

FLEX CEUs



Sensory Integration for Autism Spectrum Disorder (ASD): Enhancing Function Through Therapy



Introduction	3
Section 1: Understanding Autism Spectrum Disorder and Sensory Processing	3
Overview of Autism Spectrum Disorder (ASD)	4
Common Sensory Processing Challenges	5
Introduction to the Sensory Systems.....	7
Impact of Sensory Processing Difficulties	12
Section 1 Key Words	14
Section 1 Summary.....	15
Section 2: Foundations of Sensory Integration Therapy	15
Definition and Principles	16
Importance of Sensory Integration in Improving Quality of Life	18
Recognizing Sensory-Seeking vs. Sensory-Avoidant Behaviors.....	20
Section 2 Key Words	22
Section 2 Summary.....	23
Section 3: Assessment and Clinical Decision-Making	23
Screening Tools and Standardized Assessments.....	23
Clinical Observations and Caregiver Input.....	26
Identifying Red Flags and Establishing Intervention Priorities.....	28
Section 3 Key Words	29
Section 3 Summary.....	29
Section 4: Intervention Strategies and Therapeutic Techniques.....	29
Evidence-Based Sensory Integration Interventions	30
Activities To Support Sensory Processing, Motor Development, And Self-Regulation	32
Adaptive Strategies for Clinic, School, and Home Environments	34
Practical Strategies for Integrating Sensory-Based Approaches into Clinical Practice .	35

Section 4 Key Words	37
Section 4 Summary.....	37
Section 5: Professional Roles, Collaboration, and Continued Learning	38
Roles of PTs, PTAs, and OTs in Sensory Integration Therapy	38
Scope of Practice and Ethical Considerations	40
Interdisciplinary Collaboration with Educators, Caregivers, and Other Professionals	42
Adapting Interventions to Individual Needs	43
Resources for Ongoing Professional Development	45
Section 5 Key Words	47
Section 5 Summary.....	47
Case Study 1	48
Reflection Questions	48
Responses.....	49
Case Study 2	50
Reflection Questions	50
Responses.....	51
Conclusion	52
References	53

Introduction

This course provides a comprehensive overview of Autism Spectrum Disorder (ASD) with a specialized focus on the sensory processing challenges frequently experienced by individuals with ASD. Designed for physical therapists, physical therapist assistants, and occupational therapy professionals, the course examines the theoretical foundations and practical applications of sensory integration therapy. Participants will understand how dysfunction in the vestibular, proprioceptive, tactile, auditory, and visual sensory systems can impact motor coordination, self-regulation, and participation in daily activities. The course outlines how to differentiate between sensory-seeking and sensory-avoidant behaviors, identify clinical red flags, and apply standardized screening tools alongside caregiver input to inform therapeutic decision-making. Through a review of evidence-based practices, the course presents Participants will be equipped with the knowledge and tools necessary to integrate sensory-based interventions into clinical practice, adapt strategies to meet individual client needs, collaborate effectively across disciplines, and uphold ethical and scope-of-practice considerations in the application of sensory integration therapy. This course supports the advancement of professional skills and contributes to improved functional outcomes for individuals with ASD through research-informed care.

Section 1: Understanding Autism Spectrum Disorder and Sensory Processing

This section provides an introduction to Autism Spectrum Disorder (ASD) with a focus on the sensory processing challenges commonly encountered by individuals with ASD. It will explore the foundational sensory systems, vestibular, proprioceptive, tactile, auditory, visual, and others, and examine how dysfunctions

in these systems can significantly affect movement, coordination, and participation in daily activities. Understanding these sensory challenges is crucial for professionals working with individuals with ASD, as it helps to explain how sensory sensitivities or deficits can impact functional outcomes. This section will lay the groundwork for recognizing and addressing sensory processing difficulties, setting the stage for more in-depth exploration of intervention strategies in later sections.

Overview of Autism Spectrum Disorder (ASD)

References: 1, 2

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by persistent deficits in social communication and social interaction, accompanied by restricted, repetitive patterns of behavior, interests, or activities. The term “spectrum” is used to describe the wide variability in the type and severity of symptoms observed among affected individuals. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR), the core features of ASD include challenges in social-emotional reciprocity, difficulties in the use of nonverbal communicative behaviors, and impairments in developing, maintaining, and understanding relationships. Additionally, individuals with ASD often exhibit stereotyped or repetitive movements, an insistence on sameness or inflexible adherence to routines, highly restricted interests, and atypical responses to sensory stimuli.

The etiology of ASD is multifactorial, involving a complex interplay of genetic and environmental influences. A strong genetic component has been identified, with numerous genes and genetic variants contributing to susceptibility, though no single genetic anomaly accounts for all cases. Environmental risk factors, such as advanced parental age, prenatal exposure to certain medications or toxins, and

perinatal complications, have also been implicated in increasing the likelihood of developing ASD. Current prevalence estimates indicate that approximately 1 in 36 children in the United States are diagnosed with ASD, with the condition being approximately four times more common in males than in females. While ASD can be reliably identified by the age of two to three years, early signs may be present during infancy, including diminished eye contact, reduced response to social cues, and delayed language development.

The clinical presentation of ASD varies, ranging from individuals with profound intellectual and functional impairments to those with average or superior cognitive abilities who primarily struggle with social communication and behavioral rigidity. Early identification and intervention are essential in optimizing developmental outcomes. Evidence-based management strategies typically involve a multidisciplinary approach, incorporating behavioral therapies such as Applied Behavior Analysis (ABA), speech and language therapy, occupational therapy, and physical therapy when indicated. Educational support, individualized intervention plans, and pharmacological treatment for associated symptoms such as irritability, anxiety, or attentional difficulties may also be employed. Although there is no known cure for ASD, comprehensive, individualized care strategies significantly improve the quality of life and long-term functioning for many individuals on the spectrum.

Common Sensory Processing Challenges

References: 2, 3

Sensory processing challenges are a hallmark feature in individuals with ASD, with evidence indicating that as many as 90% of individuals on the spectrum experience atypical sensory responses that significantly influence functional performance, social participation, and quality of life. These sensory differences

arise from atypical central nervous system processing and integration of sensory input, resulting in hyperresponsiveness (sensory over-responsiveness), hyporesponsiveness (sensory under-responsiveness), or sensory-seeking behaviors across one or more sensory modalities, including auditory, visual, tactile, vestibular, proprioceptive, gustatory, and olfactory systems.

Hyperresponsiveness may present as intense aversive reactions to commonplace stimuli such as loud sounds, bright lights, or certain fabric textures, often resulting in behaviors like covering the ears, avoiding eye contact, or withdrawing from environments perceived as overwhelming. Conversely, hyporesponsiveness can manifest as diminished or delayed reactions to sensory cues, such as an indifference to pain, temperature, or socially salient stimuli, which can compromise personal safety and impede reciprocal social interactions. In addition, many individuals with ASD display sensory-seeking behaviors, engaging in repetitive motor actions such as spinning, rocking, jumping, or pressing against objects or people, often as self-regulatory strategies to achieve sensory modulation.

These sensory processing differences extend to vestibular and proprioceptive systems, often contributing to challenges in postural control, balance, bilateral coordination, and motor planning (dyspraxia). Vestibular processing difficulties may manifest as gravitational insecurity, poor equilibrium responses, or a preference for intense vestibular input, while proprioceptive challenges can result in clumsiness, poor body awareness, inefficient movement patterns, and difficulty grading force during motor tasks. Additionally, tactile sensitivities may affect self-care activities, social touch, or tolerance of clothing, and olfactory hypersensitivities may lead to avoidance of certain environments or objects with distinct smells. Of particular clinical significance is the prevalence of gustatory and oral sensory processing challenges, which frequently manifest as selective or restrictive eating behaviors. Many individuals with ASD exhibit strong preferences

or aversions to specific food textures, temperatures, flavors, and consistencies. This may result in highly limited diets, food refusal, or strong ritualistic eating patterns, significantly impacting nutritional status, mealtime participation, and family routines. Oral hyporesponsiveness may lead to a preference for intensely flavored, spicy, or crunchy foods to achieve adequate oral sensory input, while oral hypersensitivity may cause aversions to mixed textures, certain temperatures, or unfamiliar flavors, often leading to gagging or refusal behaviors.

For physical and occupational therapists, recognizing the multidimensional impact of these sensory processing differences is essential in developing comprehensive, individualized intervention plans. Assessment should involve a thorough sensory profile evaluation, including observation across natural contexts and standardized assessment tools where appropriate. Intervention strategies may incorporate principles of sensory integration therapy, individualized sensory diets, proprioceptive and vestibular-based activities, oral-motor exercises, and structured exposure to new sensory experiences in a graded, supportive manner. Additionally, environmental adaptations to reduce sensory overload and promote regulation, alongside collaborative work with families and interdisciplinary care teams, are critical in supporting optimal functional participation in self-care, play, social, and mealtime activities. A nuanced understanding of sensory processing patterns allows therapists to create interventions that not only address impairments but also capitalize on sensory preferences and strengths to facilitate meaningful, individualized outcomes.

Introduction to the Sensory Systems

References: 3, 4

Sensory processing differences are a core characteristic of Autism Spectrum Disorder, affecting how individuals perceive, interpret, and respond to sensory

stimuli in their environment. Research indicates that up to 90% of individuals with ASD experience atypical sensory processing patterns, which can manifest as hyperresponsiveness (sensory defensiveness), hyporesponsiveness (under-registration of sensory input), or sensory-seeking behaviors. These differences occur across multiple sensory systems and can significantly influence functional performance, participation in daily routines, learning, emotional regulation, and social interaction. A comprehensive understanding of these sensory systems and their clinical implications is essential for physical and occupational therapists, as sensory processing challenges often underlie behaviors and functional difficulties observed in individuals with ASD.

The vestibular system, housed within the semicircular canals and otolith organs of the inner ear, is responsible for detecting changes in head position, balance, and movement through space. Vestibular processing challenges in ASD may present as either hyperresponsiveness or hyporesponsiveness to movement-based activities. Hyperresponsive individuals may demonstrate gravitational insecurity, avoid swings, slides, and climbing activities, and exhibit significant distress during head position changes or when their feet leave the ground. In contrast, hyporesponsive individuals might appear indifferent to movement, demonstrate poor balance reactions, or fail to respond to hazardous situations appropriately. Many individuals with ASD also display vestibular-seeking behaviors, frequently engaging in repetitive motions such as spinning, rocking, or jumping to provide vestibular input that helps regulate their arousal state. Therapeutic interventions often incorporate structured, graded vestibular input, including linear and rotational movements through swings, obstacle courses, and balance activities to support postural control, spatial orientation, and sensory modulation.

The proprioceptive system processes information from muscles, tendons, and joints about body position, movement, and force production. Proprioceptive differences in individuals with ASD commonly manifest as hyporesponsiveness,

resulting in poor body awareness, clumsiness, and difficulty grading force during functional tasks such as writing, lifting, or carrying objects. These individuals may display a high pain threshold and reduced awareness of joint positioning, compromising movement efficiency and safety. Proprioceptive sensory-seeking behaviors are frequently observed and may include crashing into objects, leaning heavily against people or surfaces, engaging in deep pressure-seeking activities, and participating in heavy work tasks. Therapeutic management often involves integrating proprioceptive-rich activities such as pushing, pulling, carrying, or squeezing exercises, providing deep pressure input, and using weighted materials or compression garments to enhance sensory integration, promote regulation, and improve motor coordination.

The tactile system, responsible for detecting touch, pressure, temperature, and pain through mechanoreceptors in the skin, is one of the most commonly affected sensory systems in individuals with ASD. Tactile hyperresponsiveness, or tactile defensiveness, may lead to aversions to certain clothing textures, resistance to grooming activities such as haircuts or tooth brushing, and avoidance of messy play. Social touch may also be poorly tolerated, potentially affecting peer and caregiver interactions. Conversely, hyporesponsiveness to tactile input can result in delayed or absent responses to pain, temperature, or incidental touch, compromising personal safety. Some individuals may seek out tactile input by frequently touching objects, people, or textures. Intervention approaches typically include graded tactile experiences, desensitization activities, deep pressure input through weighted items or compression garments, and the incorporation of tactile activities into daily routines to improve sensory tolerance and functional participation.

Auditory processing differences in ASD often have profound effects on language development, attention, and environmental awareness. Auditory hyperresponsiveness may present as heightened sensitivity to everyday sounds,

leading to distress or avoidance behaviors in noisy or unpredictable environments. This can result in covering the ears, fleeing from sound sources, or displaying agitation in response to loud or unexpected auditory stimuli. Conversely, hyporesponsiveness may manifest as an apparent unawareness of spoken instructions, difficulty localizing sounds, or a reduced response to environmental cues such as alarms or approaching vehicles. Sensory-seeking behaviors might include a fascination with repetitive sounds, vocalizations, or close proximity to sound sources. Therapeutic strategies often involve modifying the auditory environment to reduce overstimulation, using noise-canceling headphones, providing structured auditory input, and implementing auditory integration activities to support tolerance and processing.

The visual system plays a central role in spatial awareness, environmental navigation, visual-motor integration, and social communication. Visual processing differences in individuals with ASD may involve hyperresponsiveness to bright lights, flickering patterns, or visually cluttered environments, which can lead to avoidance of eye contact or distress in stimulating settings. Hyporesponsiveness can result in delayed visual tracking, difficulty following fast-moving objects, or impaired depth perception, affecting functional mobility and participation in academic or recreational tasks. Sensory-seeking behaviors might include a fascination with light reflections, spinning objects, or visually repetitive patterns. Clinical interventions often involve environmental modifications to reduce visual clutter, structured visual supports such as visual schedules and social stories, and activities to enhance visual tracking, scanning, and processing.

The gustatory and olfactory systems, responsible for processing taste and smell, are closely linked and significantly influence feeding behaviors and environmental experiences in individuals with ASD. Gustatory and olfactory hyperresponsiveness may result in strong aversions to specific tastes, textures, food temperatures, or odors, leading to selective eating patterns, food refusal, and ritualistic mealtime

behaviors. These individuals might gag or become nauseated in response to certain food characteristics or environmental smells. Hyporesponsiveness, on the other hand, can manifest as limited detection of subtle tastes or scents, often resulting in a preference for intensely flavored, spicy, or textured foods. Sensory-seeking behaviors might include chewing on non-food objects, smelling objects repeatedly, or seeking strong-tasting foods. Therapeutic interventions typically involve oral sensory integration strategies, gradual exposure to novel tastes and textures, oral-motor exercises, and collaboration with feeding specialists and dietitians to address restrictive eating patterns and support adequate nutrition.

Finally, interoception, the internal sensing of physiological states such as hunger, thirst, pain, temperature, and emotional arousal, is frequently disrupted in individuals with ASD. Difficulties in interoceptive processing can lead to poor recognition of internal cues, resulting in challenges with toileting, appetite regulation, emotional awareness, and responses to physical discomfort. These challenges can contribute to difficulties in emotional regulation, behavioral outbursts, and difficulties participating in health-promoting routines. Therapeutic approaches may include mindfulness-based activities, explicit teaching of emotion identification and bodily sensations, and structured routines to support awareness and interpretation of internal states.

Sensory processing challenges in ASD are multidimensional, affecting multiple interconnected sensory systems with varying patterns of hyperresponsiveness, hyporesponsiveness, and sensory-seeking behaviors. These differences have a significant impact on functional performance, participation, social interaction, and overall quality of life. For physical and occupational therapists, an in-depth understanding of the sensory systems and their role in shaping behavior is critical for conducting comprehensive assessments and designing individualized, evidence-informed interventions. Interventions may involve structured sensory-based activities, environmental adaptations, sensory diets, interdisciplinary

collaboration, and caregiver education, all aimed at supporting sensory regulation, functional independence, and meaningful participation in daily life.

Impact of Sensory Processing Difficulties

References: 3-5

Sensory processing difficulties are a hallmark feature of Autism Spectrum Disorder (ASD) and exert a profound influence on an individual's ability to engage in movement-based tasks, develop coordinated motor patterns, and participate meaningfully in daily activities. When the brain has difficulty interpreting, integrating, or organizing sensory input from the environment and the body, it disrupts the foundational systems that support motor planning, balance, posture, and functional participation. These disruptions are often observed in the form of atypical movement patterns, dyspraxia, motor clumsiness, and challenges with activities of daily living (ADLs), significantly impacting an individual's independence, safety, and quality of life.

Movement and gross motor coordination are highly dependent on effective processing of vestibular, proprioceptive, tactile, and visual information. Individuals with ASD who experience hyperresponsiveness to sensory input may demonstrate avoidance behaviors during movement-based activities, leading to decreased opportunities for gross motor skill development. For example, vestibular defensiveness can cause reluctance to participate in activities such as swinging, climbing, or jumping, limiting exposure to experiences that develop balance, bilateral coordination, and postural control. Conversely, those with hyporesponsiveness may appear unaware of their body's position in space, display poor balance reactions, and experience frequent falls or difficulty navigating dynamic environments. This under-registration of vestibular and proprioceptive

cues contributes to diminished postural stability, delayed acquisition of motor milestones, and compromised safety awareness.

Fine motor skills, such as handwriting, buttoning clothing, or using utensils, are equally influenced by sensory processing abilities. Tactile hyperresponsiveness can interfere with manipulating small objects or tolerating certain textures, while proprioceptive difficulties may result in poor grading of force, affecting tasks that require precision and control. Additionally, individuals with ASD often exhibit praxis difficulties, which refer to challenges in motor planning and the ability to conceptualize, sequence, and execute unfamiliar or complex movements. Dyspraxia can manifest as clumsiness, difficulty imitating movements, or challenges in transitioning between motor tasks, contributing to frustration and avoidance of skill-based activities.

The impact of sensory processing difficulties extends beyond isolated motor challenges to affect performance in a wide range of daily activities and routines. Activities such as dressing, grooming, bathing, and toileting require the integration of multiple sensory inputs to guide sequencing, coordination, and appropriate force modulation. For instance, tactile defensiveness may lead to distress during grooming activities such as hair brushing or nail trimming, while proprioceptive hyposensitivity can result in inconsistent pressure during tooth brushing or difficulty fastening clothing. Similarly, challenges in interoceptive awareness, which involves sensing internal body states such as hunger, thirst, or the need to use the bathroom, can disrupt personal care routines and contribute to toileting accidents or irregular eating habits.

Sensory processing differences also influence participation in community, recreational, and educational activities. Environments that are visually busy, noisy, or unpredictable in terms of movement demands can overwhelm individuals with ASD, leading to withdrawal, emotional dysregulation, or behavioral outbursts. As a

result, children may avoid playground equipment, organized sports, or group activities that are essential for developing peer relationships and social-emotional competencies. In educational settings, auditory hypersensitivity may interfere with attention and learning, while vestibular and proprioceptive challenges can make it difficult to maintain an upright seated posture or follow multi-step classroom routines.

For physical and occupational therapists, recognizing the pervasive impact of sensory processing difficulties on movement and daily activity participation is essential for conducting comprehensive evaluations and developing individualized intervention plans. Therapeutic approaches should emphasize the integration of sensory-based activities into functional tasks, promoting sensory regulation while targeting specific motor and self-care goals. Interventions might include structured sensory-motor experiences, environmental modifications to reduce sensory barriers, and teaching compensatory strategies to support independence. Collaborative caregiver education is also critical, equipping families with strategies to create sensory-friendly home routines and community experiences that promote meaningful participation and skill acquisition.

Sensory processing difficulties in ASD have a far-reaching effect on motor performance, coordination, and engagement in daily routines. Addressing these sensory challenges through targeted, individualized, and evidence-based interventions is vital for enhancing functional outcomes, supporting self-regulation, and improving quality of life for individuals across the autism spectrum.

Section 1 Key Words

Hyporesponsiveness – A diminished or delayed response to sensory stimuli

Hyperresponsiveness - An exaggerated, aversive, or defensive reaction to sensory stimuli that are typically perceived as non-threatening or tolerable

Dyspraxia - a motor planning disorder characterized by difficulty in conceptualizing, sequencing, and executing novel or complex motor tasks

Section 1 Summary

This section introduced Autism Spectrum Disorder with a focus on the sensory processing challenges commonly faced by individuals with ASD. It examined the key sensory systems, vestibular, proprioceptive, tactile, auditory, visual, and how dysfunctions in these systems impacted movement, coordination, and daily activities. Understanding these challenges was essential for professionals working with individuals with ASD and set the foundation for exploring intervention strategies in later sections.

Section 2: Foundations of Sensory Integration Therapy

Sensory processing challenges are a key feature of Autism Spectrum Disorder, influencing movement, behavior, and daily participation. Sensory Integration Therapy (SIT) provides a structured, evidence-informed approach to support individuals in managing sensory input and promoting functional skills. This section introduces the principles of SIT, its role in improving quality of life, and the importance of identifying sensory-seeking and sensory-avoidant behaviors to guide effective, individualized interventions.

Definition and Principles

References: 6, 7

Sensory Integration Therapy (SIT) is an evidence-informed, neurodevelopmental approach designed to support individuals who experience challenges in processing and responding to sensory input from their environment. Originally developed by occupational therapist and neuroscientist Dr. A. Jean Ayres in the 1970s, sensory integration theory proposes that the brain's ability to organize and interpret sensory information from the body and surroundings is foundational for developing motor coordination, behavioral regulation, attention, emotional control, and adaptive participation in daily life. Ayres' early research established that when sensory processing is disrupted, it can interfere with learning, behavior, and daily functioning, especially in children with neurodevelopmental conditions such as Autism Spectrum Disorder.

At the core of sensory integration theory is the belief that difficulties in processing sensory information can disrupt the brain's ability to use sensory input effectively. This may lead to challenges in movement coordination, emotional regulation, attention, and engagement in meaningful, everyday activities. SIT aims to address these difficulties by enhancing the nervous system's capacity to process and integrate sensory input through active, guided, and therapeutic experiences. The ultimate goal is to support the development of more efficient, appropriate, and flexible responses to sensory stimuli, thereby improving the individual's ability to participate in daily routines, social interactions, and learning opportunities.

A key principle of SIT involves providing structured, individualized sensory experiences within a safe, therapeutic environment. Activities are thoughtfully tailored to target specific sensory systems, including vestibular (balance and movement), proprioceptive (body awareness through muscles and joints), tactile (touch), visual, auditory, and interoceptive (internal bodily sensations such as

hunger or heart rate) input. Therapy might include activities like swinging, jumping, climbing, deep-pressure games, or tactile exploration with different materials, all of which are selected to match the child's unique sensory needs.

Another foundational concept is the creation of a "just right challenge," where activities are designed to be challenging enough to promote new learning and adaptive responses, but not so difficult that they overwhelm or distress the child. This delicate balance encourages the child to gradually build skills in sensory processing and regulation while fostering resilience in managing a variety of sensory experiences. The therapist closely observes and adjusts the activity demands to support the child's engagement and success throughout the session.

Play-based, child-led engagement is also central to SIT. Recognizing that intrinsic motivation and meaningful participation enhance therapy outcomes, therapists use play-based, naturally rewarding activities that encourage the child to actively explore and respond to sensory experiences within a supportive, controlled environment. This approach honors the child's preferences and interests, making therapy more enjoyable, collaborative, and effective.

Finally, SIT emphasizes promoting adaptive responses, appropriate, functional, and flexible behaviors generated in response to sensory challenges. Through repeated, graded sensory experiences, the therapy aims to strengthen the individual's ability to regulate their reactions to sensory input, manage transitions, sustain attention, and interact socially with greater ease. Rather than isolating sensory modalities, SIT often addresses multiple sensory systems simultaneously within a single activity. For example, an activity might combine vestibular input from swinging, proprioceptive input from pushing off the floor, and tactile input from gripping various textures, mirroring the complex, multisensory nature of real-life experiences.

In clinical practice, Sensory Integration Therapy is typically delivered by occupational therapists with advanced training in sensory integration theory and intervention techniques. It is widely used for children with Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder (ADHD), developmental coordination disorder, sensory modulation disorder, and other neurodevelopmental conditions where sensory processing challenges interfere with functional participation. When integrated into a multidisciplinary care model, SIT can help improve attention, emotional regulation, motor planning, social participation, and academic engagement, providing meaningful, functional improvements in the child's everyday life.

Importance of Sensory Integration in Improving Quality of Life

References: 6, 8

Sensory processing difficulties profoundly affect the daily functioning and quality of life of individuals with Autism Spectrum Disorder. Many children with ASD experience disruptions in their ability to accurately register, interpret, and respond to sensory information from their environment and their own bodies. These disruptions can lead to challenges across multiple developmental areas, including motor coordination, emotional regulation, social participation, academic engagement, and activities of daily living. Sensory processing issues may manifest as hypersensitivity, hyposensitivity, or sensory-seeking behaviors across different sensory systems, contributing to difficulties managing daily routines and adapting to varied environments.

The impact of sensory processing difficulties extends beyond momentary discomfort, affecting a child's ability to fully engage in essential developmental activities such as play, learning, self-care, and social interaction. For instance, children with vestibular or proprioceptive processing challenges may struggle with

balance, postural control, and coordinated movement, limiting their ability to participate in gross motor activities, physical education, or playground play with peers. Tactile sensitivities can result in distress during grooming tasks like haircuts, tooth brushing, dressing, or bathing, leading to increased dependence on caregivers and avoidance of these important routines. Auditory sensitivities may cause a child to become overwhelmed in noisy environments such as classrooms, stores, or community events, resulting in heightened anxiety, behavioral outbursts, or social withdrawal.

Given these widespread effects, addressing sensory integration challenges is a critical component of comprehensive occupational therapy intervention for children with ASD. Sensory Integration Therapy (SIT) offers structured, individualized opportunities for children to engage in sensory-rich, play-based activities designed to improve sensory processing and integration skills. Interventions targeting vestibular and proprioceptive input can enhance postural stability, balance reactions, and motor planning abilities, increasing the child's confidence and participation in active, physical play. By gradually desensitizing tactile defensiveness, therapy can reduce grooming-related aversions and support greater independence with hygiene and dressing tasks.

In addition, therapeutic strategies that address auditory and visual processing challenges can help children manage environmental sensory demands, promoting successful participation in school, home, and community settings. This might include graded exposure to sensory stimuli, environmental modifications, and teaching self-regulation strategies such as deep pressure, movement breaks, or use of noise-canceling headphones. Importantly, improvements in sensory processing often lead to enhanced emotional regulation and behavioral modulation. As children develop the capacity to better interpret and respond to sensory input, they demonstrate greater control over arousal states, reducing episodes of dysregulation, anxiety, and frustration.

These gains have meaningful downstream effects, promoting increased engagement in social opportunities, recreational activities, and daily routines. Participation in these experiences not only supports the child's skill development but also improves overall family quality of life by reducing stress, increasing opportunities for shared activities, and fostering stronger social connections. By promoting more organized, adaptive responses to sensory input, Sensory Integration Therapy contributes to greater functional independence, emotional well-being, and social participation for children with ASD, helping them lead more fulfilling, engaged lives within their communities.

Recognizing Sensory-Seeking vs. Sensory-Avoidant Behaviors

References: 6, 9

An essential aspect of sensory integration assessment and intervention involves recognizing and interpreting patterns of sensory-seeking and sensory-avoidant behaviors, both of which reflect the individual's attempts to modulate their sensory experiences and achieve a more regulated and comfortable state of arousal. These behaviors are highly individualized and can fluctuate depending on the environment, activity demands, and the person's internal state, making careful clinical observation and context-sensitive analysis critical during assessment and therapy.

Sensory-seeking behaviors are characterized by an active pursuit of intense, frequent, or varied sensory input. Children exhibiting these tendencies may engage in activities such as spinning, jumping, crashing into walls or furniture, chewing on non-food objects, repetitively flapping hands or creating visual patterns, seeking out deep pressure hugs, or producing vocalizations to stimulate their auditory system. These behaviors are often driven by hyporesponsiveness to sensory input, where the individual requires a higher intensity or volume of

stimulation to adequately register and process sensory experiences. While some sensory-seeking actions can be adaptive, such as using movement breaks to regulate attention, others may interfere with functional performance, disrupt classroom activities, create social difficulties, or pose safety risks. Therefore, clinicians must carefully evaluate whether these behaviors are supporting or hindering participation and adjust intervention strategies accordingly.

In contrast, sensory-avoidant behaviors reflect hyperresponsiveness to specific types of sensory input, where individuals perceive certain sensations as aversive, uncomfortable, or even painful. These children may cover their ears in response to loud or sudden noises, resist participating in messy or textured play, refuse to wear clothing with specific textures, avoid crowded or brightly lit environments, or become overwhelmed in spaces with competing sensory stimuli. Such aversive responses frequently lead to behavioral outbursts, escape behaviors, avoidance, or emotional dysregulation when faced with undesired sensory experiences. Over time, persistent avoidance can limit a child's participation in important developmental opportunities, daily routines, and social experiences.

Understanding the interplay of sensory-seeking and sensory-avoidant patterns is essential for occupational therapists, as these behaviors offer valuable insights into the child's sensory processing profile and guide the development of individualized intervention plans. Effective sensory integration therapy requires clinical reasoning to differentiate the function and purpose behind these behaviors, allowing the therapist to design purposeful, graded, and meaningful sensory experiences that support regulation and functional engagement. For example, providing structured opportunities for safe and appropriate proprioceptive or vestibular input may help meet a child's sensory-seeking needs in a way that enhances attention and participation without disrupting their environment.

Therapists must consider how to accommodate and gradually desensitize sensory-avoidant behaviors while respecting the child's sensory boundaries. Intervention should be carefully titrated, often using the "just right challenge" to gently expand sensory tolerances without triggering distress. This approach often includes environmental modifications, sensory diets, and the introduction of coping strategies such as using noise-canceling headphones, compression garments, or scheduled sensory breaks.

Crucially, successful sensory integration intervention extends beyond the therapy session. Ongoing collaboration with caregivers, teachers, and other professionals is vital to create supportive, consistent environments that honor the child's sensory preferences while gradually expanding their sensory tolerance and adaptability. Through shared goal setting, education, and coordinated strategies across home, school, and community settings, therapists can help children with sensory processing challenges achieve greater functional independence, emotional regulation, and meaningful participation in daily life.

Section 2 Key Words

Sensory Integration - The process by which the brain organizes and responds to sensory input for appropriate motor, emotional, and behavioral actions

Sensory-Seeking Behaviors - Actions where individuals actively seek intense sensory input, often due to under-responsiveness

Sensory-Avoidant Behaviors - Reactions where individuals avoid or withdraw from sensory input they find overwhelming or distressing

Section 2 Summary

Sensory integration plays a critical role in supporting functional independence and participation for individuals with ASD. Recognizing and addressing sensory-seeking and sensory-avoidant behaviors through targeted, evidence-based strategies can improve motor skills, self-regulation, and engagement in meaningful activities. By integrating sensory-informed approaches into therapy, clinicians can enhance outcomes and promote quality of life across home, school, and community settings.

Section 3: Assessment and Clinical Decision-Making

Comprehensive assessment is essential in identifying sensory processing difficulties in individuals with Autism Spectrum Disorder and guiding targeted, individualized interventions. Physical and occupational therapists must utilize a combination of standardized tools, clinical observations, and caregiver collaboration to develop a complete understanding of the individual's sensory needs and functional challenges. This course section reviews key elements of assessment and clinical reasoning in sensory integration practice, highlighting the use of evidence-based screening measures, the importance of observational and caregiver-reported data, and strategies for identifying clinical red flags and setting intervention priorities.

Screening Tools and Standardized Assessments

References: 5, 7, 10–14

A thorough assessment of sensory processing differences in individuals with Autism Spectrum Disorder relies on the use of validated screening tools and standardized assessments, which provide objective, structured data to support

clinical reasoning, intervention planning, and outcome monitoring. These tools evaluate various aspects of sensory modulation, discrimination, motor coordination, and praxis abilities across multiple environments. It is important for clinicians to be familiar with the scope, structure, and psychometric properties of commonly used assessments to select those most appropriate for the individual's developmental level, cognitive abilities, and presenting concerns.

The Sensory Profile 2 is one of the most widely used standardized caregiver-report measures for assessing sensory processing patterns in children from birth to 14 years, with adapted versions for adolescents and adults. It examines how sensory processing affects participation in home, school, and community settings. The tool is divided into several questionnaires: the Infant Sensory Profile 2, Toddler Sensory Profile 2, Child Sensory Profile 2, and School Companion. It categorizes behaviors into quadrants, seeking, avoiding, sensitivity, and registration, based on Dunn's Sensory Processing Framework. The Sensory Profile 2 allows therapists to identify specific areas of difficulty (auditory sensitivity, tactile defensiveness) and guides intervention planning by highlighting both strengths and challenges in sensory processing.

The Sensory Processing Measure (SPM) is another widely used assessment, designed for children aged 5 to 12 years, with a preschool version for younger children. It evaluates sensory processing, praxis, and social participation across home, school, and community environments through separate rating forms completed by caregivers and teachers. The SPM assesses seven sensory systems: visual, auditory, tactile, proprioceptive, vestibular, taste/smell, and social participation, providing a comprehensive picture of how sensory processing difficulties impact function in different contexts. Its strength lies in offering environment-specific data, which can reveal discrepancies between settings and assist in developing context-specific intervention strategies.

The Sensory Integration and Praxis Tests (SIPT) remain the gold standard for comprehensive, performance-based assessment of sensory integration and praxis abilities. Appropriate for children aged 4 years to 8 years, 11 months, the SIPT consists of 17 subtests that assess visual perception, tactile perception, proprioception, motor planning (praxis), bilateral coordination, and postural control. Subtests include evaluations of tactile discrimination, graphesthesia, postural praxis, and motor accuracy. While highly detailed and psychometrically sound, the SIPT requires extensive training and certification, limiting its use to specialized practitioners. It is particularly useful for developing in-depth sensory profiles and guiding targeted, individualized interventions for children with complex sensory and motor planning challenges.

Additional assessments may complement these tools. *The Bruininks-Oseretsky Test of Motor Proficiency, Second Edition (BOT-2)* is a standardized measure of fine and gross motor skills, balance, strength, and bilateral coordination for individuals aged 4 to 21 years. While not a sensory-specific tool, it is valuable for identifying motor coordination difficulties often associated with sensory processing challenges, such as dyspraxia or vestibular dysfunction. Similarly, the *Peabody Developmental Motor Scales, Second Edition (PDMS-2)* assesses motor skill development in children from birth to 5 years, providing insights into reflexes, locomotion, object manipulation, and visual-motor integration.

Emerging assessment options, such as the *Evaluation in Ayres Sensory Integration (EASI)*, are under development and validation. The EASI is designed as a modernized, freely accessible, globally normed performance-based tool for assessing sensory integration and praxis in children aged 3 to 12 years. Its anticipated use will help broaden access to comprehensive sensory assessments for clinicians worldwide.

In addition to these formal tools, therapists may employ screening checklists such as the *Short Sensory Profile (SSP)*, a condensed version of the Sensory Profile, suitable for quick screening or outcome monitoring in busy clinical or school-based settings.

Selecting appropriate assessments requires clinical judgment, considering factors such as the child's developmental level, cognitive capacity, attention span, and the specific sensory domains of concern. Integrating information from multiple sources, including standardized scores, qualitative observations, and caregiver reports, provides a multidimensional understanding of the individual's sensory processing profile, ensuring that intervention is comprehensive, individualized, and functionally meaningful.

Clinical Observations and Caregiver Input

References: 15, 16

While standardized assessments offer objective, norm-referenced data, clinical observations are essential for capturing the qualitative, context-specific aspects of sensory processing that may not be fully reflected in structured tools. Direct observation allows therapists to witness firsthand how an individual responds to various sensory stimuli during therapeutic activities, play, and naturalistic routines. These observations provide valuable insights into sensory-seeking, sensory-avoidant, or sensory-insensitive behaviors, motor planning difficulties, postural control issues, and self-regulation challenges in real time.

Therapists should intentionally structure opportunities during assessment sessions to elicit and observe responses to a range of sensory inputs, including vestibular (movement-based), tactile (touch), proprioceptive (body awareness), auditory (sound), visual (light and color), and oral-motor (taste, texture) stimuli. Clinicians should note signs of distress, avoidance, fascination, or over-

engagement, as well as the individual's ability to modulate arousal, maintain attention, and transition between activities. For example, a child who consistently avoids messy play, covers their ears during routine sounds, or craves intense swinging motions may be demonstrating sensory modulation difficulties that warrant targeted intervention.

Observations of motor responses are equally critical. Therapists should assess for postural stability, bilateral coordination, balance reactions, and the ability to sequence and execute movement tasks. Difficulties in these areas may reflect underlying sensory integration challenges, such as vestibular dysfunction or impaired proprioceptive processing. Clinicians should also observe the individual's problem-solving strategies, coping mechanisms, and social engagement, as these provide important context for understanding the functional implications of sensory processing difficulties.

Equally vital to comprehensive assessment is obtaining detailed, structured input from caregivers, who offer an invaluable perspective on the individual's sensory experiences and behaviors across home, school, and community settings. Caregivers often provide critical context that cannot be captured within the clinic, such as how the individual responds to grooming, mealtime routines, school transitions, and crowded environments. Structured caregiver interviews, such as the *Sensory History Questionnaire* or portions of standardized tools like the *Sensory Profile 2*, help clinicians gather specific information about sensory triggers, behavioral patterns, coping strategies, and the impact of sensory processing difficulties on family routines and participation.

Collaborative discussions with caregivers also enable the therapist to identify meaningful, family-centered goals and priorities for intervention. This partnership ensures that therapeutic recommendations are practical, culturally sensitive, and aligned with the individual's daily life demands. Furthermore, caregivers are

valuable partners in monitoring progress and generalizing intervention strategies into home and community environments.

Ultimately, integrating clinical observations and caregiver input with standardized assessment results allows for a multidimensional, individualized understanding of the person's sensory processing profile. This comprehensive approach ensures that assessment findings are clinically relevant, functionally meaningful, and guide effective, targeted, and contextually appropriate intervention planning.

Identifying Red Flags and Establishing Intervention Priorities

Recognizing early indicators of sensory processing difficulties is essential for timely intervention and minimizing their impact on development and participation. Red flags may include extreme distress or withdrawal in response to specific sensory inputs, frequent tantrums or meltdowns related to sensory experiences, delayed motor milestones, repetitive sensory-seeking behaviors that interfere with daily routines, or avoidance of grooming, dressing, and feeding activities due to tactile or oral sensitivities. Additional concerns include poor balance, postural instability, challenges with motor imitation, and resistance to changes in routine.

Once assessment data is gathered, therapists must engage in clinical decision-making to prioritize intervention goals. Priority should be placed on addressing sensory processing challenges that most significantly limit the individual's safety, independence, and participation in daily activities. For example, interventions might focus first on reducing hypersensitivity to touch that interferes with dressing or improving vestibular processing to support balance and playground safety. Collaboratively established goals should be functional, measurable, and meaningful to the individual and their caregivers, ensuring that therapy addresses both clinical needs and family-identified concerns.

Section 3 Key Words

Sensory Profile 2 - A standardized, caregiver-report assessment tool designed to evaluate sensory processing patterns in children from birth to 14 years

Sensory Modulation - The process by which the brain regulates and organizes incoming sensory information

Red Flags - Refer to early warning signs or behaviors that suggest the presence of sensory processing difficulties or developmental concerns

Section 3 Summary

Effective assessment and clinical decision-making are foundational to providing individualized, evidence-informed sensory integration interventions for individuals with ASD. By combining standardized tools, clinical observations, and caregiver input, therapists can develop a comprehensive understanding of each individual's sensory profile and its functional implications. Recognizing clinical red flags and setting clear, prioritized intervention goals ensures that therapy is purposeful, goal-directed, and responsive to the individual's unique needs and daily challenges. A thoughtful, collaborative assessment process enhances intervention outcomes, promotes participation, and improves quality of life for individuals with sensory processing difficulties.

Section 4: Intervention Strategies and Therapeutic Techniques

This section presents evidence-based sensory integration interventions designed to support individuals experiencing sensory processing challenges. Sensory integration refers to the neurological process that organizes sensation from one's

own body and the environment, making it possible to use the body effectively within that environment. Difficulties in sensory processing can significantly affect participation in daily tasks, motor development, and emotional regulation. Developing a comprehensive range of therapeutic techniques and environmental strategies is essential for improving functional outcomes and supporting individuals across home, school, and clinical settings.

Evidence-Based Sensory Integration Interventions

References: 17

Sensory integration therapy for individuals with ASD follows structured, play-based, and meaningful activity models designed to provide controlled sensory experiences. The primary goal is to improve the brain's ability to organize and interpret sensory information in a way that promotes adaptive responses. Evidence-based sensory integration approaches emphasize individualization, goal-directed outcomes, and active participation. Interventions are most effective when activities are intentionally chosen to target the individual's unique sensory profile and are linked to meaningful, functional goals that support participation in daily life.

One widely recognized and researched approach is Ayres Sensory Integration (ASI), a standardized, fidelity-based model that offers individualized therapy in a sensory-rich environment. Research has shown that ASI interventions lead to improvements in functional skills, goal attainment, and adaptive behaviors in children with ASD. In addition to direct therapy, environmental modifications play a significant role in sensory management. Adjusting lighting, reducing auditory distractions, and creating quiet, structured spaces in homes, schools, and clinics can reduce sensory overload and improve participation in routine activities.

Proprioceptive and vestibular-based activities are commonly used to promote self-regulation, postural control, and arousal management. These include deep pressure activities, heavy work, climbing, swinging, and other movement-based experiences that help calm or alert the nervous system as needed. Tactile activities, such as sensory bins, textured art projects, or grooming routines, help individuals with ASD improve tactile tolerance and decrease defensiveness over time. Self-regulation strategies, including deep breathing, guided imagery, and mindfulness practices, are frequently incorporated to support emotional regulation alongside sensory interventions.

Another evidence-based strategy involves creating individualized sensory diets. These structured schedules of sensory-based activities are strategically embedded into daily routines to provide consistent, calming, or alerting input throughout the day. Sensory diets are highly adaptable and may include morning movement routines, mid-day calming exercises, or pre-bedtime tactile input to improve sleep regulation. When implemented consistently, sensory diets have been shown to improve attention, behavior, and overall participation.

Clinical decision-making in sensory integration for individuals with ASD relies on comprehensive assessment and ongoing monitoring. Standardized tools such as the Sensory Profile or Sensory Processing Measure (SPM), combined with therapist observation and caregiver input, help identify specific sensory processing differences and guide intervention planning. Collaboration with families, educators, and interdisciplinary care teams ensures that strategies are consistently applied across clinical, home, and educational settings, promoting skill generalization and improved outcomes.

Education and training for caregivers and support staff are critical components of successful sensory integration programs. Equipping families with the knowledge and tools to implement sensory strategies within daily routines enhances

consistency, reduces stress, and improves quality of life for both the individuals with ASD and their support network. Regular monitoring, documentation, and adjustment of intervention plans are essential to ensure that strategies remain effective and aligned with evolving needs and therapeutic goals.

Activities To Support Sensory Processing, Motor Development, And Self-Regulation

References: 11, 18

Activities designed to support sensory processing, motor development, and self-regulation play a vital role in the therapeutic management of individuals with Autism Spectrum Disorder and other neurodevelopmental conditions. These activities are intentionally selected and structured to provide targeted sensory input while simultaneously promoting the development of foundational motor skills and emotional regulation abilities. The goal is to help individuals process sensory information more effectively, develop motor coordination and body awareness, and manage arousal levels to participate meaningfully in daily routines.

Sensory processing activities often involve engaging the tactile, proprioceptive, vestibular, visual, and auditory systems in ways that are both calming and alerting, depending on the individual's sensory profile. Tactile activities might include working with textured materials such as sand, rice bins, shaving cream, or finger paint, providing opportunities to desensitize the tactile system and promote tolerance for different textures. Proprioceptive activities, which involve resistance or heavy work, are frequently used to support regulation and body awareness. Examples include pushing and pulling weighted objects, climbing, animal walks, and deep pressure activities such as rolling a therapy ball over the body.

Vestibular activities focus on controlled movement experiences that stimulate the inner ear and help regulate arousal, balance, and spatial orientation. These might include swinging, spinning, jumping, or activities that involve changing body position in space. Because vestibular input can have both alerting and calming effects, careful observation of the individual's response is essential to determine the appropriate type and amount of movement input.

In parallel, activities aimed at motor development address skills such as balance, coordination, postural control, and bilateral integration. Obstacle courses, yoga-inspired poses, ball games, and climbing structures can be adapted to incorporate both sensory and motor challenges, helping individuals improve strength, stability, and motor planning while receiving regulating sensory input. These activities promote the integration of sensory and motor experiences, which is essential for developing purposeful movement and functional skills.

Self-regulation strategies are frequently embedded within sensory-based activities to support emotional and behavioral control. Techniques such as deep breathing, progressive muscle relaxation, mindfulness exercises, and guided imagery are often paired with sensory experiences to teach coping skills for managing stress and sensory overload. Activities might include a “calm-down corner” with visual supports, weighted lap pads, and fidget tools, or structured routines for sensory breaks during the day to help manage arousal and prevent sensory-related meltdowns.

When carefully selected and tailored to individual needs, activities supporting sensory processing, motor development, and self-regulation can significantly improve participation, emotional regulation, and functional independence. These interventions should be regularly monitored and adjusted based on the individual's response and evolving therapeutic goals, ensuring that activities remain meaningful, engaging, and appropriately challenging.

Adaptive Strategies for Clinic, School, and Home Environments

References: 19

Adapting the physical and social environment is a critical component of effective sensory-based intervention, particularly for individuals with Autism Spectrum Disorder and sensory processing challenges. Environmental adaptations can help reduce sensory-related distress, improve attention and engagement, and support participation in daily activities. These strategies involve modifying aspects of the sensory environment, including visual, auditory, tactile, olfactory, and spatial elements, to create spaces that are both supportive and responsive to individual sensory needs.

In clinical settings, adaptive strategies might include providing access to sensory tools such as weighted lap pads, fidget items, noise-canceling headphones, or visual schedules. Treatment areas can be designed with low-stimulation zones, calming color palettes, and adjustable lighting to accommodate clients who are sensitive to visual and auditory input. The use of movable room dividers, sensory-friendly waiting areas, and clear visual boundaries can also help individuals navigate clinical spaces with greater ease and comfort.

In school environments, sensory adaptations play a valuable role in promoting attention, emotional regulation, and task participation. Examples include incorporating flexible seating options, such as therapy balls or wiggle cushions, allowing sensory breaks during the school day, and establishing calm-down corners equipped with soft lighting, weighted items, and preferred sensory tools. Teachers and staff can be trained in recognizing signs of sensory dysregulation and supporting students with proactive strategies, such as modifying classroom lighting, providing movement-based activities between lessons, or using visual schedules and timers to help manage transitions.

At home, adaptive strategies often focus on creating sensory-friendly routines and spaces that support regulation and functional independence. Designated quiet areas with dim lighting, weighted blankets, and soft textures can provide retreat spaces during times of sensory overload. Integrating sensory-rich activities, such as trampoline jumping, therapeutic swings, or tactile play, into daily routines can help children manage arousal levels and transitions between activities. Families can also be educated on the importance of consistent sensory strategies, using visual support, structured routines, and predictable sensory activities to promote emotional well-being and behavioral regulation.

Overall, adaptive environmental strategies provide essential support in promoting sensory comfort and regulation across settings. These modifications are most effective when individualized, routinely reassessed, and integrated collaboratively with families, teachers, and healthcare providers to ensure consistency and carryover into everyday life.

Practical Strategies for Integrating Sensory-Based Approaches into Clinical Practice

References: 17, 20

Successfully integrating sensory-based approaches into clinical practice requires a thoughtful, individualized, and evidence-informed approach that aligns with the client's sensory profile, functional goals, and daily routines. Effective sensory integration begins with a comprehensive assessment of the individual's sensory processing patterns, identifying areas of hypersensitivity, hyposensitivity, or sensory-seeking behavior across different sensory systems. From this foundation, targeted intervention plans can be developed to address specific challenges and promote adaptive responses.

In practice, therapists often incorporate sensory-based strategies into both structured therapy sessions and unstructured, play-based interactions. Activities such as obstacle courses, scooter board rides, tactile exploration stations, and calming proprioceptive games can be seamlessly integrated into sessions to provide regulating sensory input while addressing motor skills, social engagement, or daily living tasks. Therapists may also use specialized equipment like swings, climbing structures, weighted items, and resistance tools to grade activities based on the individual's tolerance and therapeutic goals.

Practical strategies extend beyond the clinic as therapists collaborate with families and educators to establish consistent sensory routines and modifications in the home, school, and community settings. This might involve developing personalized sensory diets, providing recommendations for sensory-friendly environmental changes, or teaching caregivers how to identify early signs of dysregulation and implement proactive calming techniques. Incorporating education and coaching ensures that sensory strategies are carried over between therapy sessions and into natural daily routines.

Another key aspect of practical sensory integration is flexibility and clinical reasoning. Therapists must closely monitor the individual's sensory responses, adjusting activity type, intensity, duration, and sequencing based on arousal levels and behavioral cues. Recognizing when to provide alerting versus calming input, when to transition between sensory activities, and how to embed sensory regulation strategies within functional tasks enhances the effectiveness of intervention and supports generalization of skills.

By integrating sensory-based approaches into clinical practice through individualized, evidence-based, and family-centered strategies, therapists can significantly improve outcomes related to sensory processing, motor coordination, emotional regulation, and participation in meaningful activities.

Section 4 Key Words

Ayres Sensory Integration (ASI) - A standardized, evidence-supported model of sensory integration therapy developed by Dr. A. Jean Ayres involving individualized, play-based intervention in a sensory-rich environment, aimed at promoting adaptive responses and improving functional participation

Sensory Diet - A personalized schedule of sensory-based activities incorporated into a person's daily routine to help manage arousal, attention, and emotional regulation

Self-Regulation - An individual's ability to manage their emotional and physiological responses to sensory input, stressors, or environmental changes

Section 4 Summary

Evidence-based sensory integration interventions are essential for supporting individuals with Autism Spectrum Disorder and sensory processing challenges. These strategies improve sensory processing, motor skills, emotional regulation, and participation in daily routines. Approaches like Ayres Sensory Integration, proprioceptive and vestibular activities, tactile experiences, and sensory diets are most effective when individualized and goal-directed.

Adapting clinic, school, and home environments further enhances regulation and engagement, reducing sensory-related distress. Successful integration of these approaches requires comprehensive assessment, clinical flexibility, and collaboration with families and educators. Together, these interventions promote meaningful participation, functional independence, and improved quality of life.

Section 5: Professional Roles, Collaboration, and Continued Learning

Effective sensory integration intervention requires a clear understanding of professional roles, ethical practice boundaries, and the value of interdisciplinary collaboration. By working together and continuing to build knowledge in this area, healthcare providers can offer comprehensive, individualized care that best meets the needs of individuals with sensory processing challenges.

Roles of PTs, PTAs, and OTs in Sensory Integration Therapy

References: 21, 22

Occupational Therapists (OTs) have historically held the primary role in the provision and leadership of sensory integration therapy, particularly when interventions involve standardized, fidelity-based assessments and the direct treatment of sensory modulation, discrimination, and praxis difficulties. Praxis refers to the ability to conceptualize, plan, and execute motor actions, an area frequently impacted in individuals with sensory processing challenges. OTs are uniquely trained to evaluate how sensory input influences functional behavior, attention, social interaction, emotional regulation, and participation in daily routines. Their education includes in-depth study of neurodevelopmental processes, sensory modulation theory, and the application of clinical reasoning strategies specific to sensory integration interventions.

OTs typically administer and interpret formal sensory assessments such as the Sensory Integration and Praxis Tests (SIPT), Sensory Profile, or Sensory Processing Measure (SPM), using these results to design highly individualized, play-based, and goal-directed interventions. These activities often incorporate tactile (touch-based), proprioceptive (body position awareness), vestibular (balance and spatial

orientation), auditory, and visual sensory inputs in controlled, therapeutic environments. The primary aim is to promote adaptive responses — purposeful, organized reactions to sensory experiences — that support the individual's ability to function and engage effectively in their everyday environments.

Certified Occupational Therapy Assistants (COTAs) play a vital, supportive role in sensory integration therapy under the supervision of a licensed OT. While COTAs do not independently perform formal assessments or determine treatment plans, they are skilled in implementing therapeutic activities designed by the OT, including sensory-rich play, proprioceptive and vestibular interventions, and tactile desensitization activities. COTAs contribute to the therapy process by carefully monitoring client responses to sensory input, adjusting the intensity or pacing of activities as appropriate, and providing timely feedback to the supervising OT. Additionally, COTAs often assist with caregiver education, demonstrating sensory strategies and supporting the integration of therapeutic activities into home and community routines. Their close involvement in ongoing intervention delivery helps ensure treatment consistency and promotes generalization of skills across environments.

Physical Therapists (PTs) play a complementary and equally vital role in addressing how sensory integration deficits influence gross motor development, postural control, balance, and functional mobility. PTs have extensive expertise in neuromuscular function, motor control, and movement pattern development, which positions them to address the motoric consequences of disordered sensory processing. For example, children with poor vestibular processing may exhibit delays in balance reactions and difficulty navigating uneven surfaces or playground equipment, while those with proprioceptive dysfunction may struggle with motor coordination, postural stability, or the ability to grade force during tasks.

PTs frequently incorporate proprioceptive and vestibular input into movement-based interventions aimed at enhancing body awareness, joint stability, balance, and arousal regulation. Treatment strategies may include activities such as climbing, jumping, swinging, rolling, or obstacle course navigation, intentionally selected and sequenced to support postural control and movement organization while regulating sensory input to promote optimal engagement.

Physical Therapist Assistants (PTAs), functioning under the supervision of a licensed PT, contribute to the sensory integration process by implementing sensory-rich movement activities planned by the PT, monitoring individual responses to these interventions, and providing essential feedback for ongoing clinical decision-making. PTAs may assist in setting up therapeutic environments, grading activities to match sensory needs and tolerance levels, and documenting functional outcomes related to sensory-based motor performance.

An interprofessional understanding of each discipline's unique expertise and responsibilities within sensory integration therapy is essential for safe, effective, and ethical care. Collaborative partnerships between OTs, COTAs, PTs, and PTAs not only enhance the quality of intervention but also promote continuity of care across settings and professional roles. By maintaining clear communication, respecting professional boundaries, and working toward shared functional goals, interdisciplinary teams can more effectively address the complex, multifaceted needs of individuals with sensory processing challenges, improving participation and quality of life outcomes.

Scope of Practice and Ethical Considerations

References: 21, 22

Sensory-based interventions must be provided within the boundaries of each profession's scope of practice, as outlined by state practice acts, licensure

regulations, and professional association guidelines. While OTs receive advanced, specialized training in sensory integration theory, assessment, and intervention, including certification in specific sensory integration methodologies when applicable, PTs are authorized to incorporate sensory-based strategies within the context of interventions targeting motor performance, balance, postural control, and functional mobility. These sensory-based strategies may include the use of tactile, proprioceptive, and vestibular inputs to facilitate motor learning, improve neuromuscular control, and enhance postural stability. PTAs must operate under the supervision and delegation of a licensed PT, adhering to supervisory structures and regulations, and are responsible for safely and effectively implementing sensory-motor interventions that are clearly planned and directed by the supervising PT.

Ethical considerations in the provision of sensory-based care include maintaining professional competence in the selection and application of sensory integration techniques through ongoing education, clinical mentorship, and evidence-informed practice. Obtaining informed consent from clients or their guardians is essential, including clear communication about the purpose, nature, potential benefits, and risks of sensory-based interventions. Providers must also ensure that interventions are individualized, culturally responsive, and client-centered, taking into account the client's preferences, values, and personal goals.

Additionally, healthcare professionals must remain vigilant in recognizing their own professional limitations and scope boundaries. When sensory-related concerns or complex sensory processing issues fall outside a provider's scope of practice or expertise, timely referral to appropriately qualified professionals, such as occupational therapists, speech-language pathologists, or behavioral health specialists, is both ethically and clinically responsible. Regular use of clinical reasoning, outcome monitoring, thorough documentation, and interprofessional

collaboration supports ethical, effective, and evidence-based practice within this dynamic area of care.

Interdisciplinary Collaboration with Educators, Caregivers, and Other Professionals

References: 16, 23

Sensory integration interventions are most effective when delivered through a collaborative, interdisciplinary approach that recognizes the complex, multi-system nature of sensory processing and its impact on functional performance. Effective care requires seamless communication and coordination among therapists, educators, caregivers, and other allied health professionals to ensure that intervention strategies are cohesive, complementary, and consistently applied across clinical, educational, and home environments. This shared approach not only reinforces therapeutic gains but also promotes the generalization of skills in meaningful, real-world contexts.

Educators play a pivotal role in identifying sensory-related barriers to learning and participation within the classroom setting. They are instrumental in embedding sensory strategies into daily routines, academic tasks, transitions, and structured activities, thereby supporting student regulation, attention, and engagement. Special education teachers, in particular, often collaborate closely with therapists to adapt learning materials and modify classroom environments to reduce sensory stressors and optimize participation.

Caregivers provide essential, context-specific insights into the individual's sensory preferences, aversions, and coping mechanisms observed in the home and community settings. Their active involvement in care planning ensures that interventions are relevant, practical, and feasible within daily family routines, increasing the likelihood of adherence and long-term benefit. Training and

coaching for caregivers in the implementation of sensory supports also empower families to create sensory-friendly environments and manage challenges proactively.

In addition, professionals such as Speech-Language Pathologists (SLPs), behavior analysts, and mental health providers frequently contribute valuable expertise in managing co-occurring issues that often accompany sensory processing differences. SLPs may address oral-motor and feeding difficulties, communication impairments, and pragmatic language deficits, while behavior analysts provide strategies for reducing maladaptive behaviors related to sensory triggers. Mental health providers support the development of coping skills, emotional regulation, and resilience in individuals experiencing sensory-related anxiety, mood dysregulation, or trauma-related responses.

Regularly scheduled interdisciplinary team meetings, collaborative goal-setting sessions, and consistent feedback loops are essential components of effective care coordination. These practices support continuity of care, align intervention priorities, and facilitate timely adjustments to care plans based on the individual's progress and evolving needs. Documentation systems that allow for shared access to goals, strategies, and outcomes further enhance team collaboration. Ultimately, a well-integrated, interdisciplinary approach improves intervention efficacy, promotes the generalization of skills across environments, and enhances the individual's overall quality of life and participation in meaningful activities.

Adapting Interventions to Individual Needs

References: 23

No two individuals with sensory processing challenges present in the same way, necessitating a highly individualized, responsive, and flexible approach to intervention planning. Sensory processing differences can manifest across a broad

spectrum of presentations, ranging from sensory-seeking behaviors to sensory avoidance, low registration, or heightened sensitivity to specific modalities such as tactile, auditory, proprioceptive, or vestibular input. Because of this variability, comprehensive assessment is essential to accurately identify an individual's unique sensory processing patterns, areas of dysregulation, and preferred sensory inputs that promote self-regulation, engagement, and functional participation.

Assessment typically begins with a combination of caregiver and teacher interviews, clinical observation, and the use of standardized assessment tools. Direct clinical observation remains a critical component, allowing therapists to assess sensory modulation, discrimination, and motor planning abilities in real-time, while capturing qualitative information about the individual's arousal regulation, attention, affect, and adaptive behaviors.

Intervention strategies must be carefully tailored based on the individual's chronological age, developmental level, cognitive and communication abilities, cultural background, and environmental context. Therapists should consider the individual's personal preferences, sensory history, cultural beliefs about touch, movement, or body awareness, and the physical and social demands of the environments in which they live, learn, and play. For example, culturally informed adaptations may be necessary to ensure that interventions respect family norms regarding physical contact, personal space, or auditory stimuli.

Activities should be intentionally selected for their sensory properties (modality, intensity, and duration) and sequenced in a way that supports optimal regulation and participation. The concept of the "just-right challenge" is central, requiring activities to be neither too difficult nor too easy, while providing meaningful sensory input to help organize the nervous system. Sensory-rich tasks such as swinging, deep pressure activities, heavy work, or oral-motor exercises should be adjusted in real-time based on the individual's moment-to-moment responses.

Arousal levels and sensory responses must be monitored continuously during sessions, with therapists prepared to adjust task demands, modify sensory input, or implement calming or alerting strategies as needed to maintain safe and therapeutic levels of engagement. Signs of overstimulation, such as increased agitation, avoidance, shutdown behaviors, or dysregulation, should prompt immediate intervention modifications to prevent sensory fatigue or distress. Conversely, under-responsiveness or disengagement may indicate a need to increase the intensity or novelty of sensory input.

This responsive, individualized approach ensures not only the safety and well-being of the individual but also enhances therapeutic outcomes by promoting trust, participation, and the development of adaptive skills in a way that is both meaningful and sustainable across settings.

Resources for Ongoing Professional Development

References: 17, 21, 22

Continued professional education is essential for maintaining competence and ethical practice in the provision of sensory integration and sensory-based interventions, particularly as research in this field continues to evolve and expand our understanding of neurodevelopment, sensory processing, and intervention outcomes. Given the complex and nuanced nature of sensory integration theory and its clinical application, practitioners must remain current with the latest evidence, clinical methodologies, and professional standards to provide safe, effective, and individualized care.

Occupational therapists seeking advanced expertise in sensory integration frequently pursue post-professional certification in Ayres Sensory Integration (ASI), an internationally recognized framework grounded in the original work of Dr. A. Jean Ayres. Certification programs, such as those offered by the

Collaborative for Leadership in Ayres Sensory Integration (CLASI), include comprehensive coursework in sensory integration theory, assessment, and intervention, alongside mentorship and competency-based evaluations. These programs equip clinicians with advanced skills in using specialized assessment tools like the Sensory Integration and Praxis Tests (SIPT), as well as in designing intervention plans that support functional outcomes across sensory, motor, and adaptive behavior domains.

Physical therapists and physical therapist assistants, while typically not trained in formal sensory integration assessment, can access specialized continuing education courses focusing on sensory-based interventions as they relate to motor control, posture, balance, arousal regulation, and functional mobility. These courses often cover topics such as proprioceptive input for postural stability, vestibular stimulation for balance retraining, and sensory strategies for modulation of arousal and attention in neurologic and pediatric populations.

Professional organizations play a key role in supporting ongoing professional development. The American Occupational Therapy Association (AOTA) and the American Physical Therapy Association (APTA) both offer practice guidelines, position papers, evidence-based resources, and webinars on sensory processing and related interventions. These resources provide clinicians with access to current practice trends, research updates, ethical guidance, and recommendations for integrating sensory strategies within discipline-specific scopes of practice.

Interdisciplinary professional development is also highly encouraged in this area, given the collaborative nature of sensory-based care. Attending interdisciplinary conferences—such as those hosted by the American Occupational Therapy Association, the American Physical Therapy Association, the American Speech-Language-Hearing Association (ASHA), or the Interdisciplinary Council on Development and Learning (ICDL), exposes practitioners to diverse perspectives,

emerging evidence, and case-based learning opportunities. Participation in journal clubs, research review groups, and special interest sections within professional associations fosters peer discussion, critical appraisal of the literature, and practical application of evidence to clinical decision-making.

Additionally, joining professional networks or online communities of practice focused on sensory processing or pediatric rehabilitation provides opportunities for ongoing mentorship, case consultation, and shared problem-solving among colleagues. These platforms promote clinical growth and contribute to the development of best practices that reflect the most current knowledge in this rapidly developing area of care.

Section 5 Key Words

Sensory Processing Measure (SPM) - A standardized assessment tool used by occupational therapists to evaluate how an individual processes sensory information in different contexts, such as home, school, or community environments

Client-Centered Care - With sensory integration therapy, it ensures that interventions are tailored to the specific sensory challenges and goals of the individual

Sensory Integration - A therapeutic approach based on the theory that sensory input plays a critical role in how individuals respond to and engage with their environment

Section 5 Summary

The roles of physical therapists, physical therapist assistants, and occupational therapists in sensory integration therapy are distinct but complementary. OTs lead

sensory integration therapy, focusing on sensory modulation, praxis, and functional behavior, using specialized assessments and interventions. PTs and PTAs, on the other hand, address the motoric aspects of sensory integration, including balance, posture, and movement. Successful treatment hinges on the collaboration between these professionals, with clear communication, a shared understanding of each role, and an individualized approach to care. Continued professional development and interdisciplinary cooperation are crucial to providing effective, client-centered interventions that enhance the quality of life for individuals with sensory processing challenges.

Case Study 1

Ethan is a 6-year-old boy with Autism Spectrum Disorder referred to physical therapy for delayed gross motor skills, poor balance, postural control, and difficulty participating in physical play. He exhibited sensory sensitivities, particularly to tactile and vestibular input, and demonstrated proprioceptive-seeking behaviors like crashing into objects. The physical therapist designed a play-based program emphasizing proprioceptive and vestibular activities, core strengthening, and gradual exposure to dynamic tasks like swinging and climbing. Visual schedules, choice boards, and a sensory-friendly environment supported his participation. Collaboration with his occupational therapist, educators, and family ensured consistency across settings. After 10 weeks of bi-weekly sessions, Ethan showed improved balance, greater tolerance for playground activities, and increased participation in group movement games.

Reflection Questions

1. What strategies helped address Ethan's sensory sensitivities while promoting gross motor skills?

2. Why is interdisciplinary collaboration important in this case?
3. How were interventions and the environment adapted to support Ethan's engagement?
4. How might family education impact Ethan's progress?
5. How can therapists monitor and adjust interventions for children with sensory regulation needs?

Responses

1. Proprioceptive input (deep pressure, obstacle courses) and gradual vestibular activities (slow swinging) were integrated to provide regulating sensory experiences while targeting motor skills. Visual support and choices promoted predictability and engagement.
2. Working with occupational therapists, educators, and family ensured consistent sensory supports, shared goals, and a holistic approach addressing Ethan's motor, sensory, and social needs.
3. The therapist used a sensory-friendly space with minimal distractions, sequenced activities from preferred to challenging, and adjusted interventions based on Ethan's arousal and comfort levels.
4. Coaching parents on sensory-motor strategies should help them to support Ethan at home and in the community, promoting skill carryover and reducing caregiver stress.
5. By observing cues like arousal level, affect, and behavior, therapists can modify the intensity, duration, and type of sensory input to maintain safety, engagement, and therapeutic effectiveness.

Case Study 2

Ethan is an 8-year-old boy diagnosed with ASD who was referred to occupational therapy due to challenges with emotional regulation, sensory processing, and difficulties with handwriting and classroom participation. His third-grade teacher reported that Ethan frequently struggled with loud or unpredictable environments, had difficulty transitioning between activities, and often avoided writing assignments due to frustration with fine motor control. At home, his parents noted similar difficulties with self-regulation during homework, family meals, and community outings.

During the occupational therapy evaluation, Ethan exhibited auditory sensitivity, a preference for deep pressure and heavy work activities, and poor frustration tolerance with tasks requiring fine motor precision. He became visibly anxious during noisy or crowded activities and was easily overwhelmed by multi-step directions. The plan of care focused on sensory integration-based strategies for emotional regulation, interventions to improve fine motor skills for handwriting, and collaborative problem-solving with school staff and his family.

Therapy sessions incorporated sensory-based movement activities like climbing, heavy work, and fidget tools to help regulate arousal levels, followed by graded fine motor tasks such as handwriting practice, cutting, and small manipulative games. Visual schedules, calming routines, and choice-making opportunities were integrated to reduce anxiety. Family education and coordination with school staff supported consistent strategies across settings.

Reflection Questions

1. What were the primary occupational challenges Ethan experienced, and how did they impact his participation at school and home?

2. Which intervention strategies were most effective in helping Ethan regulate and engage in therapy tasks?
3. How did collaboration with Ethan's teacher and family enhance his outcomes?
4. What signs indicated a need to adjust intervention strategies during therapy?

Responses

1. Ethan struggled with sensory modulation, emotional regulation, and fine motor coordination, which affected his ability to stay calm in stimulating environments, complete written tasks, and manage transitions. These difficulties led to classroom avoidance behaviors, emotional outbursts, and frustration at home with daily routines like homework and mealtimes.
2. Providing regular proprioceptive input through activities like wall pushes, heavy lifting, and therapy ball exercises helped manage Ethan's arousal. Visual schedules, clear expectations, and offering choices allowed him to feel more in control, which reduced anxiety. Gradually introducing fine motor tasks after sensory activities improved his willingness to participate.
3. Close communication with his teacher and parents ensured that calming routines, sensory supports, and handwriting accommodations were consistently applied in the classroom and at home. This consistency promoted carryover of skills, reduced behavioral incidents, and made daily transitions smoother for Ethan.
4. Signs such as increased fidgeting, covering his ears, withdrawing from activities, or becoming irritable indicated overstimulation or frustration. When this occurred, the therapist modified the task, offered sensory

breaks, or adjusted the environment to help Ethan return to a regulated, engaged state.

Conclusion

This course offers a comprehensive exploration of Autism Spectrum Disorder with a focus on sensory processing challenges. Tailored for physical therapists, physical therapist assistants, and occupational therapists and assistants, it covers the impact of dysfunction in the vestibular, proprioceptive, tactile, auditory, and visual systems on motor coordination, self-regulation, and daily activities. Participants have learned to distinguish between sensory-seeking and sensory-avoidant behaviors, use standardized screening tools, and apply evidence-based interventions in various settings. The course emphasizes enhancing motor function, self-regulation, and engagement in daily routines while integrating sensory-based therapies into clinical practice, collaborating across disciplines, and maintaining ethical standards.

References

1. Hirota T, King BH. Autism Spectrum Disorder: A Review. *JAMA*. 2023;329(2):157-168. doi:10.1001/jama.2022.23661
2. Antshel KM, Russo N. Autism Spectrum Disorders and ADHD: Overlapping Phenomenology, Diagnostic Issues, and Treatment Considerations. *Curr Psychiatry Rep*. 2019;21(5):34. doi:10.1007/s11920-019-1020-5
3. Nimbley E, Golds L, Sharpe H, Gillespie-Smith K, Duffy F. Sensory processing and eating behaviours in autism: A systematic review. *Eur Eat Disord Rev J Eat Disord Assoc*. 2022;30(5):538-559. doi:10.1002/erv.2920
4. Gentil-Gutiérrez A, Cuesta-Gómez JL, Rodríguez-Fernández P, González-Bernal JJ. Implication of the Sensory Environment in Children with Autism Spectrum Disorder: Perspectives from School. *Int J Environ Res Public Health*. 2021;18(14):7670. doi:10.3390/ijerph18147670
5. Hadad BS, Yashar A. Sensory Perception in Autism: What Can We Learn? *Annu Rev Vis Sci*. 2022;8:239-264. doi:10.1146/annurev-vision-093020-035217
6. Lane SJ, Leão MA, Spielmann V. Sleep, Sensory Integration/Processing, and Autism: A Scoping Review. *Front Psychol*. 2022;13:877527. doi:10.3389/fpsyg.2022.877527
7. Mailloux Z, Grady-Dominguez P, Bundy A, et al. Evaluation in Ayres Sensory Integration® Praxis Tests: Construct Validity and Internal Reliability. *Am J Occup Ther Off Publ Am Occup Ther Assoc*. 2023;77(4):7704345020. doi:10.5014/ajot.2023.050138
8. Oh S, Jang JS, Jeon AR, et al. Effectiveness of sensory integration therapy in children, focusing on Korean children: A systematic review and meta-analysis. *World J Clin Cases*. 2024;12(7):1260-1271. doi:10.12998/wjcc.v12.i7.1260

9. Itahashi T, Aoki R, Nakamura M, Ohta H, Hashimoto RI. Sensory seeking and its influence on sustained attention performance in adult males with Autism Spectrum Condition. *Sci Rep*. 2025;15(1):4047. doi:10.1038/s41598-025-88733-7
10. Marcilla-Jorda M, Grande C, Coelho V, Rubio-Belmonte C, Moro-Ipola M. Sensory Profile-2 in Autism Spectrum Disorder: An Analysis within the International Classification of Functioning, Disability and Health Framework. *J Autism Dev Disord*. Published online April 13, 2024. doi:10.1007/s10803-024-06337-y
11. Randell E, Wright M, Milosevic S, et al. Sensory integration therapy for children with autism and sensory processing difficulties: the SenITA RCT. *Health Technol Assess Winch Engl*. 2022;26(29):1-140. doi:10.3310/TQGE0020
12. Al-Zboon EKA, Abdel Latif Moukhles Aljaiuossi N. An Evaluation of a Jordanian Version of the Bruininks-Oseretsky Test of Motor Proficiency Second Edition Brief Form (BOT-2BF) for Use with Children with Autism Spectrum Disorder. *Percept Mot Skills*. Published online December 23, 2024:315125241308345. doi:10.1177/00315125241308345
13. Zhu Y, Hu J, Ye W, Korivi M, Qian Y. Assessment of the measurement properties of the Peabody Developmental Motor Scales-2 by applying the COSMIN methodology. *Ital J Pediatr*. 2024;50(1):87. doi:10.1186/s13052-024-01645-6
14. Lyons-Warren AM, Wangler MF, Wan YW. Cluster Analysis of Short Sensory Profile Data Reveals Sensory-Based Subgroups in Autism Spectrum Disorder. *Int J Mol Sci*. 2022;23(21):13030. doi:10.3390/ijms232113030
15. Lee H, Chen YJ, Sideris J, Watson LR, Crais ER, Baranek GT. Sensory Features of Young Children From a Large Community Sample: Latent Factor Structures of the Sensory Experiences Questionnaire (Version 2.1, Short Form). *Am J Occup*

Ther Off Publ Am Occup Ther Assoc. 2022;76(3):7603205140. doi:10.5014/ajot.2022.046995

16. Clark-Whitney E, Klein CB, Hadley PA, Lord C, Kim SH. Caregiver Language Input Supports Sentence Diversity in Young Children With Autism Spectrum Disorder. *J Speech Lang Hear Res JSLHR.* 2022;65(4):1465-1477. doi:10.1044/2021_JSLHR-21-00458
17. Acuña C, Gallegos-Berrios S, Barfoot J, Meredith P, Hill J. Ayres Sensory Integration® With Children Ages 0 to 12: A Systematic Review of Randomized Controlled Trials. *Am J Occup Ther Off Publ Am Occup Ther Assoc.* 2025;79(3):7903205180. doi:10.5014/ajot.2025.051023
18. Deng J, Lei T, Du X. Effects of sensory integration training on balance function and executive function in children with autism spectrum disorder: evidence from Footscan and fNIRS. *Front Psychol.* 2023;14:1269462. doi:10.3389/fpsyg.2023.1269462
19. Kodak T, Bergmann S. Autism Spectrum Disorder: Characteristics, Associated Behaviors, and Early Intervention. *Pediatr Clin North Am.* 2020;67(3):525-535. doi:10.1016/j.pcl.2020.02.007
20. Raditha C, Handryastuti S, Pusponegoro HD, Mangunatmadja I. Positive behavioral effect of sensory integration intervention in young children with autism spectrum disorder. *Pediatr Res.* 2023;93(6):1667-1671. doi:10.1038/s41390-022-02277-4
21. Wu Y, Ding L, Zhang Q, et al. The effect of physical exercise therapy on autism spectrum disorder: a systematic review and meta-analysis. *Psychiatry Res.* 2024;339:116074. doi:10.1016/j.psychres.2024.116074
22. Domínguez-Lucio S, Compañ-Gabucio LM, Torres-Collado L, de la Hera MG. Occupational Therapy Interventions Using New Technologies in Children and

Adolescents with Autism Spectrum Disorder: A Scoping Review. *J Autism Dev Disord.* 2023;53(1):332-358. doi:10.1007/s10803-022-05431-3

23. Hume K, Steinbrenner JR, Odom SL, et al. Evidence-Based Practices for Children, Youth, and Young Adults with Autism: Third Generation Review. *J Autism Dev Disord.* 2021;51(11):4013-4032. doi:10.1007/s10803-020-04844-2



FLEX CEUs



The material contained herein was created by EdCompass, LLC ("EdCompass") for the purpose of preparing users for course examinations on websites owned by EdCompass, and is intended for use only by users for those exams. The material is owned or licensed by EdCompass and is protected under the copyright laws of the United States and under applicable international treaties and conventions. Copyright 2025 EdCompass. All rights reserved. Any reproduction, retransmission, or republication of all or part of this material is expressly prohibited, unless specifically authorized by EdCompass in writing.