Understanding your limits

– A burnout guide book

Authors

The International Genetically Engineered Machine, iGEM, is a competition in synthetic biology where the participants are teams of students from all around the world. By applying methods and tools from the field of synthetic biology teams can excel and claim prizes in multiple disciplines by various methods, such as working out new ways of generating energy, solving environmental issues, hardware development and much more. We are the iGEM Uppsala 2018 team. High hopes, new experiences, expectations set by oneself and colleges, concerns regarding workload and deadlines are all things that we have experienced whilst working on our project.

Now we want to pass on the things that we have learnt. Even though we are compiling information in this booklet through an iGEM lense, e.g. looking at students perception of being enrolled in projects structured around a competition (held in Boston, USA each fall) we also aim to address what effects stress might have on people in general and what unmanaged stress may lead to over time if unsolved. Since stress is a universal problem found in all walks of life, this booklet is meant to help anyone who seeks guidance in managing it.

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INTRODUCTION

Burnout, exhaustion, fatigue, or even just feeling worn out and torn are all symptoms that are well known and way too common among us researchers. In today's society it is not always acceptable to talk freely or openly about these topics—which is something we would like to address with this guide book. Burning out is something that can happen to everyone, and it usually develops over time. What signs should you look for? How can you prevent burning out? What lifestyles are most prone to have a negative impact on your health? You can read about the answers to these questions and more in this guidebook.

Who gets burnout?

Anyone who puts enough stress on the body or the mind without enough room for recovery will eventually develop symptoms as a result. Humans have a great variety in their individual needs due to genetics and the circumstantial/external environment in which they operate. Stress doesn't necessarily need to mean something negative. When looking at physical (and mental) performance stress offers growth, but growth only happens when the muscles or the mind are able to repair and adapt to better fit the new tasks that it's being asked to perform. Exposure to too much stress and too little rest over time develops into a risk of burning out. This can lead to a plethora of negative impacts such as

feelings of fatigue, increased risk of infectious diseases, lowered memory retention, sleep and eating disorders and emotional instability. Most often one's work environment plays a key role in the development of this syndrome, but other factors come into play. Most people present different susceptibility to the development of this condition (Sousa & Mourão 2018).

Burnout syndrome

Burnout syndrome may be defined as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment (Kalantari & Kolahi 2017). A more informative description from a psychosocial perspective details a total of three dimensions of burnout, which are as follows: "
a) emotional exhaustion, characterized by emotional depletion and loss of energy;
b) depersonalization or cynicism, also described as dehumanization, detachment from work and clients and emotional hardening;
c) reduced personal accomplishment or inefficacy, that is, a feeling of personal or professional inadequacy

as well as reduced productivity and coping skills" (Salvagioni *et al.* 2017).

Diagnosis

Due to the similarities in symptoms between depression and burnout, it is difficult to distinguish these conditions. For the diagnosis of burning out, the most common system used is the Maslach Burnout Inventory (MBI), which consists of 22 questions regarding the subject's psyche which can be answered with a grade of severity between 1 and 5. The questions refer to three main areas of personality: personal achievement (8 inquiries), emotional exhaustion (9 inquiries) and depersonalization (5 inquiries). The questions change according to the profession: some remain the same among all adaptations, featuring enquiries like feeling drained by the work day and waking up exhausted, while most of the questions are adapted to the work environment the questionnaire is intended for.

For medical professions, for example, many questions ask about the relationship between the medical personnel and the patients, and the effect the interaction between the two has on the former. In fact, caretakers affected by the burnout syndrome tend to treat their patients with less care than what is expected from them. MBIs have been developed also for students and teachers, for different levels of education (Maslach *et al.* 1997).

Even though MBI is the most used system for burnout diagnosis, sometimes it is not enough to recognize a real case of burn-out, or it might lead to misdiagnosis of a case of depression. A more accurate diagnosis tool will be required in the future (Maslach *et al.* 1997).

Statistics

Terms such as "burnout", "exhaustion", "burnout syndrome", "occupational burnout", "depression" etc., are oftentimes used interchangeably making it harder for consistent statistics. The different definitions and interpretations arise from the nature of burnout causes as these may vary between different professions, individual's characteristics and geopolitical settings. Thus the statistics on burnouts are usually performed in the frame of one profession in one country rather than reflecting the overall mental health trends in society. Even in relatively homogenous settings like the countries in European Union the trends regarding the increase- or decrease of burnout prevalence are varying. Also since the characterization of what is regarded as a burnout varies, the studies themselves are often non-comparable which precludes generalisation.

As examples of bigger studies of working population these can be mentioned:

•Netherlands Working Conditions Survey 2007–2016 where over 40,000 employees participated. This study showed percentage of employees experiencing burnout increasing from 11.3% in 2007 to 14.6% in 2016 (Hooftman et al (2017)).

•MONICA (Monitoring of Trends and Determinants in Cardiovascular Disease) survey from 2004 in Northern Sweden with a sample of 1,000 actively working people, aged 25-64 years. The research assessed the prevalence of high level burnout in the studied settings. In 2004 prevalence was shown to be 12.9% and, after the five year follow-up of the same population, in 2009 13.1% (Norlund (2011) and Norlund et al (2010)).

There has been an increase of research papers about stress, suggesting that the topic of mental health is acknowledged by society more and more in the later years. Whether this is due to awareness or actual rising of stress levels is up to discussion.

As for burnout among students — it is not uncommon. A cross-sectional study from 2015, conducted in five universities, Constantine (Algeria), Rouen and Paris (France), Miskolc (Hungary) and Cluj-Napoca (Romania), showed prevalence of high level burnout to be 29.7% in Algeria, 17.9% in France, 12.6%

in Hungary and 21.7% in Romania (Luckas et al (2017)). Groups of students that have been shown to be especially exposed are medical students and PhD students. A study from Belgium reports every other PhD student experiences psychological distress and every third is at risk of a common psychiatric disorder (Levecque et al (2017)).

"Students working on iGEM projects"

Working with projects on a time-limit is one activity that often is associated with burnout, especially to those who take on extra responsibility such as managers; iGEM projects are no exception. Thereby we wanted to investigate this further and created a survey, handed out to former members of older teams and active members of this year. The participation resulted in a collaboration between iGEM teams around the globe.   The questions were not mandatory for the survey itself, hence the variety of answers from each question.
At the time of the writing of the booklet the survey "iGEM Work Environment Evaluation" is still running. Complete results from this survey will be available later in autumn 2018, if interested contact us at team@igem.uppsala.com or check our wiki-page http://2018.igem.org/Team:Uppsala.

One thing we wanted to investigate was how the stress level correlated

to the time spent on the project. The participants were able to appreciate on a scale where 1=too little/low and 5=too much/high. When comparing these first questions it is clear that the majority thought that the time spent on the project was in the desired area, or slightly high. This resulted in a stress level where the majority thought that it was slightly too high stress levels throughout the project. This reasoning could mean that iGEM projects often are ambitious in comparison with the time limit, hence the increased stress levels.
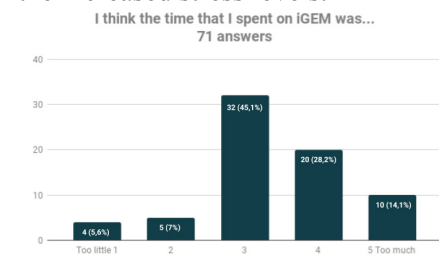

Figure 1. Perceptions of time spent on project. iGEM Work Environment Evaluation, September 2018
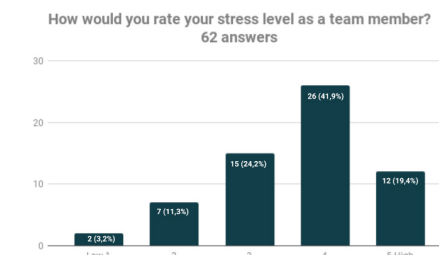

Figure 2. Perceptions of stress related to project. iGEM Work Environment Evaluation, September 2018

Different iGEM teams have different possibilities such as budget, time-limit in the lab, materials provided by the school, etc. We were interested in analysing the different levels of

stress during different parts of the project, hence the separate analysis of both summer (mostly lab work)
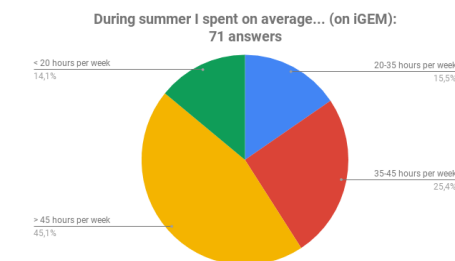
and autumn (mostly documentation compilations). The workload during summer indicated that the majority of all people worked more than 45h per week which is more hours than the standardized workload in Sweden which is 40h per week. As a follow-up the absolute majority answered that in their opinion both the workload and stress levels during the summer was slightly too high. This could be the result of unrealistic plan scheduling, unexpected obstacles, poor group dynamics, poor team work or an ambitious project.

Figure 3. Estimations on time spent on project during summer. iGEM Work Environment Evaluation, September 2018
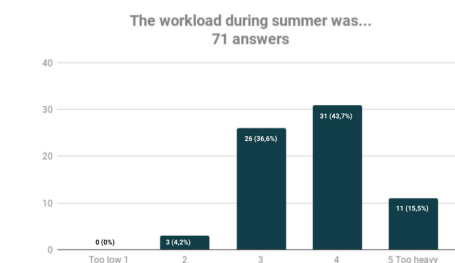

Figure 4. Perceptions of workload during summer. iGEM Work Environment Evaluation, September 2018

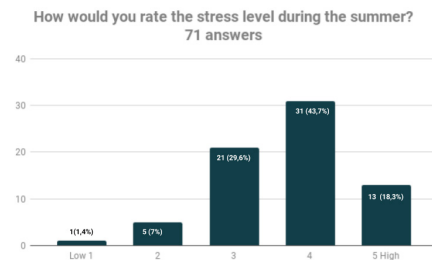How would you rate the stress level during the summer?
71 answers

Figure 5. Perceptions of stress levels during summer. iGEM Work Environment Evaluation, September 2018

The autumn is the final sprint until the absolute deadline in October. It is the time for documentation compilations for many iGEM teams, which can sometimes be stressful due to the juggling with both new courses and the last touches onto the project presentation. The workload during autumn indicated that the majority of all people worked more than 80h per week which is the double amount of hours compared to the standardized workload in Sweden which is 40h per week. As a follow-up the absolute majority answered that in their opinion the workload during the autumn was slightly too high. The majority also answered that the stress level were simply too high against what is optimal. This could be the result of team members finding it difficult to allocate the time needed when their ordinary semesters starts as well as being able to meet with often times conflicting time schedules depending on what classes they're taking. Thereby the team members contribution can vary and the risk of underestimating the total remaining work load could be a crucial contribution to the increased
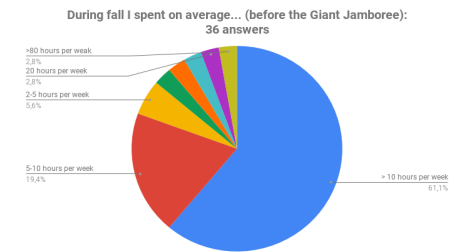
stress levels.

During fall I spent on average... (before the Giant Jamboree):
36 answers

Figure 6. Estimations on time spent on project during summer. iGEM Work Environment Evaluation, September 2018
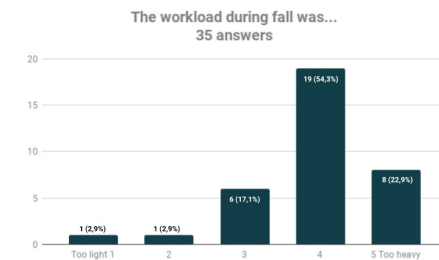

The workload during fall was...
35 answers

Figure 5. Perceptions of stress levels during summer. iGEM Work Environment Evaluation, September 2018

How would you rate the stress level during the fall?
36 answers
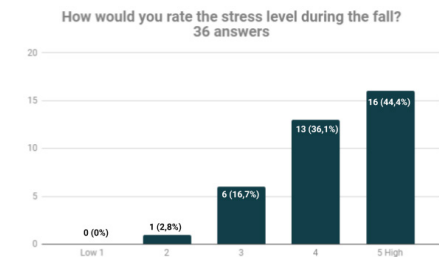
Figure 8. Perceptions of stress levels during summer. iGEM Work Environment Evaluation, September 2018

Hopefully these statistics can provide guidance for future iGEM project teams, and projects in general, due to the recurrent scenario of underestimating the total workload against tight time schedules. A last piece of advice is to put some effort into doing a proper risk analysis about the different deadlines in your project. Do you have a plan B? What happens if a deadline has to be extended? What is a reasonable workload that also fits the time-limit? If you have answers to these questions maybe you can decrease the stress levels and the workload may be within a reasonable range.

WHY IS THIS A PROBLEM?

One of the main issues regarding burnout is its closeness to depression. Many of the symptoms developed by people affected by burnout are closely related to depression, making the treatment difficult. Burnout has developed in every work environment, and especially in medical facilities. The current society often requires workers to exhaust themselves, sometimes leading to problems such as burnout. This has been shown by a large correlation between perfectionism and burnout. This syndrome leads to a whole plethora of negative consequences , which impact not only the individuals afflicted by it, but also their coworkers and ultimately society itself (Dewa *et al.* 2014, Philp, Egan, & Kane, 2012).

Symptoms

Everybody is susceptible to suffer burning out, and many factors influence the chances of a person suffering from this condition, including gender, working field and personal vulnerability. There are some symptoms that can help realizing that someone is suffering burning out (Mindtools, 2018):

•Having a negative and critical attitude at work.
•Dreading going into work, and wanting to leave once you're there.
•Having low energy, and little interest at work.
•Having trouble sleeping.
•Being absent from work a lot.
•Having feelings of emptiness.
•Experiencing physical complaints such as headaches, illness, or backache.
•Being irritated easily by team members or clients.
•Having thoughts that your work doesn't have meaning or make a difference.
•Pulling away emotionally from your colleagues or clients.
•Feeling that your work and contribution goes unrecognized.
•Blaming others for your mistakes.
•Thinking of quitting work, or changing roles.

Impacts on health

Burnout syndrome doesn't just impact the psyche but also carries physical consequences for the individuals affected by it. Different studies tried to understand the consequences burnout syndrome can have on the health of a person, with clear results. People afflicted by this issue often experience many and even grave impacts on their health. The most dangerous implications associated with burnout are cardiovascular heart diseases (CHD): a higher incidence of people afflicted by CHD has been noticed in the population affected by burnout syndrome. This can lead to more serious complications, and even to the death of the person afflicted by the disease.

Burnout also carries some significant secondary impacts on health, including an increased rate of hypercholesterolemia, type 2 diabetes, alcoholism and musculoskeletal disorders. Another commonly noticed disturbance is an increased rate in pain reception: individuals afflicted by burnout not only report musculoskeletal pains more often, but they also appear to be more painful than average.

Burnout syndrome has also been associated with higher chances of gastrointestinal issues, respiratory problems and severe injuries. These connections have been noticed only in populations below the age of 50. (Salvagioni *et al.* 2017)

Impacts on work performances

In this section the focus is on the negative consequences of a worker burning out both for the person and the company. Nowadays, burning out is one of the main issues in companies, so different companies are changing their praxis in order to prevent this, making an effort on the employees well-being instead of the production. Some of the effects of burning out in work are (Bakker, A. B., Demerouti, E., & Verbeke, W. (2004):

•A decrease in the productivity. As the capacity of focusing is decreased and the motivation is much lower, the results on the production are noticeable.

•Also connected with the productivity, there is the increased number of errors and mistakes committed.

•The employee needs many more days of "sick leave time", as anxiety and depression are its everyday life.

•A high t urnover rate. This is common when the employee feels overworked for long periods of time.

PREVENTIVE METHODS

There is a saying that goes: better safe than sorry. This can be applied to burning out. If you feel like you are under some of the effects mentioned in the diagnosis paragraph, trying some of the following tips can help you avoiding going under burnout. Planning your work schedule, eating and sleeping properly and exercising regularly can prevent you getting into this state.

Work scheduling and work/home environment optimization

The work schedule could be of importance when talking about burnout. It is shown that flexibility in the work schedule results in lower rates of burnout, compared to having a schedule with the same intensity, length and amount of consecutive days per shift. By having a more flexible schedule the individual perceive to have more leisure which then increases the satisfaction (John Nelsen, 2018).

An alternative for some people is to have as few work days as possible to achieve as much leisure as possible. Surprisingly this might have an opposite effect, since the work days left will have a higher percentage of workload. Thereby fewer work days might actually be perceived as tougher due to higher procentual

workload compared to work at a normal pace and more days (John Nelsen, 2018).
So when scheduling your work keep in mind concepts such as:

•Less can be more, to be effective remember to take breaks. long work sessions can drain you

•Figure out when your most efficient hours are during the day

In the ongoing era of mass data and online communication with the everyday usage of different technologies such as the smartphone, tablet and computer etc., one is subjected to competition for attention like never before ("It's no accident that Facebook is so addictive" - Washington Post, 2018). While some of our social media "retreats" might invoke some comfort in the short-term, it'd be wise to monitor your usage over time since sites like instagram and facebook all have sophisticated algorithms put in place to simply keep you "in the feed" ("Social media apps are 'deliberately' addictive to users" - BBC, 2018) keeping you from getting work done as well as relaxation. Whatever your goals are. Thus one can implement a series of routines (or *habits*) to stay on track.

1) Make a to-do-list of what needs to be done. Try to be somewhat realistic as not to get to overwhelmed as you go about working through your list, one task at the time. Ideally you should make the

list the day before and even a weekly schedule for longterm overview, say every sunday
2) Keep your workspace clean
3) If you get stuck, keep moving on (you can always go back if needed)
4) Take regular breaks
5) Treat yourself with an activity of your choice once you have finished your work (may be planned in advance)

Notes: Identify what times of the day your attention is at its best and try cover this time in your work- and/or study routine ("Study more effectively", Uppsala University web resources).

Tip: Put your phone away from sight. Use browser extension apps such as *Momentum* for chrome which lets you set and be reminded about today's goal each time you open a new tab. There also timer apps which lets you know when you're scheduled for work and when you should take a break, e.g. *Marinara.* There are also extensions for chrome which lets you block any access to web pages you know have a tendency to go to when you shouldn't that drains both time and attention (e.g. facebook).
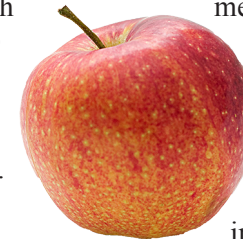
Diet

Taking care of your well-being comes down to mundane aspects of your everyday life. Eating properly is a factor as important as having a proper

schedule, exercising or feeling loved when it comes to prevent burning out. In this section some broad concepts as well as concrete tips are mentioned to encourage everybody to have a healthier diet.

In our society, everything goes so fast, that we also try to speed up life. This means that we oftentimes don't plan our meals, and end up eating the first thing we grab, e.g. a hot dog, a doughnut, fast food or any kind of carbs source. Uniformity of diet is however a direct threat to your health as it provokes malnutrition in different forms and an array of follow up health problems and diseases (WHO).

There are over twenty essential nutrients and for optimal health you need to ensure that your diet is defined by diversity regarding the different food groups. Deficiency of any nutrients leads to a decrease of your overall well-being and thus ultimately contribute to the risk of entering the downwards-spiral of mental imbalance. Deficiency of micronutrients such as vitamin A, iodine, iron and zinc are is a worldwide health problem and accentuates the importance of a varied diet. For example iron deficiency alone causes fatigue, decreased focus and work capacity and in severe cases - anemia (WHO).

However its is not only about consuming all the right things but

also consuming them in the right amounts. Carbohydrates and fats, since being the main energy sources, in too low or too high doses prevents your body from functioning as its supposed to.

To sum up, the basic pillars of good diet is to vary the food groups in your diet and at the same time avoid overconsumption.

Some quick tips to help you find balance:

Avoid processed food and refined sugars. Keep in mind that processed foods are not only the apparent - like all kind of fast food. Any meat that is in a plastic container likely contains some kind of additives and salts. In the case of the sugars it is important to keep decreasing the amount we ingest (Yang, Q.).

To ensure stable energy supply you should distribute your meals evenly throughout the day. A meal that is overseen by many is breakfast. Starting your day with a proper meal is likely to give you a boost in the mornings. It is recommended to start the day with a glass of water during the meal(Lappalainen, R., Mennen, L., Van Weert, L., & Mykkänen, H. (1993), even if after you drink your morning tea. Whether you are one of the people with no time in the morning or if you prefer to sit down and enjoy your breakfast you should aim for low GI (glycemic index) food to avoid fast fluctuating sugar levels causing mood swings

and inconsistency in metabolism. Examples of foods with low GI are different cereals (chia, oats, etc.) as well as most of the vegetables and fruit. Why not go for a smoothie? You can add all kind of fruits and vegetables, plus eggs or almond milk e.g.

When cooking try to follow these tips:

•Include more veggies in your diet! Not only do they contain many different nutrients, they also are rich in fibers that helps to keep our immune system in tune as well as help controlling the release of sugar to the blood and avoid crazy GI peaks. And to get the maximum profit out of it, it is better to go for the natural, organic, fresh vegetables, as they will provide most nutrients.

•Avoid butter as it is a saturated fat. Use oil with a high fume point (coconut, hemp etc.)(Chiang, T. A., Wu, P. F., & Ko, Y. C. (1999)).

•Test different type of grains, or you will end up eating always quinoa. Try black, brown and red rice, buckwheat and millet. You will diversify the nutrient content while making your food more interesting!

•Hungry in between meals? Do not go for cookies, they are just a huge amount of sugar. Instead try hazelnuts, walnuts, etc. They contain a lot of protein and energy!

Definition of eating properly will vary with geographical location as well individually depending on genetic differences and lifestyle. When it comes to diet there are many theories with different amount of science behind them out there, find your own but don't forget the fundamentals of the human body.

Exercise (practice suggestions)

The importance of exercise cannot be underestimated. Since physical exercise has a direct impact in terms of biological processes it will affect your mood, which is governed by it. In one study they introduced exercises (cardiovascular- and resistance type) to a sedentary group of people over four weeks and found that the proportion of people experiencing high levels of burnout was reduced by more than half (Bretland & Thorsteinsson 2015). Which proves the direct relationship between exercising and burning out.

After physical activity the body releases a type of hormone called endorphins. Endorphins interact with different receptors in the brain, leading to a reduced feeling of pain and an increase of happiness (Goodarzi, M., et al 2008). This is the reason of the "euphoria" that

one feels after a run, a football game etc, also called the "runner's high". A good complement to this could be practising it with your colleagues, friends or coworkers, as then you also build up a feeling of belonging to a group (Preller, K. et al (2016)), leading to an increase feeling of happiness.

To sum up, the benefits of exercising regularly are:
•Release of endorphins
•Better sleep
•Boost self-esteem
•Increases energy levels

1. Mindfulness

Although for a lot of people is not seen as exercise, a simple breathing exercise can get you a long way as it will introduce more clarity, focus and a state of wellbeing. Over time you can develop your own meditation practise. The simplest of meditation practises are the ones when you focus on your breathing.

Benefits with meditation being: Stress reduction, decreased anxiety, decreased depression, reduction in pain (both physical and psychological), improved memory and increased efficiency (Sharma 2015). A way of improve meditation is adding some physical exercise, as it can be yoga, in which you
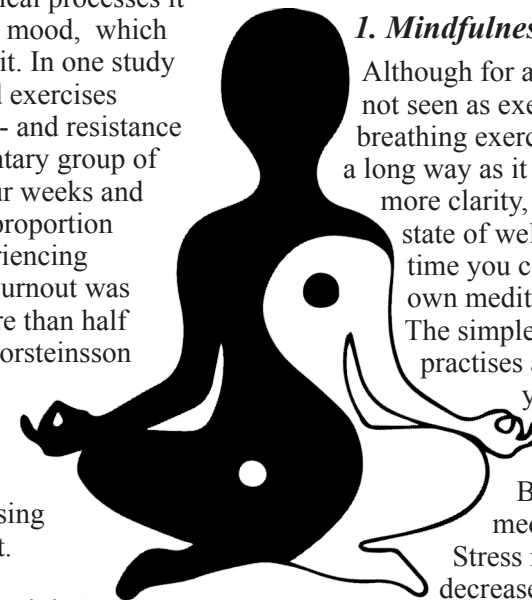
combine physical exercise with focus on breathing. A typical yoga class often starts with *Pranayama* (translated from Sanskrit, prana, meaning "life force," and *ayama*, meaning "extension") a variety of different breathing exercises which allows more control of breath whilst performing yoga postures as well as relaxing the mind in favor of meditation.

Breathing exercises differ somewhat from meditation, as breathing exercises aim to manipulate or pace the breath in different ways whilst meditation on the other hand is just a practise of focusing on the breath. They work well in pair as one might have both practises, often in conjunction with one another. Starting with a breathing exercise that is in the 6-10 breaths per minute range might be a good option since it has been shown to maximise HRV (heart rate variability) which has been associated with longevity (Russo *et al.* 2017) and is generally thought of as an indicator of a low-stress physiological milieu.

2. Breathing exercise - Nadi Shodhana (alternate nostril breathing)

Sit cross legged, use a cushion under the buttocks for support if needed. Keeping your spine straight, shoulders gently rolled back. Let your left hand rest on your left thigh. Place the index- and middle finger of your right hand in the space between your eyebrows, with the palm facing towards you. Use the thumb on your right hand to block the right nostril as you breath in through your left nostril, mouth closed. On the top of your inhale block your left nostril with your ring finger, retaining the breath briefly before releasing your thumb and exhaling through your right nostril. Inhale again, this time through your right nostril. Repeat 5-10 cycles.

Applicable when feeling anxious, stressed or if you just need a reset. Feel any difference?

Tip: Try breathing at a slow and controlled pase, pausing briefly at the end of both inhales and exhales. You can count the inhales and exhales for 5-7 seconds so that their equal in length. Use your belly to deepen the breath.

3. Standing sun salutation

Stand with both feet hip width apart firmly on the ground, booth feet parallel to each other toes pointing forward. Engage your thighs as you gently tuck your tailbone under to lengthen the lumbar spine. Roll your shoulders back, opening the chest. As you inhale bring your arms from your sides, palms facing up, over your head and let them touch as you look up. Exhale as you bring your hands down in front of you whilst bringing your gaze back in front of you. Repeat 5 times. On your last exhale fold your upper body forward and down, with legs straight, or bent, letting your chest rest on your thighs. Relax your neck. Come half way up, straight legs and back, shoulders rolled back, hands on chins or thighs as you breath in. Exhale fold forward again. Inhale come all the way up, straight back, arms meet over head - exhale, hands in front of your chest. Close your eyes and observe your breath for a moment.

A good and effective way to revitalise yourself by engaging your body with elements both of stretching and breathing.

Tip: If you like it, why not try a full sun salutation series which you can easily find more information about on the web.

Perma model

A practical method to prevent burnout is to use the Perma model created by the american psychologist Martin Seligman. The model is divided into 5 different categories that represent psychological well-being and happiness (Positive Psychology Programme, 2017).

Positive emotion

The first category is *Positive emotion*, which describes the ability to focus on positive emotions by being optimistic and keep viewing the past, present and future from a positive perspective. It is crucial to distinguishing between pleasure and enjoyment to fulfill this category. Pleasure is the physical needs such as hunger, thirst and sleep whilst enjoyment represents the intellectual stimulation and creativity. When someone enjoys their workload they will be more prone to overcome challenges with creative and alternative solutions (Positive Psychology Programme, 2017).

Engagement

Personal happiness is something that needs to be nurtured through engagement in an activity of our own choice, that helps us to learn and grow. The activity varies on an individual basis, for example playing an instrument, exercice, working on an interesting project or having a hobby. The activity absorbs us into the present moment and, creating a "flow" that helps us evolve in skill, intelligence and emotional capabilities (Positive Psychology Programme, 2017).

Relationship

"Humans are a social animals that search for connection, love, intimacy, strong emotional and physical interaction with other humans." – Martin Seligman. This is the only way we can spread love and joy to others and also the one way we feel support in difficult times. In an interview with Dr Mitch Printein, who is managing a course in "Psychology of popularity", he mentions a research that shows

that our pain centra activates once there is a chance of being isolated (Positive Psychology Programme, 2017).

Meaning
To be able to live a life filled with happiness and fulfillment, we all need to have a purpose and a meaning as to why we exist. One way to find the meaning of your life could be to understand the greater impact of your work. By remembering why you chose to pursuit that work will also help you enjoy the tasks more and to become more satisfied and happy (Positive Psychology Programme, 2017).

Accomplishments
One way to complete this last category is by having goals and ambition in life, that could increase the sense of accomplishment. The sought satisfaction could be reached by making realistic goals and put in enough effort to fulfill those goals. Having accomplishments in life is important to keep pushing ourselves forward in life, to eventually thrive as a human being (Positive Psychology Programme, 2017).

CONCLUSION

Even though iGEM might seem categorical in their nature we still have enlightened about some fundamentals of worklife. We all can recognize ourselves in topics such as workload and balancing of different parameters – colleges, deadlines, inner and outer demands, ambitions. All the things that drives us forward. Your work/studies is where you spend a huge part of your life—thus it is important that it feels right.

Admitting that we have limitations and understanding these, allows us to foresee the threats to our well-being and career. Preventing is always easier than rehabilitating so do not delay in sorting out and prioritizing your health. The contents in this guide book are things that we considered helpful for us in our work, though there are many other methods. Our hope is that these concepts will help you begin your journey towards a healthier lifestyle, no matter your occupation. This guide book mentions a few tips, but there are several other ways to improve your well-being on a daily basis. Also, most schools, universities and workplaces have safety nets that are there to help you.

We also aim for this guide book to help spreading awareness about the problem of burning out. More and more countries every year started to take into consideration this issue in the work related politics, but sometimes it is not considered a proper illness, that has to be treated differently compared to conditions like depression. This booklet will hopefully spread more knowledge about burning out, and help increasing the consideration people have of this issue.

As for future iGEM teams, we hope that you can use this handbook to manage your iGEM project and simultaneously maintain your well-being. The take-home message here is that your work gets affected by many parameters – some of which we have discussed in this booklet. Taking care of ourselves leads to improved health but ultimately – a balanced individual will contribute to the project itself to a greater extent.

Acknowledgements

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Appendix

A collaboration with iGEM Lund 2018 was done after we learnt that both have the ambition to write a handbook about different aspects of burnout. With this section we want to give you a glimpse of Lund's handbook, in particular their section "The importance of authenticity in Organization".

The importance of authenticity in Organization

Well-being has become a central concept within the study of psychology and its branching disciplines, with the emergence of positive psychology and the scientific study of happiness (Kahneman, 1999). The exact definition remains disputed, but one proposed by WHO states that personal well-being is 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns' (World Health Organization, 1997) and is therefore closely linked to the concepts of happiness and life satisfaction (Pollard & Lee, 2003; Seligman, 2002). Therefore, it is of paramount importance in the discussion of human life quality.

Well-being has been noted to have a strong correlation with the organizational performance (Taris et al, 2009). The organizational performance, used synonymously with organizational effectiveness for the sake of ease, reflects in many ways the success of the organization. Thus, it lies at the heart of every organization to optimize its performance. Commonly, the organizational performance is defined as the sum of both financial and non-financial variables capable of evaluating the degree of which the organization's goals, vision and values have been met (Kaplan and Norton, 1992; Richard et al, 2009).

The importance of authenticity to human well-being has been a topic of great discussion since the early days of psychoanalysis and existential philosophy of the early 20th century (Freud, 1901; Heidegger, 1962). The true nature of authenticity is widely debated among philosophical and psychological scholars, but later include formulations such as 'the unobstructed operation of one's true- or core-self in one's daily enterprise' (Kernis et al, 2006). In the context of organization, the proposed definition by social psychologist Rogers may be applied 'Authenticity emerges when congruence is achieved between one's private self-concept and immediate experiences, behaviors, and interactions with others in group, organizational and social contexts' (Rogers, 1961). In recent years, quantitative empirical studies has been designed and conducted with results indicating a strong correlation between the phenomena of authen-

ticity and that of perceived well-being - with some studies suggesting its very necessity (Baker et al, 2017; Thomaes et al, 2017; Huppert, 2009; Wang et al, 2018; Wood et al, 2008; Vandenberghe, 1999). Some studies suggest that the sensation of authenticity generates well-being, characterized by happiness, productivity and loyalty, through allowing the individual a clear and concise sense of self. The absence of authenticity has, however, provoked feeling of disorientation, dissatisfaction, depression and consequently apathy (Sheldon et al, 1997; Ariza-Montez, 2017).

Perceived authenticity in the workplace has been discussed as a potential key-factor in individual employee well-being (Brunet, 2011). Thus, to optimize the organizational performance, the sensation of authenticity needs to be nurtured. Studies suggest that the core component of authenticity is living an authentic life; that is to say, to be able to act according to the individual's own values and personal belief. Such opportunity has been related to a heightened sense of loyalty, group affiliation, engagement and role- (Ariza-Montez, 2017; William 1990).

Authenticity can be stimulated through shaping the core values of the organization according to that of the employees. Not only will this lead to a sensation of empowerment through self-actualization, but increased effort, involvement, mindfulness, motivation and creativity (William, 1990).

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