

## Fetal behaviour: a neurodevelopmental approach.

Einspieler, C., Prayer, D., and Prechtl, H.F.R. (2012). *Clinics in Developmental Medicine No 189*. London: Mac Keith Press. Price \$155.00

Embryology and fetal development are fascinating topics. What this book focuses on is fetal behaviour and movements, from a developmental neurology perspective, providing age-specific documentation of the functional repertoire of the nervous system. The research provided by ultrasound observations of the fetus, over many decades now, has revealed so much that was previously hidden from doctors, obstetricians, midwives and researchers. Heart motion is the first motor activity, occurring at 5-6 weeks post menstrual age; startles, general movements (as defined by Heinz Prechtl) in the entire body and hiccups are present in the embryo from as early as about 8 weeks; fetal breathing movements typically follow 2-4 weeks later; hand to face contact is occurring at about 11 weeks; isolated finger movements can be seen at 13 weeks (that challenges the concept that development is cephalo-caudal); sucking and swallowing is present at 14 weeks. And so the list could go on until we can describe the behaviours and movements that we see in the very preterm infant. Our knowledge of fetal movements has been much enhanced from the observations seen during ultrasound of the embryo and the fetus, and these are documented and extensively referenced in this book.

The eight chapters range over the topics of observation of fetal behaviour, spontaneous motor behaviour, prenatal laterality, fetal behavioural states, fetal responsiveness, fetal behaviour in twins, determinants of fetal behaviour, and functional assessment of the fetal nervous system, linking these observations with many well documented brain malformations, chromosomal abnormalities and lesser known syndromes. Included with this book is a CD of 26 videos of fetal recordings. Interesting detailed research identifies facts such as "embryonic motility is not dependent on sensory input but is centrally generated" (p17); "adequate embryonic and fetal movements are necessary for the proper development of the skeletal, muscular and neural systems" (p19); "the variability and complexity of general movements is an indicator for the integrity of the young nervous system" (p26); "the developing brain permanently interacts with a variety of sensory stimuli" (p91) viz: auditory, tactile, olfactory stimuli in utero, in addition to external stimuli. What is fascinating in this material is the continuum of fetal behaviour, that is then seen in preterm infants, term babies and young infants, as documented in *Prechtl's Method on the Qualitative Assessment of General Movements in Preterm, Term and Young Infants* ((Einspieler, Prechtl, & Bos, 2005). Heinz Prechtl, one of the authors of this book that I am reviewing, was a pioneer in the evaluation of the quality of spontaneous movements during early development, both fetal and after birth.

This book is written for neonatologists, paediatric neurologists, paediatricians, neurophysiologists, neuroscientists, obstetricians, and researchers in fetal development, but would be of considerable interest to neurodevelopmental paediatric

physiotherapists who work in neonatal units. It is not an essential read, but one to get out of the library to brush up one's knowledge of embryonic and fetal development, to link up the continuum of the developmental behaviour of healthy fetuses with one's clinical knowledge of preterm infant behaviour, Prechtl's assessment of preterm infant behaviour (Einspieler, Prechtl, & Bos, 2005) and one's ongoing observations.

### REFERENCE

Einspieler C, Prechtl HFR and Bos AF (2005). *Prechtl's Method on the Qualitative Assessment of General Movements in Preterm, Term and Young Infants*. London: Mac Keith Press

Margaret Davidson, MHS (Hons); ADP (Paeds); Dip Phys