

YOGIC EDUCATION: YOGA-BASED MANAGEMENT OF WORK-RELATED HEALTH RISKS IN OFFICE WORKERS, STRESS AND UPPER EXTREMITY MUSCULOSCELETAL DISORDERS

Neda Lazarevic, PhD¹
neda@yogalite.fr

Marie Andrée Baillon, MSc^{2,3}
mabaillon@aol.com

¹Yoga teacher, *YogaLite*, Lille, France

²Founder of the Association *RESPYRS*, Lille, France

³Course Leader *DU Yoga Education Yoguique*, l'Universié Lille2, France

Abstract

Recent years have witnessed an increasing interest in Yoga throughout the Western world. The concept of Yogic Education has emerged from reflections upon the use, the utility and the benefits of Yoga in the West. The concept proposes a novel yoga-based framework for development of the psycho-social life skills defined by World Health Organisation. Yogic Education proposes a methodology for Education for Health based on Yoga with a view to maintaining lifelong wellbeing. The framework for Yogic Education includes a number of components: citizenship education, physical education, emotional education, education for self-awareness, and education for being. The proposed approach is accessible to all, ensuring protection of the physical, psychological and social integrity of each individual.

The formalisation of the concept of Yogic Education allowed setting up the first academic course awarding a University Diploma in Yogic Education in France at the University of Lille 2. The project Yoga-based management of work-related health risks in a population of office workers was carried out as part of this course. The project looked at two organizations, in private and in public sector, where the participants reported significant levels of stress and symptoms of musculoskeletal discomfort in upper extremities. The main objective of the project was to provide participants with means for positive transformation from being passively subjected to health risks at work to taking active part in ensuring their own wellbeing.

Key words: yoga, yogic education, health, stress management, work-related musculoskeletal disorders

1. Introduction

The Yogic Education teaches the art of living granting the central place to the notion of relationship with self, with others and with the environment. This notion may be interpreted as a form of human ecology, interior and exterior, essentially providing the right environment in which the yogic techniques may be applied in the endeavour to attain the state of Yoga. The aim of Yogic Education is to enable each individual to attain the state of an autonomous existence in which it becomes possible to access our own life force and fulfil our human potentials.

The Yogic Education is rooted in traditional yogic texts (Yoga Sutra, Hatha Pradipika, Gueranda Samitha) and the actual scientific research achievements and knowledge about the human being development. It represents a discipline of awareness, a way of life, a tool for self-knowledge, for self-development of both body and mind, adapted to the needs of human beings in 21st century. The educational approach provides a global understanding of human existence and facilitates the acquisition of knowledge, knowhow and the relationship with oneself, with others and with the environment.

The Yogic education concept proposes a protocol for implementation of yogic practices in the form of education for health. One of the great advantages of the Yogic Education protocol is its adaptability. With a set of specific tools and variables, the protocol may be transferred to any environment and adapted to any age group. The suggested approach is adapted to lifestyle and cultural milieu of Western world of our

time. Its aim is the integration of yoga in everyday lives of people in our society regardless the age, the social and professional background.

This work describes the Yogic Education concept and illustrates its practical implementation with two examples: (i) *School Yoga*, which has been integrated as part of the physical and sport education for adolescents in French national education system, and (ii) *Yoga for Office Workers*, a programme for management of stress and upper extremity musculoskeletal disorders in office workers.

2. Yogic Education

The concept of Yogic Education has emerged from the School Yoga experiment. The project of School Yoga aimed to introduce the practice of Yoga in French school environment. The Yoga practice was integrated within the framework of Physical and Sport Education curriculum for students aged 16 to 18. The idea was to transform the traditional approach to Physical Education in schools in France into Education for Health in keeping with Life Skills Education defined by the World Health Organisation (WHO) [1] and the yogic ethics of Yama and Nyama. Indeed, according to the documents governing the French national education system "the objective of the Physical Education in France is to shape a cultured citizen, lucid, independent, physically and socially educated. (...) Its aim is the pursuit of wellbeing, good health (...) and the lifelong independence, by application of reflexive analysis." [2] The School Yoga programme aims to provide adolescents with access to the health education by implementation of the Yogic Education concept.

The framework for Yogic Education has emerged from the structure of Yoga described in Patanjali's Yoga Sutra. The yogic principles, universal in their nature, cut across centuries and cultures and can be applied to reformulate the standards of the modern school education. In this light, The Yogic Education contains the following elements, as summarised in Table 1: citizenship education, physical education, emotional education, education for self-awareness, and education for being. Each element has one main focus.

YOGIC EDUCATION			
Education concept	Yogic concept	Objective	Focus
Citizenship education	Yama	Ethics of conduct to attain balanced relationships with others	OTHERS
	Nyama	Ethics of conduct to attain a balanced relationship with self	SELF
Physical education	Asana	Physical techniques to attain physical balance	BODY
Emotional education	Pranayama	Respiratory techniques to attain nervous balance	MIND
Education for self-awareness	Prathyara	Withdrawal of senses	ATTENTION
	Dharana	Steadily directed attention	CONCENTRATION
Education for being	Dhyana	Continuous concentration	MEDITATION
	Samadhi	Integration	GLOBAL WELLBEING

Table 1: Yogic Education concept and focus

Yogic Education is a personal development process. In the heart of the School Yoga programme is a positive transformation where the student evolves from executing teacher's instructions to independently making choices and taking actions. The student progressively improves the capacity of proprioception, both on respiratory and on muscular level, becoming an active receptive observer of self and eventually attaining the autonomy in the yogic practice. An eight week programme of Yogic Education has been carried out in the school environment in France since 2002 with very promising results [3].

Since its beginnings, the concept of Yogic Education has been continuously developed, documented and formalised. These efforts have paved the way for integration of Yogic Education within French academic environment. The first university course, Diploma in Yogic Education, has been set up at the University of Lille 2. This course does not pretend to replace the yoga teacher training of any yoga school. Rather, it aims to expand the theoretical and practical knowledge specific to Yoga, its history and concepts. It establishes relationships between the Western theories and practices relevant to Yoga: life sciences (biology, physiology, anatomy), humanities and social sciences (psychology, history), and education science (philosophy for health education transferable throughout the life).

The diploma course is organised in eight modules centered around different educative aspects each of which represents a different aspect and an integral component of Yogic Education. Students studying for the Diploma are required to complete two elements of personal work: the logbook and the practical project. The logbook is kept throughout the course enabling the student to document and follow personal development and reflect upon it at various stages of the programme. The reflexive analysis is seen as the true backbone of the course, the essential element of student's personal development. The idea is that students should adopt the principles of the Yogic Education before attempting to apply them elsewhere as part of their practical project. The second element of the course is the practical project conceived by the student and carried out in an educational, social or health-care establishment or work organisation.

The Yogic Education project has a well defined goal – the implementation of the Yogic Education programme in a given environment and in relation to a particular problem. The development of the programme starts with familiarising with the environment in which the programme will be implemented, and identifying the specific needs of persons involved. Next, the problem is identified and the working hypothesis is set up in partnership with the participants in order to elaborate a specific Yogic Education protocol. The participants play an active role in the learning process: the educative approach is based on the acquisition of autonomy in the practice via reflexive analysis of the effects of the practice at all levels of personality. The acquisition of autonomy requires certain time dedicated to personal practice and certain maturity in the learning process. The apprenticeship is guided by experimental, scientific, and philosophical knowledge of today, which, in our opinion, is a manner of learning the most appropriate for human beings in Western society today.

While numerous Yoga courses start up everywhere at the moment, offering diverse practices, traditional as well as much westernised variants, the Yogic Education remains rooted in the tradition while at the same time bearing in mind the knowledge accumulated by modern sciences. If the proposed approach of Yogic Education can help ease the suffering inflicted upon the human beings in the fast changing and turbulent world of the 21st century - by returning to our primary nature, rediscovering our true self, in order to reach out to the world, to others - it will have accomplished its mission.

3. School Yoga

The programme of School Yoga [3] focused on the development of the Yama and Nyama ethics along with the WHO psychosocial life skills in order to develop healthy habits in a group of adolescents. The participants in the programme were young individuals in search for identity and self esteem, undergoing full physical and psychological transformation. At this age, young people are particularly fragile having to deal with conflicting images of self and the way they believe to be seen by their peers and adults. The need to adapt quickly is constantly present, may it be accepting new responsibilities at home, achieving results in school or responding to diverse expectations continuously imposed by the environment.

The aim of the programme is to provide adolescents with tools which can help them find a connection with own body, build a positive image of self, and establish healthy relationships with the others and the environment. The programme is imagined as a form of a personal project undertaken by the student. The student will create a series of yoga postures, apply breathing techniques, and implement a concentration practice, which correspond to a specific objective set in advance. The goal of the student's personal project is to make a connection between the physical sensations induced by postures, their effects on the nervous system, and consequently on the emotional state.

The tools used to convey the messages of Yogic Education were adapted to the school environment, such as: anatomical body maps, written accounts on the level of perceived sensations during the practice with scales from 0 to 10, flash cards, and group discussions. Using the proposed tools the student experiments, creates and adopts a short sequence of postures in order to feel and observe different effects of his or her own actions. Progressively, the student evolves from a passive listener, via being able to reproduce the seen, via actively receiving the internal information emitted by nervous receptors, to finally becoming a researcher exploring his/her own needs, seeking to transform the posture into Asana, thus attaining the balance between the body and the mind.

A well defined protocol of Yogic Education allows young individuals to experience the "active-receptive" attitude in order to establish relationships between different yogic notions (Asana, Pranayama, Prathyara, etc) and their impact on psycho-physiological sensations. The systematic reflexive analysis drives the process of appropriation of internal sensations. The understanding of the difference between taking a yoga pose physically and undertaking a yoga practice consciously is essential. This understanding will transform the physical kinaesthetic education into proprioceptive education.

4. Yogic Education for Office Workers

The programme Yogic Education for Office Workers was conceived as part of the student project for the Diploma in Yogic Education at the University of Lille 2. The project has since developed and has been formalised as a personal development programme offered to Human Resource departments in establishments in the North of France.

The project was motivated by recent reports highlighting the significant increase in stress related illnesses and musculoskeletal disorders (MSD) reported by office workers in France. A number of reports published by European and French bodies monitoring conditions at work have published documents warning about the health risks threatening this particular segment of working population [4, 5, 6]. Statistics reveal alarming facts: MSD represent 66.7% of all illnesses reported in France [4], MDS and stress are the two main causes of absence from work in France [6]. Although the figures vary across European countries they clearly show similar levels of stress and MDS among the European working population [5]. Furthermore, the review of literature published in leading scientific journals demonstrates a possible strong link between stress and the upper extremity musculoskeletal disorders (UMSD), including the neck, shoulders, arms and hands [7, 8, 9, 10, 11, 12].

4.1 Objectives

The office workers seem particularly affected by stressful working conditions due to specific work demands. In addition, this population is subjected to prolonged hours of sitting and working with a computer, often throughout the whole working day. Approximately two thirds of all working people in France work in offices for most part of their working hours (according to the approximate size of the services and IT sectors). Clearly, the health issues affecting this population will impact heavily on the rest of the society in terms of human and financial costs. Consequently, the prevention of stress and UMSD in office workers will play a crucial role in easing the burden on public and private health care funds in future years.

The objective of Yogic Education is re-education for health, which offers a simple and cost effective tool to help reduce the risk of stress and UMDS in office workers. Yogic Education programme aims to

provide a toolbox of yogic techniques which will allow each individual to become the main actor of their own wellbeing both at workplace and in private life.

4.2 Approach

Yogic Education approach implements the education for health, with respect to "life skills for psychosocial competence" defined by the WHO [1], using the yogic principles as the educational method of choice. With respect to WHO psychosocial life skills, the Yogic Education for Office Workers will attempt to tackle the following three issues: decision making (regarding own well being), self-awareness (physical and emotional), coping with emotions (for better functioning in situations of stress), and coping with stress (for better control of own body and mind). With regard to yogic tradition, the programme engages yogic the principles of: Yama and Nyama (ethics regarding the environment, the others and self), Asana (physical practice for balanced body), Pranayama (breathing practice for balanced nervous system), Pratyahara et Dharana (for balanced emotions). The envisaged approach will be practical, only the basics of the yogic principles will be introduced, with the emphasis on the usefulness of the proposed techniques within the defined context of education for health.

4.3 Environment and the public involved

The first phase of the programme was familiarisation with the environments and the persons concerned by the project. Two establishments were approached, one in private sector (group E) and one in public sector (group A). After the initial agreement with the management an email was sent to 70 employees in each establishment with a short description of the project. The participation in the project was voluntary, 11 employees from each establishment accepted the invitation and took part in the project. Finally, the group consisted of 22 adult women aged between 25 and 60, with no medical restrictions and of average physical fitness. All participants were of French cultural background and formal education, of unknown spiritual inclinations; most had no previous experience with yoga and had very little information about the yogic practices.

Considerations

These facts allowed some initial parameters of the approach to be determined. A formal but friendly and simple discourse was used. The symbolic of yogic practices was explained when appropriate without using sanscrit terms. The practice was presented with the emphasis on health benefits including the physical and the emotional aspect. The main priority during the practice was to preserve physical and emotional integrity of each individual. The safety of the participants was of the utmost importance throughout the practice. A special care was taken to emphasise the non-judgemental approach of the practice and the respect for each individual. Both institutions had a suitable meeting room at disposal, which were made available for the project. The rooms were clean, warm, and comfortable, with plenty of space for practice after moving the office furniture to the sides. The environment was pleasant and calm. The practice went on without any disturbances.

4.3 Protocol

Taking into account the environment and the persons concerned by the programme the work protocol is developed in collaboration with the participants and the management of the establishment. The protocol includes the following components: hypothesis, assessment, content and tools of the intervention, and evaluation.

Hypothesis

Yogic Education programme for office workers facilitates the acquisition of skills and habits which will, upon the completion of the programme, enable the participants to autonomously apply yoga techniques in order to alleviate the symptoms of stress and UMSD both at the workplace and in everyday life.

Assessment

Assessment is performed to evaluate the needs of the participants in terms of the risk of stress at work and UMSD symptoms. The Karasek model is used to assess the risk of stress at work [13]. This model establishes a relationship between the perception of the well-being at work and the stress related health risks. The model uses three dimensions: L, D, and SS. The factor L, the decision latitude, is defined as a

combination of the level of skill and creativity required on the job and the flexibility in making decisions about one's own work. The factor D describes the general psychological demand of the job. The factor SS, the social support, is based on the perceived professional and emotional support received from colleagues and superiors at work. When the two dimensions, D and L, are used to define a four-quadrant diagram, they classify a job according to the *job strain* and the active behaviour hypotheses. The score, obtained by Karasek Job Content Questionnaire, defines a person as passive, active, under low strain, or under high strain, according to where the person is located in one of the quadrants in the two-dimensional D-L diagram. The Karasek method defines the "high job strain" as a situation with low decision latitude and strong psychological demand, where the risk of stress is high. In addition, a low SS score aggravates the risk of stress. The job strain is identified as *isostrain* when L is low, D is high and SS is low.

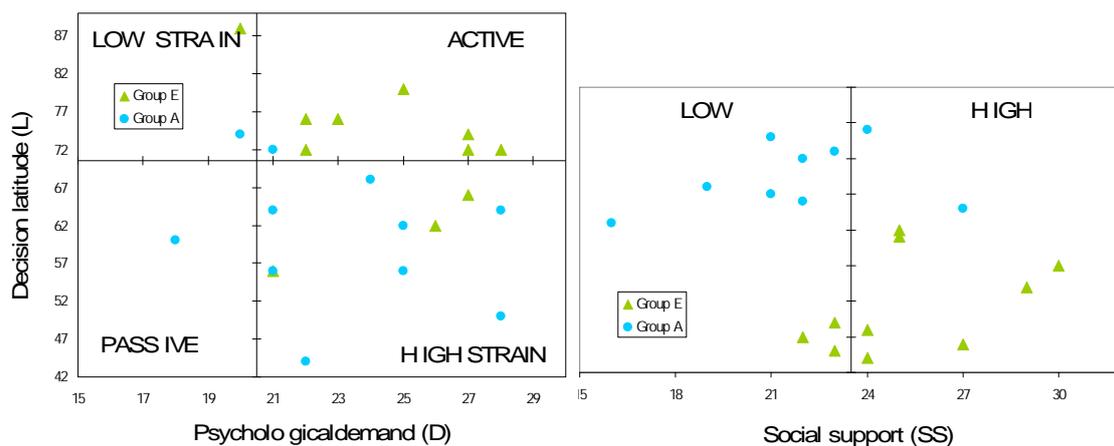


Figure 1: Karasek JCQ – job strain and social support

Figure 1 shows the results of stress risk assessment. It is observed that 73% of employees in the group A are stressed, under high strain, compared to 27% in the group E. In total, half of the participants are diagnosed as stressed according to Karasek method. A very high proportion, 78%, of participants in the group A reported a low social support at work, compared to 30% in the group E. It is observed that 67% of employees in the group A, compared to 20% in the group E suffer from isostrain. In total, 36% of all participants are subjected to isostrain and are diagnosed as being at a very high risk of having a negative effect on their health due to stressful conditions at work.

The UMDS symptoms are assessed by means of The Maastricht Upper Extremity Questionnaire (MUEQ) [14]. Within the scope of the Yogic Education for Office Workers programme only the part of MUEQ dealing with UMDS was used. The participants were asked whether during the past year they perceived discomfort or pain in the upper extremities which lasted at least one week. The questions referred to discomfort in seven body regions: neck, shoulder, upper arm, elbow, lower arm, wrist, and hand. The number of positive answers, the UMDS score, was counted. The score range is from minimum 0, when no musculoskeletal discomfort was perceived, to maximum 7, when some discomfort was perceived in all upper extremity regions. It is observed that 86% of all participants reported symptoms in at least one upper extremity region. The majority of 81% of participants in the group E are diagnosed as having UMDS symptoms, compared to 90% in the group A.

The assessment revealed great differences in the wellbeing of the individuals in the two groups. In the group E only one out of four employees is diagnosed as stressed, while three out of four in the group A are stressed. Also, the average UMDS score in group A is almost double that of the group E. In the light of these findings it can be concluded that the group A is exposed to the higher risk of stress related health problems than the group E. The Yogic Education content and tools were adapted accordingly for each group of participants.

Content and tools

The programme consisted of eight weekly sessions. Each session was based on a routine which consisted of several segments. The routine was developed based on two underlying principles: (i) the experience of being the observer (Drasta) and the witness of self (Sakshi), and (ii) the quality of being stable and comfortable in own body and mind (YSP II-46 Asana). The practice proposed a series of simple but effective techniques accessible to all participants. The participants were encouraged to observe their own emotional state and the occurrence of any changes during and after the practice.

The specific tools were developed and used appropriately in order to attain the objective of each session.

- (i) Objective Self Awareness Mind. A visual and written account of one's own feelings was used. A list of different facial expressions (collection of 70 "smileys"), and a list of words describing emotions were provided to help participants define and describe how they feel. The list of emotions, borrowed from the non-violent communication theory [15], contained two groups of words describing emotions we experience when our needs are satisfied and emotions we experience when our needs are not satisfied.
- (ii) Objective Coping with Emotions. The participants were invited to experience different types of breathing: abdominal, thoracic, and complete. The experience was related to movements of different parts of the body and sensations provoked by these movements. Gradually, the participants learned to control the breathing and establish ample and calm breath, which helps regulate blood circulation, reduce stress and muscular tensions.
- (iii) Objective Self Awareness Body. A short and simple sequence of postures was used to activate certain parts of the body. The focus was on awakening the upper extremities, opening up the chest and mobilising the spine.
- (iv) Objective Attention and Concentration. The concept of prolonged attention and concentration was introduced by means of a balancing pose. The focus on breathing provided an inner anchor which helped participants to remain present "here and now" and find their own balance. The concentration practice was further extended with the practice of reverting the attention from the exterior to the interior of the body.

The yogic principles were continuously invoked throughout the practice by carefully selected wording of the instructions used to guide the participants. The right timing for each instruction was derived from observation of the participants during the practice. The formulation of instructions aimed to help the participants get into the practice progressively, to make a connection between the practice and its objective, and to facilitate attaining the autonomy in the future practice after the project.

Evaluation

The outcome of the programme was evaluated in two ways. First, the effects of each session were assessed by means of self-reporting questionnaires where the participants were asked to evaluate their own state of body and mind before and after the session. Second, the final outcome of the project was evaluated in relation to the hypothesis defined at the beginning of the project.

Let us define a notion of an instance as one person attending one session. The project counted 120 instances in total, 45 in the group E and 75 in the group A. In terms of evaluation, there were approximately 120 states of mind and body noted before and after sessions during the course of the intervention (in a few instances a person did not fill in the questionnaire).

It was observed that a great majority of participants arrived to sessions in a "dissatisfied" emotional state, in 77% of instances. The perception of well-being greatly improved after sessions, where only 11% were left dissatisfied. A significant proportion of 84% of participants finished a session in a "satisfied" state of mind. Table 2 illustrates examples of sentiments most often experienced before the sessions (tired, upset, worried ...) and after the sessions (relaxed, calm, tranquil ...).

Before and after each session the participants were asked whether they perceived a discomfort (tensions, cramps, pain ...) in various parts of the body. In 72% of instances the participants arrived with UMSD symptoms. Various discomforts were also reported in the lower back region, back, legs and feet,

abdominal region, and the head. Except in a very small number of cases, the reported discomforts were non-specific, i.e. non-diagnosable by standard medical diagnosis methods, which is often the case with UMDS.

Before session			After session		
No instances	Quality	Sentiment	Sentiment	Quality	No instances
21	Dissatisfied	Tired	Relaxed	Satisfied	21
6	Dissatisfied	Upset	Calm	Satisfied	15
5	Dissatisfied	Worried	Tranquil	Satisfied	7
4	Dissatisfied	Anguished	Centred	Satisfied	6
4	Satisfied	At ease	Serene	Satisfied	5
< 4	Dissatisfied	36 other	27 other	Satisfied	< 5
< 4	Satisfied	13 other	9 other	Dissatisfied	< 5

Table 2: Emotional state before and after the session

At the end of the session the participants compared the general perception of the body before and after the session. In 75% of instances the participants reported feeling better or much better after the session, in 11% there was no noticeable change, and in 2% of instances a person didn't feel as well as before the session, Table 3.

Perception of the body after the session	group E	group A	total
Much better	11%	23%	18%
Better	53%	60%	57%
No change	20%	5%	11%
Worse	2%	1%	2%
Much worse	-	-	-

Table 3: Perception of the body after the session

At the end of the project the outcome of the intervention was evaluated by means of final questionnaire. The aim of the questionnaire was to assess the validity of the hypothesis. The final questionnaire consists of four parts. The first part evaluates the short term effects on the reduction of stress and UMDS symptoms at work, perceived after each session. The second part evaluates the medium to long term effects on the reduction of stress and UMDS symptoms perceived in everyday life, at work and outside work. The third part evaluated whether the participants achieved autonomy in their practice. The fourth, and the last, part of the questionnaire addressed the potential change in the attitude towards yoga.

The results of the final evaluation of the programme are listed below:

- The great majority of participants perceived *short term positive effects* right after the individual sessions. More than 90% of participants reported reduced level of stress which lasted up to 30 minutes (6%), up to 1 hour (17%), for few hours (59%), or longer than few hours (12%) after the individual session. Furthermore, over 80% participants reported reduced UMSD symptoms which in most cases, 53%, lasted for few hours after the individual session.
- The *medium to long term effects* of the project were reflected by the perceived stress and UMSD symptoms reduction in everyday life, at work and outside work. In total, 65% of participants perceived a general stress reduction, and 53% perceived an improvement in UMDS symptoms.
- The total of 88% of participants said they were capable of using the controlled breathing in order to calm the mind and reduce the stress; 94% felt capable of creating a short routine of Asana in order to relax and reduce UMSD symptoms; finally, 65% said they learned how to use concentration exercises to develop better attention capacity. The majority of participants attained certain *autonomy in practice*.
- Finally, bearing in mind that very few participants had any experience of yoga before taking part in the project, it can be concluded that a *significant change in the attitude* occurred: 83% of participants said they would consider continuing yoga practice at work place and 65% would consider practicing in their leisure time.

The evaluation confirmed the anticipated positive effect of the Yogic Education programme on the reduction of stress and UMSD symptoms. At this point it can only be suggested that a more regular practice over a longer period of time could bring long lasting positive effects in terms of relationships with entourage and reduced absenteeism.

5. Conclusion

The Yogic Education concept has been implemented through the programmes Scholl Yoga for adolescents and the Yogic Education for Office Workers. Yoga calms the mind and relaxes the body which brings more positive perception of one self and the environment. Even a short practice in school or at workplace may change the rest of the day in a more positive direction. The evaluation of programmes has demonstrated very promising results: a rapid improvement of general wellbeing was observed, the participants integrated the yogic techniques, attained autonomy in the practice, and expressed an intention to pursue the practice in future.

Admittedly, the Yogic Education programme was run over a relatively short period of time and with a limited number of participants. Yet, the health benefits it can provide are evident. The majority of the participants noticed a more relaxed and peaceful state of mind after the practice. However, a long term personal commitment in the practice is indispensable to ensure long lasting positive effects. This is true for both the participants in the practice and the decision makers in the institutions. The good will on its own is insufficient. A significant change in attitudes towards health, which would guide decisions in the right direction, is necessary. Fortunately, the trends of changing attitudes in Western society are visible. The signs of these trends are ever increasing numbers of people practicing Yoga, the emergence of publications dedicated to Yoga, and a greater tolerance towards the holistic medicine. In particular, the scientific interest in yogic tools and techniques has suggested a new approach adapted to the needs of the human beings in 21st century. It is beyond doubt that this scientific and educational approach will open up the access to the benefits of Yoga practice to all individuals in Western society regardless their age, their cultural or social background.

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