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Paper Presented to:

The World Aquatic Babies Congress 2007
Oceana Swim Teachers and Coaches Conference

Wellington, NZ
Broadbeach, Qld

8 Oct. '07
3 May '08

"READING BABY"

A Developmental Approach to understanding Aquatic Readiness.

Introduction:

As a young Occupational Therapist working with developmentally challenged children, Julie used **observation of posture, muscle tone, eye gaze, vocalizations, facial expressions** (and other nonverbal cues), to establish the level of relaxation and readiness for learning in her young patients. Over the past 20 years Julie has applied this knowledge to young children in the **aquatic environment**.

This presentation gives swimming teachers **tools to assist in establishing the learning state - both physically and emotionally - of their students** from 0 to 2 years of age. The postural and protective neonatal reflexes most relevant to the aquatic environment will be interpreted for clues to the readiness of the infant for aquatic activity.

Readiness for Baby Swimming is Multifaceted.

It is about...

- emotional state;
- muscle tone and posture;
- alertness of the nervous system;
- focus and attention.

Readiness for Baby Swimming is influenced by External Factors.

Factors such as...

- past experience;
- quality of the current environment;
- quality of the current group dynamic;
- quality of current personal interactions.

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Readiness for Baby Swimming takes many Forms.

It is about readiness for:

- submersion
- separation;
- group participation;
- introduction of new skills and activities;
- movement in different planes;
- removal of assistance and support;
- and many other skills and activities in the aquatic environment.

The Instinctive Baby Swim Teacher:

- Just knows when a baby is ready!
- Quickly builds rapport and **2 way communication**.
- Is **attentive**, maintains good visual and physical contact.
- Naturally practices good **“scaffolding”** techniques.
- Often works **subconsciously** and finds it hard to “explain” how they evaluate readiness.

From Instinct to Awareness:

- This presentation aims to **increase conscious awareness** of the “signs” effective teachers are reading when teaching babies to swim
- “Perceptive” or “Intuitive” people can **subconsciously “read”** these signs. They will often speak of “hunches” or “gut feelings”.
- In order to train parents and other teachers we need to bring this intuition into our **“collective consciousness”** - our **“knowledge base”** as professional baby swimming teachers.

Reading the Signs:

- Research has shown that women (in general) are twice as **“perceptive”** as men. Men in nurturing professions such as nursing and teaching scored nearly as well as women. (Brody L., 1999, Harvard)
- Even women are **not** usually **“tuned in”** very well. (Pease, 1997)
- Learning to read the signs allows us to **become more sensitive** and in tune with others needs and so better teachers.
- Knowing when a baby is **“relaxed yet ready for action”**.

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Reading Auditory Clues:

- Crying;
- Reflexive baby sounds;
- The **pitch and tone** of vocalisations;
- The power of **rhythm**;
- Common early “words”;
- Interpreting **silence**;
- **Mirroring** and **pacing** of vocalizations.

Auditory Reflexes - Dunstan Baby Sounds (www.dunstanbaby.com):

- Innate, universal, **reflexive** sounds
- Unless encouraged will be **gone by 4 months**
- **Some ears** have difficulty distinguishing them
- Many mothers “**instinctively**” know the meaning of their babies cry
- “Neh”, sucking cry, tongue to roof of mouth, **hungry**
- “Eh”, need to **burp**, air in the upper digestive track.
- “Heh”, panting cry, **skin discomfort** (eg hot, cold, wet)
- “Eairh”, lower gas, **colic** pain.
- “Owh”, yawning cry, **tired**.

Reading Through Touch:

- **Touching** is important to read tonal state but also to transmit comfort and security.
- If we can’t touch our water babies we miss a lot of **opportunities to “read”** them.
- “**Floppy**” **tone**: leaning into you; not alert; sleepy (hypotonic)
- “**Ready**” **tone**: firm; relaxed; stable.
- “**Stiff**” **tone**: resistant; “fight or flight”; (hypertonic).
- Look for **subtle changes** in tone eg. Clenched fist; shoulders hunched forward.

Reading Visual Cues:

- Albert Mehrabian conducted a study in the 1950’s which showed **communication** to be 7% words; 38% tone and inflection; 55% non verbal.
- Other studies have found over 65% of conversations to be **non-verbal**.
- Ray Birdwhistell (Kinesics – original study of nonverbal communication) concluded we only speak words around 10 or 11 min’s per day, but we “**read**” **around 250,000** facial expressions!

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Reading Facial Expressions:

- Nearly all facial expressions are **innate and universal** (deaf and blind babies develop the same basic expressions for emotions) (Paul Eckman - Uni. Of California; and also Dr Linda Camras – DePaul Uni. Chicago)
- Expressionless faces in young babies are **normal** – they don't have our more subtle emotions as yet. However their faces may certainly show if they are unhappy, angry, tired, uncomfortable, delighted or actively engaged in an activity!
- **Extended gaze** develops in the early months and is essential to build rapport and develop the babies repertoire of socially acquired facial expressions
- **Smiling** is innate and universal – the release of endorphins has a powerful effect on the child's development

Hand Gestures:

- There are more **connections brain to hand** than to any other part of the body, and so hand position tells us a lot.
- There is an **innate tendency** to gesture with the hands – culture will affect the level to which it is developed.
- My husband is Italian – if I want silence him I hold his hands down!
- **Finger pointing** (starts with developing pincer grasp)
- **Palm up** = non threatening; **palm down** = authority.
- **Open palms** – very comfortable.
- **Closed fists**, tense, angry, insecure.
- **Cover mouth** if lying, but can't purposely tell a lie until around 4yrs.

Orientation of the Eyes:

- Dr Simon Baron-Cohen (Cambridge) found that just showing a photo of the strip across the eyes 22/25 women could establish mental state (e.g. friendly, relaxed, hostile, worried). 19/25 men could. Both sexes were **better at decoding the eyes than they were at body language**.
- Apart from some Asian and South American cultures (notably Japan), **extended eye gaze** is positive and builds rapport.
- Babies have **larger pupils** – they dilate and look most appealing when around adults – causing them to receive extra attention.
- Small pupils are considered hostile (beady eyes)
- Eye direction is linked to **emotional state** (NLP - American Psychologists Grinder and Bandler).

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Body Language:

- Many gestures are **inborn**
- Mirroring of postures **builds rapport**.
- As **adults** our posture, movement and gestures can tell one story while our words tell another.
- Under 5yrs it is difficult to tell a lie - under 3 yrs it is impossible – therefore a **baby's body language, facial expression and verbal communication will always match!**

Early Communicative Body Language:

- Strenuous body movements and sounds to capture adult attention.
- Actively resists removing a toy.
- Reaches out for toys, cuddles.
- Pushes away, turns away to reject.
- Waving and banging - beginning of hand gesturing.
- Head nodding and shaking.

Posture:

- **Closed** postures = uncertainty
- **Arms across** the body = defensiveness
- **“When the body closes so does the mind!”** (Pease)
- **Open** postures = comfortable
- **Personal space** – learnt by age 12 yrs – different each culture.
- Body (sometimes just feet or head) will **tend to point** to where we want to be.
- Legs together and pointing at you = **attention**
- Jiggling the feet = I want to **run away!**

Head Orientation:

- Righting **reactions v's intentional** posturing
- Using **head as “purchase”** for other movement
- **Better control** than other body parts.
- Nodding and head shaking are **universal** (nodding to show submissiveness as in head lowering; head shaking from refusing the breast)
- **Head Gestures** are some of the first socially acquired postures to emerge.
- **Chin down** = non conforming / hostile / negative
- **Chin up** = defiant / dominant

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- **Head tilt** = interested / submissive (also in dogs!)
- **Head shrug** (pull head down and raise shoulders) = trying to be small and inconspicuous.
- **Self awareness** emerging: embarrassment, shame, doubt, pride
- **Turning head** to avoid, ignore, escape, explore
- When doesn't like what hears or sees, will **cover** ears, eyes sometimes entire face, or **turn away** the head or whole body.

Social Referencing:

- **Children look to adult faces and body language** (usually their primary carers) for reassurance, comfort responses, and attention.
- This constant **checking** for the adults' **response** is called "**referencing**" and it peaks at around 12 months.
- By 10 to 12 months the baby is an **expert at "reading" the facial expressions** of his mother to interpret her emotions.
- Our response is a powerful stimulator, physiologically, emotionally and socially. When a baby **sees a smile**, endorphins are released into its body. Not only does this make it feel good but it also helps the baby **grow and develop!**
- Babies have a **tendency to mirror** the expressions and facial expressions of their primary carers, and then **experience the emotions** that go with those expressions and postures.
- Babies from around 6 months will track the gaze of adults and show "**shared attention**".

The role of reflexes

- Newborns are born with a **universal** set of movement patterns that help them to survive and develop in the early months.
- Primitive Reflexes are **present in the newborn** and mostly integrated by 4 months. A few primitive reflexes hang on a few months longer.
- Until 3 to 4 months the baby has poor control of posture (stability against gravity) and large movements.
- As the **primitive reflexes** start to **integrate**, a universal set of **postural reflexes emerge**. Most of these reflexes stay for life and we use them every day to interact with our physical environment.
- If able to **read and interpret** these clues the swimming teacher is empowered to effectively evaluate readiness and achieve maximum learning outcomes.

Primitive Reflexes – mostly not seen after 4 months:

- These are the reflexes **displayed by healthy newborns**, and most are integrated by the time the baby is 4 months old.
- These are the reflexes we love to talk about! However understanding them is not always of great use to us as they are mostly all over (**integrated**) **by the time we get children into the pool!**
- Some are for survival, others are evolutionary “left overs”.
- There are **over 70 primitive reflexes**, the most interesting to early aquatics being the rooting reflex; sucking reflex; tonic labyrinthine (TLR); asymmetrical tonic neck reflex (ATNR); startle reflex (Moro); and grasp reflex (palmar); trigeminal reflex.
- **ATNR (Asymmetrical Tonic Neck Reflex)** integrates by 3 to 4 months. When the head turns the arm and leg on the same side will extend, the others will flex. Known as the “fencing position”.
- Reference has been made to a **swimming reflex**. It is interesting to note that a rooting reflex will cause head turning, head turning will elicit an ATNR. When face down in water the **combination of rooting reflex and ATNR** may appear to be a swimming action. The “swimming reflex” may be a variant of the **crawling/creeping reflex** which allows a newborn to work its way up the mothers’ abdomen to her breast.
- The **startle (Moro) reflex** is integrated by around 5 months and is gradually replaced by an adult “startle” reflex. Loud noise or sudden fall backwards of the head will result in postural reactions and an unpleasant emotional response. This reflex is often elicited in back floating with young babies.
- **Grasp reflex** is integrated by 4 to 6 months but controlled voluntary release takes a few more months to master.
- **Tonic labyrinthine reflex (TLR) is not integrated until around 6 months.** Caused the child to flex/extend **with gravity**. Curling into flexion when on the stomach and opening into an open, extended posture when on the back. Young babies in the pool are very comfortable on their back because of this reflex.

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Misreading Reflexive Body Language

In the early months Primitive Reflexes are still active and strongly influencing the way baby moves its body. We often misinterpret these actions as meaningful, communicative body language.

Tonic Labyrinthine

- “My baby is so snuggly – he loves cuddles”
- “My baby is so advanced – he just wants to be up and looking around all the time”

Moro

- “My baby doesn’t like the bath”

Grasp

- “He loves to pull my hair”

ATNR

- “My baby loves to reach up to touch my face when I nurse him”

Reflexes relevant to submersion:

- Submersion of young babies is often discussed in relation to “**breath holding**” reflexes. In medical literature the term “breath holding reflex” is usually associated with “breath holding attacks” (apnoeic or pallor attacks). These attacks are common in young children and very frightening. Certainly not something we wish associated with infant swimming. The other association with “breath holding reflexes” has been underwater breath holding resulting in teenage deaths. We must be careful as a profession when we use “borrowed” terminology.
- Most swim teachers in Australia and New Zealand are using a learnt response to prepare a child to submerge. **Unless working with very small babies (under 3 months), or submerging children who are not relaxed and ready, it is unlikely that we are eliciting any primitive reflex.**
- **Pharyngeal Reflex.** Triggered by the baby taking in water on submersion – a sign that readiness is not achieved. If activated water has reached the epiglottis region to trigger the reflex. The baby will initially stop breathing, and be likely to swallow water or cough up the water trapped in the throat when breathing resumes. This reflex is part of the trigger for the dive response. Dental literature also refers to this as the “**apneic reflex**”.

- **Dive Response (mammalian dive response).** Unlikely to be triggered in our warm baby pools. Part of the trigger is cool/cold water to the face. Characterised by a number of physiological changes which are not normally demonstrated in baby swim sessions. Associated to Pharyngeal Reflex – triggered by water reaching the upper respiratory tract.
- **Trigeminal Reflex.** Water, air stream or other stimulus (hand) to area around the nose. Blinks (due to different reflex), breathes in and holds without water having to reach the throat. In young children (and sometimes adults). As comfortable to the child as having the face gently wiped. If gentle approach is transferred to learnt response (cue) very quickly. Also sometimes referred to as the “aspiration” reflex.

Most teachers are using a learnt response to prepare a child to submerge.

- Unless submerging babies under 3 months, it is unlikely that we are eliciting any primitive reflex.
- Over 3 months if the child is **actively (independently) submerging**, or passively submerged with good preparation, relaxation and readiness, reflex responses are unlikely.
- Many teachers in Australia and New Zealand elicit the Trigeminal reflex the first few times they pass a hand or small amount of water over baby’s face when teaching a cue. As the baby learns quickly and the stimulus soon becomes “expected” rather than “novel” the reflex is **quickly integrated** and the child shows a **learnt response** to the cue. The learnt response is achieved long before the baby experiences its first submersion.

Reading Readiness for Release into the Water

- **Parent** is relaxed, attentive and **ready to receive** the baby
- Babies body and **eyes are attending** to receiver (parent)
- **Posture is stable**
- Muscle **tone is relaxed** (soft to firm, but not stiff)
- **Relaxed face** and slight eye blink when baby hears the cue
- Remains relaxed **during and after**
- When parent displays **readiness** (often weeks after the child) they start **releasing the child themselves.**

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Postural Reflexes/Reactions – very important to swimming “body language”:

- My background in **Neuro Developmental Therapy** (NDT) has resulted in a heightened awareness of the postural and reflexive reactions of young children in swim lessons.
- As the primitive reflexes become integrated and so “disappear”, the **postural reflexes are emerging**. This transitional period was identified by Myrtle McGraw as a period of “disorganised” movement.
- At 3 to 4 months, just as the Tonic Labyrinthine is integrating, the **Landau Reflex** emerges. Very important to develop good postural control. Unlike most postural reflexes the Landau does not persist through life, rather it is integrated at around 12 months. Seen when the baby is suspended horizontally in mid air it is also seen in many when horizontal in the water. When the head (neck) extends back the trunk and hips, arms and legs extend in sequence resembling a “superman” pose. When the head is tilted forward the arms and legs flex. Many of the free swimming underwater shots we see are baby’s in the extended Landau posture. When children this age lift the head and legs when in back float, head righting reactions are bringing the head up and the head position is setting off a Landau reflex causing the rest of the body to flex. This can be a very uncomfortable and posturally insecure position for the child
- The **Symmetrical Tonic Neck Reflex** (STNR) emerges at 4 to 6 months and has a significant impact on the child’s swimming posture. It is integrated at anything from 8 to 12 months. Allows us to stabilise our body against gravity – again in opposition to the Tonic Labyrinthine Reflex. The reflex caused the legs to extend and the arms to retract when the head is tilted forward, and the arms to extend and the legs flex when the head is tilted back. This will result in bent leg kick when the head is raised and a straighter kick when the head is lowered. It also makes it hard for the child to reach forward with a lowered head. It is the reason why this age group will have their arms back against the body when kicking with the head lowered. Unfortunately this is not an effective streamline position when moving through the water and perhaps the reason why some swim schools resort to back packs at this age as they allow the child to propel in that position. With patient free swimming time the child will learn to integrate the reflex and achieve a more streamlined aquatic posture.

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- Protective extension forward (**Forward Parachute**). Often seen as child enters from a height or falls through the water.
- **Downward Parachute**. Protective extension downward
- Mature neck righting on the body (**NOB**). Emerges 4 to 6 months, integrates 5 years. Important for rolling and rotation.
- Mature body righting on the body (**BOB**). Emerges 4 to 6 months, integrates 5 years. Important for rolling and rotation.
- **Positive Support Weight Bearing** – Lower Extremities. This reflex emerges at 6 to 9 months and persists throughout life. Bouncing action when feet on hard surface – good practice for kicking.
- **Lateral Propping**. Emerges at 4 to 8 months. Persists through life.

The Body Language Implications of Sensory Integrative Dysfunction:

- If **primitive reflexes are not well integrated, or postural reflexes not well developed**, the child will show signs of poor sensory-motor (perceptual motor) integration.
- These children will have trouble **receiving, filtering and organizing** sensory information and performing an appropriate motor response.
- For good sensory motor integration the child must have well functioning **vestibular, proprioceptive and tactile systems**. If they cannot interact well with the physical environment due to poorly integrated movement patterns, there will be delays in the development of these systems.
- Sensory integrative dysfunction/disorder will affect the **postural alignment, muscle tone, level of alertness and reactivity** of the child in its environment. This will have a significant effect on the **body language** signals being displayed by the child and will result in ongoing “**misreading**” of the child.
- E.g. A child who has **tactile defensiveness** may present with the body language signaling withdrawal or aggression;
- E.g. a child with **gravity bound postures** due to poor development of postural righting reflexes may display body language that seems disinterested or inattentive;
- E.g. spinning, hand flapping, banging, exploring with the mouth, or touching (more than the average child) may all be perceived as **antisocial, aggressive, or disinterested**, when in fact the child is seeking information from the environment that it is lacking due to a poorly functioning sensory integrative system.

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Signs of SI Dysfunction

- Avoiding touch
- Overly seeking touch
- Poor eye contact
- Distractibility
- Clumsiness
- Gravity bound postures
- Aversion to movement
- Dislike change – overly crave routine

Misreading the Signals

- May appear withdrawn or aggressive
- May seem to dislike the water environment
- May seem to have poor empathy for others
- May seem to prefer their own company
- May seem to actively reject efforts to build rapport and relationships
- May seem to be not trying, not listening, not paying attention.
- May seem to dislike playing with others
- May seem to dislike physical activity

In Summary:

- Learn about postural reflexes and reactions and body language
- Use the knowledge to prepare parents for each stage and to reassure them.
- Ensure babies are responded to by reading their readiness cues accurately
- Be understanding, gentle and supportive with your babies and your parents – they are relying on you!

“For every mind state there is a body reaction!”

(Jean Ayres)

May you remain open to all that is yet to explore in this wonderful profession of baby swimming!

TE NA KOUTOU, TE NA KOUTOU, TE NA KOUTOU!