



SENSORY FACTS & HACKS

- Proprioceptive input is considered the “Magic Pill” for sensory modulation because it’s almost always helpful and organizing. When in doubt, choose proprioceptive input.
- Proprioceptive receptors are located in muscles, joints, and tendons. They are activated through contraction or elongation of muscles as well as deep pressure input.
- Heavy work, weight-bearing, resistive exercise, massage, and joint compressions are all forms of proprioceptive input.
- Proprioception is what allows me to touch my nose with my eyes closed. It is my first sensory system to go if I have too much to drink – that’s why this is a test of sobriety.
- Proprioceptive input almost always helps us get to that “just right” level of modulation. It’s helpful if we are over- OR under-stimulated. Therefore it is always a safe choice.
- We as a species are not over-responsive to proprioceptive input. Therefore we don’t have to worry about “over-dosing” someone on proprioceptive input.
- Weighted vest guidelines – Most experts recommend up to 5% of the child’s body weight in the vest. Recommended wear time is between 20 and 40 minutes then leave off for at least that long.
- Weighted blanket guidelines – Research on adults showed that as long as the adult reported being comfortable, there were no negative side effects due to weight (blood pressure, respiratory rate, etc.). Most adults and children prefer about 10-15% of their body weight in the blanket.
- Guidelines for sleeping under a weighted blanket. If the following three conditions are not met, close supervision during awake times only is recommended for use of a weighted blanket:
 - Over the age of three
 - Able to recognize and express discomfort
 - Able to crawl out from under it or remove it independently



- Therapy balls provide both proprioceptive input as well as vestibular input. The proprioceptive input comes from contraction of some muscles in order to be stable on a dynamic object. The pressure of the ball against our body parts is also proprioceptive input. The vestibular input comes from activation of our balance mechanism as well as the movement through space the ball can provide.
- Calming forms of vestibular input include movement that is linear, uni-directional, slow, rhythmic, and predictable.
- Alerting forms of vestibular input include movement that is multi-directional, fast, and unpredictable.
- Vestibular input has a long-lasting effect. The effects of ten to twenty minutes of intense vestibular input can last up to eight hours.
- ALERTING vestibular activities that can be done with a therapy ball: inversion (on back with head down) to get beanbags, bouncing on ball, prone on belly rolling back and forth rapidly to catch self with hands and feet.
- CALMING activities that can be done with a therapy ball: using the ball to apply deep pressure to child lying on a mat, gentle rolling back and forth with child prone on ball, child sitting on ball to gently rock back and forth.
- JUST RIGHT activities that can be done with a therapy ball: sitting on ball rather than a chair, prone over ball to put together a puzzle, exercises such as sit-ups or push-ups.
- Compression garments provide deep pressure input which is typically calming and organizing. These are great for kids with poor body awareness (usually due to under-responsiveness to vestibular input) and kids who seek lots of proprioceptive input.
- Compression garments are also more appropriate than weighted ones for kids with low muscle tone. Those kids are already having trouble fighting gravity and weighted garments make that task even more difficult.
- Compression garments can be left on all day if desired. Some research indicates true “habituation” doesn’t happen with compression garments because we continue to breathe and move against them. Therefore all-day wear can be beneficial and the garments can go unnoticed if worn under regular clothing.



- Mini-trampolines are alerting (green arrow) in nature, but backyard trampolines tend to be “just right” (yellow arrow). This is because kids engage their whole bodies more on backyard trampolines. They provide an amazing amount of input in a short amount of time and are beneficial for both over- and under-responders.
- Camelbak water bottles require you to gently bite the straw while sucking against a resistive valve. Therefore, drinking from this requires a lot of heavy-duty oral input. This type of input is calming or “just-right” for most people.
- This iPod is playing iMusic from Volitional Thought House (website is <http://www.vth.biz/driver/imusic>). iMusic offers music to relax (currently playing), improve focus, enhance sleep, and much more.
- Prior to 1994, babies were typically placed in the fetal position on their tummies for sleep. This position provided a lot of proprioceptive input to all of the major joints in the babies’ bodies. In 1994, the “Back to Sleep” campaign was initiated to decrease the risk of Sudden Infant Death Syndrome. We have seen the average age of walking go from 9-12 months 20 years ago to 12-15 months today. This change is believed to be due to back-sleeping as well as the over-use of bouncer seats, exersaucers and the overall lack of good old-fashioned floor-time.
- Between birth and six weeks, swaddling is recommended to replace the proprioceptive input that used to be received through tummy-sleeping. Encourage flexion of the arms and legs and swaddle the baby snugly. Once baby is showing signs of more upper extremity control and/or interest in rolling, swaddling should cease.
- Yoga mats can be used to swaddle older kids in activities such as “Tortilla Time”
- Hand Exercisers are a great form of socially acceptable input for older kids and teens.
- Calming visual input can be helpful at bedtime for many kids on the Autism Spectrum, such as lava lamps, electronic aquariums, and calming videos.
- TV and videos for children are controversial because research shows that for most of us, screen-time increases our cortisol level (stress hormone) which is counter-productive to sleep. For kids on the spectrum and over-responders in general, this is more of a grey area.



- Their cortisol level is already high and these calming forms of visual input don't increase that level much further. Baby Einstein videos and the "Hide Em In Your Heart" (children singing scripture) videos are some great options for calming videos.
- Bilibos have a hundred uses. Kids love to be creative with these, and spinning in it is a great activity. Kids can use their own power or you can ask them to hug their knees and you can spin them. Try it out for yourself!
- A few drops of a calming essential oil (such as lavender) can be put on a bracelet for a child to wear. It is always accessible to the child and it is socially acceptable as well.
- Metronomes set to 60 beats per minute have been shown to be beneficial for many people in enhancing focus. Rhythm itself is organizing. Also, 60 bpm is the average rate of the adult resting heartbeat and is therefore modulating.
 - Auditorily, the theory is that metronomes give the brain something rhythmic and predictable to latch on to in order to help you disregard the non-rhythmic and non-predictable sounds in the environment.
- The two most intense forms of vestibular input are spinning and inversion (being upside down).
 - Spinning is contraindicated for people with seizure disorders.
 - Inversion with Bean Bag Toss – This is a great alerting activity that provides a lot of proprioceptive and vestibular input simultaneously. With the child on his back over a ball, have him reach back to get a beanbag then pull up using his own core strength as much as possible. Once sitting upright, name a target for him to throw the beanbag at (or have buckets in various positions on the floor).
- Coffee Grinder – Strength required! Support yourself on one arm while "walking" your body in a circle around that arm. Then change arms and directions. Great proprioceptive and vestibular input!
- Dots and Squeezes – Use right thumb to press firmly in left palm to make a "dot." Then travel up left arm making a series of squeezes along the way. Switch hands/arms and repeat.