

QLINE STRESS MANAGER AND RELIEVER

DANTEST PERSONAL



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INTRODUCTION

With the dynamics of the modern world people are getting busier and busier. Often people need to squeeze in their schedules all kinds of unexpected tasks. As much as you might want, you might never find time to get enough health-care attention. In such cases health-risk prevention is even more important and the less time-consuming it is, the less need for additional adjustments of busy schedules.

Qline offers two major services:

Physical and Mental Stress Assessment – this includes a Health Snapshot of your overall health condition; accumulative physical and mental stress assessment; early stage warning system.

E-coaching & Stress Relief – health improvement system for dealing with stress and health-risk factors, based on E-coaching biofeedback breathing technologies.

Qline provides a unique way for you and your family to:

- Take fast and easy (5 min) health evaluation.
- Observe the influence of daily factors (workload, daily activities, and other stress factors).
- Track health changes and reveal accumulative stress in their early stages.
- Monitor your training activity
- Best health warning system
- Improve you momentary stress

In only 5 minutes, one of Qline's services known as the Health Snapshot will reliably evaluate your condition in terms of accumulative physical and mental stress level. You will know in no time how you and your family really are.

With Stress Relieving functionality you can really take control over physical and mental stress accumulated in your body. Qline Stress Reliever has been designed to prevent, manage and reverse the negative effects of stress. With it you can learn how to operate your mind, body and heart as a unified system, and achieve new levels of health and well-being. It helps you effectively reduce your stress levels and revitalize your entire body. Continuous reducing of momentary stress can affect your accumulative stress and health level.

PHYSICAL AND MENTAL STRESS ASSESSMENT

Stress has two major aspects: momentary stress and accumulative stress. Continuous increase of momentary stress leads to increase in long-term accumulative stress and health level.

Stress could be either physical, mental or both.

Physical stress is caused by long-term exposure to negative factors, such as: irregular lifestyle; physical overload; environmental toxicity; cigarettes; alcohol; drugs; improper diets, etc.

Mental stress can be caused by factors like: insecurity; negative emotions; mental overload; confusion; rejection on a social level; family problems; boredom; low self-esteem; etc.

This system is based on over three decades of profound scientific and medical researches of highly renowned medical professors and different scientific institutes. The reliability of the system is guaranteed by over 40,000 assessments and relevant scientific reports.

BACKGROUND SCIENCE

This Section describes the science and terminology relating to QLine's Stress Assessment. It clarifies how and why the body seeks homeostasis using the autonomic nervous system and why stress disrupts this process. It then describes how Heart Rate Variability (HRV) measurement can be used to indicate the degree of this disruption because of the relationship between HRV and autonomic nervous system balance.

HOMEOSTASIS

In order to survive the body seeks to maintain a condition of balance or TequilibriumT within its internal environment, referred to as 'homeostasis', even when faced with external changes. A simple example of homeostasis is the healthy body's ability to maintain an internal temperature around 37 TdegreesT Centigrade whatever the temperature outside.

CENTRAL NERVOUS SYSTEM

Homeostasis is controlled by the central nervous system, that portion of the nervous system consisting of the brain and spinal cord. It mediates the distribution of resources to and the functional state of organs in the body to deal with demands from the:

- Internal environment via the autonomic nervous system
- External environment via somatic sensory nerves

AUTONOMIC NERVOUS SYSTEM

The autonomic nervous system is that part of the central and peripheral nervous systems which regulates the activity of structures not normally under voluntary control. A synonym is 'the vegetative nervous system'. It provides the motor innervation of smooth muscle, cardiac muscle and gland cells. The system consists of two physiologically and anatomically distinct parts or divisions, the sympathetic and the parasympathetic, having opposite action. The word 'autonomic' means 'being functionally independent'.

[Professor Svetoslav Danev](#) describes the autonomic nervous system and its two complementary components as follows:

“ . . . the complex series of neural connections, linking all organs to the brain to control the whole internal environment. It is the body's major defense against physical stress (such as heat, cold or exercise) and psychological stress, and the system that demonstrates the principal symptomatic manifestation of stress in its early stages.”

The functions of the two parts of the autonomic nervous system, which counterbalance each other, can be summarized thus:

- **Sympathetic Nervous System** – activates organs, getting them ready to cope with exercise or other physical or psychological stress. Activation of the sympathetic nervous system is associated with the 'fight or flight' response and causes a range of physiological effects such as increased heart rate and breathing.
- **Parasympathetic Nervous System** – controls background functions in the body and is responsible for 'repair and recovery'. This system controls internal organs at times of relaxation when, for example, the subject is resting or sleeping. Parasympathetic control of beating of the heart is mediated via the vagus nerve, the level of nerve impulse traffic often being referred to as 'vagal tone'. Increased parasympathetic activity thus corresponds to increased cardiac vagal tone.

MENTAL AND PHYSICAL DEMANDS / STRESS

MENTAL DEMANDS

These are pressures placed on the individual in an emotional, mental or psychological sense. 'Stress' occurs when these pressures exceed the individual's ability to cope. Stress is difficult to define, is not readily susceptible to measurement and therefore not ascertained in any standard units, and although acknowledged to affect health and performance the result of such influences is very variable from individual to individual (Kasl, 1996).

A reasonable working definition of stress, applicable to workrelated situations, with some allusion to its possible

consequences is to be found in the scientific literature:

“Stress is the psychological, physiological and behavioural response by an individual when they perceive a lack of equilibrium between the demands placed upon them and their ability to meet those demands which, over a period of time, leads to ill health.” (Palmer S. Occupational stress. Safety & Health Practitioner 1989; 7: 1618).

A degree of pressure can be good for us, because for peak health and performance there is an optimal level of arousal or perception and response to demand. However, a greater degree of pressure for a period of time, which varies from individual to individual, may lead to ill health – with mental, behavioural and physical changes such as anxiety, sleep disturbance, mood swings and negativity, or headaches – and even be a factor in addiction. Occupational stress is generally accepted as longterm damaging stress (Palmer, 1989).

PHYSICAL DEMANDS

These are pressures put on the body by exercise or other types of physical activity, environmental extremes such as very hot climates, medical problems, and poor lifestyle habits such as smoking or a lack of adequate sleep. Such physical stressors will be additive to mental stressors to increase the overall burden of stress perceived by an individual.

EFFECTS OF STRESS ON THE AUTONOMIC NERVOUS SYSTEM

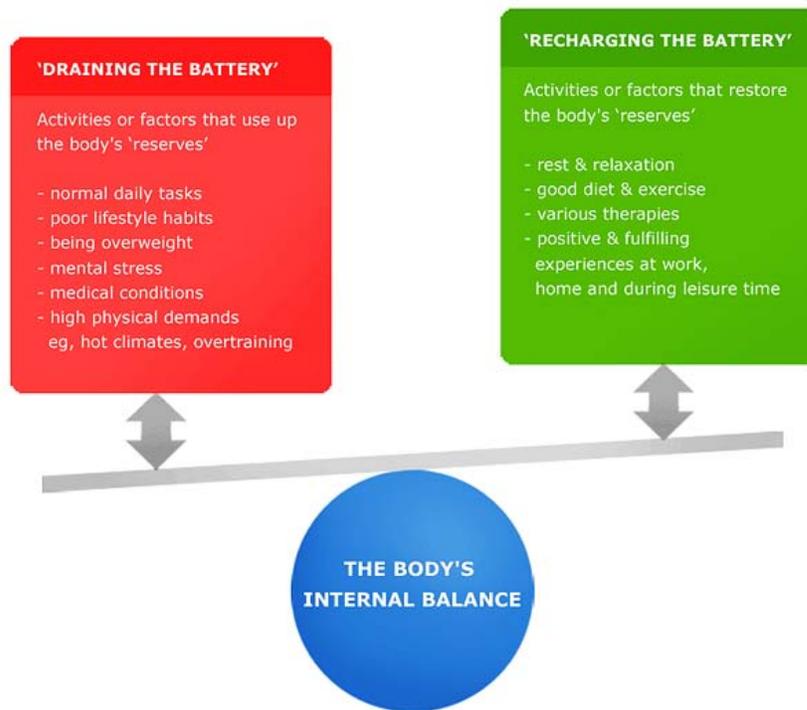
When the body is challenged by almost any mental or physical demand or pressure, the brain activates the sympathetic part of the autonomic nervous system and stimulates the output principally of two hormones, cortisol and adrenaline. These two hormones released into the bloodstream and the activity of the autonomic nervous system help the individual cope with the demand by expending energy in an attempt to rebalance the internal environment (Brunner, 2002).

Once the demand has passed the body may regain its normal equilibrium. However, if the demand is sufficiently severe and/or prolonged then the autonomic nervous system can remain in an overactive or underactive state. In this state the systems involved in rebalancing the body don't shut off when not needed or don't become active when they are needed. Consequently the body becomes less able to cope with demand and is more vulnerable to mental and/or physical illness. The concepts of 'stress' and 'burnout' are closely related and the broadest definitions equate burnout with stress, connect burnout with a long list of health and wellbeing variables, and suggest it is caused by the relentless pursuit of success (Burke & Richardsen, 1996).

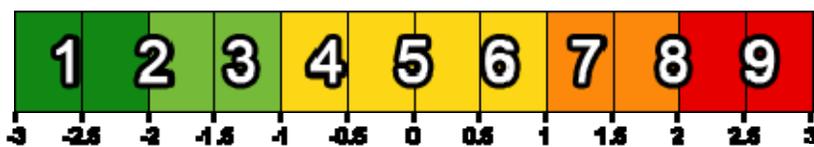
The typical pattern of autonomic nervous system imbalance considered to be indicative of stress is increased sympathetic nervous system activity and diminution of parasympathetic activity (Sloan et al, 1994; McCraty et al, 1995; Dishman et al, 2000). In keeping with this formulation, Porges (1995) emphasised the importance of low parasympathetic activity as reflected by low cardiac vagal tone as a key indicator of stress. He wrote:

“Stress would be defined as the autonomic state that reflects a disruption of homeostasis due to depressed parasympathetic tone. Thus the degree of stress can be quantified on a physiological level. Moreover, the chronic autonomic state before a clinical event would index the individual's stress vulnerability; individuals

exhibiting problems of homeostasis (i.e., low parasympathetic tone) would have the greatest stress vulnerability.”



PHYSICAL AND MENTAL STRESS ZONES



GREEN ZONE

(Index value of 1 or 2; 'Best physiological status')

Interpretation / likely meaning:

- Suggests that the body is able to deal comfortably with demand

Advice:

- Maintain current work and lifestyle habits
- Repeat the Personal Assessment every 6 months or so to ensure that this desirable Green Zone status is maintained

Typically 25% of supposedly healthy subjects score in this Zone

YELLOW ZONE

(Index value of 3, 4 or 5; 'Some tension / Possibly minor stress')

Interpretation / likely meaning:

- Suggests that the individual could be under some pressure but the body's regulatory system is generally coping well with demand

Advice:

- Review current work and lifestyle habits to see if there are any areas that could be fine-tuned
- Monitor situation and repeat the Personal Assessment perhaps quarterly, with desire to bring Stress Index into Green Zone

Typically 45% of supposedly healthy subjects score in this Zone

ORANGE ZONE

(Index value of 6, 7; 'High tension / Stress')

Interpretation / likely meaning:

- Suggests that the individual is under significant pressure and is not coping well – so the risk of stress-related illness is increased

Advice:

- Improve lifestyle habits and work patterns if necessary
- Monitor situation and repeat the Personal Assessment perhaps every 8-12 weeks, with desire to bring Stress Index into Yellow or Green Zone as soon as possible
- For a score of 3 if significant stressors are not identifiable in the subject's personal and/or work situation, and particularly if there is any concern that there could be underlying illness, assessment by a doctor is recommended

Typically 18% of supposedly healthy subjects score in this Zone

RED ZONE

(Index value of 8 or 9; 'Marked stress / Risk of burnout')

Interpretation / likely meaning:

- Suggests that the subject is under too much pressure or that there is a significant medical problem

Advice:

- Assessment within few days by a doctor is strongly recommended
- Urgently take action to improve lifestyle habits and work patterns
- Monitor situation as deemed necessary under medical supervision and repeat the Personal Assessment perhaps every 4-6 weeks, with desire to bring the Stress Index into the Yellow or Green Zone as soon as possible

Typically 12% of supposedly healthy subjects score in this Zone

E-COACHING AND STRESS RELIEF

Qline Coaching Feedback is a training system designed to improve the health and reduce the impact of stress on the human body. It trains you how to use the positive effects of paced breathing. Deep slow breathing causes significant synchronous changes in blood pressure inside of your chest due to respective changes in chest volume. This process stimulates autonomic nervous system to compensate changes in blood pressure and causes rhythmic reflexive changes in heart rate. This is a special biofeedback training exercise that impacts your body's self-regulatory system.

Continued use will assist to improve muscular relaxation, improve mental relaxation, lower blood pressure and strengthen the immune system. There is a short-term effect too - stress relief and relaxation. The long-term benefits of regularly performing the breathing exercise is the direct improvement of the overall health condition.

A lot of cultures see breath as a connection to the soul. Each one of us can be considered as a breathing expert or guru -- after all, we have been breathing since we were born. However, this is an incorrect assumption because most of us don't truly understand the power of breathing.

The constant pressure associated with living in a fast-paced world has created an environment where nearly everyone is suffering from excessive stress. It is not possible to live without any stress. We can, however, learn ways to handle the stress of daily life efficiently, and to manage our reactions to stress and minimize its negative impact.

It has been designed to prevent, manage and reverse the negative effects of stress, and to enable users to learn how to operate their mind-body-heart as a unified system, achieving new levels of health and well-being by reducing their stress levels and revitalizing their entire bodies. The stress-reducing effects are both immediate and long lasting.

The Qline Stress Reliever consists of an easy-to-use finger sensor and software that displays your heart rhythms (HRV). You can objectively monitor your heart rhythms and confirm when you have achieved autonomic nervous system balance and this real-time feedback enables you to more effectively manage your levels of stress and negative emotions.

WHAT ARE THE BENEFITS?

It is proved that emotions are reflected in our heart rhythm patterns. The analysis of Heart Rate Variability (HRV), or heart rhythms, is recognized as a powerful, non-invasive measure that reflects heart-brain interactions and autonomic nervous system dynamics, which are particularly sensitive to changes in the emotional state. By using The Qline Stress Reliever you learn a simple, easy way of self-control of emotions - how to intentionally shift to a positive emotional state - which helps reduce the symptoms of stress. You also will be able to see the changes in your heart rhythms immediately on your computer screen. Seeing your heart rhythms and a coherence score in real time can accelerate your progress. You gain clarity, calmness and control. The effects are both immediate and long lasting.

The Qline Stress Reliever teaches you how to synchronize your nervous system while at the same time learning how to regulate your emotions. This reduces a lot of unnecessary stress, which promotes healing.

Using Qline Stress Reliever for 15 to 30 minutes a day will help you create a more calm and balanced state of being.

THE POWER OF BREATHING

The importance of breathing is obvious as we depend on taking in oxygen for our lives. As humans, we have to eliminate the things our body is no longer using, and breathing takes care of 70% of this process. Other than eliminating the air from your lungs, after the oxygen has been absorbed, breathing also expels toxins from your body. You can also eliminate other things such as emotions or stress. By harnessing the immense power of breathing, you can create a better connection with your inner self.

By becoming more aware of your breathing you will be able to reduce a lot of outside negativity. Focus your attention on your breath and tell your mind to think only about it. The rhythmical sensation your breath produces will help your mind, and your body, relax and slow down. Thinking is responsible for most of the tensions and stress we face, and this little exercise takes thinking into a harmonious and peaceful location.

Many of our thoughts are negative. We often use or think about words like "won't," "can't," or "shouldn't." These negative connotations reflect on the way we feel, increasing nervousness and stress. Your brain processes millions of thoughts on a daily basis and focusing it on your breath gives it a break. Temporarily lowering your mind's activity gives you extra peace and helps relax both your brain and your body.

Try to appreciate your breathing education as you would practice a sport. In order to reach a goal, you will need to improve and enhance certain skills. You can't just be an Olympic athlete -- you have to become one through hard work. This can be done by building up your strengths and stamina, as well as improving your physical abilities.

Improving your breathing works exactly the same way. Right now you are at a low level, as you most likely don't do any additional exercises to improve your breathing. (Think of it like an RPG game -- you must build up your "experience points" to reach the next level.)

Your subconscious mind usually takes care of the breathing process, leaving your conscious mind to deal with other things. However, this is the time to take breathing matters into your own hands, and consciously control your breath while you exercise this technique.

At first, try to analyze yourself each time you inhale and exhale. Do this until your mind gets used to the rhythmic tone of breaths and lets your brain preoccupy itself only with your breathing. It may be tough at first, as you will get distracted by sounds or movements around you. In time, however, you will manage to ignore outside interference and sustain a prolonged period of clear, utmost focus. Regularly practice with your breathing and you will soon begin to see some of the positive effects of better understanding and controlling one of the vital elements that keep us ticking.

BREATHING AWAY STRESS

The mainstay of relaxation breathing techniques is to be found in diaphragmatic (abdominal) breathing. It can be used as a direct stress reduction technique. More indirectly, it can be used as a form of meditation, as a preparation for autosuggestion or self-hypnosis, as a way of becoming calm when agitated or as a method for facilitating relaxation. It can also be used as a method of focusing and enhancing the learning experience. All of these are very relevant to stress management.

We suggest that you read through the exercise a few times to familiarise yourself with it. Then, when you are ready, begin.

The best way to learn abdominal breathing is to begin by sitting up straight on a chair with your hands resting on your lap and your feet placed firmly on the floor. Footwear is optional but be sure to avoid high heels or anything too tight.

When you are ready, close your eyes and begin to concentrate on your breathing. The aim at this point is just to get used to the way you are breathing. Pay attention to your depth of breath and its rhythm and pace.

Next, pay attention to which muscles you use when you breathe. It might help you to do this if you place one hand on your diaphragm (just under your ribs at the top of your stomach). Place the other hand on the upper part of your chest. Keep breathing normally and become aware of which hand is moving in and out as you breathe.

You may discover that you are doing abdominal breathing already, that is, the majority movement is under the bottom hand. If not, adjust your breathing slowly until only your bottom hand is moving. When this happens it means that you are using your diaphragm to control breathing. This may take some getting used to. When you are comfortable with things, allow your hands to relax.

This kind of breathing is beneficial and it actually provides the correct kind of exercise for your breathing muscles. When doing this exercise it may be best to breathe through your nose while keeping your mouth closed. Avoid, however, clenching your teeth as this generates stress in your jaw area.

When you first begin you may be surprised at the time distortions which can occur. What this means is that you might spend two minutes on an exercise but believe you have spent a quarter of an hour doing it, or vice versa. In the beginning it is more likely to be the former.

QLINE HARDWARE (DT-HW8)

DT-HW8 can collect Pulse Wave (PWV) signal from a finger or ear clip probe.

This hardware can work standalone.

The hardware can process standalone one measurement data and display the results.

All the stored data can be easy transferred to the PC for a more detail analysis with our windows software.

DT-HW8 can also work connected with our PC windows software and work in real time data input mode.

DT-HW8 is using USB connection mode.

DT-HW8 is a very easy to be used Hardware. The device has a very intuitive menu and functional keyboard.

The hardware meets all USA and EU safety standards.

This hardware is good to be used with our *light health assessment* and *stress reliever* software.

DT-HW8 is used by:

- Stress Management Counselors
- Alternative Therapy Specialists
- Biofeedback Therapists
- Physiology Class Teachers
- Physical Occupational Recreational Therapists
- Self and Home use
- Yoga Centers
- And many others...

