



The Sensory Side of TTouch

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We have all witnessed the sometimes remarkable changes in animals following a few minutes of TTouch or work in the Confidence Course. The hyper, twirling dog suddenly stands in balance and looks calmly around the room. The fearful cat hunched in the back of a cage steps forward allowing human contact. Even a stressed snake is calmed by gentle lifts along its body. While we can easily observe the outward changes in an animal's behavior or posture, explaining how these shifts occur is not always so simple.

Linda speaks of "awakening the function of the cells" when she describes the intent of TTouch. How does the act of touching another being, human or animal, influence the very function of the body, even down to the cellular level? One way we can understand this process is to examine how the nervous system takes in and makes sense of information. This is the function of sensory integration, and it is what allows us to learn, and make adaptive responses to each new experience or situation.

Input – How Information Is Recognized

Most of us are very familiar with the five senses of sight, sound, smell, taste, and touch. We also have two other sensory systems that process information from "inside our bodies", rather than external sources. The vestibular system responds to changes in head position and is critical to balance and postural security. The receptors are located in our inner ear. Anyone who has ever had an inner ear infection or vertigo knows what happens when this system is out of whack! The proprioceptive system is what gives us our internal awareness of where our body parts are in space. It is critical to spatial awareness and coordinated movement. The receptors for proprioception are located in our joints and muscles, and they respond to compression of joints or movement (exercise). People or animals who have suffered a stroke or other head injury often experience a loss of proprioceptive function and tend to have very impaired movements.

Of particular importance when talking about TTouch is the tactile system. This system is actually very specific. Not only can we perceive temperature, pain, and vibration, but also the

difference between light touch and pressure touch. The receptors for each of these modalities are specific and are located in the skin and other membranes such as the mouth. The tactile system is our first communication system and serves two purposes: The first is protective and carries the signals about temperature, pain, and light touch. Light touch receptors detect very subtle movement of the hair on the skin, for instance when a small bug crawls on your arm. It is alerting and draws our attention immediately, as in "get that bug off my body now!" The second purpose is discriminatory and carries signals about vibration and pressure touch. Pressure touch receptors are located just under the skin surface, and allow us to detect where we were touched, for how long, and how much pressure was applied. This is actually the type of touch receptor activated when we use TTouch on the body. It is interesting to note that pressure touch tends to be calming and we will see why in the next section.

Processing – How Information Is Transferred and Interpreted

At its most basic level, TTouch is a form of communication. We are giving information to the nervous system, which then processes and interprets that information. We can give information to the body using our hands to perform various TTouches, using other tools such as a wand, feather, or body wrap and through leading an animal in various movements over the confidence course. In other words, we are giving tactile, proprioceptive and vestibular input to the sensory part of the nervous system. Thanks to major advances in neuroscience over the past twenty years, scientists now recognize a complex communication system powered by chemicals known as neurotransmitters and neuropeptides. Candace Pert refers to these chemicals as an informational network between the various systems within the body, and virtually every cell.

There are three classes of neurotransmitters, each having a specific function in terms of how they respond to information (sensation). Some excite cells or "turn the volume up" and some inhibit cells, or "turn the volume down." The class that we can influence by giving specific input or



sensations (tactile, proprioceptive, and vestibular), are called Biogenic Amines and includes Serotonin, Dopamine, and Norepinephrine. The names are not so important, but guess what these neurotransmitters do? They are the cell programmers! The function of these chemicals in the body is very widespread and they are critical to our survival mechanisms of eating, drinking, reproduction, and sleep. They also are key to arousal, motivation, emotion, and pain relief. It is thought these neurotransmitters are the major link between the nervous, endocrine and immune systems. Much has been written on the relationship between stress and digestive and immune disorders.

You may recognize Serotonin as being associated with positive emotional states, and often people with low levels of Serotonin experience depression. It helps us to feel safe, secure, and content. Proprioceptive input (movement, which is what we do with groundwork) enhances Serotonin release. Sensual pleasures found in nature also enhance Serotonin. (This includes interacting with animals)! In states of stress, especially chronic stress, Serotonin is depleted and Norepinephrine is increased. Norepinephrine is the chemical of activation and arousal. It contributes to the sympathetic response of fight, flight, freeze, and fool around. Of course we need a certain amount

of arousal in order to focus or pay attention. New situations or novel experience (non-habitual) enhances Norepinephrine release, but too much can result in reactive or aggressive behavior. Dopamine has a significant impact on the emotional centers of the brain, allowing us to feel pleasure and is associated with bonding and attachment. It also impacts motivation and focused thinking. Pressure touch (the type of input done with TTouch) enhances the release of Dopamine.

Another important aspect of sensory processing is how sensation is carried through the nervous system to specific areas of the brain. There are separate pathways that carry specific sensations. As a student in PT school I had to memorize these pathways with weird names like the Spinothalamic tract, which isn't very useful to anyone! We really only have to remember the two general functions of the pathways. One pathway carries protective sensations of pain, temperature, and light touch. The other pathway carries discriminative sensations like pressure touch, proprioception, and vibration. When we look at the difference between the two pathways in the chart below, it is interesting to see how the sensations associated with TTouch (pressure touch) and Groundwork (proprioception) appear to be carried by the Discriminative Pathway, and result in the type of responses we often observe in the animals we work with.

Protective Pathway	Discriminative Pathway
Carries pain, temperature, light touch	Carries vibration, proprioception, pressure touch
Older, more primitive system	Newer, more sophisticated system
Faster, imprecise, can't tell exactly where contact was made	Slower, precise, can tell exactly where contact was made
Often response is avoidance	Usual response is approach
Can trigger sympathetic response	Can trigger parasympathetic response
Evaluates information – do we need to be concerned	Carries information that encourages us to learn and explore
Activates and energizes	Calms and organizes

From the chart we can also see why the body wrap may have such a significant effect on animals in terms of increasing focus, calming, and improving body awareness. When applied to an animal or person, the body wrap provides pressure touch, as well as enhancing the brain's perception of where the body is in space.



Response – The Effect of Sensory Processing

The ability to adequately recognize and process sensory information is what enables people and animals to respond to the world around them. The type of input greatly influences our responses. Too much stimulation can be overwhelming and too little input does not keep us interested or focused. Therapists who use sensory integration as a treatment for kids with sensory processing disorders often refer to the “Just Right Challenge,” giving the appropriate amount of new information (sensation) to encourage learning without overloading. We intuitively apply this principle when working with animals using TTouch and Groundwork. By carefully observing the animal’s responses to the work we know when to change the type of input, either by changing to a different TTouch, moving to a less threatening part of the body, changing the pressure, etc. When doing groundwork we often stop and allow the dog to come into a state of physical balance and simply process the experience for a moment.

Responses to sensory information can be physical, emotional, and behavioral. Physical responses include changes in muscle tone (release of tension), postural adjustments (tucked tail to relaxed tail), and other internal physiological changes like respiration rate, blood flow, etc. As sensory information is relayed to many areas of the brain associated with emotional processing, we often see shifts in an animal from a fearful, anxious state to a more calm and focused state. Of course we can easily observe behavioral responses ranging from arousal (fight, flight, fidget, freeze), to more exploratory behavior and adaptive responses. The most vivid example of this is seen when working with a reactive dog using the sequence of slowly introducing first a neutral dog and then other dogs while working in the confidence course. As we lead the dog through the confidence course (proprioceptive input), making changes in direction and stopping in balance (vestibular input), we also occasionally stroke with the wand or do a few TTouches (pressure touch). As we know from the discussion above, this type of sensation is calming and organizing, and helps to shift the dog from a state of fear and arousal to a more relaxed state. When this happens, we often observe that the dog can then make a more appropriate choice when in the presence of another dog, such as giving a

calming signal and just looking away. In other words, the dog **learned** an adaptive response!

Conclusions

While this is a fairly simplified and condensed version of the neurophysiology of sensory processing, it does give us one perspective to describe how the Tellington Method influences the nervous system, and indeed the function of the cells. In teaching workshops and trainings, my goal is to help my clients and students understand that we can have a significant influence on an animal’s behavior and emotional state simply by the way in which we give information. Using TTouch, our tools, and groundwork we can shift an animal from a state of arousal or fear to a state of calm focus, creating the optimal opportunity for learning to take place, or self-healing to occur.

References

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