

A case of newborn at high risk for developmental disabilities and the correlation between the HINE, Bayley-III and ToP-TOES scales.

Play as a tool for early intervention therapists.

Introduction:

From infancy to the early years of development, children learn through play (Gray, 2017). Their neural circuits associated with play are activated by situations in their environment.

Newborns cortex begins to develop neural pathways from the beginning as it learns to move their limbs against gravity and eventually change positions in space, exploring and learning from their environment (Algra, 2021).

Neuroscientific research shows that play stimulates neural connections in the brain, particularly in the prefrontal cortex, which is associated with decision-making and social behavior (Pellis & Pellis, 2010).

Objectives:

Do children with and without developmental disorders show differences in playfulness? Do children at risk of developing neurological deficits show differences in playfulness? Is it possible to change the play repertoire by guiding families towards a more playful interaction with their children?

Method:

Examination of the case of a premature boy, with gestational age of 30 weeks + 3 days, extremely low birth weight, first child of a family.

Examining the correlation between HINE, Bayley III, ToP and TOES scales.

Future Bayley-III and M-CHAT assessment been arranged, at age of 18 months.

Results:

Initial assessments at 3 months corrected age, indicated developmental delays and need of referral to early intervention. After the initiation of the program, at 12 months chronological age conducted Bayley-III assessment showing deficits in cognitive and language developmental trajectories. These factors led to the strengthening of the family intervention model, incorporating playfulness and

social interaction elements. The ToP and TOES assessment tools was implemented to reveal the components of play that needed reinforcement.

Conclusion:

This case highlights the critical role of enhancing environmental factors that can help foster children's playfulness and the role of family centered therapy (Rautenbach, 2024). Enriching the environment with access to play materials and active engagement of parents to the intervention is associated with increased scores of playfulness and better neurodevelopmental outcomes (Shorer, 2025).

Hammersmith Infant Neurological Evaluation (HINE)

Bayley Scales of Infant and Toddler Development 3rd edition (Bayley-III)

Test of Playfulness (ToP)

Test of Environmental Supportiveness (TOES)

Modified Checklist for Autism in Toddlers (M-CHAT)

Corrected Age (CA)

References

1. Gray, P. (2017). What exactly is play, and why is it such a powerful vehicle for learning? *Topics in Language Disorders*, 37(3), 217–228. <https://doi.org/10.1097/tld.000000000000130>
2. Hadders-Algra, M. (2021). Early Diagnostics and Early Intervention in Neurodevelopmental Disorders—Age-Dependent Challenges and Opportunities. *Journal of Clinical Medicine*, 10(4), 861. <https://doi.org/10.3390/jcm10040861>
3. Pellis, S., & Pellis, V. (2010). *The playful brain: Venturing to the Limits of Neuroscience*. Oneworld Publications.

4. Rautenbach, G., Conolly, B., Hoosain, M., Zunza, M., & Plastow, N. A. (2024). The Effect of Play-Based Occupational Therapy on Playfulness and Social Play of Children with Autism Spectrum Disorder: A Systematic Review. *Journal of Occupational Therapy Schools & Early Intervention*, 18(2), 248–280. <https://doi.org/10.1080/19411243.2024.2360414>
5. Shorer, M., Ben-Ami, N., Ezra, S., Nahari, A., & Cohen, S. (2025). Can we guide parents to be playful? The effect of stimulated parental playfulness on children's emotional expression. *Early Child Development and Care*, 1–16. <https://doi.org/10.1080/03004430.2025.2465635>