OT Mastery

Sensory Intervention: Does It Have a Biological Evidence Base?

1. What sensory system contains structures called the saccule and utricle?

A. Auditory system
B. Vestibular system
C. Olfactory system
D. Tactile system

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2. Research shows that individuals with ASD and SPD have differences in what lobes of the brain?

A. Auditory and somatosensory processing lobes
B. Visual and olfactory lobes
C. Tactile and gustatory lobes
D. Frontal lobe

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3. What can a therapist takeaway from the evidence related to Dunn's Four-Quadrant Model of Sensory Processing?

A. There is no reliable evidence looking at the credibility of Dunn's Four-Quadrant Model of Sensory Processing.
B. The evidence shows there is no credibility to Dunn's Four-Quadrant Model, since research has demonstrated a lack of reliability and low validity to such methods.
C. Therapists can potentially use Dunn's Four-Quadrant Model to structure sensory interventions focused on vestibular and tactile input, but not for interventions focused on the other sensory systems.
D. While there was a small sample size in the study that assessed this model, therapists can consider the Four-Quadrant Model as a reliable structure for sensory interventions.

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4. If a therapist is treating a patient with Autism Spectrum Disorder and related sensory concerns who has not officially been diagnosed with Sensory Processing Disorder, what intervention can they likely use during treatment due to its solid evidence base?

A. Deep pressure
B. Joint mobilization
C. Chiropractic adjustments
D. Craniosacral therapy

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5. While providing music-based interventions and other auditory-based interventions to individuals with ASD, what two important considerations must therapists keep in mind?

A. Therapists can only provide music-based interventions in hospital settings under the supervision of the patient's doctor; Therapists must also exclude parents from such treatment sessions so the patient can focus as much as possible.
B. Therapists must avoid calling their interventions music therapy, since that is a separate discipline with an independent scope of practice; Therapists should also focus on stimulating the vagus nerve alongside such interventions for maximum effect.
C. Therapists should focus their plan of care for all patients with ASD on auditory-based interventions, since this is a priority in order to improve their overall function; Therapists should provide all treatments involving music and other auditory interventions in conjunction with music therapists via co-treatments.
D. Therapists should aim to provide only a little music therapy and related auditory interventions, since those with ASD can be overly sensitive to noise of any kind; Therapists should also refer all patients with ASD to music therapists for evaluation.

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6. Knowing that the evidence states individuals with ASD have lower heart rate variability than peers without ASD, what is an appropriate action for therapists to take when addressing sensory concerns in individuals with ASD?

A. Joint mobilization can be used to improve a patient's interoception and heart rate variability
B. Light touch can be used to improve a patient's interoception and heart rate variability
C. Deep pressure can be used to improve a patient's interoception and heart rate variability
D. Biofeedback focused on deep breathing can be used to improve a patient's interoception and heart rate variability

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7. Is there reliable evidence to support the use of meditation to address sensory concerns?

A. There is some evidence that explores the link between meditation and sensory concerns, but none of the studies are reliable and none found any strong connection between the two variables
B. No, there is no evidence that explores the link between meditation and sensory concerns
C. Yes, there is evidence to support the benefits of meditation forms like PNEIMED and mindfulness meditation to increase heart rate variability
D. Yes, there is evidence to support the benefits of meditation forms like PNEIMED and mindfulness-based stress reduction and related meditations to lower cortisol levels in individuals with sensory concerns

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8. If a patient presents to an OT and requests the addition of progressive muscle relaxation to their treatment sessions or their home program, can a therapist feel comfortable doing so based on the evidence?

A. There is sufficient evidence supporting the use of PMR for anxiety, sensory concerns, and depression; since there are no contraindications for this technique, therapists can feel

comfortable incorporating it as part of home recommendations and treatment
B. There is some evidence to support the benefits of PMR in lowering blood pressure, regulating heart rate, and lowering salivary cortisol levels as well as assisting with symptoms of depression, pain, and anxiety when used for several weeks
C. While there is no risk to telling a patient to they can perform PMR at home as long as they do not have heart conditions or high blood pressure, there is likely not much benefit to PMR as an intervention for sensory concerns alone
D. There is evidence to support the benefits of PMR, but only for individuals who are experiencing dental anxiety; there is no carryover that allows it to be used with patients who have health conditions or are experiencing other health concerns

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9. A 10-year-old patient is becoming overstimulated and has his vital signs monitored due to several medical complications. The therapist notices his blood pressure rises as he becomes more overstimulated. What mechanisms are taking place in the body to make this happen?

A. Hormones such as norepinephrine cause blood to flow more quickly through the child's arteries, which leads to an increase in diastolic blood pressure but not systolic blood pressure.
B. Overstimulation and other external stressors trigger the baroreflex, which causes blood to divert from certain arteries away from the heart and concentrate in the arteries near the heart. This is what causes an increase in overall blood pressure measurements.
C. Hormones such as adrenaline cause blood to flow more quickly through the child's arteries, which leads to an increase in systolic blood pressure but not diastolic blood pressure.
D. A surge of certain hormones in the body (such as aldosterone and cortisol) signals the child's blood pressure to increase. This happens by an increase in the pressure of blood flow or constricting of the arteries, which reads as an increase in both systolic and diastolic blood pressure measurements.

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10. What is an occupational therapist's role in addressing repetitive behaviors in those with ASD?

A. It is outside an OT's scope of practice to address repetitive behaviors, as this falls under ABA's scope
B. Occupational therapists can address repetitive behaviors if they negatively impact a patient's function
C. Repetitive behaviors can be a goal area in occupational therapy practice just as ADLs and IADLs
D. There is no rationale for OTs to address repetitive behaviors during treatment

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11. What interventions can an occupational therapist use to address repetitive behaviors in a 9-year-old male with ASD?

A. Evidence shows that aromatherapy blends and related olfactory interventions, music, light touch, and vibratory touch all may be effective at lowering cortisol levels in those with ASD; since cortisol levels are correlated with repetitive behaviors and ASD, the incorporation of such interventions is justified for this patient
B. OTs should not be addressing repetitive behaviors as part of their plan of care

C. Evidence shows that deep pressure, diaphragmatic breathing, physical exercise, and mindfulness meditation all may be effective at lowering cortisol levels in those with ASD; since cortisol levels are correlated with repetitive behaviors and ASD, the incorporation of such interventions is justified for this patient
D. There is little to no evidence regarding interventions that can assist with repetitive behaviors, so this should not be addressed by the therapist

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12. What is the best way to measure alpha-amylase and why?

A. The only way to measure alpha-amylase is through a hair test, since this offers a scoping view of levels over the past 90 days.
B. Salivary and blood test are both ideal, since they offer a short-term and long-term view of someone's alpha-amylase levels.
C. The most effective way to measure alpha-amylase is through a salivary test, since this is the way its most sensitive to bodily stress.
D. A blood test is most ideal, since this offers a view of long-term levels of alpha-amylase.

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13. An occupational therapist wishes to begin using yoga as part of treatment for an 80-year-old woman who was recently diagnosed with macular degeneration and is experiencing an increase in related sensory concerns. Is there evidence to support the inclusion of this intervention?

A. Yes. Certain forms of yoga - namely laughter yoga - are an evidence-based way to improve quality of life, lower cortisol levels, and lower blood pressure
B. No. There is no evidence that core stabilization yoga can positively impact cortisol levels or other biomarkers.
C. No. There is no evidence that Sahaja Yoga Meditation will lower cortisol levels in this demographic.
D. Yes. Sahaja Yoga meditation and laughter yoga are both evidence-based ways to improve symptomatology and self-esteem for older adults with vision concerns.

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14. Is it possible for therapists to measure a patient's heart rate variability for the sake of sessions?

A. There is no way to measure HRV outside of a blood test.
B. The only equipment that can measure heart rate variability is an EKG machine, which is usually not available to therapists and requires specialized training to both use and read results from.
C. Therapists can use wearable devices (such as fitness trackers and watches) to track and monitor a patient's HRV, both outside of sessions and for the sake of monitoring this vital during treatment.
D. Therapists can either use a finger prick and blood test or a wearable device (such as a fitness tracker or watch) to measure HRV.

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15. A 15-year-old girl with ADHD has a strong preference for orange essential oil. She reports to the therapist they make her feel better, especially during stressful situations at school. Is there any

evidence behind the effects of this particular oil?

A. Evidence shows benefits associated with only fennel essential oil and not orange essential oil, so there is no science behind this patient's self-reported technique.
B. Evidence shows benefits associated with only lavender essential oil and not orange essential oil, so there is no science behind this patient's self-reported technique.
C. There is no evidence to support positive benefits associated with orange essential oil.
D. Some evidence shows that, when inhaled, orange essential oil can decrease pulse and respiratory rate. This may contribute to lower anxiety overall, which could explain why she likes it during stressful situations.

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16. A therapist is attending a conference with their colleague who reports that music offers more therapeutic benefits than aromatherapy and related olfactory interventions. Is there any evidence to support this statement?

A. Some evidence shows that olfactory-based interventions are more effective at lowering pulse and respiratory rate than music is, which can lead to a simultaneous decrease in anxiety. However, this is not a blanket statement, since some individuals may respond better to music and auditory-based interventions depending on their needs and preferences.
B. Some evidence shows that music-based interventions are more effective at lowering pulse and respiratory rate than olfactory-based interventions are, which can lead to a simultaneous decrease in anxiety. However, this is not a blanket statement, since some individuals may respond better to olfactory-based interventions depending on their needs and preferences.
C. There is no evidence to support the therapeutic use of music or olfactory-based interventions during sessions.
D. There is minor (but unreliable) evidence to support the benefit of music during sessions, but no evidence for olfactory-based interventions.

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17. A therapist is interested in incorporating music into their first session with an 8-year-old girl with ASD who exhibits auditory seeking behaviors as well as tactile defensiveness. How can she structure treatment to make this beneficial?

A. The therapist can trial calming, instrumental music in the background of sessions that focus on tactile activities such as deep pressure.
B. The therapist should tell the child she can listen to music as a reward after their session is complete.
C. The therapist can tell the parents to bring in their own music for the child to listen to with headphones during the entire treatment session.
D. The therapist should tell the child that music can be harmful and trigger symptoms, and she should not listen to it any longer.

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18. A therapist has been treating an 11-year-old boy with ADHD who recently began demonstrating defensiveness to certain sounds. He is in the process of being diagnosed with SPD. However, his OT sessions often focus on fine motor skills. How can his plan of care be adjusted to better suit his needs?

A. The therapist should work around these sensory concerns in a way that attempts to minimize its impact on treatment.
B. The therapist should discuss new goals with the patient's parents that focus on his sensory needs.
C. The therapist should address auditory goals during sessions but keep his fine motor goals in place.
D. The therapist should complete a re-evaluation and speak with the patient's parents to potentially address other goals as a result of his change in status.

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19. A therapist is working with a 41-year-old woman who recently sustained a stroke. She is demonstrating significant overstimulation and fear responses related to bathing, specifically regarding the temperature of the water. What techniques can the therapist incorporate to assist the patient with this ADL?

A. The therapist should begin completing co-treats with physical therapy, speech-language pathology, and music therapy. This will offer a greater perspective in treating the patient's sensory needs.
B. The therapist should refer this patient to a psychologist to address this fear-based response.
C. After completing an evaluation and interview to gain insight into the patient's needs and preferences, the therapist can potentially incorporate sensory techniques such as deep pressure, aromatherapy, and music to calm the patient in preparation for this task. In addition, the therapist can trial sponge baths to assist in grading the temperature of the water. They may also benefit from self-care routines to decrease some of the unexpectedness surrounding the task along with assistive technology such as anti-scald valves to improve autonomy in bathing, if the patient is able to achieve this level of independence.
D. The therapist should speak with nursing home aides to increase the number of staff during this patient's bathing time. This will not only make the patient feel more comfortable, but it will offer them the level of assist they need for this period of time.

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20. A therapist is working with a 21-year-old male with ASD who is recently having difficulty transitioning between work roles in an office setting. He requests help from his therapist to improve his productivity and ability to self-regulate during the workday. He reports particular concerns related to becoming overstimulated during break time and in the morning when workers arrive. What interventions might a therapist offer to this patient?

A. After completing an evaluation and interview to gain insight into the patient's needs and preferences, the therapist can potentially incorporate sensory techniques such as deep pressure, aromatherapy, and music to calm the patient in preparation for work.
B. The therapist can complete sensory evaluations with this patient as well as interview them to determine the source of the overstimulation (visual input, auditory input, or a combination of both is the most likely). The therapist can then trial various auditory-based interventions as well as equipment such as headphones/earbuds. Accommodations such as the ability to leave his desk for a period of time during high-traffic hours or work in alternative, less stimulating settings can also help this patient as he navigates sensory therapies with OT.
C. While it's clear this patient has sensory concerns, this appears to be under the scope of practice for an employment counselor since the concerns are work-related. If the patient can no longer navigate their work environment due to these difficulties, they may also benefit from

vocational rehabilitation to find an alternative work setting or work role that is a better fit for their skills, needs, and preferences.
D. The therapist should observe the patient at work for several days, speak with their colleagues and supervisor regarding their concerns, and consider moving the patient's location as a way to avoid these work-related difficulties. The patient is of an age where sensory-based treatment is unfortunately unlikely to help him, so the only option for him are environmental modifications, equipment, and accommodations to avoid all forms of overstimulation in this setting.
