

## Body Memory

by Richard Harnack, M.Rel.

### Overview

We have all passed through similar developmental stages in terms of movement and body memory. Each of us remembers and interprets these phases idiosyncratically. What follows in this paper is a synopsis of the major life stages from a movement perspective. The basic assumption is that all persons can move easily and freely acquiring physical skills as they choose. This is also the goal of the process developed to help free our body memory.

### Body Memory

Body memory comes in different varieties. The ones most familiar to us are those early childhood activities and skills we look back on -- bicycle riding, throwing a ball, roller skating (or skate boarding, depending on your era), running and swimming. We also are aware of pain memories, old injuries and insults to our body which may still cause us to pause or inhibit ourselves.

Current research (ref. 1) in phantom limb pain suggests that our body memory is much more diverse than previously thought. The main trend holds that body memory resides in the somato-sensory areas of the brain. However, new research suggests that phantom limb pain not only resides in the somato-sensory cortex, but also the limbic system and broad areas of cortical networks involved in cognition and experience.

This new research impacts our understanding of movement and how we understand our body, as the following quote illustrates.

"The phenomenon of phantom limbs is more than a challenge to medical management. It raises doubts about some fundamental assumptions in psychology. One such assumption is that sensations are produced only by stimuli and that perceptions in the absence of stimuli are psychologically abnormal. Yet phantom limbs, as well as phantom seeing and hearing, indicate this

notion is wrong. The brain does more than analyze inputs; it generates perceptual experience even when no external inputs occur. We do not need a body to feel a body."

"...the existence of phantoms in people born without a limb or who have lost a limb at an early age suggests that the neural networks for perceiving the body and its parts are built into the brain. The absence of inputs does not stop the networks from generating messages about missing body parts; they continue to produce such messages throughout life."

"...the brain generates the experience of the body. Sensory inputs merely modulate that experience; they do not cause it." (ref. 2)

Our whole body is functionally located within the neural networks of the brain. Movement then is "hard wired" into our brain. The implication of this line of research goes beyond phantom limb pain -- it leads us to realms of possibility in terms of helping those persons who have had spinal injuries or other peripheral injuries which have inhibited their movement. It also implies that we can improve our performance in athletics and other areas much more than we had thought previously.

The next section is a summary of the major areas of movement development along with the specific principles of movement addressed at each stage.

### Stages of Movement Development

What follows is a summary of the various stages of movement development all go through. Each stage overlaps the others and seldom is as distinct from the others as described here.

#### Birth to Six Months

Basic Movement Development: Outward to Inward

Principle involved: Connecting to one's body.

In this early stage, the infant develops the tonic neck reflex, hand-eye and foot-eye coordination, and turning over. The tonic neck reflex is the earliest of these three movements and involves the infant's ability to lift her head herself. Hand-eye and foot-eye coordination are in the early stages, primarily with the infant learning to put her hands and feet in her mouth.

The primary "educational" task involved here is learning what "belongs to me". The majority of the movements made at this time are outward to inward. The infant begins to distinguish those movements and quality of movements which bring things to them. In this early phase the infant is most likely to scratch themselves on the face. This latter activity occurs because the infant has yet to develop the motor coordination necessary to bring her hands to her face using only the amount of force necessary to complete the movement smoothly.

As the tonic neck reflex develops and the infant acquires more finely tuned motor skills, they begin to turn over. These are major accomplishments as the infant now begins to be able to modify their own environment. They are the pre-cursors to the early crawling stage.

### **Six Months to One Year**

Basic Movement Development: Crawling.

Principle Involved: Inward to Outward.

During this stage the infant begins to establish a sense of connectedness from inward to outward. The infant now has achieved some measure of control and coordination and is now ready to begin to explore beyond the immediate environment. We begin to go to where we want.

The complete crawling stage involve two phases. The first involves same sided arm-leg coordination. The second involves opposite arm-leg coordination. Each is necessary for as complete as possible neurological development of the infant. The same sided movement phase allows the brain to develop the neural pathways to each side of the body in turn. The opposite side movement phase allows the brain to organize the simultaneous coordination of both sides of the body.

As the infant completes the crawling stage, they then begin to be able to stand on their own with little or no assistance. This latter point is important because of the desire as parents and grandparents to have the child start walking early. If we hold the child upright to train them to walk, they acquire their sense of balance as being dependent on external factors. Balance and coordinated walking needs to develop from the infant's inner sensory apparatus, not its' external proprioception.

The primary "educational" issue for this phase is the infant's inward development of self and self-reliance. This sense of self-reliance is at a very fundamental level. It involves the inward ability to trust our perceptions in relation to ourselves and the environment. This is primarily a physical sense at this stage which affects later cognitive development. The infant learns to move around in his environment by choice and ability, rather than relying upon his parents to move him.

### **One Year To Four Years**

Basic Movement Development: Walking, Running, and refining Hand-Eye.

Principle Involved: Exploration of movement, Movement for the "Fun" of it

The child completes the crawling and acquires walking/running during this three year period. Some children continue crawling into the second or third year as their preferred mode of getting around. Unless there is apparent neurological damage, this is not a cause for concern, for the child is being thorough in completing the neurological task for the crawling phase. During this time, the child begins to talk to convey information to her parents and others. At first she will speak in short bursts or phrases, then later in complete sentences.

As the child begins to acquire other physical skills, she begins to "pay attention" to the "how" of the movement/skill. She is learning to focus her hand-eye abilities and fine tune them as she goes. Movement shifts from learning through spontaneity to deliberate skill acquisition.

The child begins to further define herself and establish her identity. The child acquires the word "No" and begins to ask questions. Each of is important for the child's growth of self. "No" gives the child a measure of control over her state of being which she lacked previously. Her parents now must begin to account for her wishes and wants. Questions are also asked by the child to further gain knowledge about the world and her place in it.

#### **Four Years To Six Years**

**Basic Movement Development:** Active Outward Movement.

**Principle Involved:** Deliberation & Learning in movement - "Serious Play"

The child begins to move from spontaneous play to judging and being judged in regard to physical activity. It is during this stage most children also begin more social play activities, either in structured settings or in the neighborhood.

The major movement and educational tasks children acquire in this phase are more finely tuned hand-foot-eye coordination and basic reading/writing skills. Emotionally/Socially the child begins to draw distinctions between himself and babies. This is generally the period in which the child begins to perceive himself as a "big kid".

All of the above results in the child acquiring "inhibitions" or "natural athletic ability". If the child is judged too harshly (either by himself or adults), or is forced into competitive structured sports, he may develop emotional-physical inhibitions. These inhibitions generally remain into adulthood as they tend to become part of our self-image.

#### **Seven to Fourteen Years**

**Basic Movement Development:** Integration of Outward & Inward Movement

**Principle Involved:** "Doing it right."

Social and competitive play become extremely important in this phase. Those children doing well in these types of activities tend to remain in them longer than children who do not. Children not as good in team

activities as others, tend to decide they have little or no physical ability. This choice is as much a physical choice as it is an emotional one.

This period of life finds the child refining basic skills and developing confidence in movement. While it may seem strange to think of walking and running as becoming more refined, this is exactly one of the major tasks of this period. The fine tuning of all eye-hand-foot coordination occurs at several levels. The first of these levels is the gross body movement. The second is in more finely tuned activities such as catching or throwing a ball and writing.

The gross body movements addressed in this period are those involving running, jumping, skipping, climbing, etc. These movements require the child to maintain balance and utilize opposing arm-leg action. As children become more adept at these movements, they are able to acquire more finely tuned motor skills. The child who does not move much or whose movements are frenetic and uncoordinated (as in the case of "hyperactive" children), finds it more difficult to acquire fine motor skills.

The fine motor skills the child acquires include writing, catching and throwing, kicking, drawing, etc. How well the child acquires each, is greatly dependent on how well they do in gross motor movement. The exceptions here seem to be in writing and drawing. Some children, who are fairly uncoordinated otherwise, exhibit excellent writing and drawing skills. The reason behind their writing and drawing "success" is that they initially work much harder at doing these "perfectly". Consequently, such children tend to exhibit a fairly "tight" writing or drawing capability, rather than a smooth and easily flowing capability.

The child also goes through two periods of "awkwardness" in this stage. The first period occurs at the beginning of the stage as the child begins to fine tune his throwing and catching abilities. The second period occurs around puberty when the child begins their next major growth "spurt" and must adapt to the changes occurring in their body. Both periods of "awkwardness" are crucial for the



continuing development of coordinated body movement. If the child is made to feel "clumsy" during either one of these periods, they are more likely to retain this image of themselves. If the child is assured they will "grow out" of this, and they are also allowed to acquire skills at their own pace, they are likely to have a much easier time maintaining and acquiring new motor skills afterwards.

### **Fifteen to Eighteen Years**

**Basic Movement Development: Locking-In Of Physical Abilities**

**Principle Involved: Refining movement.**

In this three year period, a final locking in and/or break through occurs in physical abilities/inhibitions. We have made most of our choices in terms of how we choose to perceive ourselves physically. These choices are both conscious and unconscious and tend to remain with us the rest of our lives. Thus, the child perceiving herself as physically graceful, powerful and able throughout this phase will most likely retain this image. Whereas the child viewing herself as physically awkward and inept, will most likely hold on to this image.

We also make conscious choices as to be the "way we are". These choices involve rationalizations and justifications at both the mental and physical levels. These justifications become internalized physically.

### **Nineteen to Twenty-Five Years**

**Basic Movement Development: Routine & Organization**

**Principle Involved: Repetition, Consolidation and Confidence of movement.**

Physical activities, if still engaged in, tend to become routine. Organized sports and games become the main focus for many in the age group. By this time, the choices made in the previous stage are now completely locked in. Comfort and repetition become the hallmarks of adult physical activity.

Confidence is with the *routine* of physical movement and exercise. By this age, our attitudes towards exercise, movement and our body are set. Those believing in the "no pain no gain" principle will have a different

"comfort zone" from those believing otherwise.

Repetition of physical movement encompasses the establishment of a routine and the reinforcement of specific types of exercise and movement. This routine may involve active participation in an organized team sport, individual sport, exercise program, martial art, dance, aerobics, etc. The routine may be a more individual effort such as weight training, running, swimming, stretching, walking, etc. In both cases, it is the routine which is important to the individual's performance levels.

During this stage of physical activity consolidation of physical prowess becomes paramount. Individuals excelling in youth tend to seek to maintain a level of personal excellence. Those whose performance was "average" or "lower" generally seek to more finely tune their physical prowess in hopes of achieving a higher level of competence. Unfortunately the largest group in this age bracket simply give up on any form of physical endeavor due to poor experiences in youth.

### **Twenty-five To Forty Years**

**Basic Movement Development: Experience & Skillfulness**

**Principle Involved: Comfort and familiarity of movement.**

If a person is still engaged in physical activity during this stage, they begin to shift to greater reliance upon experience and skill and away from strength and power. Initially this realization occurs at the body level, only later does the individual become conscious that they have been changing. This occurs when the individual begins to seek understanding of underlying principles in order to increase their skill.

People who begin a physical exercise and movement activity in this stage of life tend to go through all of the previous stages in a compressed format. Thus they tend to acquire the activity on one side of their body more easily than the other. After a while they are able to bring the other side of the body into more active play. From this point on they tend to consolidate skill levels in parallel

steps to the developmental phases described thus far. They usually accomplish this shift within the first three to five years of engaging in the activity.

### **Forty To Seventy Years**

Basic Movement Development: Inward to Outward

Principle Involved: Inner Conditioning & Movement

In this stage of life, inner understanding of becomes paramount. Efficiency and effectiveness in movement are more likely to be practiced and sought by those engaging in an activity for more than ten years. Strength begins to give way to conditioning as the desired body state. Raw power is not utilized as much as is generating an effective use of that power. Skill comes to be understood in terms of efficiency and economy of movement. Power is now understood as effectiveness more than strength.

Inward understanding of the movements becomes the primary method of acquiring new skills, then repetition. This is particularly true of people beginning a physical activity in this stage of life. They are more likely to look for a "reason" first before starting the activity. As they become more involved in the activity, they may seek other justifications for maintaining interest in the activity.

### **Seventy Plus**

Basic Movement Development: Congruence

Principle Involved: Unification of Inner and Outer

People who have been physically active in the same activity their whole life, when they reach this stage, generally are able to perform feats which seem extraordinary. These "extraordinary" feats are fairly commonplace for such persons. What occurs is the most efficient movement possible. Strength is seldom used in the same way as is by younger persons. Relaxation and almost complete congruence become the effective agents of movement.

Persons beginning physical activity in this stage do so to honor both physical and inner needs. The physical needs are represented by keeping flexibility and reducing pain. Inner needs include the desire to be "healthy". The reason for the exercise and the exercise itself become identified with each other.

For all in this stage of life, the quality of movement is more important than the variety. The focus is on moving with ease and grace rather than with strength. Even a simple activity as walking can provide such a focus.

The above "stages" are not distinct, rather they blend with each other. The tendency in the later stages to compress all of the earlier stages, especially in new skill acquisition. Experience and repetition of skills, combined with inner development and understanding, leads to greater efficiency and effectiveness in movement. In other words, there is no substitute for actual movement.

### **Movement Integration / Enhancement Procedure**

In this concluding section, I have outlined a procedure which is designed to help create the optimal levels possible for new skill acquisition and refinement of current skills. It draws in part on the research cited at the beginning of this paper and combines this with techniques currently in use in Touch For Health.

1. Decide upon the specific movement you wish to improve upon or acquire.
2. Locate the Life Movement stage(s) involved. If more than one stage set the priority. Repeat the full procedure for each stage.
3. Once you have located the priority Life Movement stage, look at the issues involved. State in your own words how you wish to embody these issues. Check for Muscle Stress Response on each issue and statement.
4. Perform the movement you chose in Step 1. Note and rate the ease, levels of inhibition, discomfort, etc., involved.

5. Locate an overall emotion for the movement.
6. Locate which part(s) of the brain is (are) involved in the movement - Somato-Sensory, Limbic System, Visual Cortex, Corpus Callosum, Reticular Formation, and, the Cerebral Cortex in general. Establish which is the priority area.
7. Test the individual muscles involved in the movement. Test the opposing muscles and diagonal contralateral muscles as well. (Note: If you are using a large movement, you may want to test all 42 muscle groups.) Note any patterns of inhibition in response to the movement.
8. Correct any muscles found inhibited by the movement using Neuro-Lymphatics, Neuro-Vasculars and Origin-Insertion. Do all three. *(Please note: in this step I have kept the correction procedures fairly basic. In practice, I have found that I may have to use Cross Crawl Repatterning, Homolateral Muscle Correction, Muscle Spindle stimulation, Reactive Muscles, or Postural Stress Release. It is not that these are "better" than the basic corrections given, but rather they may be needed in addition to them. My guiding principle here is to start with the simplest corrections first and only proceed to the more complex if needed.)*
9. Repeat the movement and retest the muscles which were previously inhibited by the movement. Note if any remain inhibited. Do not do any more corrections at this point.
10. Locate the specific age(s) involved. Determine the overall emotion for this age, and, locate the area of the brain involved. Also determine if there are other ages from this stage involved, if so set the priority.
11. Do the movement as if you were acquiring it for the first time. Test the muscles involved. (Cf. above step 7.). Correct any which were inhibited. (Cf. step 8.) Repeat the movement and retest the previously inhibited muscles. (Cf. step 9.)
13. Repeat step 10 for any other ages which are also involved in the Life Movement stage. Modify the movement to reflect the level of skill for each additional age.
14. Once all of the ages in a given Life Movement stage have been checked and cleared, check for any other Life Movement stages and issues involved.

### Conclusion

The goal of the above procedure is to help you improve your ability to move and acquire movement skills. It is not intended to substitute for actual practice. Use this procedure from a sense of play and discovery. Enjoy!

### References

1. Melzack, Ronald, *Phantom Limbs*, Scientific American, April 1992, pp. 120 - 126.
2. Melzack, Ronald, *ibid.*, p.126. See illustration below for more detail.

