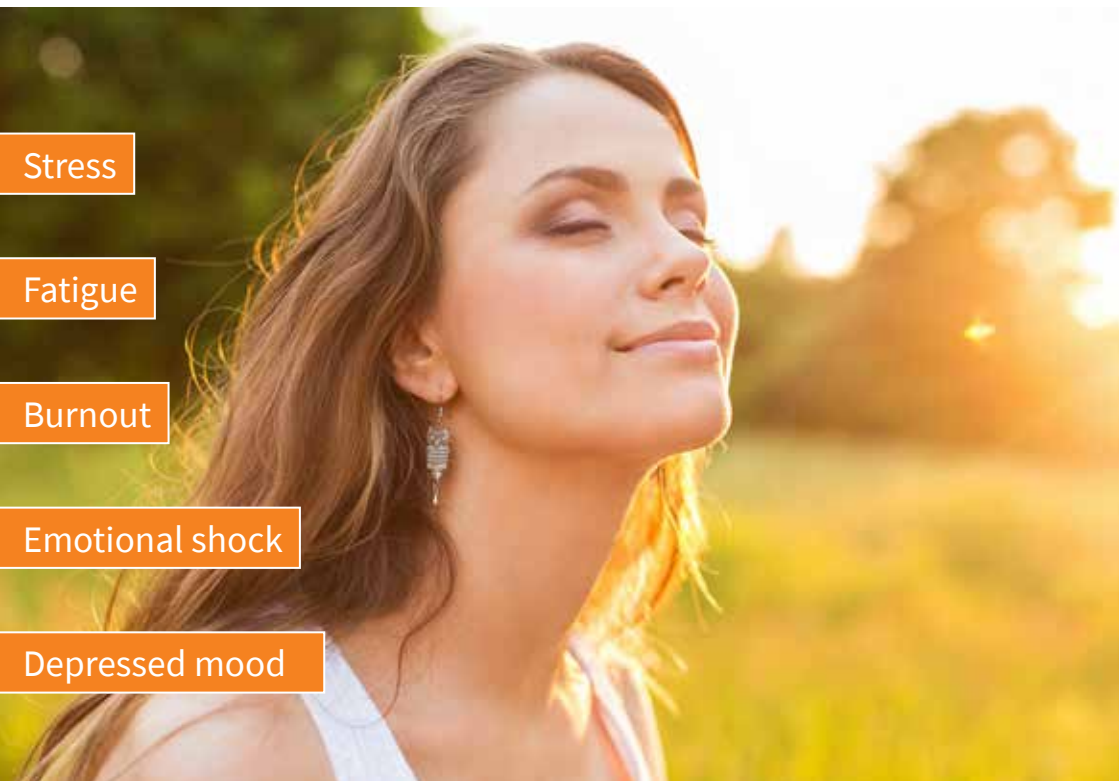




Micro-immunotherapy
International Medical Experience

Micro-immunotherapy & psycho-emotional balance



Stress

Fatigue

Burnout

Emotional shock

Depressed mood

Inner strength in challenging times

Everybody has to deal with stress in life. Pressure to perform well, deadlines, combining work and family life, conflicts in relationships, severe disease, death of a family member, worries or anxiety about the future are some of the many daunting burdens to confront. All the more so in the current times of globalisation, economization and rapid digitalization, which together contribute to a climate of permanent rush. For many, stress has become a straining companion both at work and in private life. This trend has worsened due to the COVID-19 pandemic: according to the World Health Organisation, the prevalence of stress-related anxiety and depression among the population, including children and the young, has increased by 25%¹. The immune system is also affected by this strain. It is well known that its natural function is impaired by negative emotions and chronic stress. In turn, immune disorders are involved in the onset and progression of psycho-emotional disorders such as depression. This brochure will shed light both on the interrelations between immunity and psycho-emotional health and the role of micro-immunotherapy as a gentle companion to restore inner balance.

Stress: Two sides of a coin

Stress arises in the brain as soon as internal and/or external challenges are subjectively perceived as dangerous and impossible to be managed with one's own resources². It is therefore an individual concern: depending on the person, the same stimulus may be perceived either as a pleasant challenge or a threat instead, thus leading to stress. The triggering of a stress response comes along with changes in one's body, mind and behaviour that are aimed at adapting to the existing burden. The body is brought into a state of tension via the sympathetic nervous system and stress hormones (including adrenaline and cortisol) are released. As a result, the heart beat gets faster, the body is supplied with more blood, breathing accelerates, muscles tense and alertness increases. Occasional, short-term stress followed by recovery can have positive effects on performance, since the body is pushed to bail out its full energy potential. However, if stress becomes permanent or chronic, it is detrimental to mental and physical health and has a negative effect on the immune system^{3,4}.

Effects on the immune system

The psyche, the nervous system, the hormone system and the immune system are closely interconnected and constantly influencing one another. They communicate via messenger substances (neurotransmitters, hormones and cytokines) in a crosstalk which is aimed at maintaining the body in balance. These tight interactions are being described and increasingly confirmed by the young research field of psychoneuroendocrinology (PNIE) (Fig. 1).

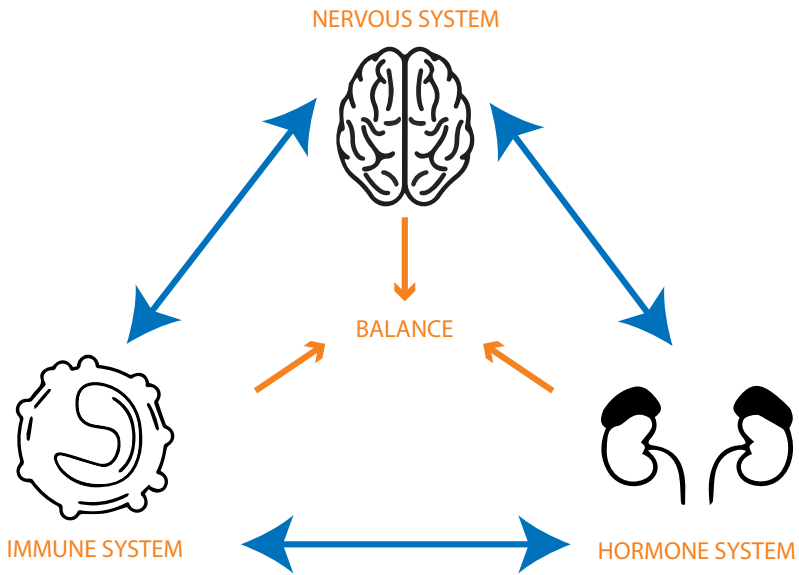


Fig. 1: Interactions between the nervous system, the hormone system and the immune system

Short-term stress activates innate immunity, the first line of defence of the immune system which acts directly against pathogens and other disrupting factors. Thereby, inflammatory cytokines are released and, normally, balance is restored shortly after⁵.

Chronic stress, however, has a negative effect on the immune system (Fig. 2):

	<p>It impairs immune function, increasing the risk of viral infections and/or herpesviruses (herpes simplex virus, EBV, amongst others) transitioning from their dormant state to the active replication phase (reactivation)⁵.</p>
	<p>It favours the onset of chronic inflammation, a risk factor for chronic diseases⁶.</p>
	<p>It accelerates the ageing of the immune system, therefore spurring on the general ageing process of the body⁷.</p>

Fig. 2: Effects of chronic stress on the immune system

Hence, depending on its duration and intensity, stress can either have a positive or a negative effect on immunity. If stress remains untreated, physical or mental disorders may appear (Fig. 3). On a physical level, chronic stress poses a risk factor for the onset or development of cardiovascular diseases (e.g. high blood pressure), metabolic diseases (type 2 diabetes), gastrointestinal disorders (ulcers) or autoimmune diseases. On a psychological level, chronic stress may lead to fatigue, burnout, depression or anxiety^{3,4}.

	<p>Cardiovascular diseases</p>		<p>Gastrointestinal disorders</p>
	<p>Type 2 diabetes</p>		<p>Autoimmune diseases</p>



Fig. 3: Chronic stress as a risk factor for various diseases

The interrelations between stress, immunity and depression are discussed in more detail below.

Depression or uncontrolled inflammation?

Downbeat mood, loss of interest, “inner emptiness”, weariness, lethargy and even suicidal thoughts are among the symptoms of depression, particularly if they last for more than two weeks. Depression is a complex disease, since various factors are involved in its onset and progression. However, chronic stress due to straining life events and the associated dysregulation in the body are known to be among the main risk factors for this disease.

Chronic inflammation is also receiving increasing attention as a possible trigger or worsening factor in depression, particularly as patients with chronic inflammatory diseases (rheumatoid arthritis, chronic inflammatory bowel disease, among others) are at higher risk of suffering from depressive moods or depression. On the one hand, higher concentrations of proinflammatory immune messenger substances affecting the brain have been observed in patients with depression and in patients with chronic stress. On the other hand, it is known that increased levels of proinflammatory cytokines can favour the release of stress hormones, which in turn leads to a decrease in serotonin, the “happy” hormone. Depressive episodes may follow as a result⁸.

Therefore, when addressing psycho-emotional disorders, the immune system should as well be taken into account and its function should be regulated.

The micro-immunotherapy approach

Micro-immunotherapy (low-dose immunotherapy) is a valuable and well-tolerated treatment to recover or maintain the balance of the immune system via immune messenger substances (mainly cytokines) in low doses.

In case of stress, shock, burnout and fatigue, micro-immunotherapy aims at balancing the existing dysregulation on an immunological, hormonal and neuronal level, therefore positively influencing the psyche.

In addition, its regulating and supportive action helps to counteract the dysfunction associated with stress and ageing as well as its consequences (e.g. recurrent infections).

As to depressive moods or mild depression, micro-immunotherapy contributes to modulating the stress response, dampening inflammation and protecting the nervous tissue. Thus, it helps to alleviate the symptoms and may allow the intake of medication to be reduced or even stopped upon consultation with the attending health professional.

Naturally, in order to ensure treatment success, some basic measures should be integrated into daily life, such as psychotherapeutic support, selective breaks, sufficient sleep, regular exercise and a healthy, anti-inflammatory diet.

Micro-immunotherapy can be applied in all age groups, it is easily taken sublingually, well tolerated and can be combined with other treatments (e.g. antidepressiva) (Fig. 4).

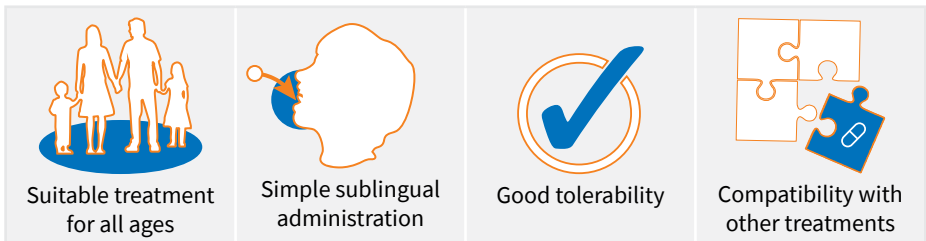


Fig. 4. Benefits of micro-immunotherapy

Under no circumstances should an ongoing treatment be interrupted without consulting the attending health professional.

Conclusion

While short-term stress can improve performance, chronic stress has far-reaching effects on the body which can lead to a dysregulation on various levels (the immune system, the nervous system and the hormone system, among others). As a consequence, the immune system can lose its balance: chronic inflammation is favoured and the body's antiviral defence is impaired. Hence the risk of various diseases, both physical and psycho-emotional, increases: fatigue, burnout, depression and anxiety, amongst others, can arise from chronic stress and associated disorders.

Micro-immunotherapy helps to dampen the stress-related inflammation and provides support on an immunological, hormonal and neuronal level. Through the administration of messenger substances in low doses, it brings the various systems back into balance, supporting the body's own capacity for self-regulation and enhancing psycho-emotional balance and well-being.

Literature:

1. WHO. COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. 2022.
2. Lazarus RS, Folkman S. *Stress, appraisal, and coping*. New York, NY: Springer; 1984.
3. Schneiderman N, Ironson G, Siegel SD. *Stress and health: psychological, behavioral, and biological determinants*. *Annu Rev Clin Psychol*. 2005;1:607–628.
4. Cohen S, Janicki-Deverts D, Miller GE. *Psychological stress and disease*. *JAMA*. 2007;298(14):1685-7. *JAMA*. 2007;298(14):1685-7.
5. Segerstrom SC, Miller GE. *Psychological stress and the human immune system: a meta-analytic study of 30 years of inquiry*. *Psychol Bull*. 2004;130(4):601–630.
6. Liu YZ, Wang YX, Jiang CL. *Inflammation: The Common Pathway of Stress-Related Diseases*. *Front Hum Neurosci*. 2017;11:316.
7. Bauer ME, Jeckel CM, Luz C. *The role of stress factors during aging of the immune system*. *Ann NY Acad Sci*. 2009; 1153:139-52.
8. Slavich GM, Irwin MR. *From stress to inflammation and major depressive disorder: a social signal transduction theory of depression*. *Psychol Bull*. 2014;140(3):774-815.



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