

Students with ASD in Physical Education: Research & Strategies

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PRESENTATION OVERVIEW

- Autism and DSM-IV & DSM-V
- Current research in motor, physical activity and fitness & ASD
- Activity
- Sensory Systems
- Sensory Activity
- Strategies and Applications
- Closing

AUTISM CLINIC CALIFORNIA STATE UNIVERSITY, CHICO

- Serving children with autism spectrum disorders since 2005
- Qualify for services—Motor deficit and sensory needs
- Served over 150 children since 2005
- 50 minute sessions 1x per week
- Individual, Paired and Group settings
- Tailored to Individual Needs
- Freedom in Elements Program

WHAT IS AUTISM?

DSM-IV VS. DSM-V

DSM-IV

(Autism, PDD-NOS, Asperger's)

- A. Social:** Impairments in non-verbal communication (no attempt to communicate in another way)
- B. Communication:** Delay or lack in language
- C. Stereotypical Behaviors:** Restrictive behaviors, repetitive movements or thought

DSM-V

(Autism)

- A.** Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays
- B.** Restricted, repetitive patterns of behavior, interests, or activities
- C.** Symptoms must be present in early childhood
- D.** Symptoms cause clinically significant impairments in social, occupational, or others areas of function.

Autism Prevalence On The Rise*

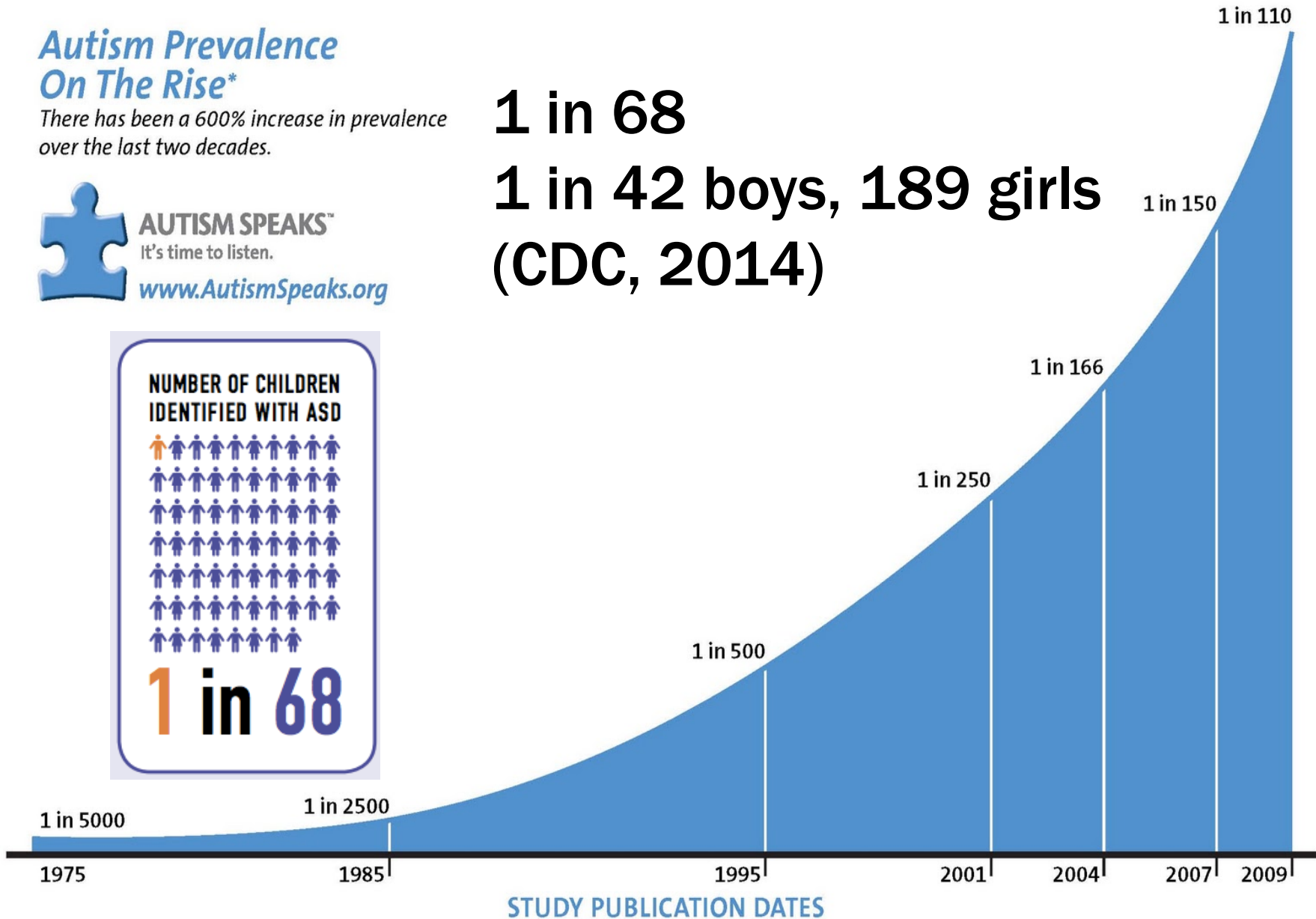
There has been a 600% increase in prevalence over the last two decades.



AUTISM SPEAKS™
It's time to listen.

www.AutismSpeaks.org

1 in 68
1 in 42 boys, 189 girls
(CDC, 2014)



*Recent research has indicated that changes in diagnostic practices may account for at least 25% of the increase in prevalence over time, however much of the increase is still unaccounted for and may be influenced by environmental factors.

SHOULD MOTOR SKILLS BE PART OF THE DIAGNOSTICS?

- Motor skill deficits are NOT part of the current DSM-V criteria
- Growing body of literature suggesting that there maybe be underlying motor deficit(s) across the spectrum
- Motor deficit may be part of the underlying deficits for ASD

MOVEMENT & AUTISM

- Able to perform the skills in the TGMD-2, but poor quality. Motor skills significantly delayed by late-childhood. (Staples & Reid, 2010)
- Significant deficits in ball catching and static balance using the M-ABC2 (Whyatt & Craig 2012)
- Gross and fine motor differences in infants with ASD which become great as the child ages (Lloyd, McDonald & Lord 2013)
- 79% of those with ASD had definite movement impairment on M-ABC, 10% borderline (Green et al, 2009)

MOVEMENT & AUTISM

- ASD had significant delays in gross motor compared to their typically matched peer on the TGMD-2 (Lui et., al 2014)
- ASD more jerky in their arm movement than typical control (Cook, Blakemore & Press, 2013)
- Children with ASD have difficulties performing motor tasks requiring certain levels of gross motor skills, coordination and balance (Obrusnikova & Cavalier, 2010)

PHYSICAL ACTIVITY & AUTISM

- ASD and Typical engaged in similar levels of activity (accelerometer), but in fewer physical activities for less time (parent report) (Bandini et al, 2013)
- Afterschool interventions and activities for ASD are often sedentary in nature (Srinivasan, Pescatello & Bhat, 2014)
- Fine and Gross motor skills significantly predicted autism severity and link between motor and language (MacDonald, Lord, Ulrich, 2014)

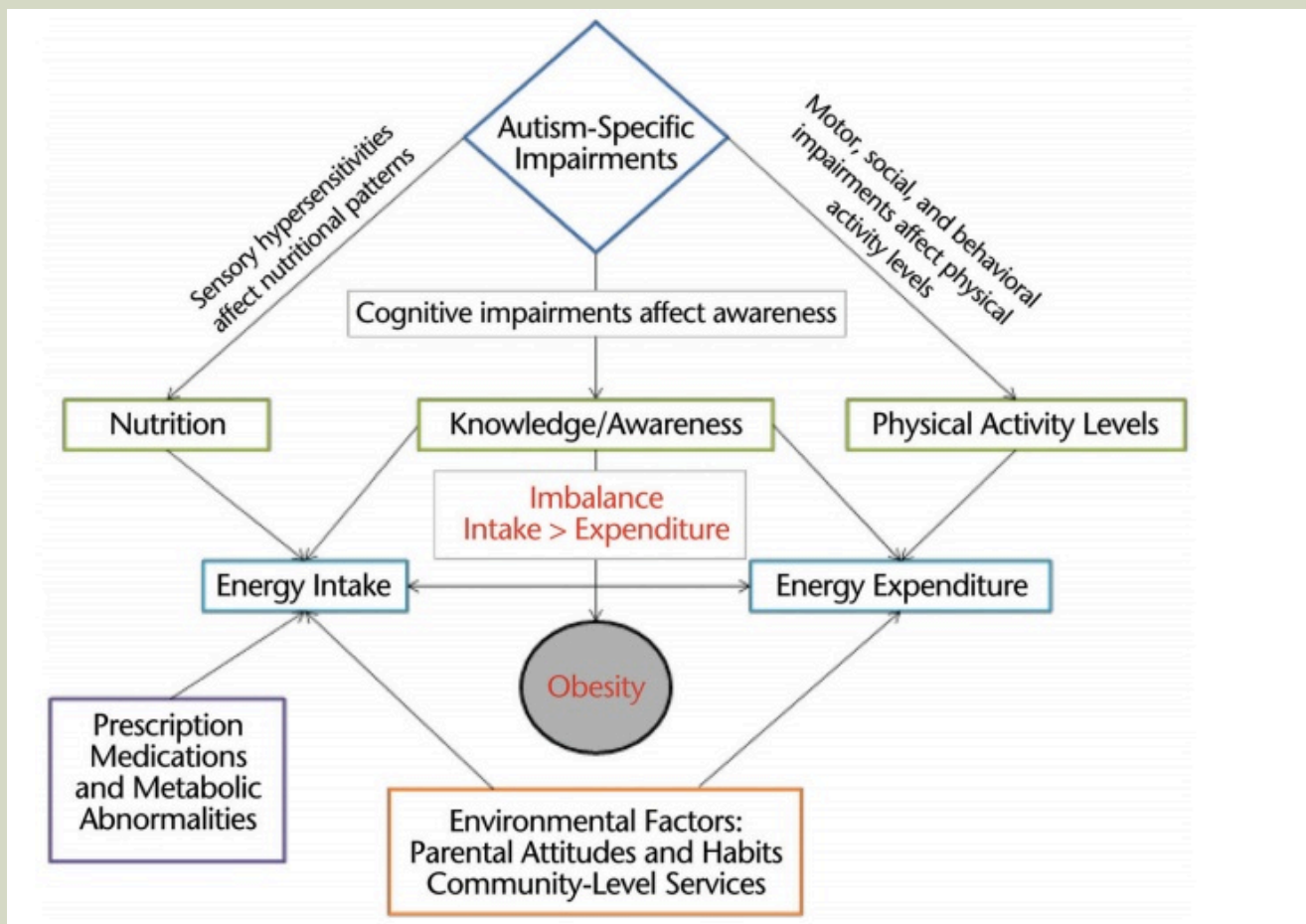
PHYSICAL ACTIVITY & AUTISM

- Antecedent physical activity interventions increase appropriate and desirable classroom behavior (Nicholson et al., 2010)
- Children with ASD less physically active than peers, ASD performed shuttle run only slightly worse than peers, strength in ASD was significantly lower (Tyler, MacDonald, & Meneer, 2014)

FITNESS, HEALTH & AUTISM

- Accessibility to equipment and peers and friends as factors in increasing activity levels (Obrusnikova & Cavalier, 2010)
- ASD low motor proficiency on fitness levels in all categories compared to typical peers (Pan, 2014)
- Significant reduction in physical activity across the adolescent years in ASD (Memari et al., 2012)
- Children ages 3-11 with ASD spend one hour more in sedentary behaviors per day, than their peers, 5.3 v. 4.2h (mostly screen time 2.5 v 1.6) (Must et al, 2014)

CONTRIBUTING FACTORS TO ASD & OBESITY



Srinivasan, S. M., Pescatello, L. S., & Bhat, A. N. (2014). Current Perspectives on Physical Activity and Exercise Recommendations for Children and Adolescents With Autism Spectrum Disorders. *Physical Therapy*.

WHAT WE KNOW

- Gross motor impairments & deficits
- Deficits in object control skills—particularly with catching
- Ability to perform skills but poor quality of movement
- Lower fitness levels than typical developed peers

What is missing ?

PHYSICAL EDUCATION & AUTISM

- Students with ASD less active than their peers in inclusive PE setting & children who were more active had more social initiations (Pan, Tsai, Hsieh, 2011)
- ASD Less motivation to participate in PE than peers (Pan, Tsai, Chu, Hsieh, 2011)
- Interviews of ASD in PE showed themes of individual challenges, peer interactions and exclusion by the teacher (Healy, Msetfi and Gallagher, 2013)

WHY DOES THIS MATTER?

- **Motor skill deficits present in early in life and continue to worsen throughout childhood with ASD**
(Lloyd, McDonald & Lord 2013)
- **Physical activity and motor skills frequently neglected in early intervention**(Lloyd, McDonald & Lord 2013)
- **Movement increases interactions which increases social interactions**
- **Poor PE performance leads to an increase in bullying**
(Berjerot, 2010)

POSITIVE EFFECTS OF PA

- Antecedent PA had a positive effect on academic engaged time
(Nicholson et al, 2011).
 - Systematic review of 18 studies revealed decreases in:
 - stereotypic behaviors
 - aggression
 - off-task behavior
 - Elopement
 - Increases in:
 - on-task behavior
 - academic responding
 - appropriate motor behavior
- (Lang, Koegel, Ashbaugh, Regester, Ence, & Smith, 2010)

WHAT IS MISSING IN THE RESEARCH?

- More motor skill studies
- More PE, APE and PA studies
- Do the skills we teach in physical education and adapted physical education make the connection to real life activities for children with ASD?
- How do children with ASD perceive their experiences in PE and APE?
- How weight training affects individuals with ASD

ACTIVITY

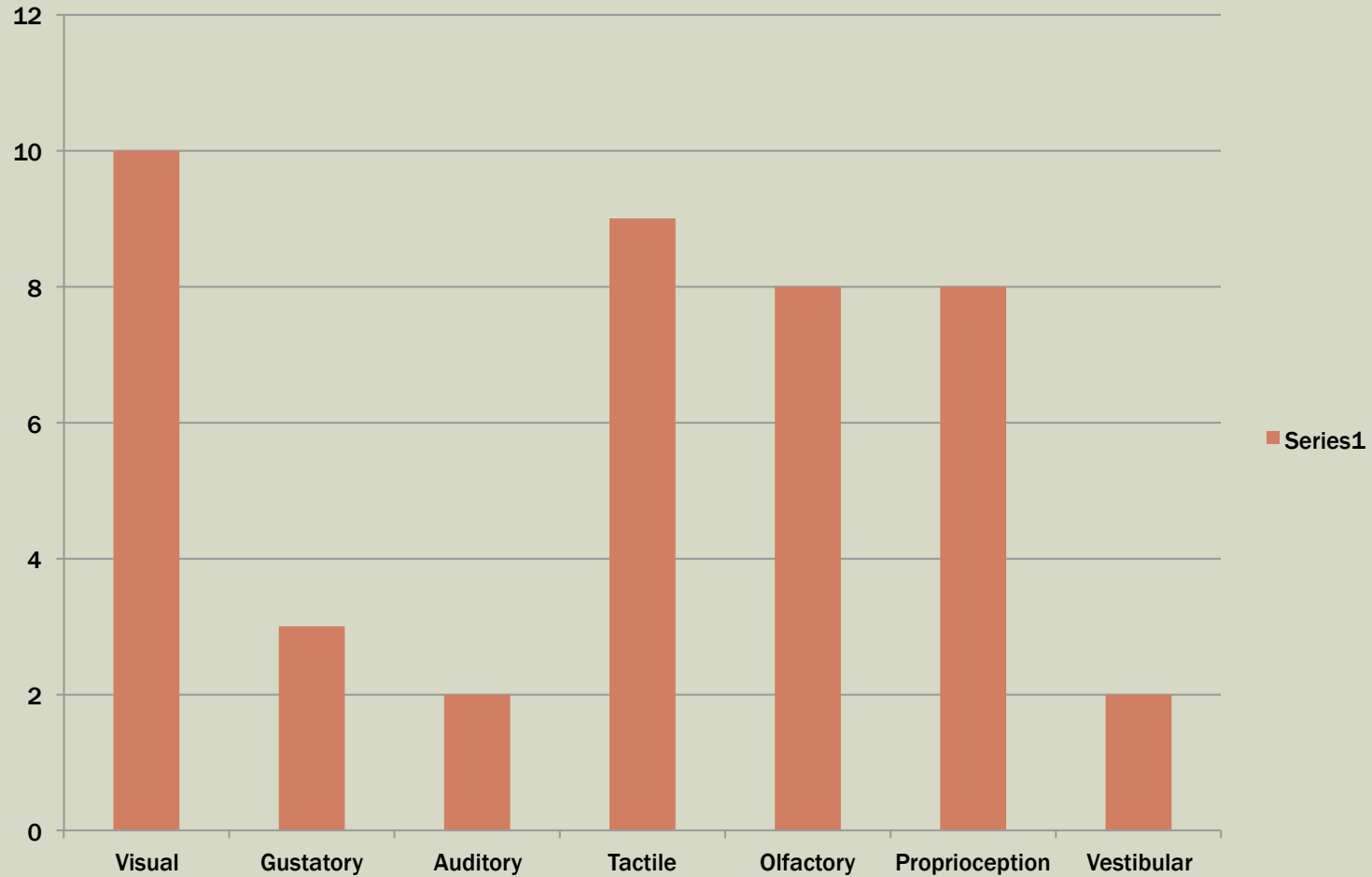


<http://www.youtube.com/watch?v=t8Xaet70paM&feature=related>

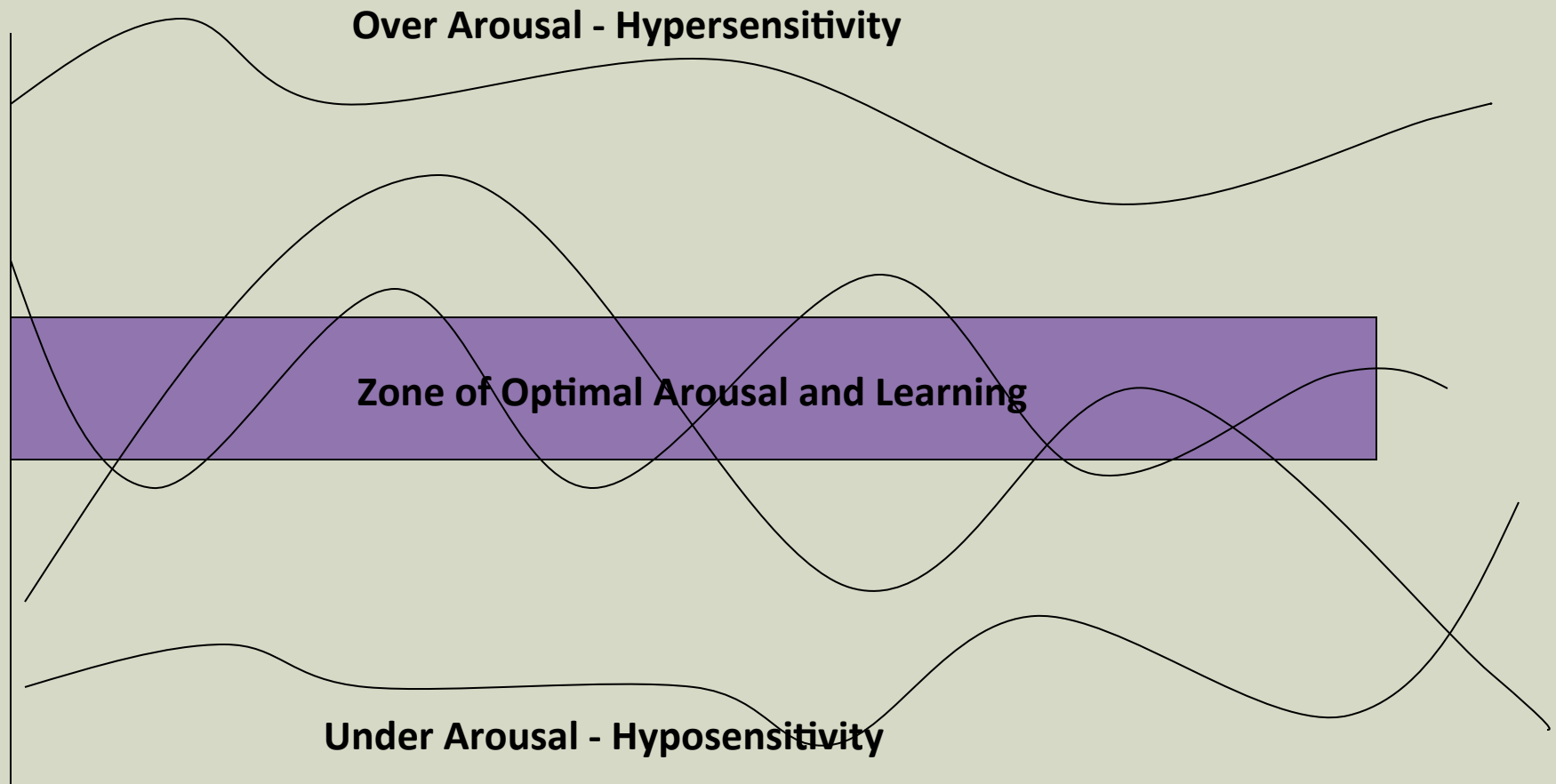
SEVEN SENSORY SYSTEMS

- Visual - sight
- Gustatory - taste
- Auditory - sound
- Tactile - touch system
- Olfactory - smell
- Proprioception - sensation of muscles and joints, resulting from active movement of the body or parts of the body.
- Vestibular system- inner ear responds to movement of the head or head and body in relationship to gravity.

WHAT DOES YOUR PROFILE LOOK LIKE? ACTIVITY



STATE OF AROUSAL - WHERE ARE YOU?



BRAIN RESEARCH AND LEARNING

(THE ART OF CHANGING THE BRAIN, JAMES ZULL,
2002)

- Plasticity of brain - Practice can increase neural density (juggling study)
- Emotion - somatic markers - specific feelings that go with specific cognitive experiences

therefore...

- Learning must be intrinsically rewarding
- Learning should feel good and the students should become aware of those feelings
- How do we do this as teachers of children with autism????

THEORY TO PRACTICE

- Consistency in language
- Consistency of the environment
- Non-competitive and Non-intimidating games
- Video Modeling of self, peers and strangers
- Visual Schedules
- Environmental Implications
- Most to least prompting

THEORY TO PRACTICE

- Providing sensory breaks
- Interspersing skill and maintenance tasks
- Infusing child choice
- High success
- 10 second response
- Using child's interests
- Utilize Paraprofessionals, Peers & Parents
- Let the child be your guide

APPLICATION—MOTOR SKILLS AND MOVEMENT QUALITY

- Music
- Balloons
- Visual modeling (videos and peer to peer)
- Imagination
- Themes and interests of child
- India Experience

APPLICATION—FITNESS & HEALTH

- Scavenger Hunt
- Lifetime fitness
- I Can Do It Program
& Nutrition

LIFETIME PHYSICAL ACTIVITY

- Understanding body mechanics
- Diagrams
- Lifetime fitness skills
 - Golf
 - Skating
 - Weight Training
 - Frisbee
 - Biking

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