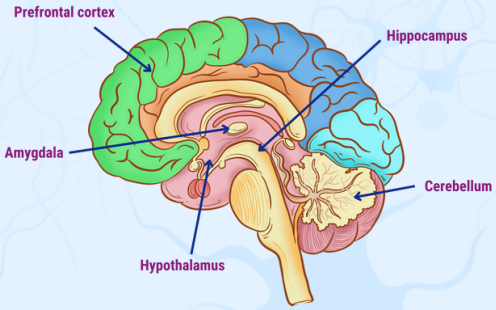
The brain, the nervous system and stress

A basic understanding of how the nervous system develops and functions can help you, as a parent or caregiver, better understand your child's behaviour, emotions, and experiences.

In this chapter, you can find basic information about brain development and the functions of the nervous system that affect the daily functioning and psyche of your children, as well as yourself.



The Brain

The brain does not fully develop until the age of 25, which explains why children and adolescents often "act before they think" — the brain and its functions are simply not yet fully developed.

The front part of the brain, which develops last (the prefrontal cortex), is responsible for abstract thinking, coordination, directing thoughts and attention, and regulating behaviour and emotions. This is the reason why children and adolescents often display immature behaviour and a lower capacity for self-regulation. This limited ability of the brain to engage in logical thinking is particularly noticeable when adolescents find themselves in emotionally stressful situations. In such situations, they may tend to react impulsively or take risks. As adults, we should always bear this information in mind. The fact that children and adolescents do not handle everyday situations in the same way adults do is not their fault, and we should not blame them for this. Rather, we should give children the support and appropriate help they need to learn how to manage their confusing emotions and experiences.

The nervous system and stress

The nervous system is the control centre of the entire body and its functions. The Autonomic Nervous System (ANS) is one part of the nervous system that controls automatic physiological processes such as heartbeat, breathing, and digestion. The main function of the ANS is to help the body maintain physiological balance.

Stress is an important factor that affects the function of the ANS, as well as the physiological balance in our body.

When a person experiences a stressful or threatening event, a part of the brain called the **amygdala** is activated and immediately sends a distress signal to another part of the brain — the **hypothalamus**. The hypothalamus acts as a command centre that communicates with the rest of the body and stimulates defence responses. These reactions include preparing the body to run or attack, resulting in rapid breathing, increased blood pressure, blood rushing to the muscles, slowing of digestive functions, and sweating.

In moments of threat, the nervous system acts like the **gas pedal in a car** and switches on our "survival mode", which means it triggers the defensive reactions mentioned above, helping to accumulate the necessary energy for action.

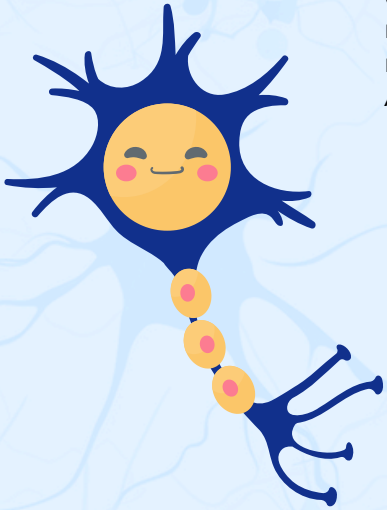
Once the danger has passed, the body and its functions need to be pacified and brought back into balance so that the body does not remain in a state of tension for too long. At this point, the nervous system turns into the **brake pedal of the car** and gradually calms the body down. Once our nervous system deems the situation safe, it begins to lower our heart rate and blood pressure, digestive function resumes, and little by little we begin to relax.

Away from danger, the nervous system is in equilibrium — much like when you put a car into **neutral**.

In order to keep our body processes balanced and working in a healthy way, the ANS actively processes stress in the same way that the digestive system processes food. It is important to remember that the ANS is working all the time. It is not only active when you use the "brake pedal" and "gas pedal", but also during the "neutral" period. The autonomic nervous system is responsible for maintaining our healthy, vital functions at all times and for communicating with other parts of our body.

Under **chronic stress**, the body continuously activates the "gas pedal", and since the pressure does not subside, the body is unable to use the "brake pedal" to calm down. This leads to an overload of stress on the body. Because the activation of the "gas pedal" is not followed by a soothing return to physiological equilibrium, stress levels rise and agitation begins to accumulate. This unbalanced state is accompanied by an **excess of stress and a lack of emotional control**, which can lead to manifestations of **severe anxiety, panic, aggression, or other negative emotions**.

We ourselves can contribute to maintaining healthy nervous system functioning. In the materials *How to help a child who is experiencing a panic attack or intense stress* and *How to look after yourself*, you will learn more about techniques that can help you regulate your nervous system and maintain this healthy balance.



Why is this information important to you as a parent?

Children who have gone through, or are going through, challenging and highly stressful situations often have problems with self-regulation, experience and express intense emotions and feelings, or, alternatively, may seem "frozen" or emotionless. Behaviour that at first glance appears to be misbehaviour, deliberate provocation, or, on the contrary, indifference or ignorance, may in fact be a reaction of the child's nervous system to intense life situations. The child may be experiencing chronic activation of the sympathetic nervous system, in which the body is aroused and ready for action. Some children react to intense stress by going into a state of shock or physical freezing. Such a child often experiences disconnection and isolation from the environment, exhaustion, and apathy. You can read more about the specific reactions children may have to stressful events in *How Children and Adolescents Can Respond to Trauma*.