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Each person is an individual and has a unique psychological profile, biochemistry, developmental and social history. As such, advice will not be given over the internet and recommendations and interventions within this website cannot be taken as a substitute for a thorough medical or allied health professional assessment or diagnosis.

Neurodevelopmental Therapy - Inhibition of Primitive Reflexes

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INTRODUCTION

The Central Nervous System (CNS) is the control centre for all thinking, learning, and moving. The development of an efficient CNS is complex yet a certain amount is understood. There are many factors which contribute to a person being able to move well, speak fluently, play and develop the skills necessary for every day living and learning. The development of the CNS commences from conception, develops in a regular sequence and is the same for all humans regardless of cultural influences.

Parts of this regular sequence of developmental stages are identified by the movement patterns which occur at each stage. These have been called reflexes. Each reflex is seen to play a part in the necessary growth of the foetus or young child. Each reflex also prepares the way for the next stage of development. Thus in the development of an infant from conception to birth, and on to the toddler stage, there is a sequential occurrence of survival or primitive reflexes.

WHAT ARE PRIMITIVE REFLEXES?

Primitive reflexes are:

- Survival reflexes occurring sequentially in the first few weeks of foetal development
- Automatic, stereotyped movements, directed by a very primitive part of the brain (brain stem).
- Executed without involvement of higher levels of the brain (the cortex).
- Ideally short lived and as each fulfils its function is replaced by more sophisticated structures (Postural Reflexes) which are controlled by the cortex
- Retained if they do not fulfil their function
- Considered aberrant and evidence of an immaturity within the CNS if present beyond their time.

WHAT ARE THE CONSEQUENCES?

Under normal circumstances, each set of movements identified as a reflex, plays a part, and then the CNS allows the package of interrelated movements to "break-up" and be integrated into increasingly complex voluntary controlled movement. Many variables however, can interfere with development for instance, genetic pre-disposition or inherited characteristics, stresses during pregnancy, birth trauma, and environmental deprivation are but a few examples.

Research in the U.K. and Sweden, has shown that retained primitive reflexes may impede subsequent behaviour, motor control, sensory perception, eye-hand co-ordination, and cognition. Neuro-developmental delay is a term which describes the presence of a cluster of aberrant reflexes because of an omission or arrest of a stage of early development. Certain combinations of retained reflexes exhibit themselves in ways that affect emotional and social well-being and academic progress.

SIGNS OF NEURO-DEVELOPMENTAL DELAY

- Dyslexia or Learning Difficulties, especially reading, spelling and comprehension
- Poor written expression
- Poor sequencing skills
- Poor sense of time
- Poor visual function/processing skills
- Slow in processing information
- Attention and concentration problems
- Inability to sit still/fidgeting
- Poor organisational skills
- Easily distracted and/or impulsive
- Hyperactivity
- Hypersensitivity to sound, light, or touch
- Dyspraxia/Speech problems and Language delays
- Motor, co-ordination and balance problems
- Poor posture and/or awkward gait
- Poor handwriting
- Poor spatial awareness

- Poor hand-eye co-ordination
- Poor gross and fine motor skills
- Difficulty learning how to swim/ride a bike
- Clumsiness/accident prone
- Slow at copying tasks
- Confusion between right and left
- Reversals of letters/numbers and midline problems
- History of difficult birth
- History of brain injury or damage
- Quick temper/easily frustrated/short fuse
- Bedwetting past 5 years of age
- Motion sickness
- Can't cope with change/must have things a certain (their) way
- School Phobia
- Poor motivation and/or self esteem
- Depression, anxiety or stress
- Behavioural, self esteem and motivational problems associated with the above

In adults, symptoms include agoraphobia, excessive reaction to stimuli, anxiety, panic attacks, difficulty making decisions and poor self esteem.

If you recognise and/or are concerned about any of the listed areas then it is worth discussing them with a trained Neuro-developmental therapist.

A brief summary of the primitive reflexes follows:

THE PRIMITIVE REFLEXES

THE MORO REFLEX

- Emerges at 9 weeks in utero and is the earliest form of "fight or flight" (reaction to stress) which is fully present at birth
- Is usually inhibited between 2-4 months of life
- When retained has an overall effect on the emotional profile of a child because he/she is caught in a vicious circle in which reflex activity stimulates the production of adrenalin and cortisol (stress hormones)
- Presents as a paradox - the child is acutely sensitive, perceptive, imaginative on the one hand, but immature and over reactive on the other.
- Results in coping in one of two ways- **withdrawing** from difficult situations, difficulty socialising and neither accepting or demonstrating affection or **becoming aggressive**, highly excitable, over-reactive and dominating
- Forms the corner-stone in the foundation for life and living and its effects are profound if it is not inhibited at the correct time and transformed into an adult startle response.
- Occasionally the Moro Reflex is retained to adulthood. This being the case, adults present with free-floating anxiety; excessive reaction to stimuli (mood swings - labile emotions; difficulty accepting criticism; tense muscle tone); difficulty making decisions; weak ego, low self-esteem (insecurity / dependency, need to control/manipulate events).

THE PALMAR REFLEX

- Emerges at 11 weeks in utero, is fully present at birth and usually inhibited by 2-3 months of life
- Is the infant grasp reflex and is replaced by the pincer grip at 36 weeks of age
- When retained beyond 4-5 months of life will impede both manual dexterity and manipulatory activities
- Is one of a group of reflexes which affect handwriting, speech and articulation.

THE PLANTAR REFLEX

- Is another grasp reflex which emerges 11 weeks in utero and integrated 2-3 months neonate
- Affects balance and mobility
- Emerges at 18 weeks in utero, is fully present at birth and is usually inhibited at about 6 months
- Facilitates kicking movements, muscle tone and provides vestibular stimulation which stimulates the balance mechanism and increases neural connections during uterine life
- Not only assists the birth process but is reinforced by it and may be one reason why caesarean babies are at greater risk of developmental delay
- If retained it will impede creeping and cross-pattern crawling which is important for hand-eye coordination and the integration of the vestibular information with other senses
- Enhances myelination of the CNS during the above processes
- Also affects balance, crossing the midline, laterality, visual-perceptual difficulties, handwriting and written expression.

THE ROOTING REFLEX

- Emerges at 24-28 weeks in utero, is fully present at birth and is inhibited by 3-4 months
- If retained may affect swallowing, feeding, speech, articulation and manual dexterity in an older child

THE SPINAL GALANT

- Emerges at 20 weeks in utero, is actively present at birth and inhibited by 3-9 months
- If fully retained, or only retained on one side may affect posture, gait and other forms of locomotion
- Is responsible for fidgeting, bedwetting, poor concentration and short term memory, and hip rotation to one side when walking
- When retained can interfere with the development of amphibian and segmental rolling reflexes.

ASYMMETRICAL TONIC NECK REFLEX (ATNR)

- Emerges 18 weeks in utero to stimulate the balance mechanism and increase neural connections
- ATNR assists birth process and is reinforced by it
- Fully present at birth
- Develops eye-hand coordination, trains one side of the body at a time; extends ability to focus from 17cm to arms length
- Inhibited about 6 months of life (so that focus on distant objects can develop)
- Ensures free passage of air when baby is in the prone position, increases extensor muscle tone.

When retained, the ATNR can result in the following manifestations:

- Homolateral movements when walking, marching skipping instead of cross-pattern movements
- Difficulty crossing the midline, can't manipulate objects with both hands, poor ocular pursuit movements, fails to establish a preferred hand / eye / leg / ear and hence a dominant side so that movements are always slightly hesitant
- Mixed laterality
- Poor handwriting and poor expression of ideas on paper
- Visual-perceptual difficulties (symmetrical representation of figures)

THE TONIC LABYRINTHINE REFLEX (TLR) FORWARDS

- Emerges in utero, is fully present at birth and is inhibited by 4 months
- Is closely linked to the Moro as both are vestibular in origin and activated by movement of the head
- When retained can lead to spatial problems, motion sickness, poor posture & muscle tone, visual perceptual difficulties, poor sequencing skills and a poor sense of time.

THE TONIC LABYRINTHINE REFLEX (TLR) BACKWARDS

- Emerges at birth and is inhibited gradually from 6 weeks to 3 years
- is involved in the simultaneous development of postural reflexes, symmetrical tonic neck reflex and the Landau reflex can result in poor balance and coordination, organisational skills and stiff jerky movements if retained.

POSTURAL REFLEXES

These are transformed primitive reflexes and executed by higher regions in the brain (cortex). Once present they should remain for life. Their absence is an indication that the CNS is immature.

THE SYMMETRICAL TONIC NECK REFLEX- FLEXION & EXTENSION (STNR)

- When the child is in the quadruped position, flexion of the head causes the arms to bend and the legs to extend.
- Head extension on the other hand causes the legs to flex and the arms to straighten.
- Emerges at about 6-9 months of life and is inhibited about 9-11 months
- If retained affects posture, hand-eye coordination and swimming skills
- Results in the tendency to slump when sitting at a desk, ape-like walk, "clumsy child" syndrome, difficulties with binocular vision, slowness at copying tasks and messy eating habits.

LANDAU REFLEX

- Emerges 3-10 months neonate and is inhibited by 36 months
- Can only occur when the TLR has been integrated and adequate muscle tone has developed.
- Neither the Landau nor the STNR are true primitive or postural reflexes. Since they are not present at birth, and do not remain present for the remainder of life, they need to be considered as "bridge" reflexes which have an important inhibitory affect upon the TLR, while strengthening muscle tone and developing vestibulo-ocular motor skills.

THE TRANSFORMED TONIC NECK REFLEX

- Emerges 6-8 months neonate and remains for life
- When present is an indicator that cross lateral integration is developing adequately
- If absent, it indicates that other primitive reflexes are present and inhibiting CNS development

THE AMPHIBIAN REFLEX

- Emerges 4-6 months neonate and remains for life
- If absent suggests uninhibited primitive reflexes especially the ATNR
- Is essential for crawling, walking & running

SEGMENTAL ROLLING REFLEXES

- Emerge 6-10 months neonate and remain for life
- Are essential for the integration of cross lateral movements such as smooth walking, running, jumping, skipping, marching, and swimming.

OCCULO-HEAD RIGHTING REFLEX

- Emerges 2-3 months neonate and remains for life
- Is critical for efficient balance and eye movement control
- When underdeveloped can lead to poor visual tracking, and sometimes nausea and disorientation.

LABYRINTHINE-HEAD RIGHTING REFLEX

- Emerges 2-3 months neonate and remains for life
- Is linked to the vestibular motor system
- Together with the OHRR is essential for balance.

One of the reasons why children frequently lose their place when copying from the board is because they have not yet developed efficient OHRR and LHRR reflexes. They struggle to readjust their focus making the task slow and laborious.

In some individuals, full integration and transformation of the primitive reflexes fails to occur and they remain active despite normal development in other areas. When this occurs, it contributes to the underdevelopment of efficient proprioceptive-motor integration, hand-eye co-ordination, lateral integration and aspects of perceptual performance.

Detection of primitive reflexes (diagnostic assessment) can help isolate some of the causes of a child's problems so that remedial training can be targeted more effectively.

If the reflex profile is only marginally abnormal, teaching strategies alone will usually be sufficient. Those with a moderate degree of reflex abnormality may benefit from a combination of specialised teaching and a reflex inhibition program designed to improve balance and co-ordination. If, however, a cluster of aberrant reflexes is present, a reflex inhibition program together with chiropractic treatment and other therapies is more effective.

ASSESSMENT

A full assessment (1-2 hrs) includes a detailed history as well as tests for gross and fine muscle coordination, balance, patterns of motor development, the presence of aberrant reflexes, laterality, oculo-motor functioning and visual perceptual ability. Should the results reveal the persistence of Primitive Reflexes beyond the normal age of inhibition, an individual treatment regime will be designed. An outline of the Home Program devised by the Institute for Neurophysiological Psychology (Chester, U.K.) will be explained when the report is ready. Progress is monitored at 6-8 week intervals and the program amended when appropriate.

WHAT IS A REFLEX INHIBITION PROGRAM?

A Reflex inhibition program:

- Is based on the theory of replication ie. it is possible to replicate specific stages of development through the repetition of movement patterns based upon early development
- Gives the brain a "second chance" to pass through the stages which were omitted or incomplete in the first year of life
- Establishes neural connections and sets the "neural clock" to the "correct time".
- Consists of specific physical, stereotyped movements practised for approximately 5 to 10 minutes per day over a period of nine to twelve months.
- Once begun should not be abandoned mid stream
- Should only be given under careful and qualified supervision.

Detection of primitive reflexes can help isolate the causes of a child's problem so that remedial training can be targeted more effectively. CranioSacral correction may also be necessary to re-establish central nervous system functioning.

Aberrant reflex activity needs to be addressed in order to facilitate normal development and eliminate many of the physical, academic and emotional problems their presence caused.

For more information or to make an appointment please contact us on (02) 9637 9998 during business hours.

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