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## **Recent Trends in Early Intervention Strategies of Preterm Infants – A Narrative Review**

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**Background:** Infants born preterm are at increased risk of adverse neurodevelopmental outcome as a result of prenatal or perinatal brain lesion. Early intervention capitalizes on increased neural plasticity and promotes cognitive, motor and sensory stimulation.

**Objective:** To describe and summarize the recent trends in early intervention such as Movement Imitation Therapy (MIT), Supporting Play Exploration and Early Developmental Intervention (SPEEDI), Craniosacral therapy (CST) and Goals-Activity-Motor-Enrichment (GAME) for preterm infants.

**Method:** Searched in the following electronic databases: PubMed, Scopus, Cochrane and Embase using terms like “early intervention” AND “recent strategies”, “preterm infants” OR “high risk infants”, “NICU” OR “neurodevelopment”. Identified 35 articles with relevant titles and abstracts (2009 to 2019). On further screening 15 full text articles were assessed for the eligibility (recent trends in early intervention of preterm infants) and excluded 5 articles (standard treatments like multimodal stimulation, NIDCAP, swaddling, pain management, positioning and Kangaroo Mother Care).

**Results:** Ten articles met the inclusion criteria. Four upcoming early intervention approaches addressing high risk preterm infants (<29 weeks of gestation) in NICU and home or community (follow up) were obtained in this review. Improvement with long term effect were seen by MIT, SPEEDI and GAME interventions when compared to the standard methods. A case series showed that normal general movement pattern was seen post MIT in a cramped synchronised preterm infant; Positive changes were seen in the motor control and early exploratory problem solving behaviors with SPEEDI in one of the pilot RCT and 2 reviews. In three other studies (2 RCT and 1 review), Craniosacral therapy was found to be safe mode of treatment in NICU for healthy preterm infants to improve their feeding abilities and general movement pattern. Also, findings from 3 articles (2 reviews and 1 RCT) having GAME protocol showed both short- and long-term benefits in the overall neurodevelopment of the child.

Outcome measures used in the studies included under this review are Prechtl General Movements Assessment, Bayley Scales of Infant and Toddler Development, Miller Assessment for Pre-schoolers, Early Problem Solving Indicator, Test of Infant Motor Performance, Peabody Developmental Motor Scale, Canadian Occupational Performance Measure, Gross Motor Function Measure, Depression, Anxiety and Stress Scale – 21 and Affordances in the Home Environment for Motor Development – Infant Scale.

**Discussion:** With MIT, movement of limbs in variable direction causes the activation of central pattern generators and further enhances the sensory feedback resulting in positive impact on the GM pattern. SPEEDI empowers parents to identify ideal times to interact, set up the environment to provide a ‘just right challenge,’ and support their infant’s self-initiated movements through a variety of activities; the changes gained with the GAME protocol could be due to the motor learning and family centric practice.

**Conclusion:** The published clinical studies endorses the recent trends in early intervention as an effective treatment approaches of preterm infants, although additional studies with a better quality methods are required. As it was found to be a safe approach, further research is required to evaluate the effect of CST in atypical preterm infants.

**Key words:** Early Intervention, Preterm infants, Movement Imitation Therapy, Goals-Activity-Motor-Enrichment, Craniosacral therapy, Supporting Play Exploration and Early Developmental Intervention