

An introduction to sensory integration

Motor and psychological unrest, concentration difficulties and sleep disturbances – the symptoms are numerous. The explanation may be difficulties in sorting and processing sensory impressions from the environment and own body.

Through structured use of sensory stimulation, many people will be able to improve their ability to participate in everyday activities and experience improved well-being.

Sensory stimulation from weight and pressure from balls

**ADHD,
Anxiety, Anorexia,
Autism, Dementia,
Depression, Brain damage,
Neurology, Psychiatry,
Sclerosis, Pain, Stress,
Sleep disturbance**



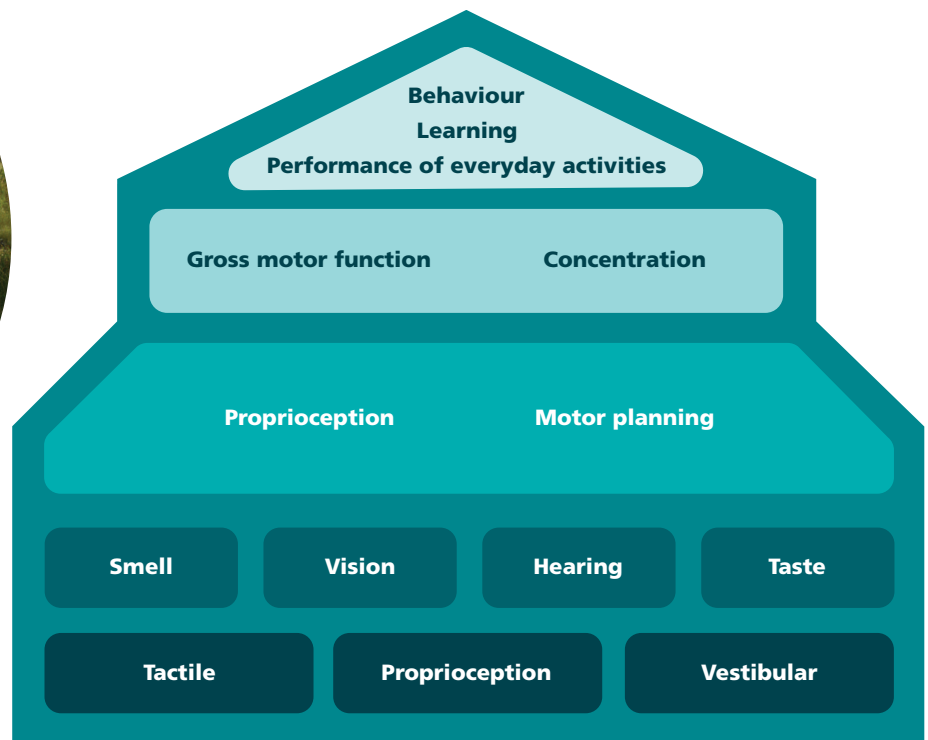
Every day we are exposed to input through our senses. The ability of the brain to process, filter and sort sensory inputs is known as sensory integration. The brain interprets all these various inputs, and it must know how and in what sequence it has to react to them. Does the noise of others need to be blocked out so you can focus on your task at hand? Should the feeling of an itchy shirt demand more or less attention than the conversation you are having? This interpretation takes place unconsciously and is dependent on the individual, so even if we as human beings are

exposed to the same exact sensory inputs over the course of a day, our brains will not necessarily interpret them the same way. This may be the reason why some people thrive in a noisy world, while others develop stress and anxiety. When the brain is overloaded, it can be difficult to find the necessary calmness and security. Several research projects show that the use of structured sensory integration can help the brain to process, filter and sort – and thereby reduce stress levels and increase well-being.

Normally, we say that we can see, hear, feel, smell and taste, but we actually have seven senses through which we interpret the world. The seven senses are broken down into near and remote senses. The remote senses are the four senses that inform the brain of the environment in which we find ourselves: vision, hearing, smell and taste. The near senses include vestibular, tactile and proprioception, which jointly form our body image.

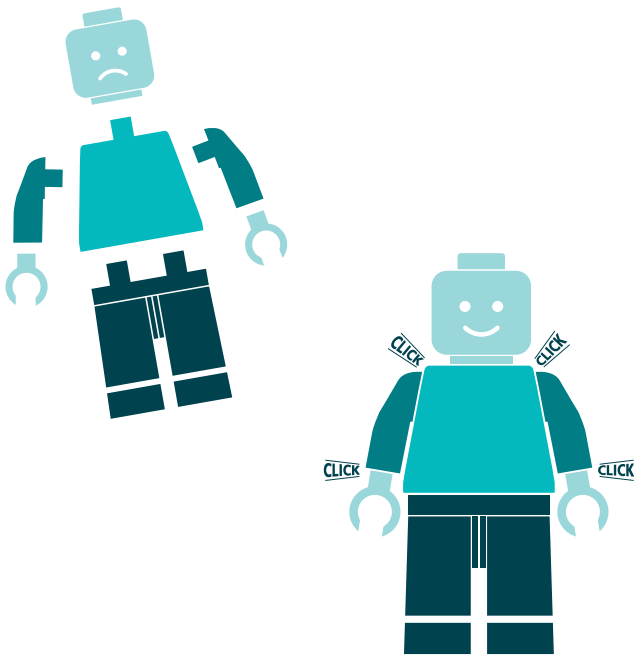
While most people are aware of the difficulties associated with an impaired sense of hearing, for example, fewer understand how disturbances in the near senses are experienced. Sensory disturbances of the near senses may be a very serious and debilitating experience, and ensuring that these senses are neither over- nor under-stimulated is a top priority at all times. One well-known example may be that you will instantly lose focus if a fly lands on your skin, and you can only concentrate again once the fly is brushed away. This is due to an over-stimulation of your sense of touch, which you will act on automatically.

It may be more difficult to understand how under-stimulation of the proprioception is experienced. The proprioception informs the brain of activity in muscles and joints, which work cooperatively and dependently on our nervous system. We intuitively use the proprioception to create a sense of calm. If you are restless, you may get the urge to tap your foot or go for a walk. People with sensory disturbances such as ADHD, autism, dementia and psychiatric disorders may have even more difficulty sitting still for extended periods because their proprioception becomes under-stimulated more quickly, and they will therefore naturally seek movement. The brain does not, however, register the difference of whether the proprioception is actively stimulated through movement or passively, such as through massage, joint compression or a sensory stimulating tool that creates weight in the joints and deep pressure in the muscles.



Humans possess a lot of skills that can only come into play when the seven senses are neither under- nor over-stimulated. This can be compared to building a house. The roof structure consists of complex skills such as social skills, learning and self-care. But the ability to use such complex abilities requires a solid foundation. We lay this foundation primarily by ensuring the appropriate stimulation of our vestibular, tactile and proprioceptive senses. Only when this foundation is created can we work further with the roof construction, thereby bringing more complex abilities into play.

Structured sensory stimulation of proprioception has a coordinating and calming effect, and is our foundation for successful sensory integration of all the senses.



Try to imagine that people are built from Lego blocks. When we are not receiving information through proprioception, the blocks begin to come loose, and we lose sense of our own body, which makes us insecure and restless. Stimulation of muscles and joints is like pulling the blocks back together and reintegrating our body image, which has a calming effect and makes us secure and resilient.



Vision

We are enlivened by striking colours such as bright red and yellow. We are soothed by subdued, cool colours such as blue and green.

Hearing

Non-rhythmic music awakens us. The sound of a heartbeat or soft music calms us down.

Smell and taste

We are re-energised by the taste and smell of sour, bitter stimuli such as citrus, coffee and strong cheese. We are calmed by sweet stimuli such as chocolate, vanilla, rose and lavender.

Vestibular

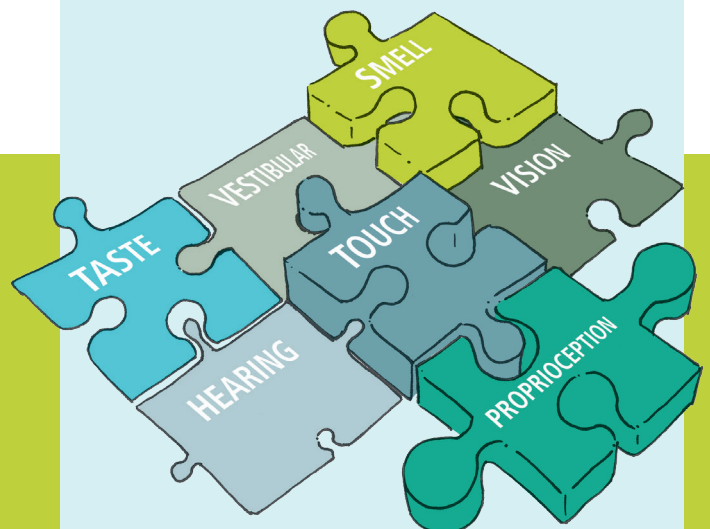
When we sway from side to side, or jump up and down, we are woken up. When we swing "in the direction of the nose" we become calm – such as in a rocking chair.

Tactile

We are reassured by rhythmic, uniform strokes in the direction of the hair, a tight embrace or by being swaddled. Unpredictable and inconsistent stimuli on the skin causes us stress.

Proprioception

Joint compression and change of muscle tension calms us down regardless of whether the stimulation is obtained through movement, or passively in the form of deep and dynamic pressure from sensory stimulating tools. Stimulation of proprioception always has a unifying and calming effect, and cannot be over-stimulated.



Puzzle inspired by occupational therapist Hanne Holmer

The important influence of sleep on body and mind

Researchers are constantly learning more about sleep and its great role for our mental and physical health and development. Getting deep, quality sleep is important. Sleep is like a shower for the brain, where a series of physiological processes take place in the body that have an impact on our health and state of mind. Sleep strengthens our immune system and gives us energy and additional resources to manage everyday activities. Unfortunately, many people with sleep disorders find that they have extreme difficulty in falling asleep. This is often due to the fact that the brain

lacks input from muscles and joints when we are lying in bed. We therefore want to instinctively turn and pivot ourselves to receive these inputs. This physical unrest prevents us from falling asleep and leads to numerous nighttime awakenings. The compromised body image can fortunately be reinforced with a sensory stimulating blanket that uses weight, depth and dynamic pressure from balls to stimulate muscles and joints. This can make you feel calm and secure even when lying still.

A good night's sleep provides better quality of life and additional resources for everyday challenges

Protac products

Protac Ball Blanket®

The original Protac Ball Blanket® is available in several variants – all with specially designed with low-noise balls. The right choice depends on the user's sensory system, preferences and the challenges the user is facing. The calming effect has been scientifically documented.

Protac SenSack®

A sensory-stimulation sleeping bag with balls on the top. It wriggles smoothly around the body, contributing to comfort and rest for the user and it is easy to bring along.

Protac SenSit®

The chair has balls in the seat, back and arms, allowing for comfortable sitting and resting postures. The weight and pressure of the balls increase proprioception and promote calmness.

Protac SenSit® Frame

A frame for the Protac SenSit® chair with an inclined plate on wheels, making the chair movable and giving a comfortable seating position.

Protac MyFit®

A sense-stimulating ball vest that delivers deep pressure every time the body moves. The ball vest is specially designed to create a sense of calm and increased concentration during activities.

Protac SensOn®

A body-adapted collar that stimulates the neck, shoulders and chest. The collar is discrete and comfortable to wear, while promoting calmness and relaxing the neck.

Protac SensCircle®

Shapeable and flexible multi-cushion with 9 articulations. The cushion can be flexed and wrapped and allows innumerable possibilities for activity, relaxation, rest and positioning.

Protac GroundMe®

A sense-stimulating foot cushion that grounds and promotes calmness and concentration.

Protac Ball Cushion®

The cushion can be fastened to chairs in the classroom, day care centre or at the dining table at home. The ball cushion especially strengthens the vestibular and tactile senses making it more easy for especially children to sit still.

Protac KneedMe® To Go

A portable, discrete and calming knee blanket that strengthens concentration through proprioceptive and tactile stimulation.

Protac MyBaSe®

A vestibular and sense-stimulating air mattress that, in combination with balls, is a fun and pleasant place to be when the entire body's sensory system needs stimuli.