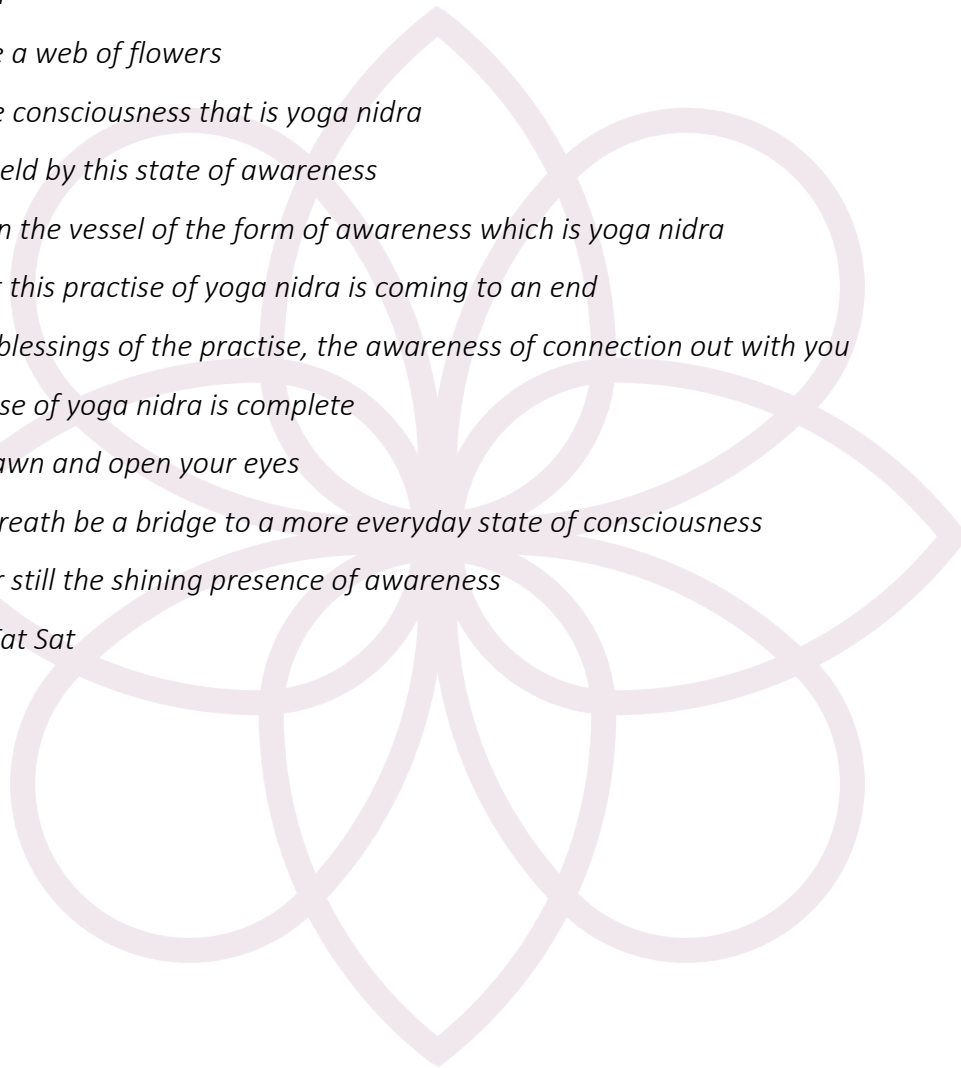
*The practise of yoga nidra is complete*

*Stretch, yawn and open your eyes*

*Let your breath be a bridge to a more everyday state of consciousness*

*Yet savour still the shining presence of awareness*

*Hari Om Tat Sat*





# CHAPTER NINE - Socio-psychological changes

## Identity and who are we in relation to the world?

The benefit of working with young people, is that we have all been there. What do you remember? Do you remember shyness, infatuation, desire for excitement and closeness? Are you aware of the shift that happened for you from childhood to adulthood? The transition from innocence to self-awareness? Can you recall the pain of feeling alienated at a party where you didn't know anyone or becoming ostracised for wearing the "wrong" clothes or liking the wrong music? How was it for you?

**Please journal your responses before you carry on.**

In this chapter, we will get an idea of how the sands are shifting for young people. We will also discover some of the potential reasons to why we are experiencing a mental health crisis and how yoga might help to alleviate this suffering and guide young people on a path of peace, both inward and outward.

Adolescent years have always been a challenging time, from Hamlet's anguish over his mother's sexuality to the passion and anger of today's young rock artists.

Please reflect over which perennial issues have hounded young people through the generations. What makes them different from children? Why do so many school systems the world over move kids at the age of 11 or 13 to a different school? In the past, you transitioned from a child to an adult as soon as you had hair on your face or menstruated. What has changed? What are the differences between today's adolescents and yesterday's young adults?

**Please take the opportunity to journal these answers.**

The main psychological themes of these years for many are

- Fear of alienation/desire to belong
- Rumination/anxiety
- Concerned with appearances





- Desire to connect with others
- Risky behaviour
- Vitality
- Rise in Intellectual capacity
- Separation from parents, desire for independence
- Forming intimate bonds
- Sex, sexuality, finding a partner
- Constantly switched on (online social media)

How are these different from your concerns as a teen?

What most of us don't understand is that these changes are biologically driven, socially enhanced and underlined by the biological imperative of looming adulthood. Becoming an adult, for some, is a painful procedure that comes way too soon and for others, cannot come quickly enough! For some the moment of adolescence is a charmed independence where there is still support when needed.

Have you ever visited a cousin or a nephew once when they are around 11 and then when they turn 13 – what happened in the interim? What are these changes? The sketch of Kevin (UK TV sketch), who on his 13<sup>th</sup> birthday changes from an enthusiastic bouncing tigger to a monosyllabic monster in front of the dotting eyes of his parents is, for many of us, a very recognisable and puzzling shift. Many parents mourn the loss of the hugging, thoughtful, funny young girl or boy and are perplexed at this new strange being in their midst.

## A time of change

The combination of chemical changes and societal expectations push the adolescent out of the house to find other groups to belong to, a bit like the cub in a lion pack, they start to roam free. When we perceive young people in the light of zoological phenomena, it is easier to understand the fundamental drivers of their behaviour and actions. It might also be easier to understand how much of what we do is conditioned by chemicals in our body. Anyone who has felt the urge to have a baby or fallen in love will know how that feels.





The hormonal changes herald the burgeoning unrecognisable physical body. I now bump my hips and shoulders in areas where before I slipped through with ease. I take up as much space as an adult and am treated accordingly. The invisible inner workings might not yet have caught up with my exterior, and this disconnect forms part of the anguish of a young person. Where there might still be a yearning for the comfort and support of the parents or carer, the physical body speaks of a different relationship. Where I might be sexualised by those around me, internally perhaps no such feelings are arising. Into this mix, we add the intense desire to belong and fit in to whatever current social norm. As we leave our parents and make our way to parties and events by ourselves, it is essential for our survival that we belong to something else – that we have an alternative abode we can call home. Maybe that home is someone else's house, or maybe it's a club or a sport or an interest group. The desire to belong to this second group is so strong that we may well act in foolish ways to ensure our belonging. Remember the characters in *Grease*? Danny was a very different character with Sandy than he was with his mates – the vulnerability of the characters is often visible to the onlooker but not to the character. Alienation, for many, equals social death. See Albert Camus' *Outsider*, a commonly read book at A Level, for that very reason, as it explores the quality of being an outsider, someone who does not belong anywhere.

As our intellectual capacity rises during puberty, this means that we might be able to think more abstractly, theorise, understand complicated philosophical reasoning and consider others' feelings and situation better than before. However, the mind may not be in its optimal state because of lack of diurnal rhythm, lack of sleep, lack of optimal nutrition, lack of a strong attachment figure, or lack of guidance. Sleep is often the first thing to be disturbed during teen years, due to changes in melatonin, the sleep neurotransmitter, which regulates our sleep pattern and also due to bedtime screen-time. If we do not sleep enough (9 hours between 14 – 19 years old, there will be mood disturbances and mental health consequences) We also often start to cook and feed ourselves in different contexts, which can lead to suboptimal nutrition. If we have been brought up in a family with disturbing patterns of depression, alcoholism or absenteeism, then we might find it hard to form strong and lasting bonds with those around us, which in turn leads to difficulty in focussing and general intellectual performance.(attachment theory)\* Many





parents, carers and friends are not sure how to support their teens at this age and may step back completely, leaving the youngster to fend for themselves, unguided and unclear of their path.

AYURVEDA – means the science of life and incorporates yoga, including many aspects of wellbeing including nutrition, movement, cleansing techniques, massages and various other ancient wellness sciences.

In these cases, there is often a rise in rumination and subsequent anxiety. From an Ayurvedic perspective, anxiety is often connected to lack of groundedness (exemplified by the list above) and lack of connection with others.

## Grounded and connected

According to Ayurveda, anxiety can have many reasons, such as lack of being grounded – this can mean literally not spending enough time on the ground in nature, barefoot preferably, or it could mean time in awareness of the body, whether in yoga asana, massage or similar techniques. It is often also the reason why we eat, to feel our bodies and our connection to it. Especially if we spend a lot of time in our heads, with the mental work that school demands.

The connection with others is something that is a need in every living being and determines whether we thrive or not. Interconnectedness is an integral part of yoga, as we spoke of earlier, bringing all aspects together, whether it be our mind with our body, or our neighbourhood or countries. Feeling connected to each other lies at the heart of wellness. I often translate yoga to the word connection. For example, recent fascinating research proves that women who had many friends had a lower risk of Diabetes 2, than those who felt lonely. (<https://sciencealert.com/social-isolation-risks-type-2-diabetes>)

## Online and disconnected

Recent emerging studies are showing an alarming relationship between increased (online) connectivity and anxiety in young people (Sherry Turkle).\* I watch the young people I work with – constantly checking the phone, never completely present as their





awareness is always being drawn outwards away from their present experience by each vibration or ping. In Buddhism, as in yoga and mindfulness joy is to be found in the present moment. When our mind is constantly being drawn outwards, it is fractured, caught up in others' opinions, feelings and attitudes, attached to both pain and pleasure, riding the roller coaster of emotions. Our fear of being judged and desire to belong is constantly being fired up, with every waking moment filled with tension and an outward looking perspective.

Obviously, the upside of connectivity could be that we have our friends only a click away – we can actually see them in real time as they cook, sleep or work. This sense of never being alone is comforting at best and fulfils the teens desire to belong.

However there have been too many situations of cyber bullying with my students to ignore the matter here. The moment when your friends post a video of you being beaten up, shamed or ridiculed is a moment which for some has led to an untimely and shameful suicide. The addiction to the online presence is something which is changing our lives on so many levels, the level of trust among young people is changing, the meaning of intimacy, the meaning of friendship and the meaning of trust.

This dangerous cocktail of the desire to connect and to belong together with the fear of alienation married to the inherent risky behaviour pattern can bring about disastrous choices. Naked shots being sent to the boy I fancy, who then posts them for everyone to see, the sexting at an early age, the porn which is readily available on any phone with 3G – all of which plays havoc with our burgeoning sexuality.

## SUMMARY

When we understand that adolescents firstly need to belong to a group, secondly, need to connect with others and thirdly need to take risks, then maybe we can harness these fundamental drives and gather them towards a different direction which is more engaging, edifying, fascinating and beneficial in the long term. When we can truly meet those needs with integrity, through exciting and fun yoga classes which challenge and take risks within their abilities, eventually drawing them inwards towards introspection, then I believe that these online experiences will drop away, no longer central to their lives, as has happened to many of my students.







“when I do yoga, I’m so caught up in the moment that I forget to look at my phone, my friends get angry with me ‘cos I never turn it on” (Edie, 18)

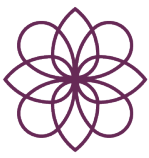
On many of my courses, therapists and psychiatrists echo the same fear, namely that young people cannot abide the thought or the fact of being alone. This fear of being with oneself, must have repercussions. If we are not comfortable in our own skin, with our minds, delving deep into our own soul, then what hope have we of feeling fulfilled or content?

It seems to me that the optimal response to this frantic outward looking phenomenon, would be to introduce introspection. Can we guide young people in a physical practise towards patience and stillness within themselves until they feel safe enough to be still in their own soul? This practise, is what I call yoga.

When we move away from constant distraction and come into the place of stillness, many of us discover our true passion, our true voice and are able to relate to others from a unique place, without the need to lose ourselves in the group. Rooted in stillness we are able to co-regulate effectively, effortlessly bringing peace to others as well as ourselves. Then we come to the realisation of our own value or meaning in our life. We receive the silent responses to questions such as What do I have to give? How much more am I than my physical appearance?

Then ensues a lifetime journey towards optimal wellbeing, full acceptance of what is and complete acceptance of others as well as ourselves.





## CHAPTER TEN – What goes on in the brain of a teen?

It was the day before her exam, Mike had just passed his test and got a new Yamaha bike. He texted her, “Let’s go for a ride along the river, I’ll pick you up in quarter of an hour!” Mike was handsome and popular, and she really liked him. Without hesitation she said yes. She sneaked out, her mum shouting – “where are you going? It’s late and you’ve got your exam in the morning”. Ignoring the calls, she rushed out into the darkness and jumped on the back of the big blue machine waiting outside and sped off. The sound of the powerful engine, her arms around his waist, she had never felt so free! The exam could wait, she’d do an all-nighter!

Only a few years before, Linda would not have considered acting so impetuously, nor would she just a few years later. But with the brain in its adolescent phase, she was up for taking risks, dropping revision and feeling independent. These actions are neurologically encoded.

### The neuroscience of adolescence

Have you ever wondered what causes the abrupt and mostly unwelcome metamorphosis of the teenage years? Acting impetuously, contrary to common sense? Why have they become extra secretive or why do they see you as the enemy when before you were their closest ally? Have they become curious about drugs, sex, the meaning of life? Take a moment to reflect in your journal about the cognitive (brain) changes you have noticed in your teen or those that you know. Wouldn’t you like to know what is happening in the brain?

In this chapter, we are taking a holistic look at the development during adolescence and as such, tying together the different aspects of development. The brain is the locus of substantial change, in this chapter we will explore the numerous changes that take place there.

ature or Nurture – is this person the product of her environment, friends and family or is she simply hard wired to behave in this way because of the chemical make-up? It is a





combination of the two. The mind is the whole organism that is being used to respond to an event, the mind resides in the body, the whole body helps us make a decision, not just the brain, which in fact has only a small impact.

*“My mind is made up, my mind is unclear, to my mind, she is at fault.”* What do we mean by the word mind? Some of us immediately equate mind with brain, but the mind is far more than that. How do we make up our minds? What are the factors that play into mood, mind and brain? What is the connection between mind and body?

The chemical constellation of our brain, our mind and our bodies are intrinsic to the way we behave. When we are lacking in a particular chemical or mineral, our entire personality can change. For example, have you ever experienced anaemia (lack of iron) – you become lethargic, sleepy, fuzzy headed? Or if you have ever known anyone who lacks B6 or B12, they can become anxious or depressed? Omega 3,6 and 9 help us think clearly and quickly. The list goes on. Not only does what we eat or not eat affect our body, but also our mind.

The mind is made up of various chemical impulses from all over the body, mostly the gut and the brain, but also various important nerves that activate and enervate various parts, for example the Vagus nerve, which travels from point to point in the body and is both afferent and efferent, meaning it is sending messages both up and down all the time, bringing in information from all parts of the body and sending messages to the brain and vice versa\*\*.

Whereas the intellect is finite and limited by experience and knowledge, insight and intuition are part of a deeper and more mysterious wisdom, which indicates a connection to something far deeper, more majestic and far more imaginative than the limited intellect. This wisdom and insight can be a lifeline for many young people who feel lost and exceedingly influenced by others and the outside world. We need to take a look at what is happening in the brain and mind to fully understand the massive shifts and changes taking place at this time.

### **Structure of the brain and its development.**

Imagine for a moment the development of a foetus from a single cell, or the development of a baby into a toddler, the amount of skills that are learnt and how many changes that





take place in order for those skills to be accomplished. Adolescence is such a time. There are three major stages of development in a human being's lifetime: foetus, toddlerhood and adolescence.

What happens in this time? In utero, the foetus develops from a single cell to a human being in 9 months, - a cell grows organs, limbs, brain and nervous system, enough to survive in the outside world! Toddlers move from helpless beings into someone who can function in the world by themselves. Babies are helpless, they need feeding, nappies changing, even putting to sleep. As a toddler, we can do all these things by ourselves, we have learnt how to walk, talk, poo and eat by ourselves in a relatively short period of time. Imagine the amount of brain power needed to achieve these goals and make these changes? What is extraordinary, is that similar amounts of neurons (nerve cells) are being deposited in the brain and across the entire nervous system during adolescence! At only three times in our lives do this many neurons become available for us to use, in utero, in toddlerhood and adolescence. So, what does this mean?

Not only do we have the abundance of neurons available for our use in the teenage years (how we use them is another matter) but we are also learning how to function from a more reasoned and reflective state of mind, so the brain is not only in neurogenesis (making new structures) but it is also neuroplastic – it is changing what is there and utilising different parts in new ways that are adapted to the outside world. These changes are completely dependent on the Nurture. What are we experiencing at this time? What are we learning? We have an enormous capacity for learning and it is used in order to position ourselves in relation to society and the world around us. As a foetus, the neurons are used to create a physical body and mind. As a toddler, they are used to create a functioning human. As an adolescent, they are used to create a function human in society.

The nervous system is already developing in the first three weeks of foetal life, at a very rapid rate. Nerve cells multiply and migrate to take their place in the system, guided by a scaffold of supportive glial cells. By the end of the second trimester of pregnancy this process is largely complete, with clear patterns of structural organisation and functional differentiation visible. Development continues more slowly throughout intrauterine life, and afterwards; the nervous system is not fully mature until at least 20 years after birth.





There is a very clear choreography and precise order to this development. For instance, the myelin sheaths necessary for rapid information transmission begin to develop around the nerves in the limbs, and myelination gradually proceeds along the spinal cord towards the brain stem, with the visual nerves becoming myelinated in the first few months after birth, and the nerves controlling movement becoming fully myelinated around 18 months of age. In the cerebral cortex, myelination progresses from the back of the brain to the front of the brain.

Myelination is when a nerve becomes covered with fatty tissue to make it more effective. After birth, the brain continues to grow, more than doubling in weight during the baby's first year of life. The brain continues to grow more slowly until around 12 -15 years of age, and myelination also continues. The organisation of the nerve cells in the brain grows in complexity throughout childhood and adolescence: at birth each nerve cell has 7500 connections and these increase rapidly until there are double the connections in an adult brain, but weak connections are then 'pruned' away.

We used to think that brain circuits were inalterable once development was complete, but it is now known that the brain continues to reallocate circuits and synapses throughout life, (neuroplasticity) although it will never again be as flexible as during childhood and adolescence. In the first 6 years of life, a child develops new skills more rapidly than they ever will again as the nervous system organises itself to enable movement, language, and growing autonomy. This process then slows down until during adolescence there is another surge in development as new sophisticated skills of social awareness and judgement emerge.

The internally directed process of neurological development is modified by experience and life circumstances. The basic structure of the nervous system is elaborated according to experience and learning to create and strengthen neural synapses and circuits. We call this process **neuroplasticity**, and it follows a rule of 'Use It or Lose It', or more positively 'Use It and Grow It'. Brain circuits are increasingly allocated to any interest that we focus on persistently – for instance researchers have tracked the changes in the brains of London taxi drivers studying for 'the knowledge' test in order to become black cab drivers - while brain circuits that are unused get reallocated to other functions.





In the developing brain, the 'Use It or Lose It' rule is unforgiving as the brain has only a limited time-period to fine-tune its major structural organisation, and major deficits will be not repairable; for example, a child which has not learnt language by the end of the first critical period will never develop language skills fully.

There are three critical periods during development when synaptic formation and cerebral cortex maturation depends on appropriate experience, and during which the plasticity of the brain is maximal. The first year of life is a critical period for maturation of the **sensorimotor** cortex. During the subsequent 7 or 8 years there is a critical period for the maturation of the **temporal, occipital** and **parietal** areas of the cerebral cortex, underpinning vision and hearing, and the acquisition of language and musicality.

### The prefrontal cortex

The final critical period occurs during adolescence, and this final increase in neuroplasticity enables the maturation of the **Prefrontal Cortex**. This area of the cerebral cortex is responsible for the most complex cognitive skills. The trend throughout neurodevelopment is for more complex skills, and their underlying neural circuits, to mature later; areas that process more complex information are 'trained' by experiences which only become possible later once simpler skills are mastered. Similarly, earlier in life we see that areas of the cerebral cortex responsible for processing sound mature earlier than the language areas.

The **Prefrontal Cortex** matures in the context of a social group and an environment that enables experimentation with making decisions and judgements, and with taking risks. These experiences are necessary to enable the development of mature executive function. Earlier in life there has been no need to exercise these skills if competent parents have been available to perform these functions. Where parents are not able to adequately fulfil these functions and young people have to attempt to take on responsibilities before the prefrontal cortex matures it places them under stress.

The **prefrontal cortex** is responsible for planning, organising, and regulating complex activity, with areas specialised for maintaining attention, self-control and impulse inhibition, and emotional decision-making. It is vitally important in social judgement, communication, abstract thinking, risk assessment and decision-making, and expression





of personality. Working memory (the ability to hold information in mind and manipulate it, for instance during mental arithmetic) is also dependent on the prefrontal cortex, The skills that rely on the prefrontal cortex are often referred to generally as **executive function**, due to their importance in differentiating between conflicting options, making sense of moral and ethical conundrums, imagining possible outcomes of actions and planning activities that support future goals.

The prefrontal cortex also enables vital social skills such as understanding other people's experience and point of view, awareness of emotional expression, understanding of social rules about inappropriate behaviour and ability to monitor and control one's own social behaviour.

## Neurodevelopment during Adolescence

Increased neuroplasticity during adolescence reflects the further organisation of nerve cell connections and circuits, increased myelination of nerve axons, further pruning of synapses, and changes in neurotransmitter systems occur during this final critical period of neurodevelopment. The changes in the levels of sex-hormones at the onset of puberty play an important role in triggering and coordinating this process.

While connections between brain areas become stronger (resulting in growth in white matter), pruning of excess nerve cells (improving efficiency at the expense of some flexibility) results in the grey matter shrinking slightly; measurement of the thickness of the cerebral cortical grey matter has found that it peaks during adolescence before thinning to adult levels.

As this final critical period of development largely focuses on the prefrontal cortex, one might expect adolescence to be characterised by a steady improvement in executive functions, but this is not what we observe. There can instead appear to be a reduction in executive function in comparison to earlier stages of neurodevelopment, which can be frustrating for parents and adolescents. However, this makes logical sense when we realise that the prefrontal cortex is largely functional prior to the final neurodevelopmental surge in adolescence; the changes during this period are to a large extent 'fine tuning' of existing skills, with a consequent apparent loss of skills as connections are loosened. Therefore, the changes in the brain during this period of





development result in a pattern of less focussed brain activity than is seen in the adult brain during problem solving. This is necessary for enable the flexibility to create new neural circuits (for example, learning how to select the 'best' behaviour according to the situation) but results in less efficient thinking patterns until the 'best' circuits are selected for survival during the pruning process.

This relative inefficiency means that the 'executive load' tends to increase in adolescents; they may not be consciously aware that their brains are not working as well as they used to, but they are often aware that everything seems like harder work than it used to. This means that adolescents can be at risk of **chronic stress**, which has its own negative effects on brain function.

While this account might suggest that adolescents lose previously learned skills, this is not the case. In some circumstances, particularly when the perceived benefits are high, adolescents can demonstrate mature planning and self-organisation skills. There is however an imbalance between the maturation of these skills, which have been described as 'cold' cognition, and the emotional decision-making functions, or 'hot' cognition, which is thought to be involved in adolescents relatively poor risk assessment and decision making skills in emotional or social contexts.

Emotional decision making appears to mature later than other executive abilities, although some researchers have argued that the two systems work together usually, but can compete when adolescents are emotionally highly aroused. Researchers have demonstrated that adolescents apply their risk assessment skills more effectively and maturely when alone than when in a group of their peers, for instance; this is not seen in adults or younger children.

These changes in the adolescent brain are not occurring in isolation. At the same time most adolescents are facing increased pressure in school, in social groups, and in their own self-organisation. They are often taking on new interests and new roles; some of these they have a choice about and some they don't. Puberty is an additional stress, as they have to navigate the physical changes it brings, as well as the dysregulation in their arousal levels, daily rhythms and sleep cycle that can result in a general feeling of imbalance.







Recently puberty has also been shown to be implicated in changes in the facial recognition system, which undergoes a retuning process to identify and gravitate towards people at a similar stage of puberty; before puberty children's facial recognition systems are orientated towards adult women, or mother figures. This is occurring at a time when ability to identify expressed emotion is still developing.

Some people have argued that these changes and stresses play a vital role in enabling adolescents to learn effective and mature self-regulatory skills. In earlier life, competent parents would have helped manage the demands of school and social life, supporting organisation and acting to an extent as a surrogate prefrontal cortex. From this perspective, the greater activation of the emotional brain in adolescence, with a greater response to anticipated reward and a reduced sensitivity to punishment would support the adolescent in their movement towards autonomy and away from safety. This would parallel the importance of curiosity in early childhood when it enables toddlers to overcome their fear and explore their environment

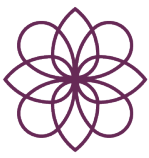
Although autonomy is the goal of this period of development, it is better thought of as **interdependence** rather than independence; humans are social in nature, and brain organisation reflects this with large areas of cortex devoted to emotional and social processes. The developing links between the prefrontal cortex and the limbic system are heavily influenced by the adolescent's interaction with their parents, reflecting the importance of maintaining family relationships during this period.

## The Effects of Stress and Trauma

Adolescence is a very stressful period, and a lot of young people find it difficult to cope, particularly if they have experienced trauma. Abuse, stress and trauma all stimulate the body's emergency systems, acutely and chronically, and impact negatively on neurodevelopment.

We can think of stress as just being under too much pressure – trying to carry too much – and becoming gradually exhausted as a result. In the end, everything becomes a challenge, and a potential emergency.





## How does the body and brain respond to stress?

The body's monitoring system has a very effective red alert system. An emergency, particularly a threat to the self, immediately activates the sympathetic nervous system and triggers the release of the hormone adrenaline from the adrenal glands into the blood system. Just like when the red alert siren goes off in a film, on a warship or spaceship of some kind, adrenaline diverts all the body's resources to defence and attack, abandoning the day-to-day tasks and routine maintenance.

Chronic stress is more like an on-going 'yellow alert' – like a warship on patrol, constantly on the alert, unable to stand down. After months on 'yellow alert', working double shifts with short rations, the warship crew will be exhausted and bad-tempered, and the ship itself may have issues, as no one has had time for routine maintenance tasks. Similarly, chronic stress takes its toll on the body as there is no down time for maintenance and repair; the adrenaline system works well for managing acute emergencies, but the body does not function well in continuous emergency mode.

Unfortunately, we often perpetuate a 'yellow alert' state by thinking about our problems, as the **limbic system** is old, in evolutionary terms, and cannot tell the difference between a real threat and an imaginary threat; film makers exploit this in thrillers and horror films – if it weren't for this 'glitch', watching Psycho would be as enthralling as watching paint dry.

The main hormone underlying the chronic stress response is cortisol, which is also released from the adrenal glands. It is a hormone that is intricately involved in the control of metabolism – the extraction of energy from food – and is vital for life. Cortisol is released throughout the day. Cortisol levels are lowest during the night and highest early in the morning, making it easier for us to wake up. When there is persisting stress or an on-going emergency, Cortisol levels increase and the pattern of release changes so that levels remain high throughout the day. This increases the amount of glucose in the blood, reduces the immune response, and can have a toxic effect on nerve cells, particularly those involved in memory and long-term learning.

In addition to the exhaustion, fatigue and general malaise caused by chronic stress, there are specific effects on the nervous system. Psychologically, stress and anxiety can also





inhibit experimentation and learning, which may result in the prefrontal cortex not developing fully before the end of the critical period of neuroplasticity.

The persistently high levels of cortisol interfere with the function of the hypothalamo-pituitary axis (HPA axis) and the autonomic nervous system, which can impact on homeostasis.(the inherent balance in the body)

Adolescents can appear to lose prior skills; however, this is temporary during the acquisition of new skills of emotional decision making, social judgement, and abstract thought. This process is stressful and arduous and requires active involvement by the adolescent, triggered by increased levels of motivation and novelty seeking (without which it would be tempting not to bother). Significant difficulties during this period occur with making decisions under emotional or social stress.

Although many of these new skills relate to finding their place in the wider social and occupational world, development of the emotional brain proceeds more rapidly when communication with parents remains open.

The changes we observe during adolescence represent the outer manifestations of the final critical period of neurological development, during which substantial fine-tuning of sophisticated and vital neural circuits occurs.

### **The teen brain and society**

So, as we see, our brains and minds develop in tandem and interacting with our social development. If we find ourselves in a “safe” and inspiring environment, our brain is likely to develop more quickly and more effectively than if the inspiration or safety were lacking.

As we look for autonomy and independence first, creating a clear identity which can have something to offer society, so that we can then engage in a satisfying interdependence, we are equally dependent on our parents as we were during toddlerhood, in terms of practising the use of our prefrontal cortex. Parents take the place of our PFC until we have one ourselves! Independence is never a true goal of any mammal, but rather the interdependence and trust on others of the same species to work together, collaborate and feel compassion. These values underpin a yoga practise, as we look to create a radical self-care programme for young people in order that they may be fully present in society.

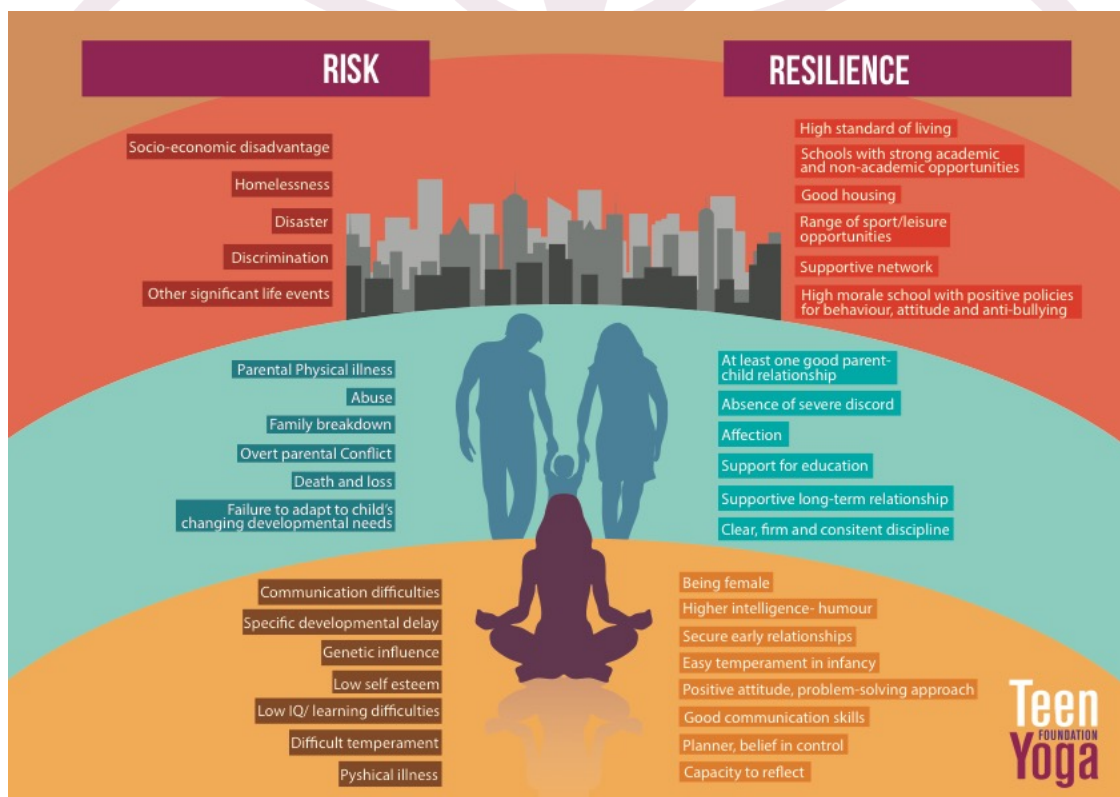




When we are able to collaborate in a satisfactory and egalitarian way, we move towards common goals, which are socially stated. We then become a fully-fledged part of the future society we are in the process of building. We are trusted and trusting of the people around us, to deliver and adapt to each other. \*

A functioning society is one where we work as one, just as the cells of a body work together to create a functioning organism. As John Donne says *“No man is an island, entire of itself; every man is a piece of the continent, a part of the main. If a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as if a manor of thy friend's or of thine own were: any man's death diminishes me, because I am involved in mankind, and therefore never send to know for whom the bells tolls; it tolls for thee.”*

Psychologically, this can only happen when we feel safe. Psychological safety means when we trust the people around us to deliver and support us in times of difficulty, when we feel able to open up about doubts or fears to the people around us. If we have these kinds of secure attachments, we will build psychological resilience and do better in life. (see figure below)





As you can see from the graphic, resilience to stress is largely determined by social factors. So, in summary, there is a direct correlation between resilience and trust.

It is misconceived to believe that if anything “bad” happens to me, then I will be more at risk. In fact, stressors are often what make us resilient. The “right” amount of stress builds strength and resilience, whereas stress above and beyond what I can cope with will lead to a risk factor. We might be able to draw a parallel with nature, where a tree on a windy ledge, will become stronger, by the battle with the elements. However, if you transplant a weak sapling onto the top of a windy hill, it is likely to break and die.

So, we can conclude that stress is a natural part of adolescence. The way the brain is develops coupled with the expectations of those around us in society and the expectations we have of ourselves create enough stress to ensure change and a certain amount of necessary resilience to move into adulthood. One could say that the mismatches between these two areas create a certain stress.

The million-dollar question is how do we respond to stress. Do we have the capacity to relax and deal with the situation or do we crack under the slightest bit of pressure? The individual who can take life in his stride, at ease, moving slowly towards each challenge with confidence will become stronger and more resilient whereas the one who breaks under the first stressful event, will be at risk for many diseases and illnesses further down the line.

### How yoga impacts the brain in adolescence

What yoga does, in this very specific context, is take the first step towards well-being which is to teach us how to respond intelligently and effectively to stressful situations by using the breath and adopting certain attitudes which programme us to positivity.

When cortisol is coursing through the body over a longer period of time (chronic stress), certain limitations occur in the brain – the size of the hippocampus (area of learning and memory) shrinks, the connections to the pre-frontal cortex are not made, the size of the Pre-frontal cortex is smaller than it could be, the size of the brain is smaller in general and the connections between the right and left side of the brain are not made to such a large degree. This is because when we are under constant threat, the development during





adolescence is focussed on the limbic area of the brain, which is the fear area. No time or space is given to development of memory or executive function.

How many times have we had students, adult or young, who after coming to yoga, say “*I feel so relaxed – I sleep so well after yoga!*” This is because a yoga class will have two main effects on the nervous system – it reduces the cortisol in the blood by down regulating the sympathetic nervous system and it releases GABA in the brain, which is the anti-anxiety neurotransmitter in the brain.

Cortisol is the main culprit in stress, it is released into the blood so that we can flee or fight. It takes some other action for it to be released out of the body. Either deep breathing, gentle movement or meditation, otherwise it stays in the muscles and blood stream for up to 72 hours. When we are constantly under stress, the body never relaxes and allows itself to repair and restore the body. When we learn certain techniques, we can consciously manage the cortisol production, allowing the body to come into healing mode more quickly and efficiently, thereby protecting it from harm.

GABA, a powerful neurotransmitter in the brain, alleviates anxiety effectively and quickly. (Chris Streeter’s research on this is interesting and requires further study) “*The 12-week yoga intervention was associated with greater improvements in mood and anxiety than a metabolically matched walking exercise. This is the first study to demonstrate that increased thalamic GABA levels are associated with improved mood and decreased anxiety.*”

Also, there is a certain Vagus nerve stimulation in certain backward bending postures primarily, which stimulates the para-sympathetic nervous system (See Porges research on this\* .

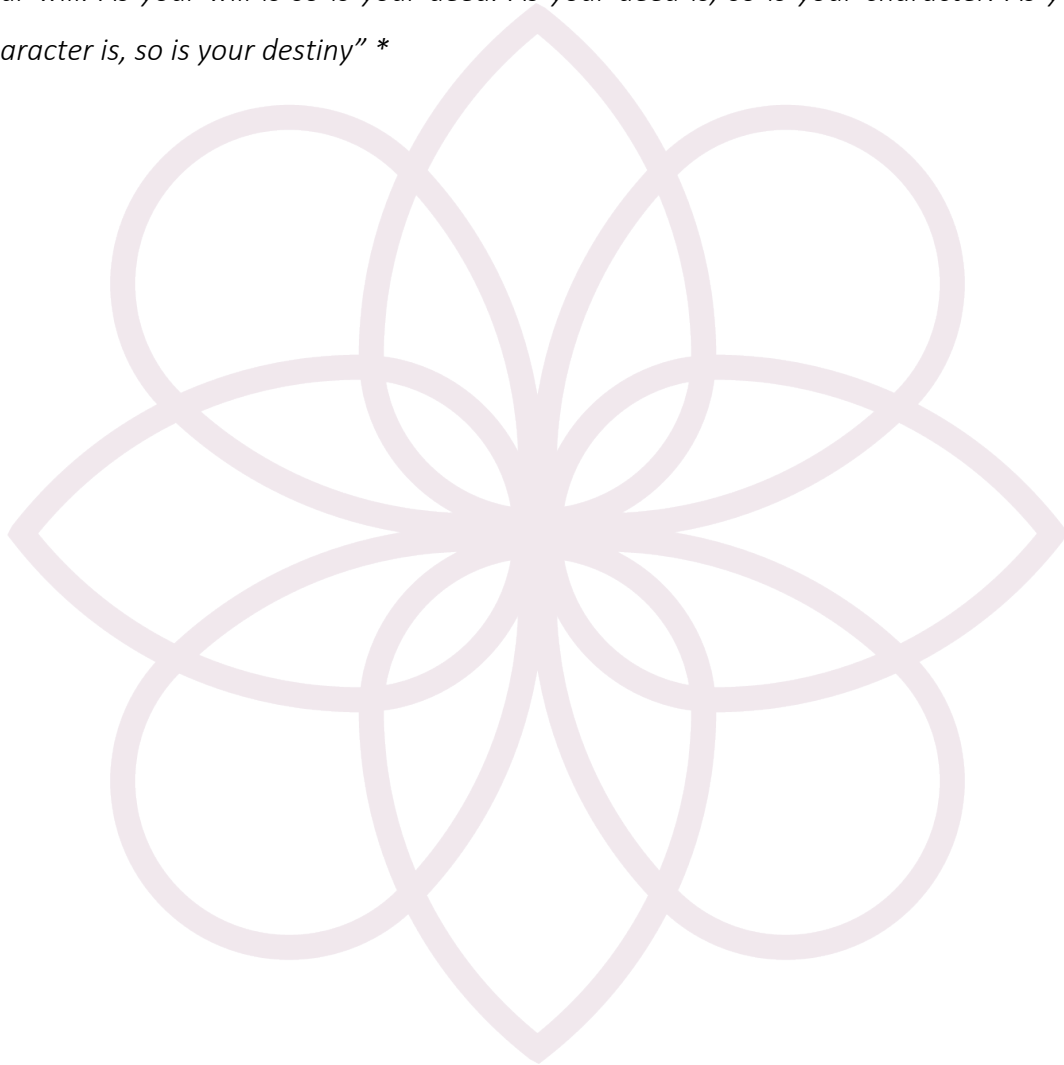
According to Porges’ theory, the Vagus nerve is an important player in the effectiveness of asana and breathing practise in changing mood. The vagus nerve carries information back and forth from the brain and body, shifting mood states as part of its role, which is partly why psychiatrists still use the vagal stimulation to support deeply depressed patients.\*

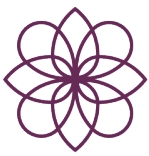
In conclusion, stressed people benefit from yoga, both mentally and physically, through the reduction and conscious management of the stress response. The brain of the adolescent is very prone to stress responses for all the factors that we discussed earlier,





so yoga at this age is particularly helpful. If we learn to cope with situations and control our responses to lower our stress reaction, we support a healthy brain growth and allow the young person to adapt well to society and create a benevolent and compassionate outlook which will then form the basis of their future character, building a peaceful and understanding society for our future. As it is stated in the Upanishads : *“You are what your deep driving desire is, As your desire is, so is your intention. As your intention is, so is your will. As your will is so is your deed. As your deed is, so is your character. As your character is, so is your destiny” \**





# CHAPTER ELEVEN- The changing body

## The anatomy and physiology of adolescence

When my son and I arrived at the cabin for our annual holiday, he was 14 years old, he ran into the loo and couldn't find the switch – he came back out – the light switch has moved! he said – as he had grown almost 11 cm, his hand reached too high on the wall. He had the impression that objects had shifted in space.

The key reason for this is proprioception. Our brain is constantly telling us where we are in relation to others and things around us. When we grow quickly, this proprioceptive ability doesn't quite catch up and we find ourselves bumping into things as we take up more room than we think.

## Anatomical changes

In this chapter, we will take a look at how the physical body changes and the impact this has on young people.

Adolescence is the years from puberty to adulthood. It can be roughly divided into three stages:

- 1 Early adolescence – 11-13
- 2 Middle adolescence 14-16
- 3 Late adolescence 17-25

The body is constantly changing, it is a flow of rejuvenation, change and decay, our body morphs and changes to adapt to outer circumstances, in response to needs and requirements of the outer and inner world. As with our mind, the body is a reflection of our habits, thoughts and attitude. Adolescence is certainly a time when these attitudes and shapes are shaped for the rest of our lives. I remember when I worked as a school teacher, and parents would come in for parents evening, I could often tell whose parent they were, because they would have the same mannerisms, stance or gait as their offspring! This is more than mimicry, this is an example of how we adopt the world view of our parents, expressed in our physical stance.







Can you remember how you felt about your body, growing up? Were you an early developer or a late one? I was late, I remember stuffing socks in my bra, to look more developed. I also remember asking for tampons, even though I didn't have my period yet, because being developed was desirable and exciting! I know that some of my friends were extremely embarrassed about developing too quickly, their breasts were in the way and heavy while taking part in sport or having boys ogling them when inside they still felt like children. This is an example of the awkward stage between physical maturation and inner development!

Young women, in general, develop more quickly than young men, giving rise to the awkward period between 11 and 15 of girls being taller and stronger than their male counterparts for a few years. In general women tend to have their growth spurt between 12 and 13, whereas boys have theirs between 14 and 15.

In the foetus, the main body grows first, then the limbs grow. In adolescence, it is the opposite way around, the feet and hands grow first, followed by the limbs. This is why as parents and teachers, we notice big shoes before the person actually grows in height. It is an early indicator to buy longer trousers!

## Growth and postural development

When we start to grow quickly and those around us stay the same, it impacts on the way we stand, sit and move. What do you think might happen if you were the first to grow tall and you were taller than everyone else?

Can you tell a yogi, standing at a bus stop or sitting in a café? I notice that yogis, tend to sit away from the backrest in chairs or release tension in their shoulders while waiting for a bus! These tendencies are a direct result of their daily or weekly asana practise. We become more attuned to the needs for tension release and are constantly making little adjustments to address them.

The effects on our posture are telling – we tend to hunch to make ourselves smaller, to fit in and belong, as we have said – connection is the main driver. Whereas if we are short, we tend to puff out our chest, in an attempt to seem taller. These postural shifts also have an impact on our emotions and in the long term, our character. Try it out for yourself – bring both shoulders forward, as if to protect your heart, bring your chin to your chest





and notice how this makes you feel. Now do the opposite, puff out your chest, look up – notice how this makes you feel.

Bones grow, and muscles grow and stretch – bones are a continuum of tissue, from hard to soft. Babies' bones are relatively soft and malleable, and as we grow, they become harder (ossify). We know when someone has fully grown, as the phalanges in the fingers come together, this is a way to know whether someone has come to their full height or not.

Like with the brain, how we spend our time, determines how the bones grow and in particular the density of the bone as we grow. There will also be genetic and societal factors that play in to the growth, stature and height of an adolescent.

In girls, the pelvis widens while in young men the pectoral area and chest widen. In girls, more fat deposits occur while in young men, fat becomes muscle.

If the pelvis widens quickly, it can lead to knock knees and flat feet among many girls. These postural anomalies can be corrected through yoga practices, that help minimise the curve in the small of the back, turn the legs out and lift through the arch of the foot. If we leave these issues unaddressed, they can cause long term damage and pain to the adult. However, if we develop a postural awareness at an early age, we can support a healthier and more conscious growth pattern that might support the alleviation of pain right from the start.

**Can you think of any postures that might help a young woman whose pelvis has widened too quickly so that she is developing knock knees?**

### Flat Feet

curl the toes under as you kneel, to accentuate the arch, it might hurt at first, but be patient and do this exercise for a few minutes every day. It is the fascia at the base of the foot which is stretching.

### Knock Knees

Encourage outward rotation of hips, as well as flattening of spine against the floor. Wide angle forward bend with conscious outward rotation and butterfly postures are good for this as well as moving bridge.





## Posture

When we encounter someone, who stands upright with their gaze at the horizon or naturally straight at you, we experience them as confident and respected. However, when we encounter someone with their head hidden, maybe in a hoodie, shoulders thrust forward and head down, they avoid our gaze, they want to be invisible, remain unjudged, unseen and so they can seem threatening.

When we start to practise asana, we are in fact practising attitudes as well as exercising our body and stretching certain areas. We practise how it might feel to open our chest or open our heart. We practise the attitude of gratitude as we open up. We practise the attitude of inward looking in the child posture, we practise balancing thoughts and emotions on a one leg balance.

Our bodies are outer expressions of our inner world. With some practise, our postures bring us into harmony and balance, exercising a balance of openings (curiosity and positivity) and nourishing “closing” postures such as forward bends, we balance powerful arm balances with nurturing resting postures etc. In this way, we balance all aspects of ourselves.

## Back problems

On a more concrete note, you will come across young people with three main spinal issues; lordosis, kyphosis and scoliosis

### Lordosis

Lordosis is common among young gymnasts and ballerinas as well as Afro Caribbean bodies. This is when the lower back has an exaggerated curve resulting in an open chest and the gaze naturally looking above the horizon. When this student is standing straight, sometimes the hands can end up hanging naturally behind the hips. How do you think we can help “correct” this posture to avoid lower back pain or neck pain in the future?

For many Afro Caribbean women, this is not something to be corrected but is their correct posture.





**What would be the long-term issues with keeping this posture, both emotionally and physically?**

Have a think and make some notes on which postures might help with lordosis.

You might like to think about which muscle groups are weak and which are strong in order for this posture to be present?

**Some reasons:**

1. Muscle weakness in abdomen
2. Over compensating muscles in the lower back
3. Dancing
4. Gymnastics
5. Attitude of pride or overcompensation
6. Short stature

With this group, you need to be sure you don't exaggerate backward bends and encourage straight, measure forward bends and core engagement in all leg lifts and other postures.

**EXERCISES TO REDUCE LORDOSIS:**

Pigeon is perfect for rounding the back a little and releasing pressure and tension in the buttocks and lower back

**Kyphosis**

This posture is also known as hunchback and is when the upper back has an exaggerated curve, resulting in shoulders coming forward and a cave like chest. The hands will end up hanging in front of the body in a natural position for those with kyphosis.

**Can you think of what might have caused this posture and how we can alleviate the pain caused by this?**

**What would be the long-term issues with keeping this posture, both emotionally and physically?**

**How can we help those with this posture? Which asanas would help?**

**How would a backward bend look for someone with kyphosis?**

**How do you think an adolescent might have come to have a kyphotic posture?**





**Some reasons:**

1. Carrying heavy rucksacks
2. Asthma or breathing issues
3. Shyness
4. Tall
5. Muscle, fascia or ligament tightness
6. Low self esteem
7. Sitting badly
8. Screen use

So, with this group, you need to be extra careful with backward bends, taking it slowly and cautiously.

**EXERCISES TO REDUCE KYPHOSIS:**

Lying flat on the floor, encouraging shoulders to come down to the floor and lengthening through the back of the neck. Also lying on a bolster, so that it runs along the length of the spine. Some gentle backward bends such as mini-camel can be helpful too.

**Scoliosis**

Why would an adolescent get scoliosis? When the spine is shaped like an S looking from behind, there is scoliosis. It is often a little twisted too. It is easy for this condition to go undiagnosed for a lifetime. Although you are not there to diagnose, it might be of interest to know that if you see one hand hang lower than the other ( a shoulder lower than the other or a hip lower), when they are standing straight, you are likely to see a scoliotic back. In severe cases, you can see a hip or a shoulder higher than the other too.

Reasons why a teenager might have scoliosis:

1. Fascia, muscle or ligament tightness
2. Birth trauma or defect
3. General trauma





4. Carrying something on one hip or shoulder exclusively
5. Sitting badly for long periods of time.

### What can we do to help?

For scoliosis, a general yoga practise is ideal, where we are continuously bringing our awareness to alignment, maybe working more on one side than the other, conscious that one side needs strengthening and the other releasing.

Any postures where we have a side to side motion or bilateral movement, will help. Many students come to yoga specifically to cure their scoliosis. If scoliosis is more than ???degrees, the NHS will operate a steel rod into the back, to keep it straight, so you might find many coming to you to straighten in order to avoid the operation.

### Back problems – why intervene?

Why is it important to help teenagers with back problems? Because if we manage to intervene at this stage of development, we might stop a trajectory that can lead to chronic and severe pain, not only in the back but also in the legs, shoulders and neck.

### Bone density

**The bones will become denser when they are under pressure. Can you think of a way in which we might create a denser bone tissue?**

Any kind of pressure on the bone will make it denser and stronger. For example, if we jump up and down, the bone in the lower leg and the femur will become stronger in response to the action. Similarly, if we stand on our head a certain pressure will be placed on the neck area of the spine, which will make it denser and stronger. If we stand on one leg, the bone there becomes stronger – can you think of any other yoga postures and how they might strengthen the bone?

### Do you know why bone density would be beneficial for teenagers?

Maybe you are not aware that the bone density of your body as an adolescent, determines the density of your body as an adult. There is a definite correlation between





bone density and wellness, or rather an adverse relationship between lack of bone density and depression or mental health issues.

A dentist friend of mine once spoke of a mutual friend saying he feared for her mental health, as she had so many cavities. I asked what he meant and he said that when teeth start to rot, it is often due to lack of calcium in the body. When calcium suddenly or gradually dips in the body, it can be due to the brain leeching calcium from the bones or teeth – the brain needs calcium for electrical impulses in the brain. When the brain is overactive, it is usually due to rumination or anxiety. The relationship is also inverse, in that when the bones are depleted of calcium it is an indicator of poor mental health. \*

### How to increase bone density:

Standing postures where we are putting pressure on one leg at a time will increase density, as well as arm balances and shoulder stand, all beneficial for bone density.

### Athletes and yoga

For many years Sport England have funded yoga as a sport for those who were dropping out of sport. It was seen to be a perfect movement which might keep young people going or maybe even segue them into other sports. This has proven to be true.

Many young athletes are open minded and always looking to become more flexible, more nimble and stronger – yoga is a common tool to achieve these goals. They see it as a tool to up their game! Some examples of athletes who have used yoga both as a sports psychology tool and also to upgrade their physical prowess are: Ryan Giggs, James Cracknell (Olympic rower), England's Rugby and Cricket Teams, Jessica Ennis Hill (Olympic Hepathlete) to name but a few.

### Many athletes work unilaterally – can you think what I might mean by this?

Tennis players work mostly with what side of their body and which limb?

Footballers?

Runners?

Hockey players?

Netball players?





You see, there is an unbalance in their fitness, which often causes injury. Several times, I have been called in to work with athletes to support healthy growth in the body and heighten their performance through effective and simple strengthening and releasing exercises. Maybe you would like to work out how you would do that with the groups above?

Many have come back to me reporting greater nimbleness and less injury. I call yoga preventative physiotherapy – you will find this group of students highly motivated to practise at home, as long as they are given reasons for the intervention. They will practise beyond what you have given them with curiosity and determination.

### **General exercises for athletes:**

Focus on the area that is under duress in their particular game. (eg footballers, focus on the knee, hamstrings and quadriceps, swimmers on shoulders and hips) Also, always look at how you can stretch the muscles and release tension, paying particular attention to any unilateral stretches that might be necessary.

### **Osgood Schlatters:**

In young people who play ball sports that involve kicking, there is a high risk of Osgood Schlatters Disease, where the kicking action has resulted in inflamed ligament insertion into the kneecap. This is a painful condition that often results in stopping playing altogether for at least 6 weeks, while the inflammation subsides and the young player needs to practise some very specific exercises to reduce inflammation and bring about healing. These stretches are often the hero pose and other gentle stretches of the muscle just above the knee cap.







## Hormonal changes

### Menstruation

It has been found that when a young woman reaches the weight of 42kg, she is likely to menstruate. Which means of course, that if there is some kind of eating disorder the natural age for first period will shift either up or down.

Obviously having your first period, in many cultures is a very important and celebrated event. It is the moment we transition from girlhood to womanhood. However, for many, periods have become a nuisance or even shameful. We see advertisements, with young women running or dancing in white trousers, advertising that you can do anything on your first day of your period, where most of us lie curled up on the sofa stuffing our faces with chocolate, nesting with a hot water bottle.

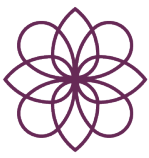
#### What has this got to do with yoga?

Uma Dinsmore-Tuli, who has championed women's cause in yoga in the UK and abroad, recognises that 90% of practitioners in the West are in fact women. There are many beautiful practices, that bring our awareness to our sacred femininity, to the profound awe and miracle of being able to bring life to the world and how our bodies and our periods are our signature. Many postural and meditation practises bring our awareness to the sacred nature of coming into womanhood and give permission for deep rest and nurturance during this time. Many young women have no idea about how our cycle can inform and inspire us when we are tune with it. Not only our menstruation or moon cycle but also diurnal and seasonal cycles. Understanding the changing energies of these cycles and what each one is inviting us to do, gives us immense power and insight. You can read more about this in Uma's wonderful book Yoni Shakti. \* footnote.

### Exercise to support healthy menarche:

Movements that are slow, deliberate and conscious, favouring, circular movements, releasing the hip and lower back area particularly. Constantly encouraging women to move within their comfort zone. Legs up the wall, yoni mudra during breathing.





## Male growth

For many young men, the main hormone at play is testosterone, which can play havoc with anger management specifically. With breathing exercises, focussing and some tough physical postures, it is possible to channel this surge in energy and need for risk taking in an optimal way.

In terms of physical changes, the growth in the chest area allows for greater upper body strength which can be particularly heartening, while they are still quite small and can easily carry their body weight on their arms in arm balances!

I remember vividly, when one young man of 12 came in to class, having taught himself the peacock, and duly balanced on the table! He was the smallest in the class, but had managed to master many tricky arm balances. He was also able to enjoy many acroyoga postures, such as plank on plank!

## Postures to support healthy male development

Any arm balances, releases anger and builds pectoral muscles. Also hamstring release and hip release in butterfly and downward dog are necessary. It is beneficial for young men to do partner work in acroyoga, to feel connected and physically support each other.

## Transitions from innocence

For many boys, the moment when their voice breaks, is one of pride and embarrassment in equal measure. The squeaky high-pitched crashing down into the desired manly pitch, is often the source of comedy and shame. Finally established in the deep voice however, young men notice a shift in the way others view them. One of my students used to take the public bus regularly to school, sometimes he would forget his money for the bus and the driver would let him in, allowing him to pay the following day or maybe even letting him have the ride for free. One day, after the summer, he forgot his money and the same bus driver chucked him off the bus, miles away from the school, on a country lane. Needless to say, the boy arrived very late for school, drenched and cold, scolded for the second time and it was only 9am! What had happened? His voice had broken! The bus driver no longer saw a cute young boy but a threatening, manipulative young man.





Perceptions of young men in our society have a deep impact on them and many feel hard done by and simply respond in kind, by being the threats that they are expected to be, finding power in this profile which is shoved upon them. Others may vainly try to recover their innocence, through kindness and pathological altruism, with varying degrees of luck. Similarly, one of my female students who had always cycled to school, oblivious to her surroundings, finds herself being whistled at, jolted suddenly into a sexualised world. All this due to the new body that had developed without her agency. Others had decided that she was now sexually available and aware, even though she herself was not. I remember vividly how shocked and self-conscious she became from that day on. She was sad and unprepared to lose her childhood.

In both these cases, it was other adults who made a judgment on the adolescent, - that they are entering a sexualised world, whether they are aware of it or not, whether they are willing participants or not. This brings to mind the statement of the wonderful Neuroscience researcher Sarah Jayne Blakemore: *If we treated old people or toddlers like we treat adolescents, there would be an outrage. We make fun of and look down on teenagers in regular intervals in this country in a way which is bound to render them introverted and insecure*" (ref) She is referring to the Kevin character by the comedian Harry Enfield.

Conversely, some can't wait to arrive into adulthood, casting off the world of dolls, trains and dependency. The moment cannot come fast enough, ready to burst out of the home and what is defining them, into a new world of possibilities and adventure. Personally, I remember borrowing tampons from my friends, pretending that I had my period, stuffing socks in my bra, to look bigger than I was! The moment a boy asked me out, was a moment of celebration, the moment I actually got my period I remember shouting out to the whole family and dancing on the table! I felt that finally I would be taken seriously, I would be allowed to make my own decisions and have autonomy. But then when I was asked out and went on dates, I felt clumsy, awkward and ignorant – trying to navigate other people's demands with my own desires and needs.

There is a binary tendency in British society today to demonise or put teens on a pedestal – either they are problematic and criminals in the making, or they are victims of crimes.

In my mind, if we truly understood that they are in a transitional phase in their lives





where trying things out, leaving their comfort zone and taking risks is biologically driven behaviour, maybe we would be more patient and understanding, allowing them in turn to take their place and be supported by society at large.

### Helping transition

Encourage inward looking, reflecting on what feels good and what doesn't, exploring our own boundaries when it comes to pleasure and pain and what is OK and what is not. Allowing to pull back from a posture if it feels too difficult but encouraging them to give them a go – especially arm balances, which provide resources for balance, focus and strength. There may be postures that they could do as children, but due to the changes, they can no longer accomplish. Acknowledge these. In relaxation, letting go of the expectation of others and feeling into our own needs and letting go of them too eventually, until we are at peace with the ground and those around us.

### Sexuality

The most striking element of adolescence is of course, the burgeoning sexuality heralded by gender defining physical changes. Breasts in girls, pubic hair and testes dropping in men. The outward signalling of the ability to conceive and create life, the availability and maturity for sexual encounter. For many this is a confusing moment. Can you remember when you started to be aware that you had sexual feelings? Did it come as a surprise or had your friends and family supported you towards that transition? Was it a time to celebrate or a time of shame? Were you ready or did you feel coerced or forced to become sexual? Did your body develop in time with your feelings?

For many, the first sexual feelings, whether attraction to another or simply “feeling horny” come as somewhat of a surprise. For many young men, their sexuality almost takes over, getting random erections on the bus at 13, is one element that has been described to me. For women, in many cultures (most, I would say) any feelings of sexual attraction are often shameful or labelled as “slutty”.

Today there is the added issue of gender fluidity. This is a controversial topic, which has come to our attention in the last few years in the UK, including young people changing their bodies to fit the gender they identify with, through various operations and





chemicals. Within this area is obviously, also the sexuality confusion, as the openness around homosexuality grows, many young people grow up unsure of which gender they are attracted to and many report that there is no such thing as gender, but we are all on a spectrum of gender and we are simply attracted to a person, notwithstanding their gender. With a holistic yoga practise, which encourages the witnessing of the breath, the body, the mind, we no longer identify merely with the body and therefore gender, but with something more nebulous, more majestic and satisfying, which is beyond gender.

### Healthy sexuality

Honouring the body, recognising sensations, feelings, emotions and thoughts, knowing where boundaries are and how they feel. What is the difference between like, love and lust? How do I feel them in my body?

### Some diseases that are on the rise among young people

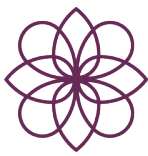
The lack of bone density, in other words, Osteopenia, is on the rise among young people in most probability due partly to lack of Vitamin D (sunshine vitamin), an increasingly sedentary lifestyle – “the sitting disease” coupled with increased cases of anorexia nervosa. We need an active approach to combat this problem which will have long term impact on our NHS – can you imagine the impact of young people who have had osteopenia on our NHS?

### Exercise to combat bone density

Anything where you are putting pressure on a single bone, such as arm balances, shoulder stands and one-legged standing poses

Obesity is another disease which has doubled in the last 10 years among young people. Obesity often leads to diabetes and osteopenia as well as poor muscle tone and depression. It is considered a mental health problem as over eating is a sign that we are trying to cope with emotions that seem out of our control. We cannot underestimate the impact of obesity on the whole body as well as future healthcare costs, the pressure on joints, the heart, the bones, the digestive and physiological systems. Long term, there is





a very high probability that the obesity continues into adulthood as eating habits and fat levels are usually set at this time.

### Exercises to combat obesity

Vinyasa flows, adapted to limited movement (similar to pregnancy), be aware that many obese children are also hypermobile, so focus on movement and strengthening rather than flexibility.

Another disease that is creeping down in the ages is Type 2 Diabetes often linked to the above, also often considered a mental health issue, due to the illogical and unnecessary emotional eating, linked to mental states rather than physical need (hunger). It is also linked to chronic stress, as glucose is needed for cortisol to be constantly present in the body, so the body craves sugar and the pancreas can no longer cope with the amount of insulin it needs to produce and crashes. Long term, this is extremely detrimental to the adult and results in shorter life span, a life of controlling diet and timings as well as fainting and weakness.

### Diabetes

With diabetic students, you will need to tell them before you start how strenuous the class is and not vary that from week to week, to that they can regulate their insulin appropriately. Calming the nervous system with breathing exercises. A smooth class in terms of energy expenditure is good. Awareness on the sweetness of life and anything they can bring to mind, that has made them feel sweet about themselves or others. Self-massage, and tuning to their own needs

We are finding more cases of Rheumatoid Arthritis among young people too. Rheumatism is understood to be an inflammatory disease, connected to a stress response and lifestyle factors. So again, stress related diseases, that previously dominated in middle age are creeping down to adolescence.

### Exercises for rheumatoid arthritis

Simple, joint-freeing exercises are helpful as well as anything which reduces stress and anxiety, thereby reducing inflammation in the body.





## Self harm

One of the most worrying issues which is on the rise among young people is self-harm, which has risen through the years. Those who self-harm will often say that they do it to “feel something” or because they feel out of control in every other sphere of their lives and they take ownership of their body in this way. Their time is tied up in school work and other activities that often are prescribed for them, so the self-harming becomes an escape. Contrary to common opinion, both boys and girls engage in self-harm.

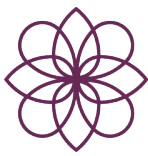
## Exercises for those who self-harm

Self-massage, metta meditation, partner work, strong postures, particularly arm balances.

## SUMMARY

Our physical growth and maturation bring many welcome and unwelcome shifts which make us almost unrecognisable to acquaintances and old relatives and sometimes even to ourselves. These changes can be alienating, making us feel like we are living in an unwelcome vessel. However, when managed with yoga asana in particular, they can become a source of power and insight. When we sometimes stumble across more or less severe issues (back problems, obesity, osteopenia) they could be adequately and effectively supported by a simple weekly yoga practise, which gives awareness to the changes occurring and tools to support both a healthy curiosity and a healthy respect towards a strong and functioning body.





## CHAPTER TWELVE – How to use the app

The programme and the mobile app constitute an integral part of the approach proposed in HIPPOCAMPUS. Although it is possible to introduce yoga practices without technological support, experience with other similar social software indicates that this helps to maintain interest and motivation (Asimakopoulos, Asimakopoulos, & Spillers, 2017; Ba & Wang, 2013; Wong, Merchant, & Moreno, 2014), and recent research has indicated that it enriches and consolidates the participant's progress (Bakker & Rickard, 2018; Holzinger, Dorner, Födinger, Valdez, & Ziefle, 2010). In this sense, the mobile app is a tool for supporting the programme and providing opportunities for participants to continue their practice at home, in addition to the sessions contained in the programme (García-Holgado, Tajés-Reiris, Kearney, Martinus, & García-Peñalvo, 2019).

Although the mobile app is part of the HIPPOCAMPUS approach, a commercial name was used to publish in Android and iOS stores. The name selected was “Yuva Yoga” where “Yuva” means young in Sanskrit.

### Download the app

The mobile app is available at App Store (iOS) and Play Store (Android), so most of the young people can download it and use in their mobile phones. You can search “Yuva Yoga” in the stores or click in the links available on <https://yuvayoga.org>.

### Restrictions

The mobile app is available for users that are 14 years old or older and we recommend that you use this app under the supervision of a yoga teacher.

### The content

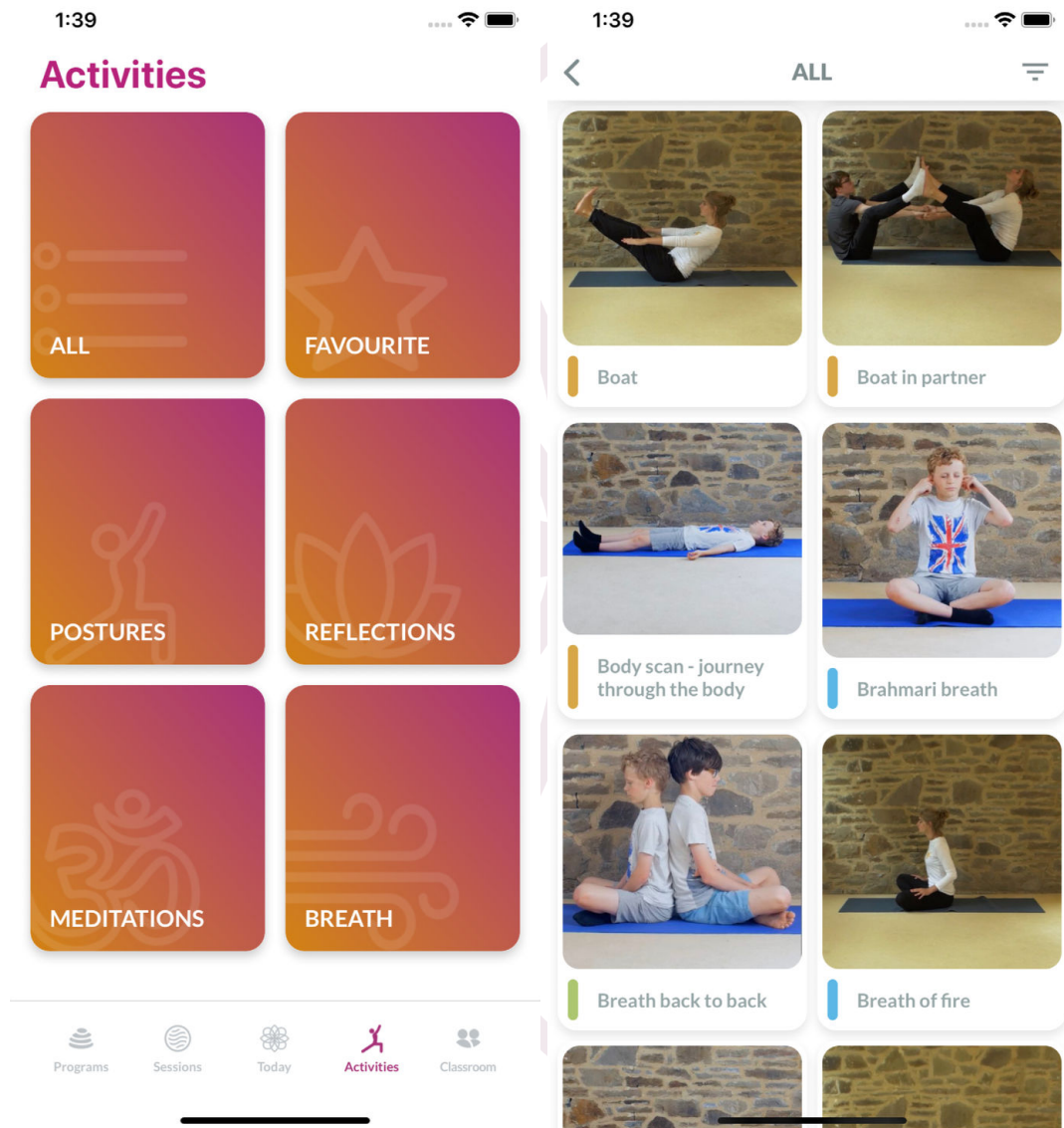
There are more than 100 yoga activities - postures (*asana*), meditations, reflections and breath (*pranayama*) -, 15 yoga sessions included in the app and 4 pilot programs to follow in different periods of the academic year.







All the contents are available in English, French, Italian, Norwegian and Spanish. You cannot select the content language; it depends on the language configured in your mobile phone. For example, if you are in Portugal and you download the app you will have the app in English, but if you configure your mobile phone in Spanish, the contents will be in Spanish.

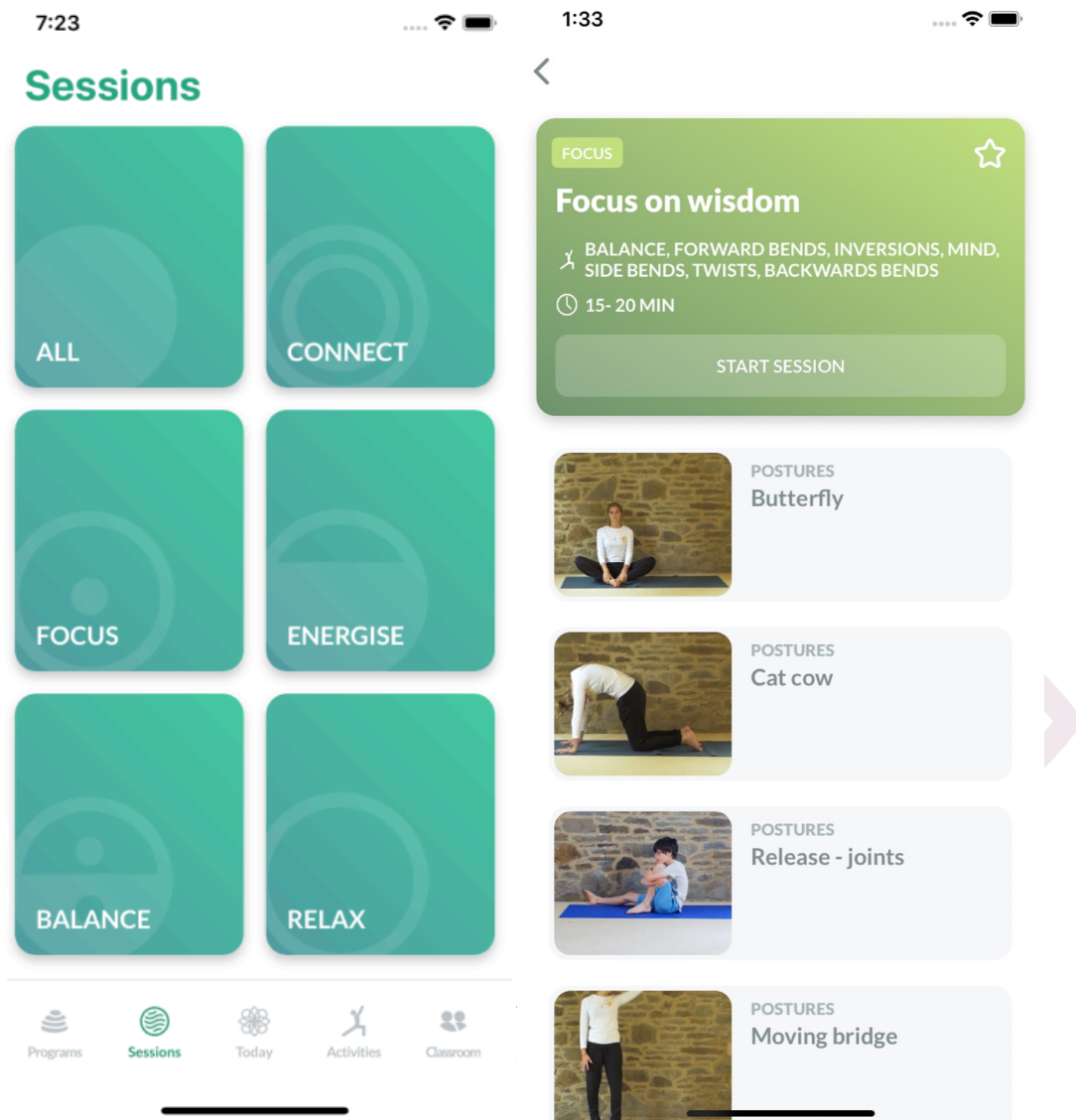


The activities are composed of a title, a video in which a person show how to do the yoga activity and a description of the activity in text. Although it is possible to follow one activity, the main use of the activities is to be part of a yoga session. A yoga session is a set of yoga activities to be carried out in the established order. There are five types of



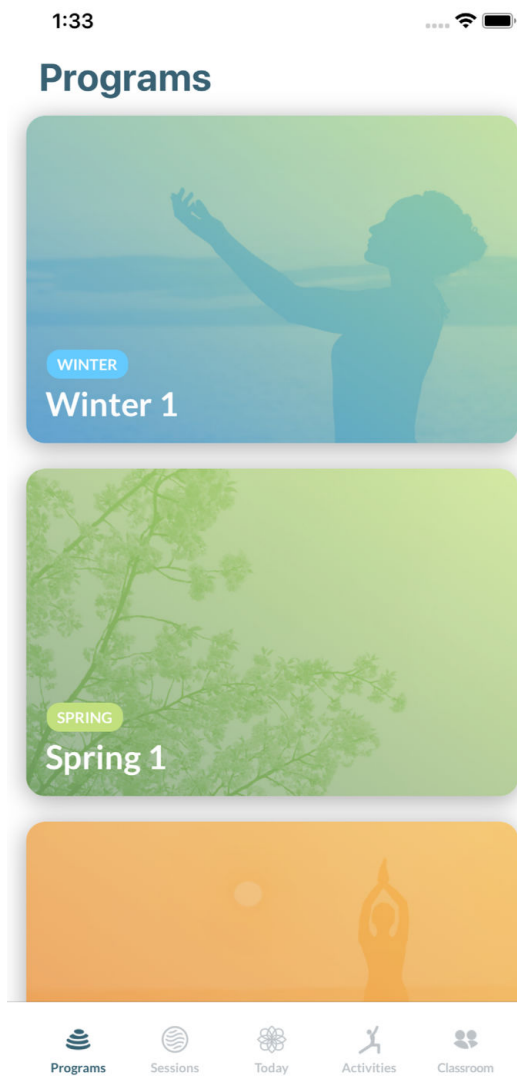


yoga sessions: connect, focus, energise, balance and relax. Depending on the type of yoga session, the results are different. Moreover, inside each yoga session there is a list of the parts of the body that are activated during the yoga session.



Finally, programs are related to the project aims, promoting the well-being of young people through the practice of a range of techniques derived from yoga. A program is a set of sessions to achieve a set of objectives, such as reduce stress, getting stronger and more relaxed, or waken the body.

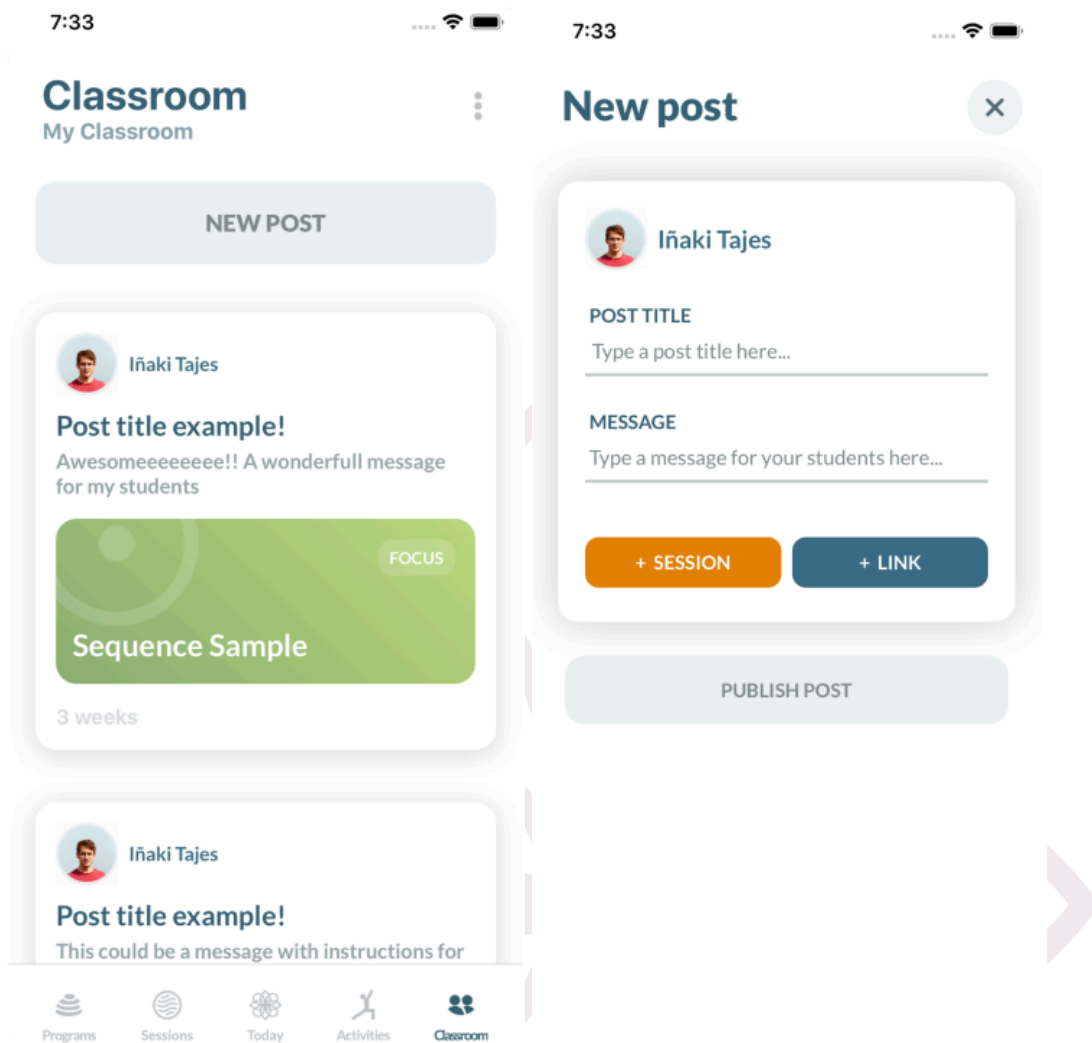




## The classroom

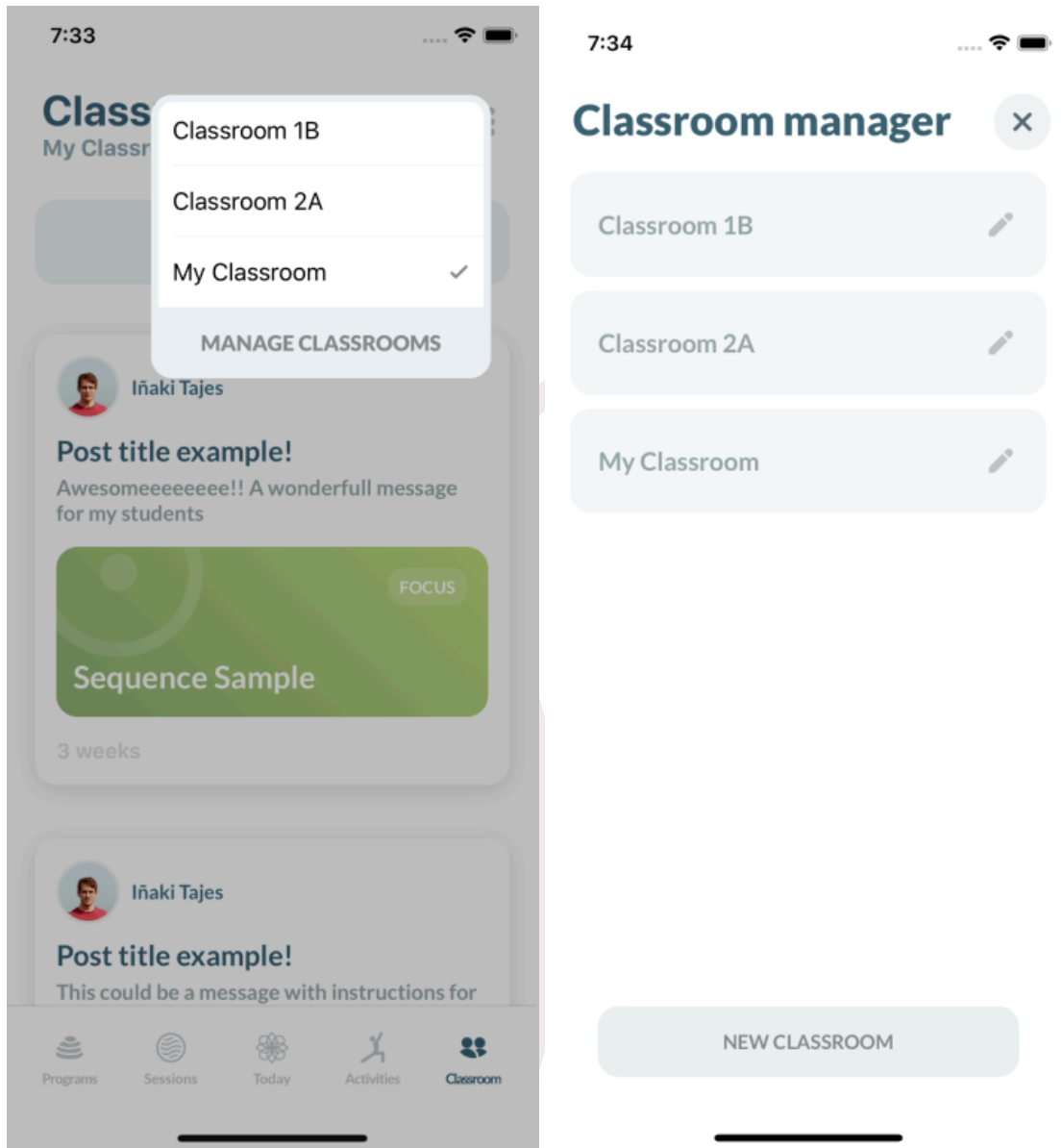
The classroom supports the communication of teachers, educators, youth workers or yoga teacher with young people. It enables teachers to send yoga homework to their students whenever they want a remotely. The teacher, educator, youth worker or the yoga teacher can create a virtual space (classroom) for each group of students that they work with and send them different kind of sessions that they must practice at home depending on their needs or other relevant information related to their yoga practices. A message inside the classroom space is composed of title (it is the only required), message, session and external link.





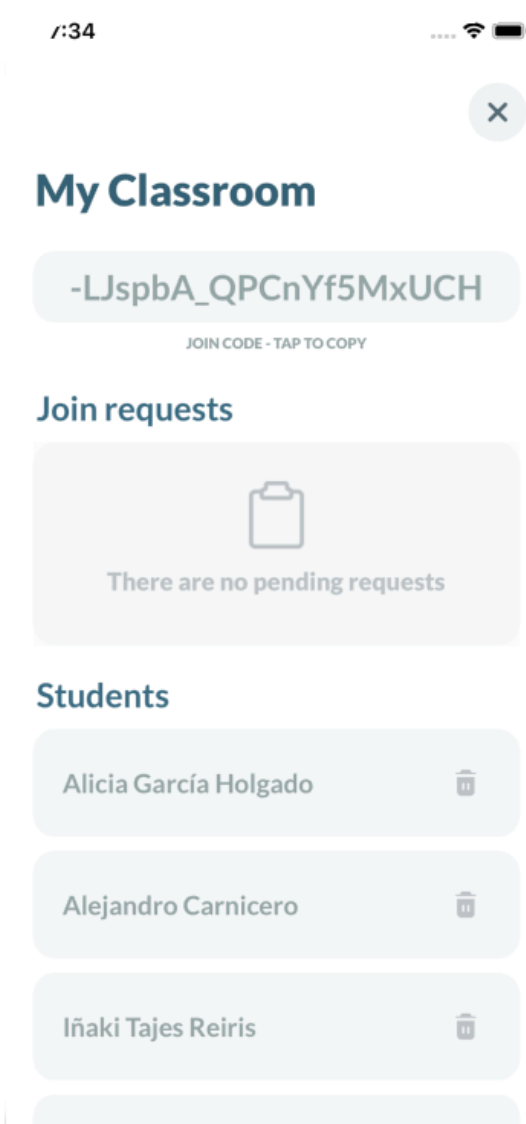
To ensure the control of the environment, and ensure that it is a secure space for young people, the teacher role must be manually validated by the administrator of the app. Moreover, the communication is unidirectional, only teacher can send messages to their students. Students can never communicate between themselves or with the teacher.





On the other hand, the access to each classroom is regulated by the teacher, who can accept or decline the students request to enter to the classroom. Each classroom has a “join code” associated so the teacher can send the code by email, write in a blackboard or print it to give it to their students.

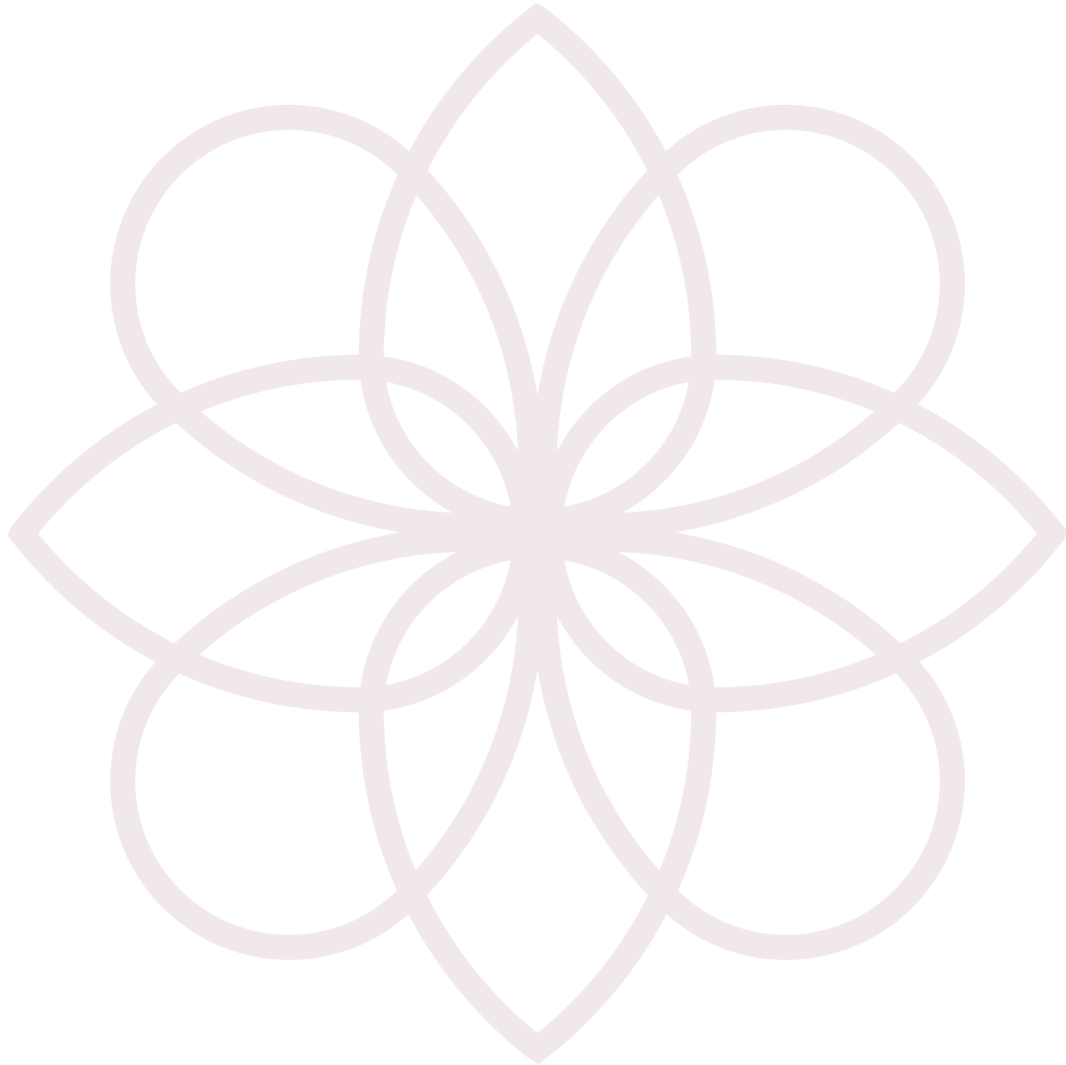






## CHAPTER THIRTEEN- Evaluation

Because the evaluation of the programme is of considerable length, all information on how the evaluation process was conducted, the instruments used in the different languages and the analysis of the results are available and fully accessible at <https://hippocampusproject.eu/programme>.





## APPENDIX – Application of the Hippocampus project in out of school contexts

This manual pre-supposes a certain regularity of contact between the youth worker and the students, working week on week and then ongoing connection to be able to carry on supporting the young people with the yoga within their context. It has become apparent from this project that that has not always been easy. In some instances, youth workers have irregular contact with young people and may see them over an intense one or two week period through the summer, for example and then not again. It is the wish of the creators, that this project could be flexible enough to allow for this kind of rhythm.

In this appendix – we outline how this programme could be adapted to such contexts.

Considering youth contexts, one might presume that there is a two or three week space in which to teach, in which case there might be an option to run the course daily over a period of time and running a course for the youth workers in parallel, so in the last week, it is possible for the youth workers to teach.

In short, the first week would see one class per day outlining the 8-week course both for the youth workers and students simultaneously. The following week the workers would continue to share the yoga within their contexts with the young people.







## Bibliography

- Association, P. (2011, August). Childrens Eating disorders Cause Alarm. *The Guardian*.
- Bainbridge, E. (2017, November 11). Instill Conference. (R. Watkins-Davis, Interviewer)
- Bainbridge, E. (2017, November 11). Instill conference (R. Watkins-Davis, Interviewer)
- BBC. (2016, Sept 25). *BBC.co.uk/news/health*. Retrieved from BBC: <http://www.bbc.co.uk/news/health-37451773>
- Begley, S. (2007). *Train your Mind, change your Brain*. `Ballantine Books.
- Biddulph, S. (2013). *Raising Girls*. Harper.
- Biddulph, S. (2015). *Raising Boys: why boys are different and how to help them become happy and well-balanced men*. Harper Thorson.
- Biddulph, S. (2015). *The Complete Secrets of Happy Children*. Harper Thorsons.
- Blakemore, D. S. (2015, March 25). The Life Scientific. (J. Al-Khalili, Interviewer)
- Bradford, E. (2018, August 26). *BBC*. Retrieved from BBC: <http://www.bbc.co.uk/news/uk-scotland-23811690>
- Brinkhues, S. (2017). Socially isolated individuals are more prone to have newly diagnosed and prevalent type 2 diabetes mellitus - The Maastricht Study. *BMC Public Health*, pp12.
- Brown, C. (2017). *The Modern Yoga Bible*. Godsfield Bible Series.
- Cam. (n.d.). Child obesity rise again, NHS reports.
- Carrington, D. (2016). Three-quarters of UK children spend less time outdoors than prison inmates - survey. *The Guardian*.
- Centre, S. Y. (2000). *New Book of Yoga*. Sivananda Yoga Vedanta Centre.
- Centre, S. Y. (2003). *Sivananda Companion to Meditation*. London: Sivananda Yoga Vedanta Centre.
- Centre, S. Y. (2003). *Sivananda Companion to Yoga*. Sivananda Yoga Vedanta Centre.
- Chopra, D. (2006). *Fire in the Heart: A spiritual Guide for teens*. Simon and Schuster.
- Connolly, A. (2016). Health Survey for England 2015, Childrens body mass index, overweight and obesity. London: National Statistics.
- Cross, F. (2017, November 11). Instill Conference 2017. (R. Watkins-Davis, Interviewer)
- Cross, F. (2017, November 11th). Young People and Yoga. (R. Watkins-Davis, Interviewer)





- Delaney, B. (2017, September 17). The Yoga industry is booming - but does it make you a different person? *The Guardian*.
- Desikachar, T. (1999). *The Heart of Yoga: Developing a Personal Practice*. Inner Traditions Bear and Company.
- Dlon, R. (2017, November 11). Instill Conference. (R. Watkins-Davis, Interviewer)
- Durgananda, S. (2010). *Patanjali's Sutras*. New Delhi: Mangalam Books.
- Einstein, A. (1950, March 29). A letter to a distraught father. New York.
- Enfield, H. (2008, June 19th). *the Harry Enfield Show*. London, UK.
- Euswaran, E. (2007). *The Bhagavad Gita*. Nilgiri Press.
- Euswaran, E. (2007). *The Upanishads*. Nilgiri Press.
- Feuerstein, G. (2001). *The Yoga Tradition: Its history, literature, philosophy and practice*. New York: Hohm Press.
- Forster, K. (2017, June 7th). Prescription drug addiction "to overtake heroin use" in UK. *The INdependent*.
- Gambhirananda, S. (2010). *Mandukya Upanishad*. New Delhi: Advaita Shrama India.
- Gangadhar, B. (2013). Cortisol and antidepressant effects of yoga. *Indian Journal of Psychiatry*, p3.
- George, A. (2004). Type 2 Diabetes in the Young: The Evolving Epidemic: The International Diabetes Federation Consensus Workshop. *Diabetes Care*.
- Goleman, D. (2017). *The Science of Meditation*. Penguin Life.
- Government, B. (2018, february 2018). [www.gov.uk](http://www.gov.uk). Retrieved from <https://www.gov.uk/education/spiritual-moral-social-and-cultural-development>
- Greenland, S. K. (2010). *The Mindful Child*. Simon and Schuster.
- Gruber, T. (2005). *Yoga Pretzels: 50 Fun Yoga Activities for Kids and Grownups*. Barefoot books.
- Haas, S. (2018). *The Dark Night of the Soul*. London: Veda wisdom Books.
- Hall, M. (1998). Sleep as a mediator of the stress-immune relationship. *Psychosomatic Medicine*, 48-51.
- Hanh, T. N. (2011). *Planting Seeds, Practising Mindfulness with Children*. Parallax Press.
- Harper, J. C. (2016). *Best Practise for Yoga in Schools*. Yoga Service Council.





- Health, D. o. (2008). Children and young people in mind: the final report of the National CAMHS Review. London: Crown.
- Helen Purperhart, B. v. (2007). *Yoga Adventure for Children*. Hunter House Smartfun Book.
- INdependent, T. (2017, May 22). *independent.co.uk/news/health*. Retrieved from Independent.co.uk: <http://www.independent.co.uk/news/health/nhs-children-mental-health-services-cuts-or-closure-third-downsizing-survey-staff-conservatives-a7749616.html>
- Iyengar, B. (2008). Light on Life: The journey to wholeness, inner peace and ultimate freedom. London: Rodale.
- Jenkins, R. (2017, August 11). *PsyPost*. Retrieved from Psypost.org: <http://www.psypost.org/2017/08/study-recreational-screen-time-linked-worse-mental-health-teens-49470>
- Jensen, F. (2015). *The Teenage Brain*. HarperCollins.
- Johari, H. (2000). CHakras: Energy Centers of Transformation. Destiny Books.
- John MAcleod, R. O. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal, general population studies. *The Lancet*, 1579ff.
- Judith, A. (1987). *Wheels of Life: Users Guide to the chakra SYstem*. Llewellyn Publications.
- Jung, C. (1964). *Civilization in Transition, Collected Works, Volume 10*. London: Routledge.
- Kabat-Zinn, J. (2005, april). *Mindful yoga, movement and meditation*. Retrieved from Yoga Chicago: <http://yogachicago.com/2014/03/mindful-yoga-movement-and-meditation/>
- Kaminoff, L. (2011). *Yoga ANatomy*. Human Kinetics.
- Khalsa, S. B. (2015). *Sleep Medicine Review*.
- Khalsa, S. B. (2016, November). *Sleep*.
- Khalsa, S. B. (2017, Dcember). *Yoga in UK*. (C. Martinus, Interviewer)
- Kolk, B. v. (2015). *The Body keeps the score*. Penguin.
- Krishnananda, S. (2006). *Chandogya Upanishad*. Rishikesh: Divine Life Society.





Krushnakumar, D. (2015). Meditation and Yoga can Modulate Brain Mechanisms that affect behaviour and anxiety - a modern scientific perspective. *US national Library of Medicine National Institutes of Health*, 13-19.

Kumar, S. (2010). Need for determining the incidence and prevalence of JIA in developing countries: the Indian predicament. *British Society for Rheumatology*.

Lapsley, D. K. (1990). Adolescent Attachment, Identity, and Adjustment to College: Implications for the Continuity of Adaptation Hypothesis. *Journal of Counseling and Development*.

Lee, M. (1997). *Phoenix Rising- A Bridge from Body to Soul*. New York: Health Communications.

Livingstone, S. (2002). *The media rich home: balancing public and private lives*. London, UK: Sage.

Long, R. (2009). *Key Muscles of Yoga: Your Guide to Functional Anatomy in Yoga*. Independent Publisher.

Maehle, G. (2001). *Ashtanga Yoga: Practice and Philosophy*. New World Library.

Matousek, M. (2012). *When you are falling, dive*. Hay House.

McLeod, S. (2007). *Simply Psychology*. Retrieved from *Simply Psychology*: <https://www.simplypsychology.org/bowlby.html>

Minds, Y. (2018, January 10th). *Young Minds*. Retrieved from *youngminds.org*: [https://youngminds.org.uk/about-us/media-centre/mental-health-stats/?gclid=EAlaIQobChMIInsva\\_tab2QIV6LftCh00SgmkEAAAYAiAAEgIVeFD\\_BwE](https://youngminds.org.uk/about-us/media-centre/mental-health-stats/?gclid=EAlaIQobChMIInsva_tab2QIV6LftCh00SgmkEAAAYAiAAEgIVeFD_BwE)

Morgan, A. (2013). *How young people explain the benefits of yoga*. Leeds : Institute of Psychological Sciences, University of Leeds.

Morgan, D. (2010). Mindfulness-Based cognitive Therapy for depression: A new approach to preventing relapse. *Psychotherapy research*, 123-125.

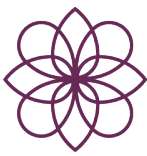
Morgan, N. (2013). *Blame my Brain*. Walker Books.

Muktibodhananda, S. (2016). *Hatha Yoga Pradipika*. Munger: Yoga Publications Trust.

NSPCC. (2018, February 10th). *NSPCC Preventing abuse*. Retrieved from NSPCC: <https://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/mental-health-suicidal-thoughts-children/>

Oakley, B. (2012). *Pathological Altruism*. Oxford: Oxford University Press.





- Ogden, P. (2006). *Trauma and the Body; A sensorimotor approach to Psychotherapy*. Norton Series on INterpersonal Neurobiology.
- Orzech, K. (2011). The state of sleep among college students at a large public university. *Journal for sleep Research*, 612-9.
- Osteopenia3*. (2018, February). Retrieved from <http://www.osteopenia3.com/Young-women-with-Osteopenia.html>
- Paediatricians, A. C. (2016, June). *Acpeds.org*. Retrieved from American College of Paediatricians: <https://www.acpeds.org/the-college-speaks/position-statements/the-impact-of-pornography-on-children>
- Porges, S. (2001). The polyvagal theory: phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology*.
- Rama, S. (1999). *Yoga and Psychotherapy: The Evolution of Consciousness*. Himalayan Institute Press.
- Robinson, O. J. (2013). The impact of anxiety upon cognition: perspectives from human threat of shock studies. *frontiers in Human Neuroscience*, pp12.
- Rodrigues, D. (2018, February 12). *dinahrodrigues.com.br*. Retrieved from dina Rodrigues: <https://www.dinahrodrigues.com.br/home-en>
- SAMHSA. (2018, february). *SAMHSA.gov*. Retrieved from Samhsa: <https://www.samhsa.gov/topics/prescription-drug-misuse-abuse>
- Saraswati, S. S. (2004). *Yoga Education for Children*. Yoga Publications Trust.
- Sat Bir Khalsa, B. B. (2016). Yoga in school settings: a research review. *Annals of the New York Academy of Sciences*.
- Scaravelli, V. (1991). *Awakening the Spine: The stress-free yoga that works with the body to build health, vitality and energy*.
- Scheel, J. (2018). Mothers, Eating Disorders and Histories of Trauma. *Psychology Today*.
- Schiffman, E. (1997). *Yoga: The spirit of moving into stillness*. Simon and Schuster.
- Selfharm UK/ get-information*. (2018, 10 February). Retrieved from Selfharm UK: <https://www.selfharm.co.uk/get-information/the-facts/self-harm-statistics>
- Sellgren, K. (2016, June 15). *BBC News education*. Retrieved from BBC News: <http://www.bbc.co.uk/news/education-36527681>
- Siegel, D. D. (2014). *Brainstorm: The Power and Purpose of the Teenage Brain*. Scribe UK.





Siegel, D. D. (2018, February 12). *The Healthy Mind Platter*. Retrieved from Dan Siegel: [www.drdansiegel.com](http://www.drdansiegel.com)

Singleton, M. (2010). *Yoga Body: The origins of Modern Posture Practice*. London: Oxford University Press.

Sivananda, S. (2004). *Bliss Divine*. Divine Life Society.

Sivananda, S. (2009). *Thought Power*. Divine Life Society.

Stefan Schmidt, H. W. (2014). *Meditation - Neuroscientific Approaches and Philosophical Implications*. Springer.

Streeter, C. (2010). Effects of Yoga Versus Walking on Mood, Anxiety and Brain GABA Levels: A Randomized Controlled MRS Study. *Journal of Alternative and Complementary Medicine*, p3.

Styles, M. (2000). *Structural Yoga Therapy*. Red Wheel.

Telles, S. (2012). Managing Mental Health Disorders resulting from trauma through yoga. *Depression Research and Treatment*.

Telles, S. (2013). Effect of yoga or physical exercise on physical, cognitive and emotional measures in children: a randomized controlled trial. *Child and Adolescent Psychiatry and Mental Health*.

Torjesen, I. (2016, March 11). *Pharmaceutical Journal News and analysis*. Retrieved from Pharmaceutical Journal: <https://www.pharmaceutical-journal.com/news-and-analysis/use-of-antidepressants-in-children-soars-by-50-in-the-uk/20200856.article>

Turkle, S. (2012). *Alone Together: Why we expect more from Technology and Less from Each Other*. New York: Basic Books.

Uebelacker, L. (2010). Hatha Yoga for Depression: Critical review of the evidence for efficacy, plausible mechanisms of action and directions for future research. *Journal of Psychiatric Practice*.

Venkatesanda, S. (1993). *Vasisthas Yoga*. New York: State University of New York Press.

Vishnudevananda, S. (1961). *The Complete Illustrated Book of Yoga*. Souvenir Publishers.

Vishnudevananda, S. (1978). *Meditation and Mantras*. Sivananda Yoga Vedanta Centre.

Waller, P. (2012). *Holistic Anatomy: An integrative guide to the Human Body*. North Atlantic Books.

Watkins-davis, R. (2017, November 11). Instill Conference. (C. Martinus, Interviewer)



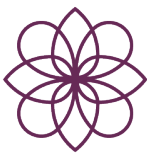


- Watts, A. (2017, November 11). Instill Conference. (Robin-Watkins-Davis, Interviewer)
- Weston, P. (2017, DEcember 21). *Daily Mail*. Retrieved from Daily Mail: <http://www.dailymail.co.uk/sciencetech/article-5203377/Young-people-spend-FIVE-hours-day-looking-screen.html>
- Wikipedia. (2018). *MAharishi school*. Retrieved from wikipedia: [https://en.wikipedia.org/wiki/Maharishi\\_School\\_\(UK\)](https://en.wikipedia.org/wiki/Maharishi_School_(UK))
- Yanovski, S. Z. (2000, July). Obesity: What mental health professionals need to know. *American Journal of Psychiatry*, pp. 854-66.
- Young, J. L. (2015). *Is Obesity a Mental Health Issue*\*/7. New York: Psychology Today.

## Works Cited

- Association, P. (2011, August). Childrens Eating disorders Cause Alarm. *The Guardian*.
- Asimakopoulos, S., Asimakopoulos, G., & Spillers, F. (2017). Motivation and User Engagement in Fitness Tracking: Heuristics for Mobile Healthcare Wearables. *Informatics*, 4(1), 5. Retrieved from <http://www.mdpi.com/2227-9709/4/1/5>
- Ba, S., & Wang, L. (2013). Digital health communities: The effect of their motivation mechanisms. *Decision Support Systems*, 55(4), 941-947. doi:<https://doi.org/10.1016/j.dss.2013.01.003>
- Bainbridge, E. (2017, November 11). Instill Conference. (R. Watkins-Davis, Interviewer)
- Bainbridge, E. (2017, November 11). Instill conference 2016. (R. W. Davis, Interviewer)
- Bakker, D., & Rickard, N. (2018). Engagement in mobile phone app for self-monitoring of emotional wellbeing predicts changes in mental health: MoodPrism. *Journal of Affective Disorders*, 227, 432-442. doi:<https://doi.org/10.1016/j.jad.2017.11.016>
- BBC. (2016, Sept 25). *BBC.co.uk/news/health*. Retrieved from BBC: <http://www.bbc.co.uk/news/health-37451773>
- Begley, S. (2007). *Train your Mind, change your Brain*. `Ballantine Books.
- Biddulph, S. (2013). *Raising Girls*. Harper.
- Biddulph, S. (2015). *Raising Boys: why boys are different and how to help them become hppy and well-balanced men*. Harper Thorson.
- Biddulph, S. (2015). *The COmplee Secrets of Happy CHildren*. Harper Thorsons.





- Blakemore, D. S. (2015, March 25). *The Life Scientific*. (J. Al-Khalili, Interviewer)
- Bradford, E. (2018, August 26). *BBC*. Retrieved from BBC: <http://www.bbc.co.uk/news/uk-scotland-23811690>
- Brinkhues, S. (2017). Socially isolated individuals are more prone to have newly diagnosed and prevalent type 2 diabetes mellitus - The Maastricht Study. *BMC Public Health*, pp12.
- Brown, C. (2017). *The Modern Yoga Bible*. Godsfield Bible Series.
- Cam. (n.d.). Child obesity rise again, NHS reports.
- Carrington, D. (2016). Three-quarters of UK children spend less time outdoors than prison inmates - survey. *The Guardian*.
- Centre, S. Y. (2000). *New Book of Yoga*. Sivananda Yoga Vedanta Centre.
- Centre, S. Y. (2003). *Sivananda Companion to Meditation*. London: Sivananda Yoga Vedanta Centre.
- Centre, S. Y. (2003). *Sivananda Companion to Yoga*. Sivananda Yoga Vedanta Centre.
- Chopra, D. (2006). *Fire in the Heart: A spiritual Guide for teens*. Simon and Schuster.
- Connolly, A. (2016). Health Survey for England 2015, Childrens body mass index, overweight and obesity. London: National Statistics.
- Cross, F. (2017, November 11). Instill Conference 2017. (R. Watkins-Davis, Interviewer)
- Cross, F. (2017, November 11th). Young People and Yoga. (R. Watkins-Davis, Interviewer)
- Delaney, B. (2017, September 17). The Yoga industry is booming - but does it make you a different person? *The Guardian*.
- Desikachar, T. (1999). *The Heart of Yoga: Developing a Personal Practie*. Inner Traditions Bear and Company.
- Dlon, R. (2017, November 11). Instill Conference. (R. Watkins-Davis, Interviewer)
- Durgananda, S. (2010). *Patanjali's Sutras*. New Delhi: Mangalam Books.
- Einstein, A. (1950, March 29). A letter to a distraught father. New York.
- Enfield, H. (2008, June 19th). *the Harry Enfield Show*. London, UK.
- Euswaran, E. (2007). *The Bhagavad Gita*. Nilgiri Press.
- Euswaran, E. (2007). *The Upanishads*. Nilgiri Press.
- Feuerstein, G. (2001). *The Yoga Tradition: Its history, literature, philosophy and practice*. New York: Hohm Press.







Forster, K. (2017, June 7th). Prescription drug addiction "to overtake heroin use" in UK. *The INdependent*.

Gambhirananda, S. (2010). *Mandukya Upanishad*. New Delhi: Advaita Shrama India.

Gangadhar, B. (2013). Cortisol and antidepressant effects of yoga. *Indian Journal of Psychiatry*, p3.

García-Holgado, A., Tajés-Reiris, I., Kearney, N. A., Martinus, C., & García-Peñalvo, F. J. (2019). An app to support yoga teachers to implement a yoga-based approach to promote wellbeing among young people: usability study. In P. Zaphiris & A. Ioannou (Eds.), *Learning and Collaboration Technologies. Designing Learning Experiences. 6th International Conference, LCT 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26–31, 2019, Proceedings, Part I* (pp. 38-49). Cham, Switzerland: Springer.

George, A. (2004). Type 2 Diabetes in the Young: The Evolving Epidemic: The International Diabetes Federation Consensus Workshop. *Diabetes Care*.

Goleman, D. (2017). *The Science of Meditation*. Penguin Life.

Government, B. (2018, february 2018). [www.gov.uk](http://www.gov.uk). Retrieved from <https://www.gov.uk/education/spiritual-moral-social-and-cultural-development>

Greenland, S. K. (2010). *The Mindful Child*. Simon and Schuster.

Gruber, T. (2005). *Yoga Pretzels: 50 Fun Yoga Activities for Kids and Grownups*. Barefoot books.

Haas, S. (2018). *The Dark Night of the Soul*. London: Veda wisdom Books.

Hall, M. (1998). Sleep as a mediator of the stress-immune relationship. *Psychosomatic Medicine*, 48-51.

Hanh, T. N. (2011). *Planting Seeds, Practising Mindfulness with Children*. Parallax Press.

Harper, J. C. (2016). *Best Practise for Yoga in Schools*. Yoga Service Council.

Health, D. o. (2008). *Children and young people in mind: the final report of the National CAMHS Review*. London: Crown.

Helen Purperhart, B. v. (2007). *Yoga Adventure for Children*. Hunter House Smartfun Book.

Holzinger, A., Dorner, S., Födinger, M., Valdez, A. C., & Ziefle, M. (2010). Chances of Increasing Youth Health Awareness through Mobile Wellness Applications. In G. Leitner,





M. Hitz, & A. Holzinger (Eds.), *HCI in Work and Learning, Life and Leisure. USAB 2010. Lecture Notes in Computer Science (Vol. 6389)*. Berlin, Heidelberg: Springer.

Wong, C. A., Merchant, R. M., & Moreno, M. A. (2014). Using social media to engage adolescents and young adults with their health. *Healthcare*, 2(4), 220-224. doi:<https://doi.org/10.1016/j.hjdsi.2014.10.005>

INdependent, T. (2017, May 22). *independent.co.uk/news/health*. Retrieved from Independent.co.uk: <http://www.independent.co.uk/news/health/nhs-children-mental-health-services-cuts-or-closure-third-downsizing-survey-staff-conservatives-a7749616.html>

Iyengar, B. (2008). *Light on Life: The journey to wholeness, inner peace and ultimate freedom*. London: Rodale.

Jenkins, R. (2017, August 11). *PsyPost*. Retrieved from Psypost.org: <http://www.psypost.org/2017/08/study-recreational-screen-time-linked-worse-mental-health-teens-49470>

Jensen, F. (2015). *The Teenage Brain*. HarperCollins.

Johari, H. (2000). *CHakras: Energy Centers of Transformation*. Destiny Books.

John MAcleod, R. O. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal, general population studies. *The Lancet*, 1579ff.

Judith, A. (1987). *Wheels of Life: Users Guide to the chakra SYstem*. Llewellyn Publications.

Jung, C. (1964). *Civilization in Transition, Collected Works, Volume 10*. London: Routledge.

Kabat-Zinn, J. (2005, april). *Mindful yoga, movement and meditation*. Retrieved from Yoga Chicago: <http://yogachicago.com/2014/03/mindful-yoga-movement-and-meditation/>

Kaminoff, L. (2011). *Yoga ANatomy*. Human Kinetics.

Khalsa, S. B. (2015). *Sleep Medicine Review*.

Khalsa, S. B. (2016, November). *Sleep*.

Khalsa, S. B. (2017, Dcember). *Yoga in UK*. (C. Martinus, Interviewer)

Kolk, B. v. (2015). *The Body keeps the score*. Penguin.

Krishnananda, S. (2006). *Chandogya Upanishad*. Rishikesh: Divine Life Society.





Krushnakumar, D. (2015). Meditation and Yoga can Modulate Brain Mechanisms that affect behaviour and anxiety - a modern scientific perspective. *US national Library of Medicine National Institutes of Health*, 13-19.

Kumar, S. (2010). Need for determining the incidence and prevalence of JIA in developing countries: the Indian predicament. *British Society for Rheumatology*.

Lapsley, D. K. (1990). Adolescent Attachment, Identity, and Adjustment to College: Implications for the Continuity of Adaptation Hypothesis. *Journal of Counseling and Development*.

Lee, M. (1997). *Phoenix Rising- A Bridge from Body to Soul*. New York: Health Communications.

Livingstone, S. (2002). *The media rich home: balancing public and private lives*. London, UK: Sage.

Long, R. (2009). *Key Muscles of Yoga: Your Guide to Functional Anatomy in Yoga*. Independent Publisher.

Maehle, G. (2001). *Ashtanga Yoga: Practice and Philosophy*. New World Library.

Matousek, M. (2012). *When you are falling, dive*. Hay House.

McLeod, S. (2007). *Simply Psychology*. Retrieved from *Simply Psychology*: <https://www.simplypsychology.org/bowlby.html>

Minds, Y. (2018, January 10th). *Young Minds*. Retrieved from *youngminds.org*: [https://youngminds.org.uk/about-us/media-centre/mental-health-stats/?gclid=EAlaIQobChMIInsva\\_tab2QIV6LftCh00SgmkEAAAYAiAAEgIVeFD\\_BwE](https://youngminds.org.uk/about-us/media-centre/mental-health-stats/?gclid=EAlaIQobChMIInsva_tab2QIV6LftCh00SgmkEAAAYAiAAEgIVeFD_BwE)

Morgan, A. (2013). *How young people explain the benefits of yoga*. Leeds : Institute of Psychological Sciences, University of Leeds.

Morgan, D. (2010). Mindfulness-Based cognitive Therapy for depression: A new approach to preventing relapse. *Psychotherapy research*, 123-125.

Morgan, N. (2013). *Blame my Brain*. Walker Books.

Muktibodhananda, S. (2016). *Hatha Yoga Pradipika*. Munger: Yoga Publications Trust.

NSPCC. (2018, February 10th). *NSPCC Preventing abuse*. Retrieved from NSPCC: <https://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/mental-health-suicidal-thoughts-children/>

Oakley, B. (2012). *Pathological Altruism*. Oxford: Oxford University Press.





- Ogden, P. (2006). *Trauma and the Body; A sensorimotor approach to Psychotherapy*. Norton Series on INterpersonal Neurobiology.
- Orzech, K. (2011). The state of sleep among college students at a large public university. *Journal for sleep Research*, 612-9.
- Osteopenia3*. (2018, February). Retrieved from <http://www.osteopenia3.com/Young-women-with-Osteopenia.html>
- Paediatricians, A. C. (2016, June). *Acpeds.org*. Retrieved from American College of Paediatricians: <https://www.acpeds.org/the-college-speaks/position-statements/the-impact-of-pornography-on-children>
- Porges, S. (2001). The polyvagal theory: phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology*.
- Rama, S. (1999). *Yoga and Psychotherapy: The Evolution of Consciousness*. Himalayan Institute Press.
- Robinson, O. J. (2013). The impact of anxiety upon cognition: perspectives from human threat of shock studies. *frontiers in Human Neuroscience*, pp12.
- Rodrigues, D. (2018, February 12). *dinahrodrigues.com.br*. Retrieved from dina Rodrigues: <https://www.dinahrodrigues.com.br/home-en>
- SAMHSA. (2018, february). *SAMHSA.gov*. Retrieved from Samhsa: <https://www.samhsa.gov/topics/prescription-drug-misuse-abuse>
- Saraswati, S. S. (2004). *Yoga Education for Children*. Yoga Publications Trust.
- Sat Bir Khalsa, B. B. (2016). Yoga in school settings: a research review. *Annals of the New York Academy of Sciences*.
- Scaravelli, V. (1991). *Awakening the Spine: The stress-free yoga that works with the body to build health, vitality and energy*.
- Scheel, J. (2018). Mothers, Eating Disorders and Histories of Trauma. *Psychology Today*.
- Schiffman, E. (1997). *Yoga: The spirit of moving into stillness*. Simon and Schuster.
- Selfharm UK/ get-information*. (2018, 10 February). Retrieved from Selfharm UK: <https://www.selfharm.co.uk/get-information/the-facts/self-harm-statistics>
- Sellgren, K. (2016, June 15). *BBC News education*. Retrieved from BBC News: <http://www.bbc.co.uk/news/education-36527681>
- Siegel, D. D. (2014). *Brainstorm: The Power and Purpose of the Teenage Brain*. Scribe UK.





Siegel, D. D. (2018, February 12). *The Healthy Mind Platter*. Retrieved from Dan Siegel: [www.drdansiegel.com](http://www.drdansiegel.com)

Singleton, M. (2010). *Yoga Body: The origins of Modern Posture Practice*. London: Oxford University Press.

Sivananda, S. (2004). *Bliss Divine*. Divine Life Society.

Sivananda, S. (2009). *Thought Power*. Divine Life Society.

Stefan Schmidt, H. W. (2014). *Meditation - Neuroscientific Approaches and Philosophical Implications*. Springer.

Streeter, C. (2010). Effects of Yoga Versus Walking on Mood, Anxiety and Brain GABA Levels: A Randomized Controlled MRS Study. *Journal of Alternative and Complementary Medicine*, p3.

Styles, M. (2000). *Structural Yoga Therapy*. Red Wheel.

Telles, S. (2012). Managing Mental Health Disorders resulting from trauma through yoga. *Depression Research and Treatment*.

Telles, S. (2013). Effect of yoga or physical exercise on physical, cognitive and emotional measures in children: a randomized controlled trial. *Child and Adolescent Psychiatry and Mental Health*.

Torjesen, I. (2016, March 11). *Pharmaceutical Journal News and analysis*. Retrieved from Pharmaceutical Journal: <https://www.pharmaceutical-journal.com/news-and-analysis/use-of-antidepressants-in-children-soars-by-50-in-the-uk/20200856.article>

Turkle, S. (2012). *Alone Together: Why we expect more from Technology and Less from Each Other*. New York: Basic Books.

Uebelacker, L. (2010). Hatha Yoga for Depression: Critical review of the evidence for efficacy, plausible mechanisms of action and directions for future research. *Journal of Psychiatric Practice*.

Venkatesanda, S. (1993). *Vasisthas Yoga*. New York: State University of New York Press.

Vishnudevananda, S. (1961). *The Complete Illustrated Book of Yoga*. Souvenir Publishers.

Vishnudevananda, S. (1978). *Meditation and Mantras*. Sivananda Yoga Vedanta Centre.

Waller, P. (2012). *Holistic Anatomy: An integrative guide to the Human Body*. North Atlantic Books.

Watkins-davis, R. (2017, November 11). Instill Conference. (C. Martinus, Interviewer)





Watts, A. (2017, November 11). Instill Conference. (Robin-Watkins-Davis, Interviewer)

Weston, P. (2017, DEcember 21). *Daily Mail*. Retrieved from Daily Mail:  
<http://www.dailymail.co.uk/sciencetech/article-5203377/Young-people-spend-FIVE-hours-day-looking-screen.html>

Wikipedia. (2018). *MAharishi school*. Retrieved from wikipedia:  
[https://en.wikipedia.org/wiki/Maharishi\\_School\\_\(UK\)](https://en.wikipedia.org/wiki/Maharishi_School_(UK))

Yanovski, S. Z. (2000, July). Obesity: What mental health professionals need to know. *American Journal of Psychiatry*, pp. 854-66.

Young, J. L. (2015). *Is Obesity a Mental Health Issue*\*/7. New York: Psychology Today.

