

Everybody Moves

TRAZER makes every body move better.

W E L C O M E

Discussing Research:

*Leveraging Technology for Children
on the Autism Spectrum*

Tuesday, October 10, 2023
12:30 PM EST



QUICK 2 QUESTION POLL

Do you use technology and gamification in your intervention strategy?

Are you using Technology in Education or Private Practice?



MEET THE PANEL



Randy Cohen

DPT, ATC,
VP of Clinical Education
Trazer Inc. (moderator)



Jiyhun Lee

Ph.D., Associate Professor
San Jose State University
(author)



Marc Sickel

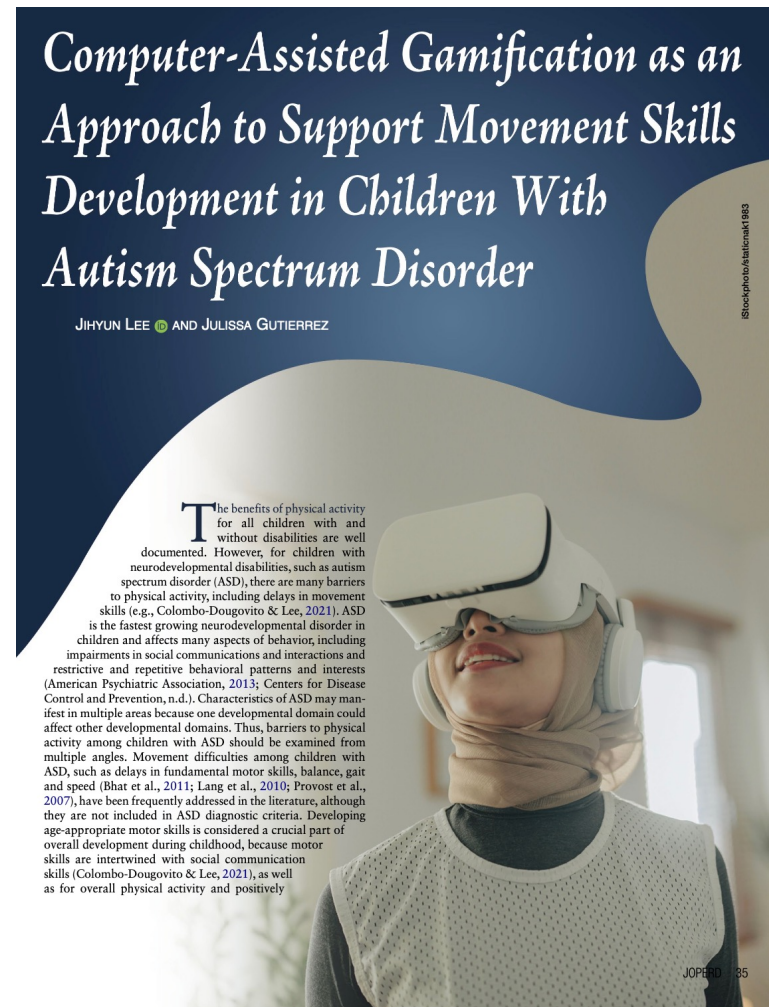
President and Founder of
Fitness for Health (guest)



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Computer-Assisted Gamification as an Approach to Support Movement Skills Development in Children With Autism Spectrum Disorder

JIHYUN LEE AND JULISSA GUTIERREZ

The benefits of physical activity for all children with and without disabilities are well documented. However, for children with neurodevelopmental disabilities, such as autism spectrum disorder (ASD), there are many barriers to physical activity, including delays in movement skills (e.g., Colombo-Dougovito & Lee, 2021). ASD is the fastest growing neurodevelopmental disorder in children and affects many aspects of behavior, including impairments in social communications and interactions and restrictive and repetitive behavioral patterns and interests (American Psychiatric Association, 2013; Centers for Disease Control and Prevention, n.d.). Characteristics of ASD may manifest in multiple areas because one developmental domain could affect other developmental domains. Thus, barriers to physical activity among children with ASD should be examined from multiple angles. Movement difficulties among children with ASD, such as delays in fundamental motor skills, balance, gait and speed (Bhat et al., 2011; Lang et al., 2010; Provost et al., 2007), have been frequently addressed in the literature, although they are not included in ASD diagnostic criteria. Developing age-appropriate motor skills is considered a crucial part of overall development during childhood, because motor skills are intertwined with social communication skills (Colombo-Dougovito & Lee, 2021), as well as for overall physical activity and positively

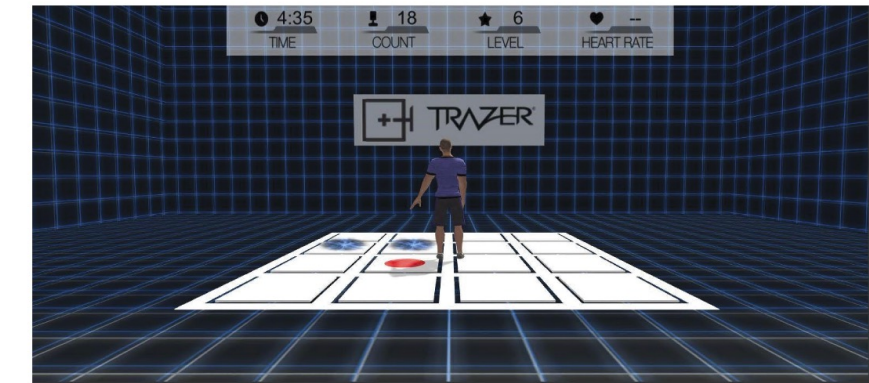


Figure 1.
Measures in Trazer.

based on a well-supported instructional strategy (e.g., Breslin & Rudisill, 2011).

Second, computer-assisted gamification specifically focuses on visual and spatial feedback. Thus, learners with ASD can look at their visual surroundings, process the information and decide how to move their bodies to get to where they need to be in a specific time frame that is set by the instructor to execute the goal of the game. The feedback provided during this gameplay is positive and helpful and includes collected data, which allows

clinicians to get feedback on the individual's movement performance. Going back to the *Goalie Wars* example (Figure 2), the instructor's role should be highlighted because they should provide additional verbal prompts, such as "hands up" or "follow the ball." This is especially important in the initial stages to enable the learner's sense of timing to help them catch or throw the ball and execute correct movement patterns.

Third, many systems enable instructors to track the learner's progress because the play history is saved on the system. In

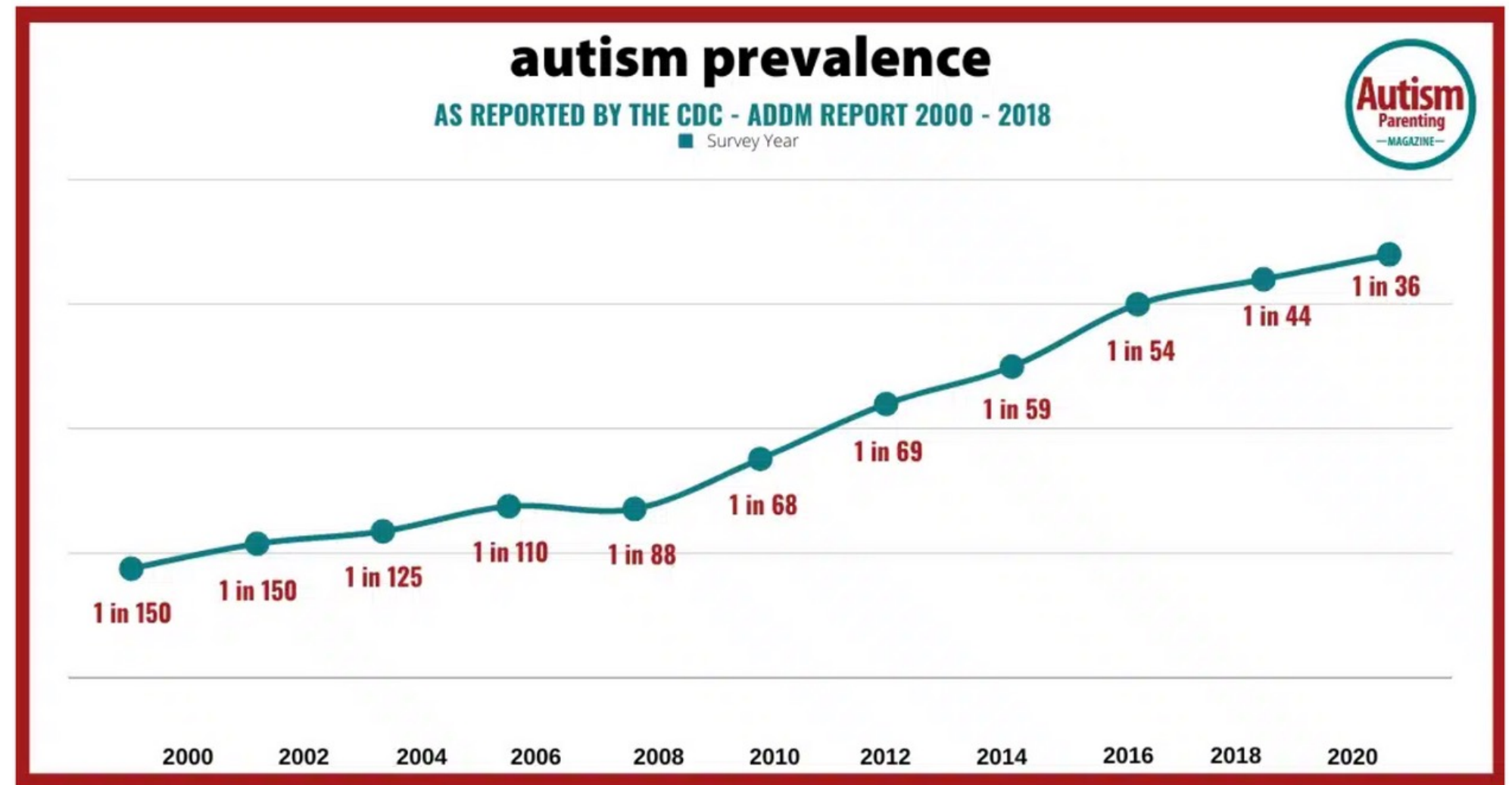
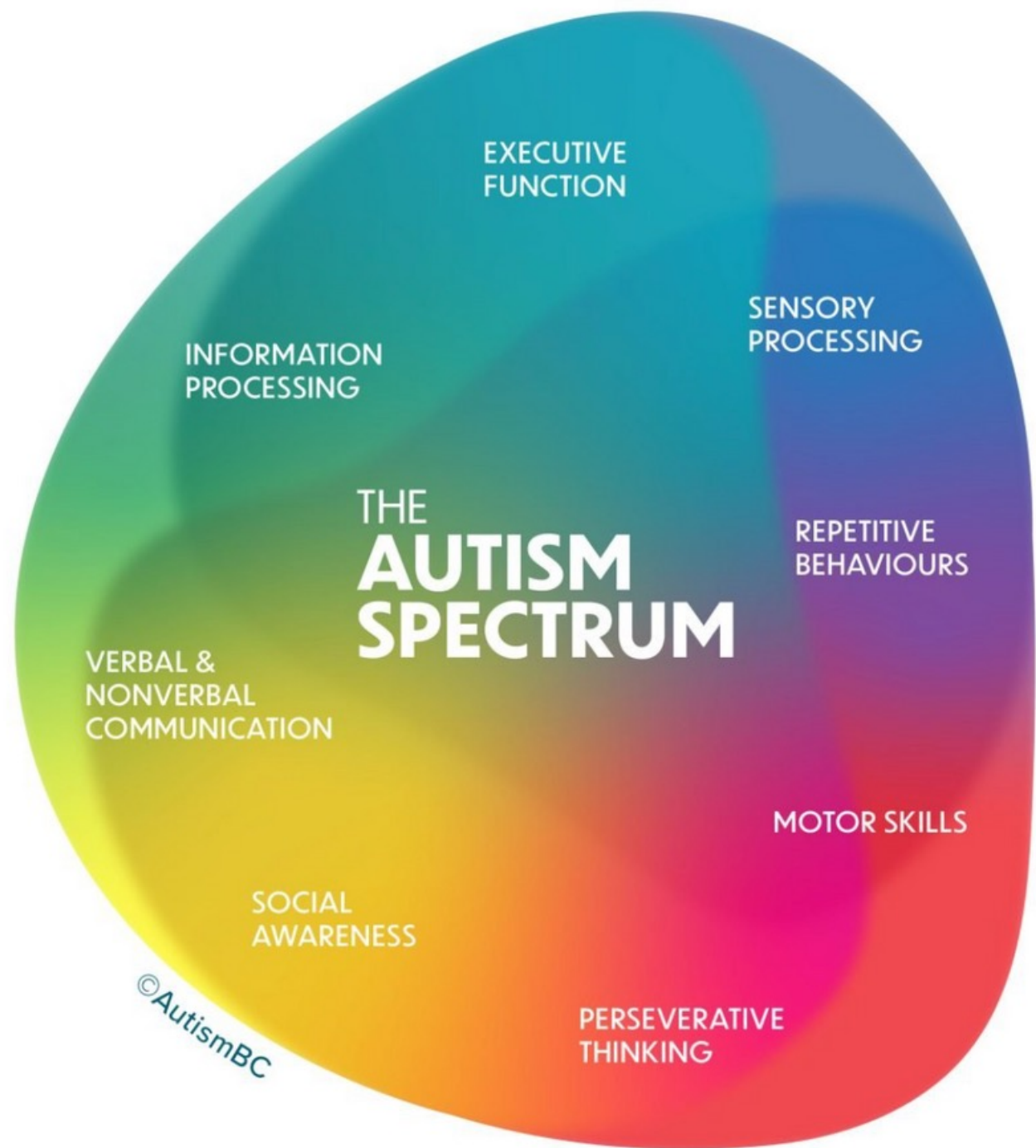


Figure 2.
Goalie Wars.

Outline:

- ASD Defined, Movement & Motor Skills
- Intervention Strategies - Motor Development & Learning
- Computer-Assisted Gamification - Advantages/Issues
- Tools identified & Used with ASD & How to Use Technology with ASD children
- Q & A

ASD Defined, Movement & Motor Skills



- Boys are nearly 4 times more likely to be diagnosed with autism than girls.

Did you know?

The 5 top reasons to address gross motor skills of children with Autism

An infographic with a black background and white text. It features a central image of a child with long braids sitting at a desk with a tablet and a blue ball. A colorful autism ribbon is in the top left. Five numbered points are arranged around the central image. The logo "PLAYWORK Intelligent Physiotherapy Technology" is in the top right.

- 1** Autism is a whole body condition
- 2** Gross motor skills decrease with age
- 3** Gross motor delay is associated with higher levels of internalizing behavior problems
- 4** For therapists: expertise on improving motor skills play a significant role when working with ASD kids
- 5** Gross motor delays are associated with lower quality of life scores

Motor Development:

- Motor development vary widely
- Fine motor skills - hand-eye & manual dexterity
- Gross Motor Skills - Running, jumping, balancing

Learning:

- Unique learning styles & strengths
- Visual thinkers and learners
- Communication challenges in traditional learning environments



COMPUTER-ASSISTED GAMIFICATION: ADVANTAGES/ISSUES



- **Tailored Content** - Personalization to needs to enhance engagement and motivation
- **Skill Development** - Target a wide range of skills, (communication, cognitive skills, fine and gross motor skills.
- **Social Interaction** - Virtual environments can encourage communication and collaboration
- **Immediate Feedback** - Consequences of actions & Connections between cause & effect.
- **Data Collection** - Monitor progress and make data-driven decisions.
- **Reduced Anxiety** - Games with clear rules and predictable outcomes.
- **Generalization of Skills** - Generalize skills learned in a game to real-world situations.
- **Professional Guidance** - Integrated into a comprehensive treatment plan



TOOLS



- Virtual Reality vs. Augmented Reality
- Headsets, Hand Controllers
- Wii, Kinect, Move, & TRAZER
- Custom - "Thinking Outside the Box"

QUESTIONS?

THANK YOU!

Learn More at: trazer.com

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