INTERACTIVE EXERCISE:

IMPLICATIONS FOR THE MOTHER/CHILD BOND

by

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ABSTRACT

Self image formation , the pregnancy experience, and the mother/child bond contain both sensory and interactive components, all of which have profound implication for communication between the mother and child. This thesis examines these components on the basis of a literature review and then proposes a programme of exercise based on body awareness principles, structured in such a way as to enhance the quality of the mother/child bond. The exercise programme is outlined in detail and the results of a pilot study conducted for the thesis are reported.

The thesis begins with an examination of the role of women in the family from an historical perspective, focusing primarily upon their relationships with children. The interactive and sensory components of the self image are then explored, followed by a consideration of the physical, emotional and social impact of pregnancy. Lastly, the works of Alice Rossi , John Bowlby, and Daniel Stern are highlighted in a discussion of the mother/child bond.

The thesis argues that a possible way of enhancing the bond is through a body movement programme based on modifications of conventional exercise management techniques. To test these arguments, an exercise programme is designed and presented, and the results of a pilot programme reported.

Concluding remarks suggest an evolutionary perspective of the woman's role in the family, and discuss the need for creative, holistic approaches to fitness that can easily accommodate the mother/child team.

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Preface

In the beginning, I would like to do three things; to say a word about the style of the thesis, to attempt a personal exposé of my reasons for writing it, and to express my gratitude. Although the thesis necessarily complies with academic standards, I would like to visualize my audience as primarily the so-called layperson, as it has been important to me to attempt an honest contribution to the real world. Therefore, I have made as much of an effort as is possible within the confines of a university environment to keep the style relatively clear and free from technical jargon. It is hoped that people who are not involved in academia will find it interesting and helpful.

It has been said to me by friends both here at Simon Fraser and elsewhere that a successful thesis is one which originates in a personal quest and is motivated by private conviction. My own work is testimony to that belief. My interest in fitness was actually motivated by the birth of my son when I gained a considerable amount of weight and turned to exercise in desperation. Those initial experiences led to a deeper commitment to the fitness movement and the idea for this thesis began to germinate.

I like being married; it feels like I am an important

part of a team. The whole really is greater than the sum of the parts. I like being a mother to my son; my relationship with him is unique and very special. Somewhere along the way it became important for me to say that publicly. Liberation for me has meant marriage, my child and stepchildren, and the ability to develop my potential to whatever level I choose. I have been very lucky.

You do not survive this kind of aggravation alone. There are certain people who have not only provided support in terms of this work, but have also been important to my life. I would like to thank Drs. Tom Mallinson and Paul Heyer, who were willing to support a slightly offbeat project when it seemed no one else would. To Mr. Ron Franklin, my good friend and lover of fine wine, goes my own version of the Oscar for his assistance in videotaping, and the same to his son, Master James Franklin, for his brilliant (albeit at times unwilling) performance. I am indebted to fitness professionals Mike Marfell-Jones, Lynne Cove and Jacquie Allan, who supported a frustrated fat lady's first faltering steps toward a fitness perspective. To my friend Pat Artley goes the credit for wading through my terrible typing to produce a first class final draft. My young and talented friend, Tara Luhtanen, gave her time and energy to produce marvelous illustrations.

Most importantly, I would like to thank my husband Wolf for his support, encouragement, and his lack of sympathy when I whined and said it would never be done. And last (but most certainly not least) to my son Ryan; once in a while the bane of my existence;

always the joy of my life.

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INTRODUCTION

Interactive Exercise is a movement system based on body awareness and exercise management principles that meets the rehabilitative needs of the new mother while at the same time providing kinesthetic, vestibular and physical stimulation for her child. The programme is based on a conviction that, because pregnancy and bonding experiences are so obviously psychophysical in nature, mutual interaction can enhance the nature of the relationship. In addition, the thesis examines the interactive and sensory components of self image and postulates that the self esteem of both mother and child may be enhanced when interaction takes place within a physical context.

The thesis is divided into three distinct sections to build the argument as comprehensively as possible. Part One begins with an historical perspective of the mother/child relationship. Next, the interactive and sensory components of self image formation are considered, drawing heavily upon the disciplines of Transactional Analysis and Neurolinguistic Programming. The physical, emotional and social aspects of pregnancy are discussed; the discipline of structuralism provides a relevant framework for understanding its social consequences. The mother/child bond is also examined within this interactive/sensory framework (using biosocial feminism and the interactive approach of Daniel Stern). In this way,

all three experiences (self image formation, pregnancy and bonding) are linked within a psychophysical context.

Part Two begins with a discussion of body awareness principles drawing on aspects of the work of F.M. Alexander, Moshe Feldenkrais and Alexander Loewen. The integrity of the interactive/sensory framework is maintained in this discussion and carried forward by an examination of relevant principles of exercise management. Of particular interest is a consideration of the mood altering effects of exercise.

Part Three presents the Interactive Exercise programme and discusses the results of a pilot programme. No hard data analysis was attempted. Instead, the examination of the results of the pilot programme (conducted for the thesis) is restricted to discussing in what ways the programme concepts were expanded as a result of ongoing communication with new mothers and their babies. Although the actual exercises are appended to the thesis, the main text expands the interactive/sensory connections of Parts One and Two, relating them more specifically to the Interactive Exercise Programme. Concluding remarks summarize the findings of Parts One to Three and then speculate on the evolutionary beginnings of women's role in the family. An "Accommodative Fitness Strategy" is proposed in a discussion of the power politics of the fitness movement.

In summary, the central concern of the thesis is to develop a feminist perspective on interactive and sensory

components of the bonding experience that does not ignore biosocial relaities. In doing so, the mother/child relationship is re-established as a vital determinant of future communicatory ability. The "hand that rocks the cradle" may truly be the "hand that rules the world".*

*Ross, cited in Stevenson, 1967

Chapter One - Parenting as Mothering

Examination of historical record (for our purposes, that which details family relationships) is revealing, perhaps as much for what it does not say as for what it does. A lack of references to children in historical record is indicative of their status (or lack of same) within a particular society. In an effort to place the argument within a chronological context, we will examine the historical analyses of Philippe Aries and Lloyd de Mause. From this analysis, we will derive a picture of the contemporary mother/child relationship as one which has at least the potential of creating enormous stress for the mother, unless she is aware enough to exercise appropriate safeguards.

An Historical Perspective

A number of works of an historical, social, or psychoanalytic nature have attempted to deal with the question of a child's relationship to his/her parents and its cultural significance. This relationship exists primarily with the mother, as the father's role tends to be inconsistent and somewhat transitory. All of these works profess an awareness of the lack of empirically verifiable data concerning children and all recognize the necessity of having to "read between the lines". These inferences can

provide a basis for an historical perspective of the mother/child relationship.

Consider the infant at the point of passage through the birth canal. Rowland Lorimer, in his essay, "Negotiations for Personage", captures the difficulties of that first journey into the world;

> Out into the world the baby comes from an almost consistent 98° Farenheit to anywhere from between about 50° and 120°, from constant contact with warm, soft tissues and liquids to only partial contact with semi-soft liquids of varying temperatures; from relative darkness to a fair circus of lights and forms, from soft low pitched sounds to all manner of abrupt noise, from a constant effortless supply of nutrients and automatic waste disposal to periodic opportunities for such liquid, a task which inevitably is performed imperfectly requiring now and then retaining the liquid and expelling gas, out one end or the other. Is it any wonder that the child almost immediately goes to sleep? (1975)

The implications of birth trauma have been studied within the context of many disciplines, and are widely recognized. If nothing else, the sheer physical violence of the experience should be enough to make us painfully aware of the potential for psychological affect. Note this description of birth by Richard Steele in the Tatler (1706); the stylistic differences alone between this and Lorimer's account make a subtle statement concerning the differences in treatment of children;

> I lay very quiet; but the witch, for no manner of reason or provocation in the world, takes me and binds my head as hard as she possibly could; then ties up both my legs and makes me swallow down a harsh mixture. I thought it a harsh entrance into life, to begin with taking physic. When I was thus dressed, I was carried to a bedside where a fine young lady (my mother, I wont) had like to have me hugged to death ... and threw me into a girl's arms that was taken in to tend me. The girl was very proud of the womanly employment of a nurse, and took it upon herself to strip and dress me anew, because I had made a noise, to see what ailed me; she did so and stuck a pin in every joint about. I still cried, upon which, she lay me on my face in her lap, and, to quiet me, fell to nailing all the pins in by clapping me on the back and screaming a lullaby.
>
> (de Mause, 1974)

From such an inauspicious beginning, the child proceeds to try and come to terms with the world; in Lorimer's terms, to "negotiate for personage". And who does she have to act as guides on this voyage of discovery? None other than "personages" who have been affected by the same kinds of traumas to which she has been exposed (in addition to other traumas which she has yet to encounter). The "guide's" experiences with the territory will directly influence the nature of the child's first impressions of the world. When the individual assuming the parent role (seen by the child as an omniscient guide) passes on a restricted view of the world, the child is correspondingly inhibited in the number of ways in which she is able to react. Having no other "map" to use, the child negotiates the "territory" in

much the same way as her parents (and possibly her parents' parents) did.

However, at the frenetic pace at which western culture is developing, such maps become obsolete more and more quickly and the transmission of culture along familial lines is becoming more and more ineffective. We require knowledge at a much faster rate in order to compensate for the rate at which such knowledge is changing. This situation has definite implications for the field of mass communications. At what point does the family cease to be the transmitter of cultural knowledge and more "efficient" methods take over? What will be the ultimate effect of such efficiency?

With this background in mind, it is interesting to consider the social evolution of the family, in particular the mother/child bond, and determine how the development of the family (and childrearing practices) has paralleled the development of society. Philippe Aries (1962) offers an approach from the perspective of social theory and Lloyd de Mause (1974) presents an approach that is more psychosocial in nature. In Centuries of Childhood, Aries richly details family life from the middle ages through to seventeenth century France. He views the nuclear family in essentially negative terms; the imposition of the nuclear family lifestyle on the social life of the child did nothing but restrict the child's relative freedom of movement within the adult culture by defining his role (and its boundaries) and

subjugating him in status to the adult culture. Previous to the inception of the nuclear family (according to Aries) the child mixed freely within the adult culture from about age seven, when he was usually sent out to work. Prior to age seven, children were usually given no status at all. The high incidence of infant mortality necessitated this emotional indifference; an efficient way of structuring a defense against the probable death of a child from any number of causes was to remain psychologically detached; to view him as a nonentity. Aries argues that this lack of definition of the "child" status had a positive effect in that it allowed the child to develop her own sense of roles and identity to a greater degree than if she were constrained by the expectations of others.

The virtues of maternal care are important cultural values in western society; children are to be pampered, coddled and treated solicitiously if they are to grow into secure adults. However, it would seem that every positive display of emotion carries with it the seeds of its own negativity, in almost a Marxian dialectic sense. Consider the mother who runs to comfort her child at its slightest whimpering; perhaps it is her needs that are being (pathologically) met rather than the needs of the child. Solicitude easily crosses over into patronage; the needs of the child become confused with the personal agenda of the "parent figure" who, as we will see, is most often (and most signficantly) the mother. Perhaps it is necessary to provide

to children less patronage and more opportunities to prove themselves; convey to children that they are capable of assuming responsibility for their own lives and they may rise to the challenge. Momism (Sebald, 1976) details the possible devastating effects of this overconcern. According to Sebald, the "perfect" mother undertakes the raising of a "perfect" child (most often a male) to be the success that the mother herself would like to be. Phillip Slater also discusses this situation in Footholds (1977). In the process, she becomes a MOM, unintentionally (at least at a conscious level) making a psychological wreck of her child. The child grows up as an indecisive and dependent adult, never having developed the resources to think for himself. Rather than looking inside herself and caring for her own needs, the MOM feels constrained, both psychologically and socially, to find expression of her own personality through that of the child.

Lloyd de Mause (1974) offers a two dimensional approach to the problem, in what he terms a psychogenic mode. De Mause views this as a new paradigm for history; a way of approaching historical research that goes beyond currently popular analytic methods, reversing the usual "mind as tabula rasa" to consider the world as "tabula rasa". Essentially, the infant enters a world of objects devoid of meaning which are invested with a significance which is highly dependent upon the nature of the care he receives.

De Mause considers two ideas in formulating his ideas

of parent/child relationships; the motivations behind the nature of the relationship itself and its evolution in history. He classifies three possible responses that the adult may have in the critical moments of the relationship; projective reactions occur as the adult uses the child as a vehicle for the interpretation or expression of the contents of her own unconscious, and reversal reactions occur when the child is used as a substitute for an adult figure of childhood importance. The final alternative is the empathic reaction when the adult recognizes the child's needs and acts to satisfy them. Personal needs do not interfere. Erik Erikson's concept of "generativity" (1963) helps to clarify what motivations are behind the adult's decision to act toward the child in a certain way.

Erikson defines generativity as the concern that one generation has with establishing and guiding the next generation. The quality of this concern is generated by three interrelated factors;

1/ The mother's past experience with being mothered

2/ Some agreement between the mother's conception of motherhood and that held by the environment (trustworthy surroundings)

3/ The nature of the world view held by the mother.

In some form or another, these factors combine to produce reactions to children that can be seen as having the structure of one of the reactions suggested by de Mause.

De Mause advances an idea concerning the cultural expression of childrearing practices which he refers to as

"periodic modes of parent/child relations" (de Mause, p.51). He examines the history of parent/child relations from an evolutionary perspective, emphasizing that although psychogenic evolution proceeds along different family lines at different rates, some overall trends in the development of relationships can be identified. As generation follows generation, de Mause sees that parents become progressively closer to their children as they are increasingly able to work through their own anxieties and deal more empathically with the needs of their own children. De Mause identifies the six historical modes as follows;

Infanticidal Mode (Antiquity to the Fourth Century A.D.)

During this period, parents routinely resolved their anxieties about caring for children by killing them (girls in particular). Of the children that were permitted to survive, most were subject to projective and reversal reactions of the most extreme variety.

Abandonment Mode (Fourth to Thirteenth Century A.D.)

The child at this stage is now considered to have a soul (Aries and Lyman have also referred to this development in parent/child relations) and therefore killing takes on the stigma of murder. The parent no longer has this outlet and resorts to abandoning the child; to a wet nurse, a foster home or even in an emotional sense, in order to control or escape their own projections. Children were still subject to

extreme projective reaction but, as evidence of diminishing amounts of sodomy indicates, children were less victimized by reversal reactions (i.e. requiring of them that they serve as a powerless sexual partner to the adult).

Ambivalent Mode (Thirteenth to Seventeenth Century A.D.)

Children now become objects to mould and beat into shape (physically or psychologically). Child instruction manuals were prevalent and the child (when permitted to interact with the adult) was still seen as a vessel for the adult's projective fantasies.

Intrusive Mode (Eighteenth Century A.D.)

Positive developments in parent/child relationships occur at this point in time, with a great reduction in projection and virtual disappearance of reversal reactions. However, parents at this stage were still trying to control the child (and by doing so control themselves at the subconscious level). Obedience was obtained as often with threats and guilt as with other forms of punishment; he was "prayed with but not played with, hit but not regularly whipped" (de Mause, p.52). True empathy was possible for the first time because the child was not quite so threatening. It was this historical mode that ushered in the beginnings of the recognition of the area of pediatrics as a legitimate focus of medical study.

Socialization Mode (Nineteenth to Mid-Twentieth Century A.D.)

The child at this point is seen as even less of a threat; he is to be trained instead of conquered, socialized as opposed to beaten. Psychoanalytic thought, from Freud to Skinner, appears to originate from these ideas. Covert methods of discipline (e.g. manipulation, guilt) are employed, and the overall quality of parenting is a general sense of detachment necessary to sustain long periods of contact with children whose needs are simply too overwhelming.

Helping Mode (Just Beginning)

The differentiating factor in this final mode is that the emphasis rests with the child knowing more accurately what he requires in order to cope with and learn about the world. It then becomes the parent's role not to determine that process, but act as a support. Requiring enormous amounts of energy, time and empathic ability from the mother (and less significantly so from the father), there will be a tendency for parents operating within this mode to allow their own needs to be consumed by the needs of the child. Parents require a considerable amount of self awareness to function effectively in this situation.

The author draws some fascinating conclusions from the development of this paradigm (de Mause, 1975), most notably that family studies show children currently being cared for in each of these six modalities. When psychiatrists rate families according to relative

psychological health, they are actually listing these historical trends. Social evolution is echoed by contemporary experience.

Conclusion

The contemporary experience of the maternal relationship seems to be offering fewer immediate rewards (biological and otherwise) to many women, largely because of the hostility of the social environment. These pressures pull the contemporary woman in many directions at once; pressure (from a male dominated work force) pulls her toward the job market as a means of "fulfillment" and away from the needs of her children (if they already exist) or in fact away from having any children at all, a decision that is also often motivated by reasonable concerns with pollution and overcrowding. At the same time, however, the biosocial realities persist, and women are still tied to the childbearing process, a fact which effectively reduces their options in other areas. To assume that collective childbearing can provide the same benefits as a strong maternal bond that is emotionally and economically supported is to ignore the biosocial basis upon which this primal relationship exists. Other alternatives exist to elevate the diminished status of the female to one of equality with males wihout imposing unhappy effects upon the children and the mother/child bond. A woman's needs can be ratified by the culture without sacrificing an aspect of living that is not

only crucial to the permanence of society but important to the mother herself. It is necessary for women to believe in and uphold those values and personal convictions that have, in the past, been disparagingly referred to as "female" (e.g. affection, response to sympathy, kindness, cheerfulness) as worthwhile social pursuits, as opposed to adopting the values of technocractic man as feminist doctrine.

As regards the area of self care and nurturance, women have often found themselves placed (both by their own hand and by cultural coercion) in a no-win situation. Social pressures to conform to the ideal of the "perfect" mother imposed guilt feelings if the woman was "selfish" enough to do that which she wanted to do for herself alone. Conveniently, the happy (for men) result of such socially imposed dedication was to leave the "little woman" at home with the kids while he went off to look after himself, be it at the office or on the squash court. Fortunately, the feminist movement is providing a cloak of social acceptance for women to pursue and fulfill their own needs. Unfortunately, the losers in the end appear to be the children and the women themselves, as the biosocial needs of each are at best ignored and at worst unsupported by social custom.

Chapter Two: Self Image and Healthy Personality: Interactive and Sensory Components

An examination of the formation of self image as a biosocial process will contribute much to our understanding of the biosocial nature of the mother/child bond. Self image is rooted in both sensory (biological) and interactive (social) experience, and the mother/child relationship is the focal point around which self image first begins to form. Therefore, the mother/child bond is also both socially and biologically constrained.

Beginning with an examination of the phenomenon of "unembodiment" in Western Culture, loss of somatic perception is viewed as a dangerous side effect of life in this society. The disciplines of Transactional Analysis and Neurolinguistic Programming are introduced as a framework around which the biosocial argument is organized. Both disciplines value the impact of early experience where Transactional Analysis assumes an interactive approach and Neurolinguistic Programming a sensory one.

Self image is shown to develop very early in life, be based in both interactive and sensory experience and characterized in this culture by a lack of somatic (body) awareness.

Mind/Body Dualism

Theoretical speculations regarding the origin and development of the self concept run the intellectual gamut from the individual and predetermined emphasis of Freud (deriving from his concentration on the growth and persistence of certain structures of personality) to the social emphasis of Mead, stemming from his essentially interactional definition of the self in terms of a "generalized other". A central concern of the argument of the present work is the establishment of a theory of self image that is rooted in early experience and the result of a number of factors, not the least of which is the holistic influence of physical experience and sociocultural (i.e. interactional) processes. Initial examination would indicate the social self theories have more to offer than those theories that place primary importance on the individual. However, the work of post Freudians such as E.H. Erickson (1965) offers critical insight in emphasizing the importance of early experience by applying the Freudian concepts of the psychosocial development of the id to the more interactive functions of the ego.

Erickson took Freud one step further by seeing the process of maturation (and therefore the development of a self image) as occurring throughout life and placed the challenges of each life stage within the context of society.

Complementing the inherited genetic equipment with which an individual begins life, a range of early experiences begin to shape how he sees himself and how he is seen by others.

Invariably, self image is affected by (and, in some cases, effected by) external pressure; social roles and demands impose changes in self perception as evidenced by the work of Mead (1934), Cooley (1956) and Sullivan (1948) who theorized that human beings develop in a sequential and systematic manner not because of the gradual unfolding of instinctual tendencies, but rather because they experience a regular and reasonably predictable sequence of interpersonal interactions in their lives;

> When the response of the other becomes an essential part in the experience or conduct of the individual; when taking the attitude of the other becomes an essential part in his behaviour - then the individual appears in his own experience as a self; and until this happens, he does not appear as a self.
>
> (Mead, cited in Holland, P.27)

Through interactions with others, an individual can assume the role of the other by providing a set of common meanings against which he is able to judge himself; he becomes the object of his own evaluation. To paraphrase Robbie Burns, he "sees himself as others see him".

Since Descartes (1596-1650) first pondered the question of mind/body dualism ("cogito ergo sum"), Western philosophy has viewed the human being in dualistic terms; a nonmaterial mind dwelling within a material body subject to

philosophy has viewed the human being in dualistic terms; a nonmaterial mind dwelling within a material body subject to mechanical and biological law.[1] Although this distinction represented an important evolution in intellectual thinking, the difficulty has been that splitting one's thinking about the human organism has led to thinking about it as being actually split. Philosophical (especially religious) thinking began to operate in terms of seeing the experience of the body as a distraction from salvation and compulsive work (the familiar "Protestant Work Ethic" - work hard and you'll get your reward in heaven). The demands of the body, from sexuality to simple fatigue, were to be overcome by the all powerful mind in the name of religion, purity, and the work ethic. The more contemporary contributions of researchers like Hans Selye (1956) on stress give clear indications of the physically damaging results of such an orientation.

We are beginning, as a culture, to reap the peculiar rewards of this unhappy imposition upon our collective organism. Conceptualizing the mind as being distinct from the body has led to a particularly distressful state of being termed, by R.D. Laing (1960) "unembodiment". Schizophrenia

1 "cogito ergo sum" translates literally from the Latin to "I think, therefore I am ". Descartes and other philsophers believed that cognition equated with existence; it was the human power of rational thought which was the crucial determinant of quality of life.

actually being "in" the body. However, unembodiment in less extreme presentation exists throughout Western culture, manifesting itself in "interpersonal duplicity" (Jourard, 1980), e.g., pretense, play-acting, role-playing and pseudo-self-disclosure. More importantly, individuals so socialized have a diminished awareness of their own bodily being.

This diminished awareness and accompanying inflexibility are types of overspecialization of one's body to a chronic lifestyle. Work patterns, habitual anxiety, lifestyle pressures (e.g. urban vs rural living, excessive driving) cause the body to assume a position of insensitivity and inflexibiltiy of response to the potential pain of such lifestyles. The most chronic pain among westernized human beings is lower back pain brought on by an overspecialization to a sedentary lifestyle and an upright walking position to which (in an evolutionary sense) we are not fully adapted. Overspecialization can be the root of psychological difficulty as well, as in the case of individuals who have adpated themselves to a particular family constellation (e.g. the "baby" of the family) and lack the role flexibility to go beyond these original constraints.

What we are considering here is the loss of an extremely important aspect of human consciousness termed "somatic perception", or the awareness of a person of the responses of their body to the social and physical environment. A person whose somatic perception has been

diminished would be unaware of (or unable to "listen" to) any discrepancy between her body language and her verbal language. The effective is simply illustrated; try saying "I love you" through clenched teeth. To the extent that a person's somatic perception is high, the inconsistency in that message would be readily apparent.

The interesting connection between somatic perception and physiological breakdown is that people whose somatic perception is low eventually begin to be anesthetized to the pain or discomfort that is being generated by their lifestyles. Thus, such people behave themselves into situations of stress and entrapment so overpowering that physical and/or psychological collapse may be the only way out. Hans Selye (1956) points out, for example, that the common cold is caused by a virus that is virtually always present in the environment but only attacks those individuals whose defenses are lowered due to stress. When illness is viewed from this perspective, do we say that the cause of the cold is the virus, or is it in fact the stress itself?

As a framework for examining the question of self image, we will examine the research as it relates to two particular perspectives that have bearing upon our argument. Both perspectives weigh the importance of early experience very heavily. Transactional Analysis (T.A.) considers the development of personality to be a function of interpersonal relationships and Neurolinguistic Programming (N.L.P.) also

considers the role of the body and sensory mechanisms in influencing the nature of information input from the world. Both perspectives are useful in building an argument for the holistic relationship of mind and body, as well as the value of physical activity and interactional exercise in improving relationships.

Transactional Analysis: Personality and Interaction

In the early 1950's, Dr. Wilder Penfield (1891-1976), a neurosurgeon at Montreal's McGill University, began some exciting research, the results of which were to form the basis of new theories of personality and psychotherapy. Penfield discovered that under rigidly controlled and scientific laboratory conditions, electrical stimulation of certain points in the brain produced vivid and meaningful memories of experiences and sensations. Tom Harris elaborates:

> Perhaps the most significant discovery was that not only past events were recorded in detail, but also the feelings that were associated with these events (Harris, 1969)

An event and the feelings associated with that event are inextricably locked together in the brain so that one cannot be evoked without the other. Wilder Penfield continues:

> The evoked recollection is (never) the exact phonographic or photographic reproduction of past scenes or events. It is a reproduction of what the patient saw and heard and felt and understood. (my emphasis)
>
> (Penfield, 1952, cited in Harris, P.)

The compelling conclusion of this research is that the recollections that have been stimulated are more a reliving than a recalling; a reliving at the age and postiion of vulnerability at which the individual first had the experience, a kind of repository of the oral tradition.[3] What had previously been theoretical psychoanalytic speculation could now be biologically verified; the crucial nature of early experience as a determining factor in personality and general coping ability in later life. Penfield established that the brain acted as a kind of tape recorder (both visual and auditory), laying down on "tape" every experience since birth and possibly even before. A familiar stimulus would activate the tape recording causing the individual so stimulated to feel as she had felt before.[4]

3 The term oral tradition refers to that information in any culture which is not passed down through any written means, but rather is passed along familial and tribal lines by word of mouth (e.g. songs, stories, legends, etc.). Prior to the evolution of writing, this was the only means of transmitting culture. Writing has not only made information easier and faster to pass on, but has also changed the very nature of the information being transmitted. For a more complete discussion of the oral tradition, see Claude Levi-Straus, The Savage Mind, and also the work of Edmund Carpenter.

4 One girl undergoing this experience not only reported listening to her mother playing the piano, but was also vividly reliving the sad feelings that the music evoked in her.

These ideas and Eric Berne's personal experiences as a therapist formed the basis of his work in establishing a new approach to therapy which he called "Transactional Analysis" (T.A.). Although it can certainly be argued that this theoretical framework is somewhat outdated, it is effective for our purposes because; a) it focuses on the validity and impact of early experience and b) the development of self image within Transactional Analysis is considered to be a function of "transactions" or interpersonal experiences.

T.A. is therefore particularly valuable as a communications perspective.[5]

Transactional Analysis also examines the experiences of individuals and the importance of these experiences in determining the nature of later interactional ability. A child, in a relatively powerless position, absorbs much (on either a conscious or an unconscious level)

5 As a form of psychotherapy, Transactional Analysis is useful primarily because it places the dilemmas of psychiatry within a system that is easily understood by the layperson; hence its popular appeal. T.A. conceptualizes the personality as being divided into three basic parts; the Parent (prohibitions and rules), the Adult (the computer; the link with the outside world) and the Child (all feelings and emotion, both positive and negative). The different parts of the personality are formed very early in life (according to Berne) and it is the various parts of the personality as they participate in interactions (or "transactions" as they are referred to in the discipline) that determine the quality of relationships. The timing of this personality development is crucial; Berne and other T.A. practitioners place tremendous value upon the impact of early experience.

from significant powerful adults about the world and her place within it. The individual takes in this information through the senses, interprets or filters this information and transmits that interpretation ("map") to others in the form of interactions or transactions. Depending upon the relative power positions of the individuals involved, these "maps" may become the territory (i.e., be interpreted as such) and frame the more vulnerable individual's subsequent experience of the world. We see the individual then not merely as a static recipient of information from the environment, but rather acting as a dynamic agent of exchange. The interpretations so gained aid in the individual's understanding of the world ("the territory").

By interpreting personality through a sensory awareness and interactive perspective, behaviour can be understood as resulting in part from the genetic filters we employ to interpret external stimuli and the way in which we transmit these interpretations to others in the form of interactions.

Neurolinguistic Programming: Personality Development Through Sensory Processes

Each of our own unique models of the world will be different due to neurological, social and individual constraints. Research done as long as one hundred years ago

(cited in Bandler and Grinder, 1975, pp.8-9) demonstrated that a whole range of identical, real world stimulus sensations are perceived as two totally different experiences solely as a function of the nervous system (e.g., pin pricks on the upper arm vs. pin pricks on the finger). The physical world remains the same and our experience of it shifts dramatically.[6]

The most commonly recognized social genetic filter is the language system. Within any particular system, part of the richness of experience is associated with the number of distinctions made in some area of sensation. In the same way, social and individual constraints help to define and limit experience. While such definition can be beneficial in terms of outlining choices and keeping them within manageable boundaries, difficulties can arise when constraints are imposed and unnecessarily limit our experience of the richness of the world.

Neurolinguistic Programming (N.L.P.) proposes a meta-model of psychotherapy based upon operational input/output mechanisms (e.g. see, hear, feel) and their representational structures (visual, auditory and

6 This was the work of Weber (cited in Bandler & Grinder) in sensory perception which established conclusively that the nervous system, initially determined genetically, constitutes the first set of filters which distinguishes the world (the territory) from our representation of the world (the map).

kinesthetic).[7] We perceive the world through our senses (e.g. touch, sight, hearing, taste and smell), although taste and smell figure least significantly as information sensors (no doubt as a function of evolution and culture). It is also probable that people receive information through other processes, although we lack the ability to be consciously aware of these sources of information. When people experience difficulty or pain with the world, their limitations are in these representations of the world.

7 For example, the comment "I understand you" might be expressed by a kinesthetic person as "What you are saying feels right to me". A visually oriented person might express the same feeling by saying "I see what you're saying" while an auditory person might "hear" the other person clearly. Human beings will tend to represent their "Maps" of the world through one most highly valued representational system using several "output" channels (e.g. posture, body langugage, voice tone, natural language). The most revealing of all these channels is natural language. An individual will tend to choose (on an unconscious level) words and phrases to represent his experience that reflect his most highly valued representational system. Difficulties between people can arise when a primarily visual person, for example, attempts to communicate with a primarily auditory person. The language used may be completely foreign to the experience of the other. It is not our intention here to elaborate on these potential communicational difficulties, but it would be the task of the psychotherapist using N.L.P. techniques to reduce any identified communication problems by adding to or changing the most highly valued representational structures of the participants. It is sufficient for this study to establish the sensory basis of communication.

There are four aspects of N.L.P. (Grinder and Bandler, 1975/76) which are of interest to this argument and demonstrate that the self image is a formulation based in part on our sensory impressions of the world. We have already considered the intake of information from the world through "input channels" which are essentially the five senses. The senses represent our first contact with the world and are, of course, neurologically constrained. In addition, social and individual constraints on the senses develop as a function of culture and peer influence.

Having taken in information about the world, we proceed to incorporate that information into our "world view" on a deep personal level; the "deep structure" referred to by structuralists like Levi-Straus (1966). According to N.L.P., our next task is to represent our interpretation of the real world and in order to accomplish this we employ "representational systems" which can be either kinesthetic (related to feeling sensations), visual (related to sight) or auditory (related to hearing). An aspect of N.L.P. of particular interest is referred to as "fuzzy function", defined in N.L.P. as;

> "any modelling (i.e. representations of the world) involving a representational system and either an input channel or an output channel in which the input or output channel involved is in a different modality from the representational system with which it is being used."
>
> (Bandler and Grinder, 1976)

Fuzzy functions are the result of distortions in communication called "mind-reading" in N.L.P. An individual takes bodily sensations - his own kinesthetic representation - and distorts the information arriving visually and auditorily from outside him in such a way that it conforms to his body sensations. For example, a person might hear a person talking loudly and feel rejection or fear. This phenomenon, known in more classical terms as "projection", sets up forward feedback (like a self fulfilling prophecy) that limits the individual's control over his feelings and robs him of the ability to experience the world directly.

The significance of early experience is once again apparent. By failing to recognize the importance of these fuzzy functions in children, parents and significant others can, albeit unintentionally, set up negative associations that are influential in adult behaviour. Transactional Analysis recognizes the importance of these early messages, referring to them as "Parent Tapes". These messages are extremely influential and have no need of validation from the outside world.

A fuzzy function is essentially a crossed circuit and, interestingly, has a verifiable basis in physiology. Bandler and Grinder cite the work of Paul Bach-y-Rita (Brain Mechanisms in Sensory Substitution, 1965) in the area of sensory substitution; translating visual and auditory input

into kinesthetic sensations to enable the blind to "see" and the deaf to "hear" through the tactile sense. The neurological foundations of this work are fascinating;

> "Indeed, visual responses have been reported to appear earlier in the somesthetic cortex (kinesthetic) than in the specific visual cortex (Kreindler, Crighel, Stoica and Sotirescu, 1963). Similarly, responses to stimulation of the skin can be recorded from widely varying regions of the cortex, including "specific" somatosensory cortex, association areas, and even the visual cortex (Murata, Cramer and Bach-y-Rita, 1965).
>
> In a study of the cat's primary visual cortical cells, Murata et.al (1965) demonstrated that even these cells were polysensory, with approximately 37% of them responding to auditory and 46% to skin stimulation .... These results demonstrated that the visual cortex (the cortex considered most highly specialized of the sensory projection areas) receives input from other sensory modalities as well as visual input, and this suggests an associative or integrating role of at least some cells in this area. (emphasis mine)

What is of particular interest to this inquiry concerning Bach-y-Rita's work is the possible existence of polysensory mechanisms in the brain. Not only does this contradict a view of the human organism as segmented (thus adding strength to our argument about its holistic nature), it also raises a possible explanation of why people derive multidimensional rewards from isolated experience. Due to the influence of hormones and polysensory stimulation, these cross-over effects mean that many different rewards can be obtained from one experience. For a discussion of the mood

altering effects of exercise, see Chapter Five.

Conclusion

At the beginning of this chapter we spoke about the phenomenon of unembodiment, or the loss of a keen awareness of one's body. A healthy lifestyle clearly requires such an awareness, and on a psychological level it is the function of the two therapies discussed to bring about "re-embodiment" in terms of the relationship of the body to its sensory processes and the person to others. Many other types of therapies are used to bring the mind and body to a more satisfactorily unified state. Ranging from simple physical contact (sadly lacking as a form of communication in this culture except as a prelude to sexual contact) to Rolfing (a system of deep muscle massage), all these approaches attempt to reacquaint the individual with bodily sensations long repressed or restrained. Invariably, overall energy is increased and psychological (in addition to phsyiological) health improves. We will look at three more approaches in subsequent chapters; the Feldenkrais system of Body Awareness through Movement, F.M. Alexander's theories of "means whereby" and "inhibition" and Alexander Loewen's Bioenergetics. Although the work of these men has received little public acclaim, there is much here of value to our argument for the need for mind/body integration.

Chapter Three:

Pregnancy: Physiological and Psychosocial Effects

Pregnancy as the beginning of the mother/child relationship is, for our purposes, an important area of investigation. Like the formation of self image, the pregnancy experience has both interactive and sensory components. In fact, pregnancy is not only obviously physical in nature but is also a deeply psychosocial experience. Perhaps most importantly, the pregnant woman undergoes tremendously profound role and status changes which have impact not only on her constantly changing self image, but also indirectly on the self image potential of her child.

The myth of "natural childbirth" is an easy one to dispel; in every society, bodily processes are culturally constrained, from sex and defecation to eating and yawning. Pregnancy is no exception. Most societies take elaborate pains to protect themselves and pregnant females against this uncertain status.

The physical changes and psychological states of the pregnant female are highly interdependent. Along with the obviously significant physical changes psychological effects seem to suggest the need for ongoing communication about the pregnancy process.

Pregnancy: A Pressure Position

The time from conception to birth rates potentially as one of the most intense and stress producing situations in a woman's life as well as in the lives of her husband and/or her family. In addition to the obvious phsyiological stressors placed upon her body by the developing foetus, psychological and sociological pressures are also brought to bear as new roles and status are acquired. This is especially difficult in a culture such as ours in which birth is regarded as a pathological condition requiring the supervision of and control by the medical profession. Also, women daily encounter messages that deny the value of the mothering experience while at the same time extolling the virtues of the male dominated labour force. Instead of treating pregnancy as a celebration of life and a normal function, the woman is inclined to see her pregnancy as an imposition on her body because it imposes a body type which is inconsistent with the ideal cultural type (i.e., slender).

The birth experience itself is seen as painful and frightening because of its medicalization and treatment. The media hype is that of a super mom who is able to breastfeed her baby, make her own baby food, keep an immaculate house, be a gourmet cook and hold a full-time job. Inevitably, performance anxieties result.

Social customs and cultural considerations play a significant role in the way a birth is handled and how a woman feels concerning her new role. Birth reflects social values and varies with each society. In fact, the more that childbirth is taken over by "experts" (whether they are shamans or obstetricians), the more likely it will be that the mother's behaviour during childbirth will be affected by external and social cues rather than her own body.

Our own culture supports a lack of body awareness and an avoidance of pain at all costs; these values find expression in labour and childbirthing technique as defined by experts in the field in their advice to mothers undergoing the experience. Alternatively, the role of "experts" should be to inform rather than to advise. It is in the advice-giving, however well intentioned, that experts will impose a style of mothering which is essentially culture bound, transitory and preoccupied with currently fashionable childrearing philosophy. This is not necessarily problemmatic in a preindustrial society where ideas remain fairly consistent over time, but anxieties and difficulties result when ideas change rapidly from one generation to another. In postwar North America, for example, mothers were told that they would do their children irreparable damage if they went to work. These children of the fifties grew up to be the mothers and fathers of the seventies who were then told that if they did not get out and work, they would be

emotionally stifled and unfulfilled. "Expert" advice (often coming from men) often places women in a no-win situation.

An examination of the actual pregnancy, birth and post-partum experience reveals physiological, psychological and cultural implications and is a necessary aspect of an appreciation of the holistic nature of the bonding experience. We will examine the physical changes that the mother goes through during pregnancy and what is involved (during the post-partum period) in returning her body to the nonpregnant state. Of crucial importance is the influence of hormones in the process. In a psychological sense, we will examine how the mother's feelings about herself, her body, and her relationships with others are affected by pregnancy and birth. Finally, we will consider the cultural and sociological implications of birth and examine the experience from the perspective of structuralism.

Physiological Developments During Pregnancy

Although the actual physical changes that accompany pregnancy are fascinating and important to our examination of its holistic nature, they are far too numerous (and too basic) to be included here. Appendix One provides a comparative analysis of maternal and fetal development. Instead, in this section of the chapter, we will examine the physical changes of pregnancy from the perspective of their implications for the fitness state of the new mother.

Pregnancy will be seen as an opportunity for growth and change (see Bibring, P.45) as a woman becomes more aware of the incredible things of which her body is capable.

Historically speaking, our not too distant ancestors took a dim view of women (especially of the upper classes) being "overly" active during pregnancy. Thus, a woman endured her time of confinement and suffered the effects of poor muscle training because it was expected of her. However, it soon became apparent that inadequate muscle training and muscle maintenance led too often to birth defects and gradually, attitudes began to change. The sedentary life in pregnancy was found to be inadequate. Pregnancy can be considered a type of work, just like exercise, in that the foetus imposes stress on the body. An increase in body weight without a corresponding increase in active tissue leads to a greater energy cost for a given task. Pregnancy is a highly stressful experience. The centre of gravity shifts dramatically and balance changes as the baby grows and settles into the pelvic cavaity, placing considerable strain on the lower back. These profound physical changes cannot help but influence a woman's physical performance and consequently her self image.

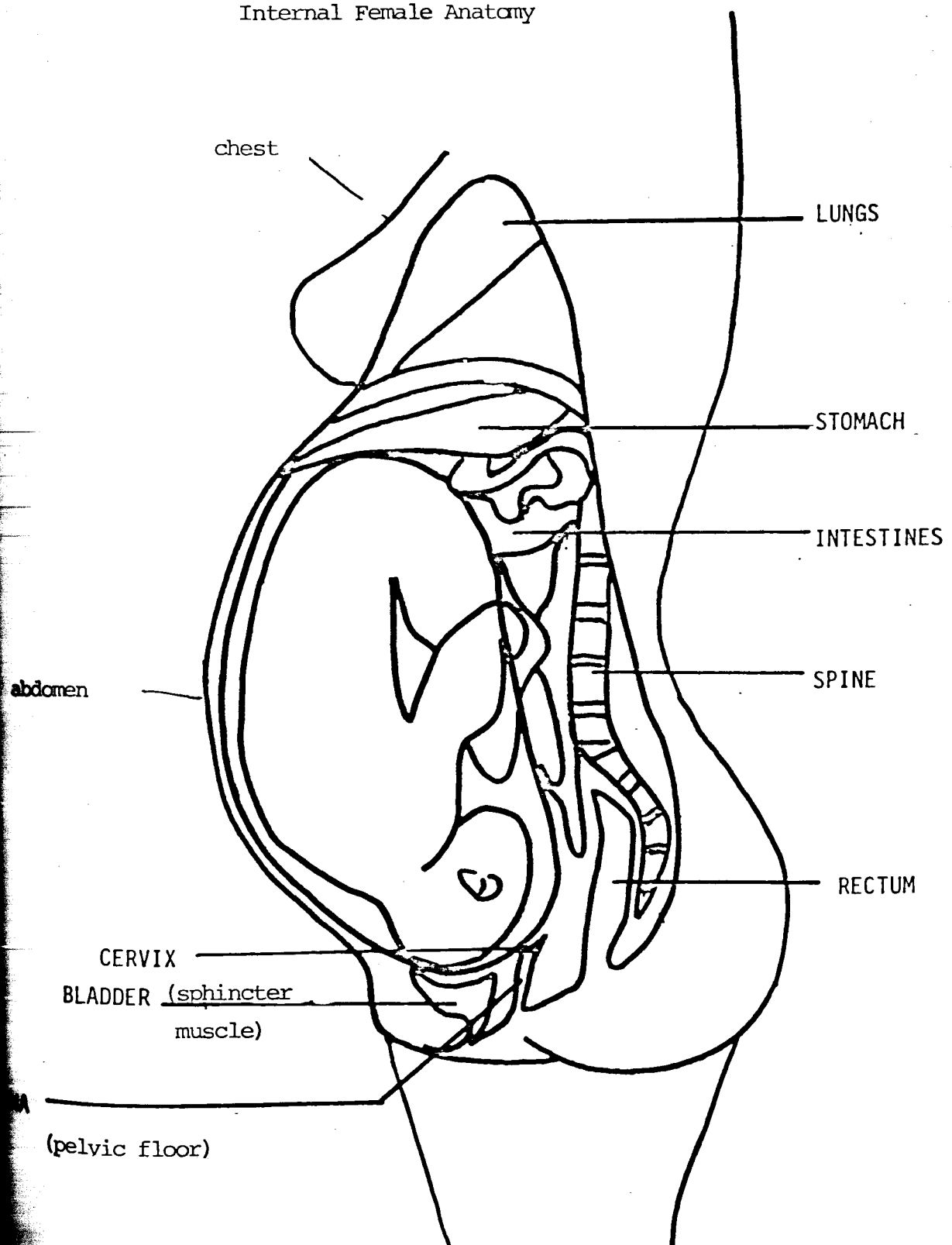
As a result of pregnancy and birth, a woman's physical capacities and abilities will be diminished in a number of ways. Her aerobic fitness will not be up to maximum because of enforced inactivity, particularly during

the third trimester. Also as a consequence of this inactivity, certain muscles in her body will have atrophied while others, namely those of the chest, abdomen and pelvic floor (Fig. 1,P.38) will have been stretched. The mother becomes fatigued more easily due to the increased effort involved in caring for the baby coupled with the exhausting effects of the birthing experience itself. Other problems that may become significant following the birth are voiding or defecating difficulties, hemorrhoids, breast engorgement or sore and cracked nipples and afterpains (post delivery uterine contractions). These are especially strong during breastfeeding as the sucking stimulates the body to secrete the hormone oxytocin which stimulates these contractions to bring the womb back to its prepregnant size and shape.

Accompanying caridovascular changes are equally profound. An increased heart rate (number of times the heart beats) and an increased stroke volume (amount of blood circulated by a single heart beat) lead to an increased cardiac output, as the heart is supplying blood and oxygen to a greater body volume in addition to the foetoplacental unit. The pregnant woman's heart beats faster and more efficiently. Of particular significance to her exercise performance is that the demands on her heart are greater in pregnancy for any specific work load. This means that the pregnant woman reaches her maximum cardiac output at a significantly lower level of work. Training must take this difference into

Figure 1

Internal Female Anatomy



account and operate at what would be for the woman in her nonpregnant state a submaximal level.

With so many things occurring to affect the mother's physical condition and how she perceives her body, pregnancy is certainly a significant step in the life of a woman. These physical changes are accompanied by equally compelling psychological changes which occur as the result of increased hormonal activity and changes in life experience and role status.

Psychoemotional Changes during Pregnancy

Although pregnancy is certainly not a state of illness (in spite of the perceptions of the medical community), it is an altered state of the body bringing about many changes in bodily systems not the least of which are emotional in nature. In addition to being motivated by the realization of impending parenthood, these emotional changes are brought about by hormonal levels which are continually adjusting as the body prepares for delivery. Whatever their origin, these mood swings place considerable strain on the mother (and those close to her) unless they are understood and dealt with compassionately.

It is certainly apparent that, from a male dominated medical perspective, the physical aspects of birth have certainly been much better managed than the emotional ones. It is largely because of the failure of medical

science to pay attention to these important emotional demands that we are beginning to reach a point of diminishing returns of increasing interference in terms of improved outcome. As with any cultural "rite of passage" pregnancy is an emotion filled experience for most women, radically changing (in many cases) their feelings about themselves and those around them. Both the intrapersonal forces in the pregnant woman and the interpersonal forces within her family are in a state of disequilibrium.

Early researchers in the area have tended to look at this state of disequilibrium as a "biologically determined psychological crisis" (Caplan, 1957, in Shereshefsy & Yarrow, 1973, p.144). This view has been modified in more recent literature. While pregnancy itself is not necessarily a crisis, the whole period of pregnancy can be seen as one of increased susceptibility to crisis, in both a physiological and emotional sense. Caplan postulated that even minimal psychotherapeutic intervention may be helpful in minimizing the stresses of pregnancy, as the pregnant state is one of disequilibrium. He tested a group of women experiencing their first pregnancy according to the following variables:

1. Life History: Caplan gave special attention to the mother/daughter relationship as this has been shown to be especially significant in the young woman's adaptations to pregnancy and maternity (e.g. Caplan, 1961, Bibring et al 1961, Deutsh, Vol. II, 1945 in Shereshefsy and Yarrow, 1973).

2. The Woman's Personality: Caplan was interested in to what extent pregnancy and maternity were associated with personality change.

3. Current Life Situation: External events have been known to aggravate the stresses associated with the pregnancy experience and may contribute to certain pregnancy complications.

4. Pregnancy Experience: Psychological adaptations of the woman as the pregnancy progresses and her post-partum relationship with the child (her ability to accept the child as s/he is).

5. Infant Characteristics: In addition to the regular weight and growth data provided by the pediatricians, infants were evaluated on several other criteria which included; intellectual and motor functions (including activity and tension levels); affective behaviour (e.g. expressions of mood); social responsiveness and coping characteristics (e.g. adaptibility, irritability, vulnerability to stress and goal directedness).

Following indepth testing and psychological counselling during the pregnancy and the post-partum period, Caplan drew several conclusions about the psychological implications of the experience. Women who tested high in nurturance and ego strength adapted well; they were able to visualize themselves as mothers easily. If the mother showed

a poor psychological adjustment, she was likely to show some type of physiological disturbance as well. A perception of the mother/daughter relationship as being warm and empathic seemed to reduce anxiety about the physical aspects of the pregnancy, delivery and the child. Families burdened with more external stress (regardless of socioeconomic status) had more difficulty in accepting and adapting to the pregnancy and later in accepting the demands of the infant. Families already involved in serious martial disharmony tended to have more stresses per family than others and therefore shared a special vulnerability to adjustment problems.

Caplan found that attitudes of acceptance of and confidence in the maternal role were significantly related to several aspects of the infant's functioning (e.g. psychological adjustment and physiological functioning including neurological state). Infant alertness was found to be less related to maternal factors than were infant adjustment and functioning, and appeared to be more constitutional in origin. Maternal behaviour, as a rule, was really only consistently predictable for mothers of girls. Women appeared to react to the maternal role with sons with a great deal more variation, thus making prediction difficult. In all, Caplan concluded that childbearing and the first few months of mothering an infant facilitate positive developmental change for a substantial proportion of women. Of particular interest to the focus of this work is that

Caplan's results emphasize the close relationship between the woman's physical well-being and her predominant mood and her emotional adaptations during pregnancy. The more physical problems experienced by the expectant mother, the greater was the psychological strain.

During the time of a woman's pregnancy her psychological and physiological states are interwoven and inseparable. Knowledge of the phases of pregnancy and the ability to have ongoing communciation with a staff member were shown to be crucial factors in maintaining the mental health of the mother (Wolkind, 1981, Chapter 11). However, different educational levels of staff and clients often contributed to a lack of communication. A study in Chicago examined the value of ongoing communication with inexperienced but enthusiastic medical students who, as a part of their training, were assigned to a particular pregnant woman (through the pregnancy, delivery and the post-partum period). Carpenter (1968, cited in Wolkind, 1981) compared the labour of these women with 52 other women who had not received this personal contact. He discovered that the attended women were far less likely to feel anxious during both pregnancy and labour. They were found to require slightly fewer tranquilizers and sedatives prior to delivery. In fact, the amounts of drugs administered to the attended group correlated inversely with the number of interviews in which they participated.

In another study, individual psychotherapy was offered to twenty-nine primips (first time mothers). Thirty-one mothers served as a control group from a total test group of sixty (Shereshefsky and Yarrow, 1974). The twenty-nine treated women were divided into three groups:

Group One: This group was given counselling using a strictly psychoanalytic approach.

Group Two: Counsellors with this group used a values and feelings clarification approach, not requiring the indepth perception and comprehension of psychoanalysis.

Group Three: The last group received counselling with an approach termed "anticipatory guidance". This was, in essence, an educational experience.

Not only did all treated groups show a marked superiority in both attitude and behaviour but the group that received the "anticipatory guidance" counselling showed the most significant difference from the control group. All the studies cited seemed to indicate that a combination of educational techniques and an informal opportunity for women to dialogue about their fears can be of significant benefit. This affirms the value of a psychosomatic approach to pregnancy as an important transitional period in a woman's life cycle.

A new model of pregnancy was suggested by Bibring

(1959) based on Erikson's ideas of the normal developmental crises of life (1950). Using this model conflict, emotional disturbance and feelings of rejection during pregnancy are conceptualized as symptoms of a normative crisis which could have a positive effect insofar as its resolution would lead the individual to a new stage of development. Using this model, pregnancy can be described as a traumatic and yet positive experience. In fact, the difficulty with which some women adjust to the role of mother is no different in a psychological sense from the difficulties that many people experience in taking on a new role, except that this new role has accompanying biological implications. The problem with pregnancy is that the social expectations are usually much greater than with other roles. The crisis a woman faces has more to do with redefining social role than psychological trauma. The social consequences of pregnancy are particularly significant and must be considered independently of other factors.

The Social Impact of Pregnancy

"When a baby is born, a mother is also born"

(Montague, 1978)

Birth, like any other act connected with the body and its functions (e.g., sex, eating, even yawning) can never be regarded as a purely natural experience since, while it is a spontaneous physical process, it must operate within a context of customs and social control. The ritualistic performance of these customs is considered essential (or at least desirable) for the safe outcome of the pregnancy. In the sense that birth is a social act uniting not only the mother and father of the newborn, but also their respective kinship groups, an appreciation of the social impact of birth is essential to an understanding of the birth experience;

> Neither birth nor death has ever, anywhere, been regarded entirely as a natural phenomena. On the contrary, birth provides an ideal opportunity for understanding the way in which culture enmeshes the crucial facts of nature in a symbolic network ... the attribution of cultural significance blocks but also awakens anxiety, conceals but also expresses the human situation.
>
> L. Chertok, 1969

It is clear that the ceremonies surrounding the pregnancy have an important integrative function in the social system. Pregnancy affects marriage and the social system, and provides the link between generations, thus joining the past with the present and building a sense of

heritage. Of no less significance is the spiritual meaning that accompanies birth. The pregnant woman in many societies (including our own, to some degree) is in a state of transition (i.e. between not-mother and mother) and is therefore assumed to be in a state of ritual danger. As she is passing through a transitional phase of identity she is also a threat to others. Ritual practices assist the woman through this transitional phase and minimize the risk she presents to others. The baby itself is also thought to be in ritual danger as it has not yet reached a state of existence. It has no place in society, no one knows what it will be like, its sex, or in fact whether or not it will survive. Customs and ritualistic behaviour toward both the mother and the baby serve to protect them in their uncertain state of existence and, to some degree, protect the community itself from this threat of uncertainty.

For example, the Lele of Central Africa consider both the mother and the baby as vulnerable but also believe that the baby is likely to be malicious and therefore the Lele expectant mother avoids going near sick people. Her baby could make them worse. In pregnancy, prohibitions and instructions of this kind have the cultural impact of "taboo". In some form, this concept exists all over the world. In our own culture, a once well coordinated system of beliefs and prohibitions about conduct exists now in remnants of folk lore like; "do not lift your arms above your head (or

the umbilical cord will strangle the baby)", "eat nuts and the baby will have a good complexion", or "if you have heartburn, the baby has lots of hair". These belief systems are now being replaced by a more compelling relationship of woman to technology which places the obstetrician (usually male) and his army of technological "assistants" in control of the birth experience. Too often, the mother's needs and the natural progressions of the birth take a secondary position to the needs of the doctor and the medical profession. Technology has become the ritual through which we express our anxiety, as Chertok has suggested (1969).

However, there are indications of change as the medical profession begins, albeit slowly, to respond to demands for change. In an article in the Vancouver Sun (May 6, 1983) entitled "Babycare as a family business", the new family centered maternity unit at St. Paul's Hospital is profiled. In the unit the philosophy is to prepare new mothers and their partners for challenges they will face at home. Fathers can be present even at most caesarian births, and are welcome in the maternity ward at any time. Other family members, including children, are free to visit during the day and evening. Each nurse in the maternity ward is assigned to a family for the duration of the new mother's hospital stay, thus eliminating confusion over who to ask for information.

These new developments reflect the findings of the

researchers already cited for ongoing informal communication concerning the pregnancy and birth experience, but these examples are few and far between. One result of the general medicalization of pregnancy is that expectant mothers have very little confidence that they are capable of giving birth without medical aid. They no longer trust their own bodies as a result of the development of male oriented obstetrics;

> The history of childbirth can be viewed as a gradual attempt by man to extricate the process of birth from woman and call it his own ... man placed woman on her back in labour, then devised metal tools to pull her baby out, then knocked her senseless with anaesthesia. And it was man who, throughout history, did it all in the name of saving woman from her own body.
>
> Arms, 1975, pp. 21-22

Suzanne Arms' caustic comments echo the sense of futility that many women have experienced regarding the birth experience in this culture. Increasing numbers of home births and family centered birthing rooms within hospital settings are testimony to the fact that society is beginning to respond to the real needs of women as they have expressed them.

The arenas of menstruation, pregnancy and birth have always been held in great suspicion by men, who have often been very frightened by them. This fear has prompted men to either restrict or control women in general and menstruating or pregnant women in particular. Even in societies within the Judeo-Christian culture, such prohibitions have existed. Not only should the menstruating woman keep away from men and

all important activities, but in some cultures anyone in an especially vulnerable condition must carefully avoid her. In some agricultural communities it was thought that if she churned the butter it would go sour or cured the bacon it would go bad. The pregnant woman's body, as strongly representative of the female principle, is therefore dangerous and must be kept apart from those representations of the male principle for life to be orderly and society to function.

These ideas fit well within the sociological theoretical framework of structuralism formulated initially by French anthropologist Claude Levi-Straus (1963) and contributed to by scholars in numerous other disciplines. Essentially, the structuralist position analyzes the basic, relatively stable elements of a system (especially in terms of the behavioural sciences) with a view to seeing those elements as part of a deeper level and cross cultural meaning system.

Sheila Kissinger's work (1978) as an anthropologist chronicling birth experiences around the world, vividly details the common experience of labouring women, from a structuralist perspective.

A main concern when assisting in the birth of a child is to reassure the woman in labour that all is proceeding as expected. Often this reassurance is given not only through companionship but also by magical practices and prayers which

invoke supernatural powers to ensure a safe outcome. When science and technology do not control childbearing, harnessing the powers of ancestral spirits, gods or other spiritual forces provide reassurance. Within this "magic" is contained an inherent logical pattern as well as clues about the important elements of the society. An analysis of these patterns and the clues they provide is the basis of the structuralist position.

In some preindustrial societies, dramatic myths are re-enacted in front of the labouring woman symbolizing the meeting of the forces of good and evil and life and death within the woman's body. Through these dramatic myths, harmony between the spirit and the physical world is achieved and the woman is free to deliver her baby normally. In the case of a difficult labour among the Cuna Indians of Panama, a midwife may ask a shaman to intervene to sing the baby out of its mother's body.

Recounting the story of the difficulty of the labour and the midwife's request for help, the song essentially represents a search for Muu (the god who created the baby and lives within the vagina and the uterus). The god has stolen the woman's vital essence which must be reclaimed by the shaman (in battle) so that the baby can be born. Among the Cuna, each organ possesses its own soul and the harmonious cooperation of all the different souls within the body maintains its vital essence. Pregnancy obviously disrupts

this harmony.

The song of the shaman relates the progress of the battle with Muu inside the labouring woman's body. The shaman and his "assistants" (the spirits of wind, water and wood; even those of alcohol and the "silver steamer of the white man") ultimately win the battle and make the difficult descent through the vagina. Although on the way in he and his assistants had to go in single file, they can exit "four abreast". The cervix (the mouth of the uterus) is dilating as it should.

This psychodramatic myth gives the labouring woman a metaphoric language in which her ordeal can be expressed and given meaning in both a psychological and cultural sense. If not the pain itself, anxiety at least is reduced as the woman gives herself up to the control and support of her cultural mechanisms. This is a highly sophisticated form of psychotherapy, designed to assist a woman through her time of crisis.

In India, it is the custom for a grain jar to be burst to let all the grain pour out. As the grain pours easily, so will the child be quickly and easily born. Alternatively, a tightly furled flower is placed near the woman which she watches, and as the petals open so her cervix will dilate. Both images provide a focus for the mother's awareness and the effect of this imagery on the mind of the labouring woman is a powerful aid to delivery, but it is far

more than that. The symbols are representative of nature and as such the relationship of the mother to the objects links her body to the rest of the natural world. When these natural symbols are also culturally significant, the experience is linked to permanent values and the labour is given pattern and meaning.

Unlike our own cultural experience, many nonwestern societies understand the psychological element of childbrith difficulties. Techniques exist for facilitating better psychosomatic coordination, the psychological impact of which helps her to get on with her labour. In Africa, a woman having a difficult labour is asked to confess her sins. Among the Manu of New Guinea, the husband and wife are encouraged to express any hidden anger they have toward each other. In this manner, not only is the mother culturally supported throughout her labour and the birth experience given meaning, but the norms and cultural prohibitions of the society are subtly reinforced.

Conclusion

The physiological, psychological and social elements of pregnancy and birth must integrate to insure a successful experience, and one aspect of the experience must not be neglected for the sake of the others. The intervention strategies which have been shown to be most successful involve providing the woman with an opportunity to freely

discuss her concerns and questions regarding her pregnancy. Largely as a result of this dialogue, anxiety concerning labour and delivery is reduced by such a significant degree that the need for tranquilizers and sedatives was inversely proportional to the number of contacts provided. Culturally speaking, support is given to a pregnant woman via companionship and ritual practices, the purposes of which are to link the even with the culture; past, present and future.

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Chapter Four: The Mother/Child Bond: A Biosocial Interactionist Perspective

We are now in a position to consider the actual mother/child bond from both a biosocial and interactionist perspective. Bonding is dealt with here not in the sense of the "magical" first few moments after birth. Rather, the mother/child bond is considered to be the primal relationship from which all others develop in that the quality of this bond is a crucial determinant of the quality of future relationships.

It is evident that, from a basic biological perspective, we exist (as do other species) for only one purpose; to reproduce ourselves. "The central biological fact (is) that the core function of any family system is human continuity, through reproduction and child rearing" (Rossi, P.4). Psychological, socio-economic and political considerations are of secondary importance. It is crucial not to sacrifice awareness of and appreciation for our biological heritage solely to serve these secondary pursuits. One such evolution in thinking over the past century has been the feminist movement; primarily women (and some enlightened males) who have joined forces to combat sexism and discriminatory treatment of individuals based upon gender. Categorical disagreement with the feminist position would be not only impossible, but counter-productive. The feminist

perspective has had great impact upon societal notions of the mother role and has therefore influenced the mother/child relationship. The mother/child bond has been misrepresented as a result of the feminist preoccupation with male technocratic thinking. The reproductive cycle will only continue if our culture is able to create a social and emotional climate in which the process carries with it at least a small measure of status for those involved. The feminist movement has attempted to take much of this status away. To quote Carl Sagan (1977), "Anatomy is not destiny, but is is not irrelevant either".

Feminism: A Technocratic Perspective

To be desirous of a more equitable share of the rewards of society is a reasonable and honest goal and certainly women have long felt their societal benefits to be severely constrained. However, in one example of the feminist argument, the problem appears rather circular. Kate Millet, for example, in her popular feminist classic, Sexual Politics, falls prey to the same difficulties that most radical feminists have to contend with in their arguments; a view of male technocratic power as the only worthwhile pursuit. For example, she laments the fact that two-thirds of the female population in most developed countries are engaged in work for which they are not paid (Millet, p.64). She disparagingly calls this "women's work"

and indeed, from a male technocratic perspective, not to be paid for what you do would be discouraging. However, technocracy[1] is not the only available option; a more humanistic perspective would appreciate work in whatever form as the essence of survival rather than simply the activity in which one engages for pay. She goes further to say that,

> "... women's distance from technology is sufficiently great that it is doubtful that they could repair or replace such machines on any significant scale ... If knowledge is power, then power is also knowledge, and a large factor in their subordinate position is the fairly systematic ignorance of technocratic issues that patriarchy imposes upon women" (emphasis mine)
>
> (Millet, p.66)

This statement assumes women to be mere pawns in this process and asserts that the only power (i.e. knowledge) worth gaining is technocratic power. No possibility seems to exist for increased appreciation for affective, human-oriented thinking; the perspective is dismissed as unimportant.

1 Millet uses this term freely and frequently in her work; I use it in this context to denote a political system based upon allocation of greater resources and rewards to those most directly involved in technology (e.g., engineers and scientists)

She states; "Woman is still denied sexual freedom and the biological control of her own body through the cult of virginity, the double standard, the proscription against abortion and in many places because contraception is physically or psychically unavailable to her" (P.83). The biological reality eludes Millet in these observations; the survival of the species is highly dependent upon women being prepared and reasonably willing to undergo the process of pregnancy and birth and the survival of culture is in some measure dependent upon this being accomplished in at least a semi-ritualized fashion.

It is of particular interest here that patriarchal circumstances and beliefs seem to have the effect of poisoning the female's own sense of physical self until it often truly becomes the burden it is said to be. It is true that in societies where defloration, pregnancy and birth are looked upon as positive occurrences they are relatively painless, but where a woman is expected to "endure" such situations, that in fact she does do.

Millet believes the sexes to be "... inherently alike; save reproductive systems, secondary sexual characteristics, orgasmic capacity and genetic and morphological structure" (P.133). However, it would seem that this is a lot of difference; these basic biological differences could be the basis of a significant difference in perception. She seems to occasionally lose track of the fact

that cultural mores imposed upon men are equally compelling. If "Woman is the product of the system that oppresses her" (P.135), then surely man is equally the product of the system that oppresses him by forcing him into the role of oppressor. A position of unwanted power is as undesirable as a postion of undesired powerlessness.

Men and women do differ radically in some important ways and those basic differences are at the root of some very real cultural facts. Patriarchy is universal without any exception whatsoever (Farb, 1978). No example of a true matriarchy has ever been discovered, although a small number of societies may trace their kinship through the female line. This, however, is not matriarchy, as it does no more than substitute a different male (the female's brother) for the authoritarian figure of the female's husband. It is only important that some male figure be persuaded to take at least social responsibility for the young. In fact, many compensatory social strategies for involving the male in the rearing of children have evolved. The most common of these are the patrilineal system and the common social practice of noting father/child similarities. These were engagingly described by Martin Daley when he visited Simon Fraser University in 1983 (see Bibliography).

The most problematic element of Millet's book (as with other feminist authors, most notably Germaine Greer) is what it lacks; there is only a passing mention of what is to

become of the children in her idealized society. "The collective professionalization (and consequent improvement) of the care of the young ... would further undermine the family structure while contributing to the freedom of women. Marriage might generally be replaced by voluntary association, if such is desired" (Millet, P.92). Although abused or neglected children may benefit from collective concern, professionalization does not necessarily equate with improvement. As well, "voluntary association" is no guarantee of security for the children such unions may produce.

Biosocial Feminism

The biosocial approach, when cultural realities are seen as resulting from a combination of both biological and sociological constraints, can considerably expand the traditional feminist vantage point. Through this perspective, the unique qualities of the mother/child relationship can be viewed positively as a function of the biological adaptation of one organism to another for the respective ontogenetic and phylogenetic survival of both.[3]

3 The terms ontogeny and phylogeny refer, respectively, to the survival of a single organism and the survival of an entire species. The biological adaptation to which I am referring, therefore, is one which not only optimally ensures the survival of the individual mother and child, but also the survival of the species as a whole.

Much like the umbilical cord which intimately connects the mother and infant in a physical sense during pregnancy, the mother experiences a need for a close psychological tie to her infant following birth. Termed "primary maternal occupation" by the English psychoanalyst Winnicott (1969), it is easy to see that it is to the baby's advantage (and indeed, crucial to the survival of the species) for an adult (most often, although not necessarily, the mother) to be highly centered on the baby (Winnicott, 1969). Biosocial feminist Alice Rossi (Rossi, P.4) points out that cross-culturally, the father's role in child rearing is a variable one, ranging from a high level of connectedness to remote indifference. "No known society replaces the mother as primary infant tender, except in the case of small and very special categories of women" (Rossi, P.6).

The high degree of variability of the father's role indicates that his response to the child is one that is socially learned, dependent upon the culture in which it occurs. Rossi does not argue that men cannot be effective parents, only that the acquisition of these skills comes from social experience (imposed by norms of kinship experience) rather than innate predisposition.

There is much to support the idea of the mother/child relationship as one which possesses innate characteristics. The female is obviously much more closely involved in the reproductive process than the male. Quite apart from the

actual experience of carrying the child and subsequently giving birth, the reproductive drives of men and women differ in one major aspect; males have only one innate orientation that is involved with reproduction; a sexual drive that draws them toward women. Women, on the other hand, have a dual orientation; a sexual drive toward men and a reproductive drive towards the young. It is important to note that, for the female, reproduction and sexuality are closely linked phenomena. The nipples, for example, become erect during sexual activity as well as infant feeding. In fact, many women describe breast feeding as an erotic experience.[4] It is clear that it is to the advantage of the species as a whole to insure that the mother view childbearing as a pleasurable experience; the dual sexual orientation is therefore functionally adaptive.

There is a far greater need for the human infant to bond with its mother than exists for any other species. The gestation period of the human fetus is commonly thought to be 266-1/2 days, or approximately nine months. Ashley Montague (1978, P.232) points out that this <u>in utero</u> phase of gestation is really only half of the entire process. He terms this phase uterogestation. The phase from birth until

4 Personal observation of breastfeeding mothers at La Leche League meetings. My own breastfeeding experience has also confirmed this.

the time when the infant begins to crawl (which he terms exterogestation) completes the entire gestation period. Interestingly enough, this phase also lasts approximately 266-1/2 days, placing the actual birth mid-way through gestation. This "premature" birth is necessitated by the evolutionary shift of the human species to an upright bipedal posture and an increased cortical size without an accompanying increase in the pelvic capacity and birth canal flexibility of the human female.

While men are usually taller and stronger than women (especially in the shoulders) and are therefore more physically adapted to certain types of activity, women will generally surpass men (upon cross-cultural examination) in their ability to form intense emotional bonds with infants and young children.

Kate Millet remarks that there are relatively few differences between men and women and that those that exist are relatively insignificant. However, the reproductive and endocrine systems that underlie childbearing and lactation function <u>throughout</u> the major portion of a woman's life cycle, regardless of whether or not she has children. Thus, their influence upon the human female condition is very real and in fact, quite profound, not to be diminished by male chauvinists or liberated females. Women have actually played an essential role in the survival of the species, a point which will be elaborated upon in the concluding pages of this

work.

Since the 1950's and the work of such scientists as J.D. Green and G.W. Harris, we now know that hormones are subject to social stimuli (Rossi, 1978 P.73). Behavioural and environmental influences thus affect hormonal secretions through the nervous system. As Green and Harris illustrated, blood flows from the hypothalamus to the pituitary. Prior to this discovery, it was thought that the endocrine system worked independently of the external environment and was only minimally responsive to the nervous system. We now know that this is not the case; neural outputs are converted to endocrine outputs. This research was an essential step in establishing a relationship between the social world and the biological. A good example of this relationship comes from the field of primatology; male rhesus monkeys who suffer defeat and loss of status in their group will show an abrupt drop in their testosterone levels. However, if the monkey is then placed next to a sexually receptive female of the same species, his testosterone level will shoot up again. "Sometimes experience and opportunity will change hormone levels" (Rossi, P.17).

In our ethnocentric arrogance, we must continually remind ourselves of the irrefutable fact of the brevity and the cultural uniqueness of Western history. An evolutionary perspective helps us to pinpoint the "growing discrepancy between the demands imposed upon us by a complex techological

society and the phsyiological equipment we have inherited from our long mammalian past" (Rossi, P.3). Washburn estimates that over 90% of human history was spent in hunting and gathering societies. To use Carl Sagan's analogy (1977, P.16), if we condense the entire evolutionary history of the earth into one year, the beginnings of the origin of modern homo sapiens (Proconsul and Ramepithecus; probable first ancestors) would be on December 31st of that year. The first signs of Western civilization that would be even remotely similar to what we know as life today would occur at 11:59:35 on the evening of December 31st. Our entire civilization represents about 25 seconds on this Cosmic calendar. "Westernized human beings now living in a technological world are still genetically equipped only with an ancient mammalian heritage that evolved largely through adaptations to much earlier times" (Rossi, P.3). In reality, the lifestyle of these earlier times was one of much more equality (in all facets of life) than presently exists. Women, in hunting and gathering societies, almost without exception, contributed through their productive labour half or more of the basic food staples consumed in their society. Reproductive success would go to those females who were most able to perform simultaneously the activities of childbearing and food gathering (Rossi, P.6).

John Bowlby, in On Attachment (1969) addresses the same idea. His term "environment of evolutionary

adaptedness" describes the physical or social matrix into which a particular organism has evolved to fit. Modern human beings, Bowlby believes, are trying to live in a society for which they are not genetically equipped. We are part of a mammalian primate heritage that has a history of over 65 million years; our own society has existed for only a minute fraction of that time.

It is important to note that in no way does a biosocial approach argue that there is a genetic determination of what men can do compared to women; rather, it suggests that biological contributions shape what is learned and that there are differences in the ease with which the sexes can learn certain things. A similar idea was advanced by Hans Haas (1972) although in a somewhat different context. He utilized the term IRM (innate releasing mechanism) to describe the disposition of an organism toward learning a particular skill or behaviour, if the appropriate environmental influences are present.[5] Rossi does not say, for example, that men cannot be good caregivers or women good soldiers. She does say that there would have to be compensatory training provided for both men and women in

5 Haas, Hans: The Human Animal: The Mystery of Man's Behaviour

The discussion of the innate releasing mechanism is helpful in understanding the function of any instinctual behaviour that may not be immediately observable but that will evolve given the necessary environmental and social conditions.

these respective fields; the biological adaptations of each allow an easier performance for women in the field of child care and men in the field of combat.

For the major part of human history, any lengthy mother/infant separation was precluded simply on the grounds of prolonged breastfeeding. In fact, research (Rossi P.76) has shown that the mother/infant bond in hunting and gathering societies was characterized by close physical contact, continuous nursing and long term lactation (4-5 years). This long term lactation, combined with a diet that was low in necessary proteins and vitamins, acted as fairly effective birth control, spacing children at least that length of time apart. Today, with a greatly improved diet and heavy reliance upon bottle feeding, children are being born much closer together, a situation which Rossi says is inconsistent with the physical abilities of the human female.

Mother/infant interaction carries with it characteristics which suggest the presence of unlearned responses. For example, infant crying will stimulate the secretion of oxytocin in the mother which triggers uterine contractions and nipple erection (preparatory to nursing). Regardless of their handedness, the overwhelming majority of mothers cradle their infants in their left arm, where the infant can be soothed by the familiar beat of the maternal heart. In addition, research has detailed a common set of behaviours of mothers toward infants while touching their

babies for the first time or talking to them. (Rossi P.75)

John Bowlby's work also proposes certain responses in the infant that function to tie mother and child reciprocally to one another. These responses are sucking, clinging, following, crying and smiling. Bowlby's contention, validated through his research, is that the mother's acceptance of clinging and following is consistent with favourable development, even in the absence of breastfeeding, while rejection of clinging or following by the mother, even in the presence of breastfeeding, is apt to lead to emotional distance on the part of the child. One is reminded of the famous Harlow experiments where the infant rhesus monkeys tested displayed an obvious preference for the cloth covered surrogate mother, even when nourishment was only available from the wire mesh surrogate (Harlow, 1963). In fact, breastfeeding itself is an activity which ties mother and child together in a reciprocally beneficial bond. The mother requires the infant's cooperation to empty her breast milk as surely as the infant requires the milk for survival.
The essential point of the argument is that,

> "where age and sex are concerned, diversity is a biological fact, while equality is a political, ethical and social precept. Marxist theory notwithstanding, there is no rule of nature or social organization that says that men and women have to be the same or do the same things in order to be socially, economically and politically equal ... the far wiser course ... is to plan and build from the most fundamental root of society in human parenting and not from the shaky superstructure created by men

> in that fraction of time in which industrial societies have existed."
>
> (Rossi, P.25)

It is not necessary to limit our lifestyle options to those generated by a technocratic perspective.

The Interactive Approach

Having examined the biosocial position on the mother/child bond, we can now consider evidence that has surfaced recently which examines the relationship as a complete interactive unit; one to which both parties contribute and through which the needs of both can potentially be satisfied. The work of researchers like Brazelton, Koslowski and Main, Stern, Fraiberg, and Lewis and Lee-Painter in Osofsky and Connors (1979) points unanimously to the rhythmic and cyclical quality of mother/infant interactive behaviour. All the above cited researchers point to the advantages of viewing mother/child communication as an interactional system, with equal opportunity for input by both parties. The work of researcher Daniel Stern (1977) is best suited to our communications perspective.

The first six months of a baby's life are obviously crucial to his or her development. As the baby is unable to care for himself or herself and will remain that way for several years to come, compensating strategies must evolve in order to insure cooperation, care and involvement from a significant adult. Daniel Stern has studied multiple interactions between mothers and their children with a view to diagramming the nature of their interactive process. His findings confirm the perspective of other current research in the field; both mother and child contribute to and take from

the relationship, according to their individual needs and desires. A view of the parent/child relationship as information coming only from the parent to the child is no longer valid.

The infant has much to absorb in the first six months. Stern outlines the six major concerns which challenge the child;

1. The child learns the general schemas of the human voice, face and touch, and those which are specific to his or her caregiver.
2. He or she must learn how different human emotional expressions affect the arrangement of these schemas.
3. The child must understand the temporal patterning of human behaviour and the meaning of different changes in tempo and rhythm.
4. The child must learn general cues and conventions, particularly those which will serve to initiate, terminate and avoid interaction with the prime caregiver (usually the mother).
5. He or she must begin to comprehend different discursive or dialogic modes (e.g., turn taking).
6. Finally, the child must acquire the foundation of some internal composite picture of his or her mother. This enduring representation will enable the infant to begin exploratory behaviours with a minimum of fear and insecurity; in effect, he is able to "take his mother

along", even if only for short intervals.

The tasks facing the infant are formidable, crucial to his optimal development and indeed to his survival. He depends for the teaching of these concepts and skills on the person who is most heavily invested in him. Generally, this will be the mother, and this will be our assumption.

Because of her task of "teaching" the infant, it is not surprising to see mothers interacting with their babies displaying very unique types of behaviour which would seem bizarre to say the least in any other social situation. Stern terms these actions "infant elicited social behaviours". It must be emphasized that, unusual as these behaviours may seem in another context, they are a normal and necessary aspect of parenting, perhaps even meeting the needs of the infant on a biological level.

One of the most obvious unusual behaviours in which a mother engages with her infant involves her facial expressions, which are unusually exaggerated over space and time (e.g., a mock surprise expression). Facial displays are generally slow to form and the mother will hold the expression longer than if she were communicating with an adult. The behaviour sequence is also repeated time and again, almost as if the mother is facilitating the imprinting of these expressions upon the mind of the child. She does them slowly so that the child will be able to put them together more easily. The behaviours which the mother

exaggerates for the benefit of the child are thrown into high relief, thus helping the infant to separate them from background movements and other expressions which may not be as crucial at a particular developmental stage.

Baby Talk

A behavioural repertoire which is obviously unique to adult/child (particularly mother/infant) interaction is baby talk. Conveniently for our purposes in terms of a communications perspective, Stern divides baby talk into content (what?) and prosodic (how?) features.* An examination of both aspects of baby talk cross culturally shows some interesting and common features.

Stern found four basic principles that characterized baby talk studied in six different languages. These were; 1) a simplified syntax, 2) a short length of utterance, 3) many nonsense sounds, and 4) certain transformations of sounds that had some common features in all languages. Baby talk is actually the first multi-level communication between the mother and the child; the baby is shaping his own "language" on the basis of his mother's response to him and in return is shaping her normally more mature language. This is the beginning of an interactive relationship.

* This approach is significant as it parallels the content/relationship distinctions of current communications theory.

Pitch is almost invariably raised (again a behavioural exaggeration) and speed is also altered. Although the mother behaves as though the interaction between herself and the infant is dialogic, it is not really dialogue because needless to say, the baby does not respond, although the mother will behave as if he had. Typically, pauses are longer in the conversation than in normal adult speech. During these pauses a response is easily simulated; the infant is shaped toward learning what is expected of him. His responses are being shaped in the direction required of him later when he is truly verbal. The mother cannot accomplish this teaching alone; she requires cues from the infant in order to be able to effectively determine her optimal level of stimulation.

Gaze

One of the most potent prohibitions in our culture concerns gazing or eye contact. Normally, two people will not engage in mutual gazing for very long. Biologically, gaze is a very important social tool, increasing greatly the individual's general arousal level, evoking strong feelings and increasing the potential for action of some kind. When necessary, social proscriptions can usually prevent situations from escalating out of control. The mother/child bond, however, differs in that it can usually support these strong feelings. Mothers will invariably gaze and vocalize

at their infants simultaneously during play interactions. It is interesting that the mother will, during these interactions, gaze as if she is the listener when in fact she is the speaker.

Proxemics

In contrast to what would be considered "normal" behaviour among adults, where personal distance is respected, most adults (even strangers) act as if there were no intimate distance barriers for babies or for themselves in relation to babies. In response to encroachment behaviour, infants will show a "looming response" (aversive behaviour in response to objects which loom toward the face) which may be the forerunner of the development of an intimate space barrier. Stern cites evidence that this behaviour is innate, and perhaps related to reflexes that have evolved for the survival need of protecting the hands and face (1977, P.21).

This encroachment of adults into the personal space of children, if handled in a responsible, sensitive manner, can be seen to have a positive function in that it may help to prepare the infant to wish to engage socially within an intimate distance. Later affiliative behaviours (e.g., kissing, hugging, etc.) may, in fact, partially depend upon the successful outcome of these early experiences.

Stern maintains that the primary task of mothering is to regulate and maintain interaction with the infant; to

start up, maintain, modulate and eventually terminate the interaction. She must also be sensitive to the infant when she/he is the initiator or any of these behaviours. Infant solicited social behaviours are the mother's most important tools in this endeavour. She sequences and times her behaviour to create various tempos and themes, thereby enhancing the infant's understanding of human communication and emotional expressiveness. The mother is constantly aware of the infant's arousal level and, through behaviours both verbal and non-verbal, attempts to keep that arousal state at an optimum (i.e., neither too high or too low).

The baby's social tools are many; perceptual and motor skills that propel him to engage in and facilitate his involvement in social interaction. He is endowed with the capacity (and the need) to seek out stimulation, and also has the capacity to turn it off when overloaded. In the accomplishment of this stimulus seeking, the baby derives great pleasure; he pursues his tasks with great vigour, and it is precisely this vigour and excitement that will function as his greatest asset in the learning experience.

Stern affirms what Rossi and others have maintained; the infant is predisposed psychologically and designed biologically to form a physical bond with her mother. The infant's visual world is restricted to a space of about 8", a distance which closely approximates the distance between the baby's and the mother's eyes during breastfeeding. A change

in the infant's gazing ability occurs at about six weeks; she is now capable of visually fixating on the mother's eyes. This gaze fixation creates a feeling of connectedness between the mother and the child and has a dramatic effect upon the feelings of the mother. Her behaviour is immediately much more social; play interactions begin in earnest. The baby's communication network is expanded and she is now a full partner in the relationship; equally capable of regulating, seeking and modulating interactions. At about six months, the communication network is once again expanded by the infant's preoccupation with objects to grasp and manipulate. Object play sessions now dominate the waking day and the mother/child relationship becomes triadic, with the partners communicating not only with each other directly but through objects as well. Also at this stage, the mother and child will evolve their own interactive style, with active stimulation as the prime behavioural characteristic. It is this stimulation that provides the brain with the raw materials for the maturation of perceptual, cognitive and sensory motor processes. At first, stimulation is endogenous, determined not by external influence but by periodic shifts in the intrinsic discharge patterns of the brain. Smiling, for example, has been shown (in the newborn) to be a result of these electrical discharges in the brain (1977, P.44).

It would seem that the primary requirement of the

interactive nature of the mother/child relationship is for the mother to be ready and willing to have fun with her baby. She must be able to keep the stimulation coming and be sensitive to any overload cues that the baby may give. The subjective (i.e., non-evaluative) experience is the goal of the activity. We must assume a non-evaluative position in assessing not only the behaviour of the infant, but also that of the mother. There is no such thing as "messing up" (Stern, P.109) in a healthy relationship. The mother/child relationship has all the characteristics of a goal correcting system in that it is constantly falling below and exceeding the boundaries of the relationship. It is only in this way that the boundaries can be tested. They are forever changing as the participating individuals change and develop.

Conclusion

The continuing psychological and physiological pressures of modern technology and technocratic society threaten to alienate women from the role of mother by denigrating and devaluing its importance. Even well known faminist activist Betty Freidan, in her latest book The Second Stage (1981), recognizes that modern feminism must address the issue of women in the family with much greater responsibility than it has in the past. She believes that the true potential of the power of women has been masked by their preoccupation with sexual issues (P.210). The abortion

question, for example, seemed to advocate sexual licentiousness and ignore the life enhancing value for both women and men of the choice to have children. True feminism means the ability to freely choose a lifestyle that expresses one's own ideals, beliefs and abilities. The choice to have children and/or to be economically dependent upon a man does not, in itself, imply a negative and unfulfilling existence. Rather than dismiss childbearing and the unique qualities of the mother/child bond completely, we need to work to discover ways of enabling women to develop that bond and at the same time, develop rich and equalitarian lifestyles.

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Concluding Summary: Part One

Part One of this work has examined the biological and interactive bases of self image. Particular attention has been given to their relevance to the state of pregnancy and the subsequent mother/child bonding experience. Throughout the analysis, the holistic qualities of each experience (i.e., self image formation, pregnancy and birth and bonding) are stressed. It is argued that optimum development occurs when both the physical and cognitive aspects of each experience are taken into consideration. These arguments prepare for Part Two where a body awareness/exercise management approach to the enhancement of the bonding experience is presented.

"Unembodiment"; where an individual experiences herself as "outside" her body, is a condition present in varying degrees throughout Western culture and thought (by Jourard) to be the result of the repression of somatic experience in children by their parents. The impact of early experience surfaces repeatedly in the literature; Transactional Analysis (T.A.) is a psychotherapeutic theoretical framework that allows easy comprehension of the influential nature of early experience. The work of Wilder Penfield (1891-1976) provides conclusive biological evidence of the existence of these "relivings" (see Chapter Two). An

individual's interactions with the world are based partially on the nature of his recollections of these early experiences and partially upon the nature of his social and neurological constraints. The discipline of Neurolinguistic Programming (N.L.P.) presents a model of operational input/output mechanisms and their representational structures. Of particular interest to the present argument is the phenomenon referred to in N.L.P. as the "fuzzy function". Supported by the biological research of Paul Bach-y-Rita, the "fuzzy function" is essentially a crossed circuit and may help to explain why an individual can derive simultaneous emotional, intellectual and physical benefits from the same activity.

The social and psychological effects of pregnancy are as crucial a part of the experience for a woman as the more obvious physical impact. Based upon Erikson's ideas of the normal developmental crises of life, pregnancy is seen as a psychophysical process just as the processes of self image formation and pregnancy have both interactive and sensory components.

Chapter Five - The Body Awareness Therapies

Having examined the self image and its relationship to the pregnancy experience and the mother/child bond, we can now turn to an examination of exercise management principles and relevant principles of body awareness. With so much conflicting research on the suitability and safety of various exercise techniques, one major focus of any good exercise program should be to teach participants to be aware of what feels good and works for them as individuals, and not to be afraid of acting on that information from their own bodies. Therefore, it is appropriate that, in addition to examining material on exercise management, stretching and weight resistance exercise principles, we should examine various authors on the subject of body awareness and psychophysical growth. With a thorough understanding of how these techniques function, we can establish an exercise program more completely suited to the individual needs of mothers and their children.

Process vs. Product

A common thread in all these body awareness therapies (and, in fact, the psychotherapies discussed in the previous chapter) is a focus on the improvement of processes as opposed to the improvement of products, a philosophy which appears to be in complete opposition to our product oriented

culture. This process oriented approach will figure very significantly in our own exercise management philosophy which will be more concerned with appreciating the function of exercise in general (and Interactive Exercise in particular) than focusing on the actual amount of exercise accomplished. This appears a more sensible approach where a long term lifetime incorporation of exercise into daily life is advocated.

We are, in fact, returning to a forgotten time in the past century where physical training was undertaken for its benefits as a form of preventative medicine. Gradually, this holistic approach was eroded to the point where physical training became almost entirely sports and competition oriented. Emphasis was placed on how to do the exercises (techniques) and how many to do (product) rather than the rationale (process) for doing the exercise and knowledge of its potential effect on the body.

Fortunately, in the past fifteen years, a change of attitude has begun to take hold and much research has demonstrated that vigorous physical activity can be instrumental in the prevention and/or alleviation of many diseases (both physical and emotional) that are hypokinetic in nature (i.e., the result of prolonged sedentary living). The philosophy of physical education has moved from "no gain without pain" to establishing physical activity as a lifestyle component.

To be consistent with the goal of permanent lifestyle change, exercise must be introduced slowly and noncompetitively and attention must be paid to developing the body awareness and sensory processes of participants. Any permanent change must be an integrated one where intellectual, emotional and physical processes are oriented toward the same goal. We will consider the work of three major contributors in the general area of "body therapies"; F.M. Alexander, Moshe Feldenkrais and Alexander Loewen. An examination of the principles developed by each of these individuals will contribute significantly to our understanding of body awareness and its relationship to overall health. The work of these men has influenced the nature of those movements we will identify in Part Three, as "Interactive Exercise".

F. Matthias Alexander (1869-1955)

Alexander pioneered a method of expanding consciousness that included (in strong opposition to any form of mind/body dualism) a unified view of the organism (see Chapter 2, Part One). He believed that the survival of man in civilization was dependent upon being able to reintegrate his behaviour on a conscious level. Instincts were no longer reliable.

Alexander's method did not simply involve "telling" the muscles to relax. Instead, an alternate set of

"directions" (messages from the brain to the various mechanisms) is issued that has the eventual effect of relaxation rather than tension. These exercises are effective only as long as they are under conscious control. The directions, or "orders" as Alexander often called them, had to be continually projected.

Alexander believed that the result of demoralizing conditions of schools and offices and of modern civilized life in general has been a faulty pattern of breathing associated with postural imbalance causing "undue rigidity" in some muscle groups and "undue flaccidity" in others. According to Alexander, conventional exercise and relaxation therapies only make the problems worse by exaggerating either the existing rigidity (exercise) or the existing flaccidity (relaxation). By attempting to improve the entire cycle by identifying only one part and strengthening that (e.g., deep breathing), the whole cycle is put even further out of coordination. Conventional exercise procedures fail (according to Alexander) to take into account the wrong mental attitudes that are usually bound up with wrong physical conditions. People who experience a particular movement difficulty lack reliable sensory standards to guide them into making a change, so the effect of the exercise can prove more damaging than beneficial. Alexander termed this "faulty sensory appreciation", considered it a significant problem, and believed that his methods would overcome it by

dealing with both the mental condition (through directive orders) and the physical condition (through skillful guided manipulation by the teacher).

There are three principles in Alexander's work that are of interest to this particular study; inhibition, end-gaining and means-whereby. These three principles form the basis of the Alexander technique and can help to illuminate principles of effective exercise management.

1. Inhibition

Inhibition involves a conscious direction of the brain not to perform a given action in some habitual way. Inhibition releases, rather than represses spontaneity by suspending habitual responses to stimuli long enough so that intelligent guidance and reasoning can intervene. This is similar to the Feldenkrais idea of engaging the "action system" to allow the thought and feeling systems to be acted upon.

Alexander defined this ability to inhibit habitual response (thus allowing the intervention of reason) as "man's supreme inheritance" (Man's Supreme Inheritance, London, Chaterston, Alexander, 1946). An important step in the process of inhibition was to activate the ideomotor centres in the brain prior to actually initiating any movement. The pupil must direct the body <u>not</u> to do things in a particularly damaging way and

having done so, concentrate directly on the orders themselves, rather than the goal or "end" to be reached. This approaches another concept of Alexander's which is useful; his ideas of "end-gaining".

2. End-Gaining

This is the term Alexander uses to describe a product rather than process oriented approach. Alexander saw most educational and exercise systems as faulty because they evolved from this premise, which had the effect of distracting them from the steps necessary to achieve the end. In Alexander's opinion, an end-gaining approach prevents the application of conscious control and may lead to uncoordinated use. Alexander endeavoured to move pupils away from a preoccupation with <u>what</u> they would achieve (i.e., the "end") to a deeper awareness of <u>how</u> they were moving (i.e., the "means-whereby").

3. Means-Whereby

This principle acknowledges the fact that each of the coordinated intermediate steps involved in attaining an end are important ends in themselves and that the most important step at any time is the present one. This principle echoes a currently popular theory of movement education (and education itself) which involves breaking the movement down into its constituent parts and learning

each part before recombining them. Learning is easier this way and much more meaningful.

In addition, the "means-whereby" approach emphasizes, once again, the process oriented approach. Each movement is to be appreciated as a goal in itself and not as a stepping stone to a higher and more important goal.

The implications of this technique for psychophysical health are profound. As Frank Jones observed:

> You are less depressed when you are not physically weighed down. Your image of yourself improves when you are physically more competent. You find that you like people more when you become more relaxed about yourself.
>
> Jones, 1976, P.12

Perhaps the actual technique of the Alexander method is of less importance (at least to our argument) than is the philosophy underlying the technique. Four major principles of body awareness suggest themselves from a study of the Alexander technique. First; body movement is capable of being brought under conscious control. If a person moves in ways that cause her pain or are not effective, it is possible to consciously alter that movement to one that is more pleasurable. Second, body movement is not an involuntary process; we can assume conscious responsibility for how our bodies function. The third point is that mental and physical responses to the world <u>are</u> closely integrated and this fact

suggests our concluding principle which is that our perceptions of the world are definitely psychophysical in nature. The way in which we perceive the world is as much dependent upon our physical condition and awareness as it is upon our emotional or intellectual biases. These factors all contribute to an understanding of the psychophysical nature of interpersonal relationships, and the importance of body awareness to successful interpersonal communication in general and mother/child bonding in particular.

Body Awareness Through Movement

- Moshe Feldenkrais

The theories and principles of Moshe Feldenkrais have contributed much to our understanding of the importance of body awareness to physical and emotional well-being. The Feldenkrais technique has thrived within small interest groups who recognize its value and a discussion of these principles would be of tremendous use in evolving a theory of body awareness and holistic fitness training.

Of primary importance are Feldenkrais' ideas concerning the physiological basis of self image. In his view, self image is formed by the stimulation of certain cells within the motor cortex which in turn activate specific muscles. Even his definition of self image is physiological

in origin and takes the multidimensional basis of personality and self image into consideration. To the extent that these muscles are stimulated over the entire body, then is that person's self image complete. His awareness is complete.*

Feldenkrais takes somewhat of a quantum leap from this position to an even more precarious theoretical stance when he says that, owing to the close proximity to the motor cortex of the brain structures dealing with thought and feeling (and the tendency of these processes in brain tissue to diffuse and spread to neighbouring tissues) a drastic change in the motor cortex will have parallel effects on thinking and feeling.** Regardless of whether he has captured the fine essences of the functioning of brain systems, his conclusions are nonetheless provocative. Changes in physical systems can and do produce changes in other systems and vice versa. The brain and behavior need to be seen as overlapping and interlocking systems rather than segmented, isolated parts of a total organism. Feldenkrais is substantiating our argument for a holistic approach to communication and therapy.

*A Feldenkrais body awareness exercise demonstrates this fact very simply. Participants asked to do so are almost universally unable to estimate the width of their head from arm's length. Conversely, it is usually fairly easy to estimate the width of the mouth. More stimulation of the appropriate cells within the motor cortex has produced a greater awareness of the muscles around the mouth area (the primary means of communication).

**The work of Paul Bach-y-Rita (Chapter 2, N.L.P.) provides physiological evidence for such boundary crossings.

Feldenkrais believed that individuals use a very small portion of their total potential (5% at the most). His work revolved around assisting people to use more of their potential, thus improving and expanding their self image which he defined as being restricted to only those cells that have been used. Again, despite inaccurate physiology, his conclusions do bear merit and are definitely applicable to the problem at hand. Basically, Feldenkrais believed that we are taught and encouraged to act in accordance with our self image. We do not strive to reach our potential as we tend (as a species) to stop learning when we have mastered sufficient skills to obtain an immediate objective. Even existing educational systems function more to pass on the philosophies of the prevailing generation rather than to promote learning through developing potential. In summary, Feldenkrais contended that we live within a culture that advocates a segmented view of a holistic organism and restricts the growth of that organism to basic survival needs as defined by the needs of the prevailing generation.

Feldenkrais verified through his work that individuals lack awareness of many parts of the body. The degree of lack of awareness he found to be highly dependent upon the form of the self image. A complete body image (a rare and idealized state) would mean full awareness of all the joints in the skeletal structure as well as of the entire surface of the body. This is, indeed, a rare state and, if it exists at all, could only be on the subconscious level, as

that level of awareness would be too much for the conscious mind. Our image of the world is understandably more accurate in front of our eyes than above the head or behind the back, and it varies if we close either one or both eyes. Like Alexander, Feldenkrais contends that our image of the world is highly dependent upon our physical relationship to it. He also recognized that it is through our bodies that we first gain an awareness of important life concepts. Through learning to coordinate the actions of breathing and swallowing for example, we first come to terms with the concepts of time and rhythm. From her first established contact with the world through her lips and mouth, the infant is eventually able to use her hands to assist in this process. Therefore, she begins to know through touch what she already knows through her lips and mouth and other senses. This awareness progresses to the relationship of parts of the body to other parts and to an eventual recognition of the "not-self". It is through the evolution of these relationships that the infant begins to develop rudimentary concepts of distance and volume, among other things.

Feldenkrais believes that the best way to affect positive change within the organism is to begin through the correction of movement. His reasons for this belief all have bearing upon our argument for the value of physical activity for improving interpersonal relationships. Feldenkrais calls what he does, "Choosing the action-system as the point of

attack for the improvement of men". (P.38, 1972)

The nervous system itself is occupied primarily with movement, the qualities of which are much easier to distinguish than the subjective sensations of emotion and thought. We have a richer basic experience of movement and also more capacity for it; without some minimum reflex we would cease to exist. The ability to move constitutes an important part of self-value. To varying degrees, the way in which a person moves influences and is influenced by the self image. Every action has its origin in muscular activity; even seeing, talking and hearing (where the muscle regulates the tension of the eardrum in accordance with the volume of the sound being heard). Intensity of movement is a valuable indicator of emotional state; permanent relaxation of the muscles will cause movement to be slow and feeble while chronic excessive tension will cause jerky and angular movements. In persons with a shaky self image, it is possible to observe disturbances in the muscle tone which relate directly to the emotional state. The study of body language is a meaningful pursuit simply because, even to the untrained eye, muscle tone conveys much of the interpersonal meaning of a message.

As muscles contract as a result of messages from the nervous system, any improvements in action or movement will appear only after the appropriate change in the mechanisms of the brain and nervous system has occurred. Nevertheless, great activity is occurring within the body below the level

of our awareness (i.e., when the change becomes apparent in the musculature). Breathing itself is movement and as such it is reflective of every emotional or physical effort or disturbance.

Finally, Feldenkrais was so convinced of the major role of the movement processes in regulating behaviour that he believed that a fundamental change in the motor basis within any single integrated pattern will break up the cohesion of the whole and leave thought and feeling pattern "unanchored" in established routine. Changes would then be much easier to effect as muscular support would be missing and the organism would therefore be much more amenable to change. Feldenkrais approaches much more closely the idea of body systems in this analysis; changes in one system will have a definite spinoff effect in another system.

Feldenkrais' many contributions to our analysis are all valuable, but perhaps the most enlightening concern the physical basis of self image and the importance of movement ("the action-system") as to the "point of attack" for self improvement (for some examples of Feldenkrais' exercises, see M. Feldenkrais, Awareness Through Movement, 1972). Sophisticated recent research into fitness training has identified the positive mood enhancing qualities of exercise. This research will be examined in detail later on in this chapter.

Bionergetics: Alexander Loewen

Psychotherapist Alexander Loewen, in his discipline of bioenergetics, has developed an alternative way of understanding personality in terms of the body and its energetic processes. He defines these energy processes as: a) the production of energy through respiration and metabolism and b) the discharge of energy in movement. Loewen begins from the obvious premise that your energy level and how you use it determines how you respond to life situations. He states that the fundamental thesis of bioenergetics is that body and mind are functionally identical; what is going on in the mind reflects what is happening in the body and vice versa. On the unconscious level, both thinking and feeling (note his holistic approach) are conditioned by energy factors. When your energy level is increased, your physical and emotional levels are correspondingly increased. Any rigidity or chronic tension in the body acts to diminish one's aliveness and decrease one's energy. Loewen maintains that these chronic muscular tensions are the result of unresolved emotional conflicts.

Bioenergetics consists of both manipulative procedures (massage, gentle pressure and gentle touching) and exercises to help a person get in touch with his tensions and release them through appropriate movement. Many of these exercises are concerned with establishing healthy vibratory functions within the body. A healthy body is in a constant

state of vibration, whether awake or asleep. Vibratory activity is a manifestation of the inherent motility of the organism. Motility is lessened in depression as this condition represents a pathological decrease in the vital functioning of the body. The fundamental goal of bioenergetics is that which Loewen terms "grounding" or getting people more in contact with "the ground" (e.g., their senses, reality, etc.); not operating "in their heads" or intellectually. Loewen finds that when a person can actually "let down" and lower her centre of gravity, her sense of security is correspondingly increased. Much has been written over the years concerning this tendency of humans to operate in the mind rather than the body; we referred to it in Chapter Two as being evident as far back as Descartes (Chapter 2, Part 1). Mabel Ellsworth Todd wrote about overintellectualization almost fifty years ago:

> Man has become absorbed with the upper portions of the body in intellectual pursuits and in the development of skills in hand and speech. This, in addition to false notions regarding appearances or health, has transferred his sense of power from the base to the top of his structure. In this using the upper part of the body for power reactions he has reversed the animal usage and has, to a great extent, lost both the fine sensory capacity of the animal and its control of power centered in the lower spinal and pelvic muscles.
>
> (Todd, 1875)

By "grounding" a person by helping her become more aware of the lower extremities of the body, Loewen hopes to assist in the process of becoming identified with the "animal" nature. Since homo sapiens assumed an upright

posture, the lower half of the body has remained responsible for more "animal functions" (e.g., locomotion, defecation, sexuality) in addition to the qualities of grace and rhythm, while the upper half of the body seeks to occupy itself with the more cerebral functions of thinking, speaking and manipulating the environment. Reintegration of these two elements of human nature is the goal of most holisitic disciplines and of fundamental importance in counteracting the "unembodiment" referred to by Laing (see Chapter 2).

Bionenergetics deals with self image through the use of the term "self-possession" which Loewen uses frequently. He does not use the term in the idiomatic way implying conceit and self absorption; rather, Loewen is using the term in the positive sense of awareness and integration. To be "possessed of self" is certainly a desirable goal and one way of resolving the conflicts of "unembodiment" referred to in Chapter 2 (R.D. Laing). Self expression is seen as an integral part of self possession; it is in our expressive activities that we perceive the self.

Loewen's work is helpful in formulating a philosophy of exercise management that is holistic in nature, taking all of the needs of the organism into account. He stresses the importance of proper breathing, healthy body alignment and mobilization. Loewen's primary thesis is that we have been taught to control our bodies as though they were wild and dangerous animals. By learning to accept the needs and activities of the lower as well as the upper body, we learn

that the entire body has extremely efficient self regulating mechanisms of its own and will go about its business very effectively if these mechanisms are left alone. For a description of proper breathing techniques see Appendix II and for some examples of Loewen's bioenergetic exercises, see The Way to Vibrant Health: A Manual of Bioenergetic Exercises, 1977.

Conclusion

The focus of these three body therapies has been to bring the mind in closer harmony with the body; to more fully integrate physical and intellectual processes. Each discipline makes its own particular contribution to this holistic approach.

The responses of the body can be brought under conscious control, as seen in the work of F.M. Alexander. This is not a control that ignores the body processes and results in severe stress reaction, but rather, the aim of the Alexander method is to train the mind to work in harmony with the body, not giving in to "wrong use habitual actions". Of particular interest to this inquiry in the work of Moshe Feldenkrais is his perception of the self image being intensely physical in nature. Following from this conviction is the idea that physical experiences must be utilized in order to change the self image. This fits well into the Interactive Exercise approach, where physical experiences

enhance the relationship between mother and child. Finally, from Alexander Loewen, we derive the concept of "grounding" where, through body therapy, efforts are made to re-integrate the physical and intellectual processes.

In summary, the body therapies under consideration support the concept of experience as an unsegmented, holistic concept. The physical realities by which we are constrained do intensely influence our perception of the world.

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Chapter Six - Conventional Exercise Technique

Traditional exercise management has had a performance based approach. Experts have recognized the biological nature of physical training and have responded to it on that basis. However, research has shown recently that exercise performance is also dependent upon the integration of biological processes by the central nervous system and therefore possesses a psychological component. Exercise participation then, can be thought of as psychobiological in nature and any contemporary exercise approach should reflect this awareness (Falls, 1980). At this stage, however, the study of exercise psychology is still very much in its infancy compared to the more sophisticated discipline of exercise physiology but sports psychologists do agree that psychological traits and states are often of equal importance to physiological factors in determining exercise performance.

Mood Alteration through Exercise: Psychological Aspects of Exercise and Training

The interface of physiological and psychological factors is well illustrated by the concept of stress (Selye, 1976). The stress condition can be easily defined as "the classic fight/flight syndrome that results in acute

(immediate) increases in metabolic preparedness during a threatening situation (Falls, 1980). However, stress may also be the result of a chronic situation and its precipitators may be either real or imaginary, as is the case with anxiety. To illustrate: a runner doing a twelve minute Cooper run[1] would definitely experience a level of physiological stress unique to his or her level of fitness. However, the runner will likely suffer some measure of psychological stress as well, brought on by such factors as performance anxiety, dislike of intense exercise in general or running in particular or even anxiety over a lack of familiarity with the reactions of the body to vigorous exercise (e.g., elevated heart rate). Such anxieties would definitely affect physical performance, either positively or negatively.

The biochemical changes that accompany stress are outlined in fig.1, P.102. These biochemical changes are accompanied by other physiological alterations that include; increased activity of the sympathetic nervous system (resulting in increases in circulating epinephrine and norepinephrine-adrenal hormones), increased heart rate, increased breathing rate and intensity, increased body

1 The Cooper run is a fitness test where participants are required to run around a regulation quarter mile running track for a total of twelve minutes. The runner measures his distances against a table which is provided and thus obtains a rough estimate of his fitness level relative to a normal population.

Stress Response

Outline of the Succession of Neurophysiological and Biochemical Changes that Characterize the Stress Response

(RAS is the Reticular Activating System of the Brain.)

Stressor

↓

RAS is Alerted

↓

RAS Alerts Hypothalamus

↓

Hypothalamus Stimulates Hypophysis of Pituitary Gland

↓

Hypophsis Releases ACTH (Adrenocorticotropic Hormone)

↓

ACTH Stimulates Cortex of Adrenal Gland

↓

Adrenal Cortex Secretes Adrenocortical Steroids

↓

Energy Mobilization

(from Essentials of Fitness Falls et al, 1980)

temperature, increased perspiration and increased oxygen consumption. It is important to note that these physiological changes are the same whether the stress is physical or psychological. To visualize more accurately the process of stress, Hans Selye's General Adaptation Syndrome (GAS) characterizes stress in three stages;

1/ The alarm reaction, during which the stressor is perceived, alerts the Reticular Activating System (RAS) in the central nervous system. This mechanism controls alertness or attention in the cerebral cortex and is responsive to somatic disturbances as well as sights, sounds, smells, tastes and even to the cortex itself (e.g., a thought).

2/ Once a stressor is detected, the resistance stage is evoked, during which body systems attempt to adapt to and combat the stressor. It is during this stage that the physiological processes of arousal occur.

3/ If resistance is inadequate to offset the stressor, exhaustion occurs and the stress syndrome is complete.

(Selye, 1976)

Chronic stress would certainly appear to be a fairly predictable component of pregnancy and early postnatal adjustment. As we have discussed in Chapter Three (Part One), the new mother faces not only physiological changes, but psychological and social (role) changes as well. The physiological changes place stress on the body while accompanying social and psychological changes can often cause at least minimal amounts of anxiety which place additional strain on the body. Exercise has been shown to be an effective anxiety reducer in a number of different

situations. Through exercise, particularly that which is cardiovascular in nature, a progressively increasing exercise stressor is imposed to evoke adaptations in the heart and lung systems during the resistance phase of the GAS, when the stress is seen as chronic. In other words, exercise can serve to make the systems of the body better able to withstand stress of any type, physiological or psychological. While the focus of Interactive Exercise is not particularly cardiovascular in nature, the exercise programme does provide a stretching and strengthening experience (with some cardiovascular training) and introduces a new concept of exercise to the mother/child team. Because the programme is designed to be gentle, nonthreatening and fun, it is more likely to be incorporated into the family lifestyle on a long term basis. Gradually, as the fitness levels of both the mother and the child increase, more intense physical activity can provide more effective stress resistance.

Recent research by exercise scientists has supported existing cultural belief systems that regular participation in physical activity can act to enhance the psychological wellbeing of the participant. Two negative emotional states in particular, anxiety and depression, have been shown to be amenable to treatment which includes regular physical activity. The mood state of anxiety, a general foreboding about some impending disaster (real, imaginary or unknown) is characterized by high levels of activation and somatic

complaints such as nausea, unrelieved fatigue and headaches. In contrast, depression is a term which denotes a mood state characterized by feelings of hopelessness, despair and self hate. Anxiety and depression are costly in both an individual and a societal sense; it has been estimated that from 30 to 70% of the illnesses treated by physicians in general practice have their origins in unrelieved stress (Falls, 1980). Studies at the University of Wisconsin and in California demonstrated conclusively that;

1/ State anxiety (temporary feelings of apprehension) can be significantly reduced following a single vigorous exercise session;

2/ Trait anxiety (a general tendency to be anxious) can reduce as a result of long term involvement in an exercise programme;

3/ Tension decreases following both short bouts of physical activity and comprehensive conditioning programmes.

Physical exercise has been shown to be a successful "coping strategy" for major health problems (Falls, 1980). The effect of exercise is even more significant in the treatment of depression, as exercise produces certain biochemical changes that do not occur in traditional depression therapy sessions. Certain studies have reported an increase in positive feelings in as many as 85% of participants who are experiencing non-psychotic depression. Of particular significance in the treatment of depression is the increase of norepinephrine in the brain as a result of

increased activity levels. As depressed patients are typically deficient in this adrenal hormone, exercise may influence depression through these subtle alterations.

Exercise has also been implicated in the treatment of the more serious psychotic disorders. As the severity of the psychosis increases to pathological levels, the patient's ability to do physical work (even cardiovascular and muscular endurance) diminishes. A severely psychotic patient can be characterized as having a detachment from reality and an absence of emotion; the "unembodiment experience" referred to by R.D. Laing (Chapter 2). In fact, actual pathological changes in the musculature of psychotic patients have been observed. Also, psychotics typically have higher levels of the enzyme creatin phosphokinase which is involved in anaerobic[2] respiration and always present in high quantities following muscle tissue damage (e.g., heart attack). It would appear that the psychotic disorders are complexly psychobiological in nature and, as such, would benefit from physical activity. Pregnancy is obviously psychobiological in nature as well (as is the mother/child bond). More attention to exercise for postnatal mothers could have far reaching effects; at the very least making the experience more enjoyable and possibly even alleviating the postnatal

2 Anaerobic respiration refers to a type of metabolic activity that occurs without oxygen. Compared to aerobic respiration (which occurs in the presence of oxygen) this is a fairly inefficient process.

depression syndrome.

Both physiological and psychological improvements can be seen when a person begins regular participation in an exercise programme. Physiological causes for these improvements include; increased oxygen to the brain, increases in alpha and beta endorphins and enkephalins[3], and the development of a more physiologically efficient response to daily stress. Psychological improvements as a result of exercise may include; feelings of competency (as a result of reaching a goal), enhanced self esteem from being aware of and valuing one's own body, increased physical attractiveness, and relief from daily routines. It is also possible that a placebo effect may result from the anticipated positive effects of exercise. For an activity to be mood enhancing, Berger (Falls, P.186-200) lists several prerequisites;

1/ The activity programme must be at least 20 minutes long.

2/ The activity must be pursued on a regular basis, 3-5 times/week.

3/ The activity must be of moderate intensity (65% to 85% of maximum heart rate).

4/ Programmes must be noncompetitive and totally lacking in the opportunity for self criticism.

5/ The programme must involve rhythmic, repetitive and continuous movments (e.g., jogging, swimming, aerobic dance).

3 These terms refer to hormonal substances which are released in the brain following strenuous exercise and seem to have the general psychological effect of mood elevation.

It has been shown that rhythmic, endurance type exercise involving at least 60% of total muscle mass (e.g., running) has a relaxation effect on the circulatory system (Falls, 1980). The peripheral blood pressure is less and the heart is not as taxed as with more static forms of exercise (e.g., weight lifting). In addition, vigorous exercise has been shown to reduce muscle tension (a necessity in relaxation).

Adherence to a regular exercise programme is a serious problem for many people in this culture, particularly those who have many demands upon their time (e.g., new mothers). Falls et al have identified a set of factors which they feel are the crucial components of adherence to any exercise programme;

1/ Proximity: College professors who began an exercise programme in 1967 and were involved in 1974 were found to live significantly closer to the facility than those who had dropped out. Finnish researchers reported a similar finding; proximity to the facility proved a significant determinant of exercise participation among business executives. Accessibility of the exercise facility seems to be an important determinant of exercise adherence.

2/ Instrumental Activity: This component of exercise adherence is of particular significance to this inquiry. Physical activity is multimodal; people engage in exercise for a number of reasons. Kenyon's Attitude Toward Fitness Activity Scale (Falls, 1980) lists six values that may be articulated through exercise participation. Involvement can be;

a) a social experience

b) for health and fitness

c) for pursuit of vertigo (e.g., "thrilling" activities like parachuting)

d) an aesthetic experience

e) catharsis (i.e., reduction of anxiety)

f) an ascetic experience (i.e., disciplined training).

With little doubt, the most common motivation for adherence to a programme of physical activity is the attainment of health and fitness but other factors do influence participants. The anticipation of these other needs being met can positively influence involvement.

A programme of physical exercise combined with stimulating interactive time can address many of these goals at once, recognizing that an individual's reasons for participating in an exercise programme are multidimensional. Part Three of this work will elaborate on the movement system referred to as Interactive Exercise. Interactive Exercise, with its combined goals of interactive time, baby stimulation and training, addresses many of the needs of the new mother.

The issue of self motivation is a significant factor in determining exercise adherence and, in fact, researchers have indicated that an individual's self motivation is substantially related to adherence behaviour. Self motivation scores, combined with reliable measures of body composition (body weight and percentage fat) will predict

with an accuracy of 80% whether or not a person will adhere to an exercise programme. Related variables have been shown to be significant others, exercise behaviour and social stability. Appendix III outlines some positive suggestions for adhering to an exercise programme. Of special interest to Interactive Exercise is to keep the programme easily accessible and flexible and to take many goals into consideration. Allowing each mother/child team to explore and define its own relationship is of crucial importance to the experience. Appendix V provides relevant information concerning the prevention of injuries.

Principles of Weight Resistance Exercise

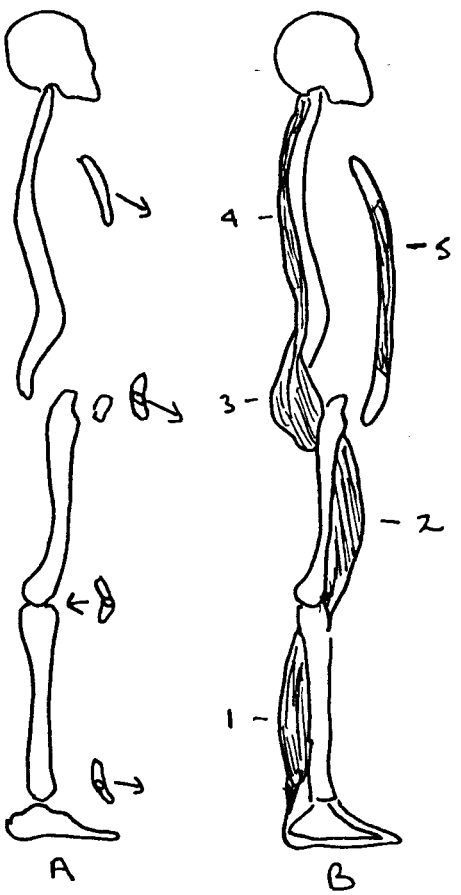
In Interactive Exercise, the child often acts as a resistant force to increase the value of the exercise for the mother. Therefore, before proceeding to a discussion of the actual exercises, a discussion of the principles of weight resistance exercise would enhance our understanding of the dynamics involved in such an experience.

A group of muscles that are of particular interest in fitness are those known as the antigravity muscles (see figure 1, P.111). Their strength and flexibility determine to a great extent whether proper alignment is maintained in the anatomical structures of the trunk and the hip. Our muscles

Anteroposterior Anti-Gravity Musculature of the Body

(a) Force of gravity results in a tendency for the skeleton to collapse at points shown by arrows.

(b) Antigravity muscle groups resist the effect of gravity and help hold the body in upright posture. The muscle groups are: (1) Triceps surae; (2) Quadriceps femoris; (3) Gluteus maximus; (4) Erector spinae; and (5) Abdominals. (From Wallis, E. L., and Logan, G. A.: Figure Improvement and Body Conditioning through Exercise. c. 1964, P. 11. By permission of Prentice-Hall, Englewood Cliffs, N.J.)



(from Essentials of Fitness Falls et al, 1980)

must be able to resist the pull of gravity in order to maintain an erect posture (we will recall from earlier discussions that it is a posture to which we are not fully adapted). We are almost always making an effort to extend the body. These antigravity muscles are under even greater strain during pregnancy not only due to the added weight, but also its redistribution and the softening of essential ligaments in the pelvic area. Even in the nonpregnant state, forces of gravity tend to buckle the body at the ankle, the knee and the hip and, since the weight of the body is largely in front of the spinal column, the body tends to fall forward in response to these pressures. Counteracting these tendencies are five main muscle groups as illustrated in figure 1, P. 111:

1/ Soleus and gastrocnemius (triceps surae): at the ankle

2/ Quadriceps femoris: at the knee

3/ Gluteus Maximus: at the hip

4/ Erector Spinae: holds the trunk upright and runs from the saccrum to the base of the skull

5/ Abdominals: serve as reflex antigravity muscles to counteract the force of the first four muscle groups that would otherwise pull the body backward.

These five major muscle groups are important in any overall conditioning programme but especially where a

stressful condition such as pregnancy has imposed unfamiliar demands. In the postnatal period, care must be taken to exercise and rehabilitate these muscles slowly but effectively to reestablish balance and proper posture.

An important myth to dispel with regard to women and weight resistance exercise is the fear that it will produce overdevelopment (hypertrophy) of the musculature. In fact, the amount of hypertrophy expected as the result of a weight training programme will vary from person to person and is dependent upon a combination of three influences;

a) the amount of muscle tissue

b) the amount of androgens (male sex hormones) available

c) certain cultural or social influences.

With regard to muscles tissue, the amount of muscle fibre a person is born with is not likely to change in adulthood, and women on the average have fewer muscle fibres than the average man, although considerable variation does exist. In addition, the trainability of adult male muscle appears greater than that of the adult female. Women, on the average, have an estimated two-thirds the strength of men and it is thought that this difference is primarily due to an overall difference in total muscle mass.

Females exhibit a greater percentage of body fat with a smaller overall body size than males, factors which can influence performance signficantly. The female hormone

estrogen has a slight atrophying effect on the protein synthesizing apparatus while testosterone (the male hormone) acts to stimulate it. Postpubertal differences in muscle bulk and lean body mass can be as much as 33%. These biological factors influence, and are influenced by, social and cultural conditions. Unfortunately, social stereotypes of quiet, passive females have resulted in her being generally less fit.

Strength is an important prerequisite to overall conditioning. Sufficient strength and endurance of antigravity muscles is the foundation of proper posture. To prevent injury, the musculature around the joints must be strengthened. The best procedure for avoiding "flabby" body areas is strength exercise, and a strengthening programme is certainly crucial to the rehabilitation of overextended abdominal muscle as a result of pregnancy and delivery.

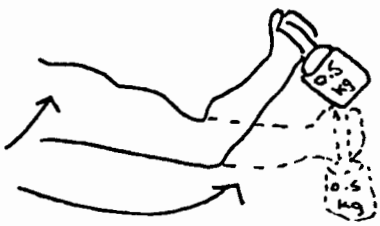
The fundamental principle of strength development is overload. Strength increase is a work-induced process. The type of work most valuable for our purposes is isotonic exercise. Any strengthening exercise is one in which the agonist (working) muscle is stimulated to contract against a load. Energy is expended in that contraction. In concentric isotonic exercise, the muscle shortens; eccentric isotonic exercise lengthens the muscle (see figure 1,P.115). Both these forms of exercise act to overload the muscle and therefore result in signficant gains in muscle strength and

Types of Muscle Contraction

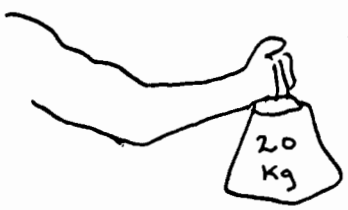
Isotonic

a) concentric

b) eccentric



Isometric



(from Essentials of Fitness Falls et al, 1980)

size. Isotonic contractions are favoured by most strength training professionals because they utilize a greater range of motion.

Thomas De Lorme (1940) pioneered work in the investigation of weight training procedures for the development of strength. He evolved his system under the name "progressive resistance exercise" to denote a method of determining by trial and error the most weight that can be lifted for ten repetitions. Our own programme suggests 8-12 repetitions, and participants determine their own comfort zone. The general consensus among experts is that 5-15 repetitions performed with maximal effort is sufficient for each exercise period. After this point, a greater number of repetitions does not yield significantly greater strength gains. A point of diminishing returns is reached.

Flexibility: Principles of Effective Stretching

Flexibility is defined as "the fundamental capacity of a joint to move through a normal range of motion" (Falls et al, P.30) and is dependent upon the muscular and connective tissue surrounding the joint. Flexibility is an important (and often overlooked) aspect of fitness because of its role in forestalling the negative effects of old age. Also, some muscles when they are tight (hamstrings in particular) can tend to cause an improper pelvic tilt with

the potential for contributing to lower back disorder. The pregnant woman and new mother is especially susceptible to low back pain, as these muscles have been stretched and weakened by the weight of the fetus. As Part Three indicates, stretching is a vital element of the Interactive Exercise programme.

There are three general principles of flexibility training that need to be mentioned here. First, demand must be placed on the joint; muscles and tendons must be gradually submitted to additional stretch. This must be done gently, so as to prevent excess stretch, possible tissue damage and reflex action, where the muscle responds to overwork by contracting rather than stretching. In order to improve flexibility, a regular practice schedule must be adhered to. Otherwise, muscles will return to their contracted state very quickly.

Practical experience has shown (Falls, P.102) that flexibility improvement is most likely to result from disturbed as opposed to concentrated efforts. In other words, it is more effective to do three sets of 10 stretches in a day rather than one set of 30. This gives the muscles a little time in between to accommodate to their new status.

This is an important factor in the Interactive Exercise programme, as it is not designed to be accomplished all at once but rather when the time and energy of both the mother and the baby can be coordinated. Therefore, it can be

done many times during the day and thus more closely approximates an effective stretching regimen. Proper breathing technique is essential to effective stretching, and is clearly outlined in Appendix II.

Conclusion

There are three principles of conventional exercise technique that are of particular concern to this enquiry. These three principles figure significantly in the structure of the Interactive Exercise movement system and an understanding of them is essential before proceeding to the actual programme.

The physiological, psychological and social changes imposed by pregnancy on the new mother can produce a chronic stress situation which can be alleviated by exercise. Exercise has been shown to be effective in the treatment of anxiety and depression, both of which are mood states common to the new and expectant mother. In general, exercise has been shown to be an effective coping strategy for major health problems.

As Interactive Exercise is essentially a stretching and strengthening programme, an understanding of stretching and strengthening principles is necessary. The antigravity muscles (see P.111) are of particular importance to any strengthening programme, as their strength and flexibiltiy enable the body to resist the pull of gravity in order to

maintain an erect posture. These muscles (the abdominals in particular) are particularly vulnerable following pregnancy and require slow and gradual rehabilitation to re-establish balance and proper posture.

Effective stretching requires that demand be placed gradually on the muscle being stretched. A gradual muscle stretch reduces the possibility of tissue damage, among other things. It has also been suggested that an interrupted stretching programme is more effective than a continuous one. Interactive Exercise encourages an interrupted stretching schedule to accommodate the needs of the mother/child team.

Part Two: Concluding Summary

If we are to assume a responsible position in the area of holistic fitness, particularly in the case of the postnatal experience, we cannot ignore the obvious link that exists between a well-functioning sense of "body" (somatic perception as dicussed in Chapter Two, Part One) and proper exercise management. One cannot exist without the other or we risk the further alienation of people from their bodies, as were Alexander's observations. The body awareness experts offer many insights which may not be immediately seen as applicable to fitness training (much less to interpersonal relationships) but nevertheless do have their application.

From F.M. Alexander, we derive the important concepts of inhibition, end-gaining and means-whereby. Inhibition refers to the activation of the ideomotor centres in the brain rather than simply relying upon habit to initiate movement. Instinct (in an overly complex world) can no longer be trusted. The basic principle behind inhibition seems to be that, regardless of how we see ourselves, we exist as intellectual and emotional organisms. If we ignore the emotional side, it will tend to surface anyway in "wrong use habitual action".

"End-gaining" implies a product as opposed to a process oriented approach; a concentration on the end result

rather than the ongoing qualities of an experience. Alexander advocated a move away from an anxious concentration on the product of the experience to an awareness of what the process of the experience means to the individual.

The "means-whereby" principle echoes the process oriented ideas of Alexander. Present experience is not devalued for the sake of some obscure future goal. It is these present experiences that are influencing and shaping self image and the crucial mother/child bond which is of primal influence.

The body awareness exercises of Moshe Feldenkrais address the psychophysical basis of self image. Recalling the work of Paul Bach-y-Rita (Chapter Two, Part One), fundamental to Feldenkrais' work is a conviction that the body's systems are capable of "spilling over" into one another. Changes in the physical system, for example, will have parallel effects on thinking and feeling.

Feldenkrais contends, as does Alexander, that our image of the world is highly dependent upon our physical relationship to it. This physical relationship, as we have seen, tends to be socially constrained, at best diminished and at worst misrepresented by the quality of our initial important relationships and by how somatically unaware we are forced to become by virtue of the world in which we live. Feldenkrais sought to teach people to go beyond the social restraints imposed upon their physical bodies, as he recognized that is through our bodies that we develop and

maintain our awareness of vital life concepts.

Alexander Loewen viewed personality as a function of the body and its energetic processes, which he defined as production (respiration and metabolism) and discharge (movement). Thinking and feeling both have their origin in energy states. Much of Loewen's work is concerned with helping his patients to re-establish contact with the lower parts of the body that have been lost as a result of over-intellectualization (Descartes' mind/body dualism). By helping the person to "ground" himself, Loewen feels that the patient becomes more aware of his "animal" nature (including qualities of grace and rhythm).

It is in a state of stress that the need for a grounded, conscious approach to body awareness becomes most important and the perinatal (prenatal, delivery and postnatal) period certainly ranks as one of the most chronically stressful in a woman's life. She is facing not only physiological changes, but psychological and role changes as well. Anxiety and depression, two mood states which have been shown to often exist during the perinatal period, have been shown to respond to a programme of treatment that includes exercise. Participants must be at a level of somatic awareness sufficient to insure that they do not do themselves any harm, and it must be recognized that the activity itself may be satisfying any one of a number of needs, perhaps the <u>least</u> significant of which may be health and fitness.

In Interactive Exercise, the child often acts as a resistant force during the movements and so an understanding of the underlying principles of weight resistance exercise is helpful. Counteracting the body's natural tendency to fall forward are the antigravity muscles (fig.1, P. 111) which require careful and consistent conditioning in order to function properly. The fundamental principle of strength development is overload; this is a work-induced process and isotonic exercise, where the muscle shortens (concentric) and lengthens (eccentric) against a load, appears to be the most effective type of work for this purpose, when the exercise is performed without the aid of a machine (isokinetic). Interactive Exercise is a movement system which is also an effective stretching experience. The important stretching principle is to place a gradual demand on the muscle so as to avoid the possibility of tissue damage. A stretching schedule that takes place several times during the day (as opposed to a concentrated time span) is most effective. Interactive Exercise easily accommodates this interrupted schedule. Interactive Exercise is in fact a type of "progressive resistance exercise" where the individual determines for herself how many repetitions of each exercise she can comfortably perform. This determination is made together with the child and thus acts to strengthen the existing bond. In keeping with the philosophy of progressive resistance exercise, as the infant grows, the mother's ability to withstand a more intense force also increases as a

result of training. The next chapter outlines the theory and technique of Interactive Exercises. The exercises are structured not only with a view to the techniques of proper exercise management discussed here, but also with the important principles of body awareness in mind.

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Part Three:

Interactive Exercise: Theory and Purpose

It is difficult to dispute the idea that any positive time spent with a mother or other caring significant adult will have beneficial consequences for the infant or child. The value of eye contact and kinesthetic stimulation alone will make the experience a worthwhile one for both people involved. Interactive Exercise takes the basic play interactions that occur many times daily between the mother and the child and expands the experience to the point where it becomes even more valuable by incorporating several needs into the process. This chapter introduces the Interactive Exercise concept in the light of the previous research and reviews the results of a pilot programme conducted for the thesis in the spring of 1983. The actual exercises are appended to the main text (Appendix VII).

Interactive Exercise has five main goals which combine to make the experience a rich and rewarding one for both the mother and the child. The first of these is kinesthetic stimulation. Much research has been done concerning the value of touching not only in communication but also in infant development. Babies who are born prematurely will gain weight much more quickly (a sign of

thriving) if they are handled on a regular basis. The skin is, in reality, one large organ which requires continual stimulation if it is to function properly as a filter for messages from the outside world. Interactive Exercise provides a vehicle through which a mother provides that stimulation in a way that is not only mutually rewarding but personally gratifying as well.

Secondly, by virtue of the nature of the exercises, the baby's vestibular or coordination system is stimulated. Orientation in space is a vital function for any living organism and is particularly problemmatic for humans, as we normally maintain a peculiar vertical alignment that is quite distinct from all other mammals. Spatial orientation is one of the many formidable tasks that the baby must undertake sometime during the first eighteen months of life. Vertical bipedal posture cannot be accomplished unless the vestibular system, particularly the balance centre of the inner ear, is optimally functional. Our bodies are actually constantly shifting and kept vertical through the action of the antigravity muscles (Chapter One, Part Two). These muscles are so effective that gravity is, for the most part, not even within our conscious awareness.

All perception and sensation take place against a background of muscular activity (see Feldenkrais, Chapter One, Part Two). The vestibular system has the chief coordinating function among all other systems in the body;

organizing all sensory apparatus that influence muscular tone and attitudes. Developing an awareness of the attitude and orientation of the body is a crucial and often ignored aspect of infant development. Interactive Exercise provides many opportunities for infants to experience their bodies in a different relationship to space, thus developing their senses of coordination and control.

The mother benefits personally from the Interactive Exercise programme because the exercises address not only particular fitness concerns, but also those related specifically to the rehabilitation of the overextended abdominal and weakened lower back muscles of the postnatal condition. There are two particular concerns that should be mentioned in this context as they are not addressed specifically in the actual exercise text. The first concerns a series of exercises known generally as "kegels" which involve the strengthening of the pelvic floor. These exercises are not included in the main text as they are primarily for the prenatal mother, but they can and should be continued following delivery (see Appendix IV).

The second concern which is important when planning a program of exercise for new mothers is the possibility of diastasis recti, a condition which was mentioned in the preceding chapter. Should separation of the abdominal muscle occur as a result of pregnancy and/or delivery, modifications of abdominal exercises are necessary until the condition has

been given sufficient time to correct itself. (See Appendix IV)

The fourth goal of Interactive Exercise is to provide relaxed interactive "play" time for both the mother and the child. Implicit in these play experiences are opportunities for the baby to acquire the kinds of knowledge referred to by Stern in Chapter Four of Part One. In addition, mothers are encouraged to talk to their babies with as much appropriate vocabulary as they feel comfortable with; the baby cannot articulate the words but does begin to develop a sense of their meaning. This is especially true when the physical action accompanies the word (e.g., "You are going UP now!" Also, talking or singing to the baby acts as a "safety valve" for the mother; she cannot overextend herself if she is still able to communicate.

The fifth and final goal of Interactive Exercise is one that is addressed by conventional infant stimulation or "baby gym" programmes; the actual physical development and muscular training of the baby. Many of the exercises are structured in such a way as to provide either a stretching or strengthening opportunity for the baby at the same time as providing it for the mother.

It is important that the exercises be done either in a small group or with just the mother and child alone. Large groups can prove too distracting, as was the case in the pilot study, which will be discussed later in this chapter.

The child will take some time to become familiar with the movements and different spatial and body orientations and a minimum of distraction will facilitate this process. It should be obvious that the baby will not always feel like cooperating in the exercises, any more than the mother will always feel like exercising. If this is the case, leave it alone and try again another time; in no way should the interaction time become a struggle of wills. It should be stressed that Interactive Exercise is in no way intended to replace a conventional exercise programme; the cardiovascular training in the programme, for example, is minimal and will have to be supplemented. We had some success in the pilot study in this by placing the babies on mats in the centre of the room while the mothers had their cardiovascular workout. However, this was not always possible and certainly other avenues of exercise participation should not be overlooked.

The exercises should be done in a room that is warm and comfortable and as close to the home atmosphere as possible so that the child will be minimally distracted. Clothing for both the mother and the baby should be loose and comfortable and easily removed in the event of overheating. A piece of dowelling approximately as long as the width of the mother's shoulders is required, as well as a small vial of vegetable oil for baby massage. For a young child, a "snuggly", or similar securing device will be necessary and, for an older child (capable of sitting and balancing) a long

scarf or belt can be used (for hanging on).

Music is an essential part of the experience for several reasons. For the mother, music provides a relaxing and/or stimulating background and makes the actual exercise performance more enjoyable. The child hears the music and begins to develop a rudimentary concept of rhythm as a result of the music and responding to the movements of the mother. The music need not be specially arranged, although some care taken in selection will undoubtedly intensify the experience. Alternatively, turn on a favourite record or even the radio and move according to the beat. It is probably best to do these exercises a little at a time, when time, energy and enthusiasm can be coordinated. The programme should never replace conventional exercise, but should be a time of warm and psychologically, as well as physiologically, healthful interactive time between the mother and the baby.

Pilot Study: February 8 - March 10, 1983, Delta Leisure Services, Tsawwassen, B.C.

To explore the practical application of the programme and to refine its elements, a pilot programme was conducted with the cooperation of the Delta Leisure Services Department. The pilot had its successes and its failures, but did provide an opportunity to test the ideas in the field and therefore accomplished its major objective. It was advertised through the January programme brochure which is

delivered to every home in the area and a total of eighteen mother/child "teams" responded. The programme ran twice a week (Tuesday and Thursday) in the morning for 45 minutes. Originally, the programme was set up to work with two distinct age groups; birth to eighteen months and eighteen months to three years. However, the second age category was dropped due to lack of response; it seemed that the real need for this programme was for mothers of children who are in the younger age group. The programme was offered free of charge, a factor which contributed to an unusually high turnover rate, as some teams did drop out and were replaced. The facility itself proved unsatisfactory; it would seem that the programme would be most successful in a home atmosphere or as close an approximation as possible.

Understandably, the atmosphere was quite chaotic at first, as babies and mothers accommodated to their new surroundings and the mothers learned the techniques and tried to pass them on to their babies. However, the babies learned quite quickly and, within three weeks, were eagerly anticipating the experience and even had favourite exercises at which they excelled. Getting to the facility proved somewhat of a problem for some mothers, a fact which tends to reinforce the idea of this programme as an in-home experience. The exercises themselves were refined and added to considerably, both by watching them being performed by the mothers and by receiving verbal input from the mothers as to

new ideas.

It was not the intention of the pilot to prove or disprove the value of the exercises, but to field test the ideas. As the thesis itself is presented in the spirit of inquiry, no hard data need be drawn from this pilot study. The following objectives were met:

1/ Interaction with the mothers provided new ideas for exercise variations that could include the babies.

2/ Practical problems were met and dealt with (e.g., the realization of the need for a warm and homelike atmosphere and the need for a very small group of participants).

3/ It was realized that, although the babies responded positively to the types of exercise presented, such positive response did take a while as the babies needed "training" as much as did the mothers.

4/ Purely monetary considerations aside, some charge must be associated with the programme to encourage long term commitment.

5/ As the pilot programme progressed, the enjoyment of both mothers and babies while performing the exercises became obvious. Even among those mothers who, for a variety of reasons, dropped out of the programme along the way, subsequent conversaions revealed positive feelings about the philosophy behind the experience.

The Interactive Exercise Movement System

Interactive Exercise is an unusual exercise system in that it is not intended to accomplish many of the goals of a conventional exercise programme and yet, in many ways, accomplishes so much more (as outlined at the beginning of this chapter). The exercises and movement experiences are chosen not only with a view to their physical benefits, but their psychosocial benefits as well. All the exercises provide an opportunity for increased warm interactions between the mother and the child.

Essential to the programme is a high frequency of opportunities for communication, either through direct verbalizing and singing (which also provide oppportunities for language development) or through eye contact and other forms of nonverbal communication (e.g., touch and massage). Although all the exercises provide these opportunities, exercises which are particularly effective verbalizing experiences include:

A-2 - The Squat Walk

B-2 - The Crab Walk

C-2 - The Hip Walk

C-3 - The Hip Rock

D-4 - Sit-Ups/Push-Ups

D-5 - The Spine Lift.

Particularly enjoyable nonverbal experiences include:

C-1 - Rock and Rolls

D-1 - Back Flattener

D-6 - Circus Tricks

D-12 - Baby Relaxation

D-13 - Progressive Relaxation.

Body awareness or somatic perception is also an integral part of the programme. Exercises D-1 (The Back Flattener) and D-3 (The Pelvic Clock) are direct adaptations of Feldenkrais exercises designed to bring the new mother into a closer awareness of her pelvic area and thereby bring it back under her own control.

Finally, rhythm and spatial orientation concepts are an important element of the Interactive Exercise Movement System. While most of the exercises address these concerns to some extent, some particularly good examples include:

A-4 - Weight Lifting

A-5 - Weight Lifting (with dowels)

A-6 - Hip Circling/Pelvic Thrusts

A-7 - Dancing

B-5 - The Slide

C-1 - Rock and Rolls

C-9 - Row Your Boat

C-10 - Tip Your Boat

D-2 - Diagonal Roll-Ups/Arm Raises

D-5 - Spine Lift

D-6 - Circus Tricks

In summary, the Interactive Exercise Movement Programme is an holistically oriented movement system based upon both physical and psychosocial components. The fundamental conviction of the programme is that the mother/child bond, if properly developed and given every opportunity for growth, can act to enhance the self image and communicatory abilities of both mother and child.

Appendix VI outlines in detail the actual Interactive Exercises. At the beginning of each exercise, the relational and physical benefits of the exercises to both the mother and the child are profiled. A description of the technique follows and drawings provide a visual illustration. Although a videotape was done with some success, it was found that babies could not be relied upon to remain involved in the programme long enough to illustrate completely all its components. Such sustained involvement was not only unfair, but against the principles of the interactive exercise programme. Preceding the exercises, the four basic orienting positions are explained and should be thoroughly understood before proceeding as correct exercise technique is dependent upon the proper performance of these positions. The repetitions suggested are intended as a guide only; do more

or less according to ability, time, energy and enthusiasm. At no point should the exercises be carried on to the point of physical or psychological exhaustion or irritability.

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Conclusion

This thesis has united several fields of interest that would seem, at first glance, to be unrelated. Its primary purpose has been to advance a theory of the mother/child bond as psychophysical in nature and a primary determinant of a child's self image and future communicatory ability.

Part One has examined the psychosocial bases of self image, pregnancy and the mother/child bond. The integrative theme of Part One was to establish all three of these experiences within a sensory (biological) and interactive (social) framework. Part Two examines body awareness therapies and conventional exercise technique. The body awareness therapies (Alexander, Feldenkrais and Loewen) are specifically concerned with the physical basis of self image and the reintegration of body and mind processes. Chapter Six on Conventional Exercise Technique concentrates on principles of effective stretching and strengthening which are the parameters of the Interactive Exercise experience.

Finally, the goals of the Interactive Exercise Programme are outlined, the programme itself is introduced, and the pilot programme results are reported.

Reflecting upon what this work has done and, equally as important, what it has abstained from doing, is a necessary (albeit difficult) task, if for no other reason

than to give closure to the experience. In addition to recapping for the benefit of the reader certain important elements of the text, it will be in the nature of this conclusion to be somewhat speculative. As the thesis was never intended as an analysis of hard data, the author assumes this privilege.

The issue of women's rights is far from being resolved in contemporary society. Perhaps the cause could be further advanced by a clearer understanding of the biosocial underpinnings of the male/female relationship, within the context of the "environment of evolutionary adaptedness" referred to by Bowlby (1969). Within this context, which is described as a hunting and gathering society, women in fact were responsible for procuring well over half of the food materials consumed by the tribe (Morgan, 1972) in the form of roots, berries, small animals and insects. Even on those rare occasions when the men of the tribe were able to hunt down fresh meat, it was to the women that the tasks of gutting, skinning and preparing the meat fell. It is also known that the body of a woman is much more fuel efficient than that of a man; due to unique layers of subcutaneous adipose tissue (strategically if depressingly placed around the pelvic area for fetal protection) she can sustain the same amount of body weight for fewer calories. It is not that the male metabolic rate is necessarily higher, but rather that the female metabolism has evolved to be much

slower, again as a protective mechanism for the developing fetus. Therefore, if we allow ourselves the luxury of speculation, it would seem that early male/female relationships were characterized by a concentration of power (in terms of the vitally important food supply) in the hands of the women of the group. Perhaps the male would ally himself to a particular female in order to profit from the surplus of food that she was able to procure but could not consume.

By virtue of prolonged breast feeding as the major nutritional source for the young child, mothers were tied to their children for at least four to five years of their lives. Those females who could most efficiently combine the activities of food gathering and childminding were those who achieved the greatest evolutionary success. A female could not be expected to continue to live and reproduce if she could not find food or her child was eaten by a bear while she was otherwise occupied. The pregnancy experience was also considered to be the domain of the female; male involvement in reproduction is a comparitively recent discovery. Male tribe members paired themselves with a selected female in the interest (perhaps biologically motivated) of continuing the species and gave protection in exchange for the security of this liaison.

Thus, it would seem that when we consider the environment for which we are functionally adapted, the

dominate sex would appear to be female. One reason behind the reversal of this power position may have been the willingness of women to subjugate themselves to values that were not their own, possibly even values which came about as the result of the recognition by the male of his powerless position. Speculation on this point is amusing. Perhaps the main reason that men work at all is to support the mother/child bond; the "primary maternal occupation" spoken of by Winnicott (1969). As language has been said to reflect cutural experience, maybe we use the pronoun "he" to denote a person when the gender is nonspecific to easily differentiate the child from the mother. Perhaps it has not been the male child who has been of such social importance but rather the mother. It is even a possibility that the reason doctors (or other males, "medical" or otherwise) have attempted to take over the birth experience is because of a need to become more closely and ritualistically involved in it.

The real reasons behind male dominance will continue to be debated for years to come, and will not be resolved on the basis of this or any other thesis. However, one point cannot be too strongly made. The female contribution to the evolution of society has been considerable, profound, and profoundly ignored. The resolution of this social inequity rests with women being able to articulate and defend those values which are inherently "female", among them the biosocial significance of the mother/child bond.

Accommodative Fitness Strategy

The majority of modern fitness approaches are presented to the general public in such a way as to appeal to those who already conform to culturally ideal body types. In this way, the fitness movement reinforces the status quo by essentially discouraging exercise opportunities for those unfortunate enough to not fit the stereotype. As with any other form of discrimination, the effect of such unnatural selection is to concentrate a particular kind of power in the hands of a select few who in this case, are most often childless, already at least physically acceptable, and for the most part unencumbered by family demands. This is seen as a subtle reinforcement of the lack of cultural emphasis placed on the relationship between the mother and her child.

In much the say way that academic jargon acts to separate those involved in scholarly pursuits from the rest of the world (thus reassuring the academic of the importance of her position), this type of fitness approach only extends the gulf between the fitness professional and the public she should really be serving. More egalitarian approaches should focus on just getting people moving (with appropriate safety considerations) in whatever way is meaningful and possible. This accommodative fitness strategy may be one that places exercise not only within a particular physical and temporal

context, but also as an ongoing part of everyday living. "Interactive Exercise" is presented as the first of such possibilities. More effective lines of interpersonal communication will perhaps result not only from establishing choices in this (or any other activity), but also from ratifying the right to choose.

APPENDIX I

Physical Changes occuring in Pregnancy/Fetal Development

Approximate Time/Weeks	Mother's Experience	Fetal Development
First Trimester	Amenorrhea (absence of menstruation) Hormone changes occur, stopping the menstrual cycle so that the uterine lining will build up to feed and cushion the baby	Day One Fertilization: Union of sperm and ovum
1-4 Weeks	<u>Breasts</u> tingling and tense Hormones cause changes in breast tissue to prepare for nursing <u>Fatigue</u> Energy needs are greater	7 Days Fertilized egg (ovum) becomes implanted in the lining of the uterus. Placenta begins to develop. Size = .3 mm Two Weeks A layered disc on the uterine wall. First menstrual cycle is missed.

Approximate Time/Weeks	Mother's Experience	Fetal Development
6 weeks	Nausea (Morning Sickness) Caused by hormonal action, tension, and/or fatigue. Can occur any time of day. Frequency of Urination Uterus is pressing on bladder, decreasing its capacity. The increased production of estrogen and progesterone is responsible for increased circulation to the pelvic area, including the bladder. Increased Vaginal Secretions Due to hormones and increased congestion.	4 Weeks: Head is 1/3 size of entire embryo - rudiments of eyes, ears, nose, spine, digestive tract and nervous system are formed. Tube for future heart starts beating. 8 Weeks: Weight - 1 gram (1/3 oz.) All systems and organs are present that would be found in a full term baby. Now called a fetus, heart is functioning.

Approximate Time/Weeks	Mother's Experience	Fetal Development
6 weeks	Introspective and Sleepy: Thought to be hormonal; part of natural protection for mother and baby so that mother isn't overactive. Breasts enlarge, areola around nipples darken: continued changes in the breast tissue in preparation for breast feeding. Lightheadedness: The circulatory system is beginning to work harder; takes time for the body to accommodate.	
6-9 weeks	Shortness of Breath: Control of body chemistry changes, requiring increased breathing.	

Approximate Time/Weeks	Mother's Experience	Fetal Development
12 Weeks (Three months)	Montgomery's Tubercles on Aerola of Breasts: Small lumps containing fatty substances which lubricate the areola. Chloasma (mask of pregnancy) and Linea Nigra darkens: Brownish "tan" on face and line running from the navel to the pubic area.	Sex can now be distinguished. "Baby" teeth buds present. Rudimentary kidneys secrete urine to the bladder. Can move in amniotic fluid but cannot be felt by the mother. Weight: 15-30 grams (1/ -1 oz.). This first three months is an especially important time in the life of the fetus; it is especially sensitive to environmental pollution (e.g., smoking, etc.)
Second Trimester	Little Nausea, Less Bladder Pressure, less tired: Uterus rising up in abdomen taking pressure off pelvic organs.	Third to Sixth Month: 1) Fetus grows an average of 1.5mm per day.

Approximate Time/Weeks	Mother's Experience	Fetal Development
	Body has accommodated to its pregnant state.	2) Gains about 1000 gms (2-3 lbs.).
16th Week	Colostrum (may begin any time from now until birth): This water/protein matter is the prelude to breast milk.	3) Fetal heart can be first heard with a stethoscope between the 14th and 16th week.
18-22 Weeks	<u>Quickening:</u> Movement of baby felt by mother. May occur earlier or later than noted.	4) A fine downy hair (lanugo) appears all over the body; may be present at full term.
20-21 or after	<u>Low Back Pain:</u> Due to stretching of ligaments attached to the uterus. Increase in size of abdomen causing curvature of spine. Normal softening of pelvic joints, may also be due to poor posture.	5) 222 bones are formed and calcium is utilized from mother's circulation (mother should increase her intake of calcium rich foods). 6) The skin is thin, shiny and covered with a creamy protective coating called vernix. 7) Baby may suck its thumb!

Approximate Time/Weeks	Mother's Experience	Fetal Development
	Leg Throbbing: Pressure in abdomen sometimes causing pooling of blood in leg veins. Varicose veins may become worse in pregnancy.	Weight at 4 months = approximately 120 grams (4 oz.).
20-21 weeks or after	Constipation: in early pregnancy; changing food habits and hormone action. Later pregnancy; enlargement of the uterus which displaces the intestines and compresses the colon. Weight begins to increase rapidly at this stage (3-4 lbs. per month). Baby can now be	The second trimester is crucial for refinement of the physical characteristics of the fetus. The major brain development is from now until 18 months after birth. Respiratory and cardiovascular systems are not yet fully developed, so the baby is still unable to function outside the body of the mother.

Approximate Time/Weeks	Mother's Experience	Fetal Development
	felt. There is rapid growth in the size of the baby from this point on. Physical changes take place in the placenta and body fluids increase.	
Third Trimester 30 weeks and later	Striae (purple or red marks) on abdomen and breast: Due to stretching of the skin and increased activity of hormones from the adrenal cortex. Fatigue increases: new demands by both the fetus and the mother's body.	Fetus gains about 2500 gms. in in these three months and grows 23 cm. (8"). The baby can survive if delivered before full term but needs special care. The closer birth is to full term, the more ready the baby is to cope with the birth process.

Approximate Time/Weeks	Mother's Experience	Fetal Development
	Braxton-Hicks (Painless) Contractions may be felt: irregular contractions of the uterus become noticeable now.	
30 weeks and later	Muscle cramps in legs, especially at night: Thought to be due to pressure on abdominal nerves, fatigue and calcium/phophorus imbalance.	
35 weeks	Fatigue and Some Depression: Feelings of awkardness and impatience at seemingly endless pregnancy. Frustration with inability to keep up with pre-pregnant activities.	

Approximate Time/Weeks	Mother's Experience	Fetal Development
36 weeks	Heartburn and Flatulence, Constipation, Frequent Voiding: Due to pressure of uterus on stomach, bladder and intestines; also hormonal action. Hemorrhoids: Due to pressure interfering with circulation in the veins, aggravated by constipation. Shortness of Breath: Top of uterus is now pressing against the diaphragm (lung capacity is decreased).	
37-38 weeks	Breathing easier - Decreased Abdominal Distension: Uterus	

Approximate Time/Weeks	Mother's Experience	Fetal Development
	settles into the pelvic cavity: feels like the baby has dropped! Occurs more often at this stage in a first pregnancy; may not occur until onset of labour in subsequent pregnancies.	
	<u>Frequency of Urination:</u> Continued pressure of the uterus on the bladder decreasing its capacity.	
3-4 days before delivery	Weight loss of 2-3 lbs. Increase in (false labour) Contractions. A burst of Energy. Less Movement of Baby.	

Approximate Time/Weeks	Mother's Experience	Fetal Development
	All due to changes in placental function.	
		Baby's weight at birth: Girls: 3280 gms. (7 lbs.) Boys: 3420 gms. (7-1/2 lbs.) Average Height: 58 cm. (20")

Condensed from Baby's Best Chance

TS0013

APPENDIX II

Proper Breathing Technique

Good breathing is essential to vibrant health and can maximize the benefits of any workout. The goal is to breathe easily and deeply without being too consciously aware of it. The pattern of relaxed breathing is downward and outward in inspiration and process is as follows:

1) The diaphragm contracts and descends, thereby allowing the lungs to expand downward as they inflate.
2) The contraction of the diaphragm raises the lower ribs with the assistance of the contraction of the intercostal muscles.
3) The chest expands outward, but relaxed breathing is abdominal as opposed to thoracic.

Healthy breathing is a total body action and aims to take in the maximum amount of air for the minimum amount of effort. All the muscles of the body are involved in some way, even the pelvic muscles which rotate the pelvis slightly backward and downward during inspiration and rotate it forward and upward to decrease the abdominal cavity during expiration. The importance of breathing cannot be overstressed - it is not a matter of making yourself breathe,

but rather letting yourself. Proper relaxed breathing in itself can do much to create a feeling of self possession and embodiment.

While breathing techniques during aerobic sports events or exercise such as running, are virtually automatic and of secondary importance to the activity itself, the use of correct breathing patterns during discrete exercise or stretching movements is very important for the optimal performance at minimal risk, especially for the elderly, prenatal or postnatal participant.

An important part of any exercise session involves stretching. Since exhalation produces a general relaxation of the body and a muscle will be less resistant to stretching when relaxed, the first breathing rule is easily formulated:

1. EXHALE ON STRETCHING.

In considering the next rule, it is useful to understand the structural effects on the body of inhalation and exhalation.

Inhalation is the taking of air into the lungs. It is effected by a voluntary muscular effort which increases the thoracic volume thus drawing the air into the lungs to fill the increased space. The net effect is that following inhalation, the thoracic volume is considerably enlarged.

Three structural movements are responsible for the increased volume which causes inhalation. The body of the sternum swings forward slightly, about the sternal angle,

increasing the thoracic volume antero-posteriorly; the ribs swing outward, increasing the transverse diameter of the thorax; the diaphragm flattens, increasing the depth of the cavity.

This third factor is a signficant one in formulating exercise breathing rules because of its effect on the abdominal contents. When relaxed, the dome of the diaphragm rises so high within the thoracic cage that many abdominal organs, e.g., liver, stomach, are almost completely sheltered by the ribs. When the diaphragm flattens out, however, these organs are pushed down below the lower rib margins. This displaces the abdominal contents downward and, since only a certain amount of compression is possible, there is a tendency for the abdominal wall to balloon outward. If an exercise involves the restriction of the abdominal wall, e.g., trunk flexion or rotation, the abdominal contents cannot be displaced downward and the flattening of the diaphragm is resisted.

This leads to the formulation of the second rule for breathing which is to:

2. EXHALE WHEN DECREASING OR "CRUNCHING" THE ABDOMINAL WALL.

Whereas stretching movements are relaxed and relatively passive, strengthening exercises are active and require effort. If the breath is held during effort by closure of the glottis (the so-called Valalva Manoeuvre),

intro-thoracic pressure increases with a concomitant increase in blood pressure. This should be avoided whenever possible, particularly in the hypertensive participant. Thus, Rule Three is:

3. EXHALE DURING EFFORT.

Following inhalation, the inhaled breath, whilst held in the thorax, and the abdominal contents under pressure from above, become a strong supporting column for the trunk as a whole. This effect is important in certain exercises where such support is necessary as a protection for the back.

In extending the trunk from the prone position, for example, the rigid column provided by the air in the thorax assists, and minimizes the risk to the back extensor muscles. A fixed, rigid trunk also provides protection for the back when the trunk is used as a base of support, e.g., in the military press, or as a single unit to be pushed against gravity, e.g., a press-up.

Such exercises, therefore, call for inhalation prior to or during effort and a holding of the breath until the finish of the movement. In this situation, the need for protection of the back supersedes the consideration in Rule Three. Rule Three cannot be totally disregarded, however. Exhalation must occur immediately following the completion of the movement. Rule Four, a conditional modification of Three, thus becomes:

4. WHEN A RIGID TRUNK IS NECESSARY TO PROTECT THE BACK, INAHLE AND HOLD THE BREATH DURING EFFORT. EXHALE IMEDIATELY ON COMPLETION OF THE MOVEMENT.

To summarize, it can be seen that "EXHALE" is the keyword in exercise breathing technique. EXHALE when stretching; EXHALE with trunk constriction; EXHALE with effort; where a solid trunk is needed as a support to protect the back, HOLD the breath until the movement has been completed, then EXHALE immediately.

For a discussion of proper breathing techniques during exercise, I am indebted to Michael J. Marfell-Jones of the Department of Kinesiology, Simon Fraser University.

APPENDII

APPENDIX III

Strategies to Support Involvement and Adherence

Individuals with low self-motivation are more inclined to drop out of an exercise programme, and need to be particularly aware of factors that may affect their tendency to do so. The following "strategies" are proposed to help facilitate participation by those people who have trouble staying with a training programme.

1. Find a place to exercise that is conveniently located so that getting to and from workouts is not a hardship. Remember, you can run any place!
2. Decide whether it is more enjoyable to exercise alone, with another person, or in a group, and plan your workouts accordingly.
3. Don't allow yourself to become totally committed to only a single type of exercise or a single exercise setting. Change is important in terms of motivation, and it makes you feel better too!
4. Avoid becoming excessively goal-oriented. Training objectives are important, but there may be other aspects of exercise that are more important for you.
5. Don't expect too much. Training objectives should be realistic and individualized. Not everyone has the same genetic potential, and not everyone can

reach the same fitness level, but everyone can improve.

6. Be patient! Fitness takes time. Think in terms of months, not days.
7. Keep a daily exercise record. When you are feeling discouraged, it is sometimes buoying to know that you have improved more than you thought. Remember, however, fitness increases reach a plateau as you become more fit.
8. During initial training sessions, stay within your "comfort zone". Remember, for the untrained person, exercise doesn't have to hurt in order for the heart and lungs to increase their capacities.
9. If you are not one of those who like to push to their limits, choose an activity (large muscle, rhythmic) that you can <u>enjoy</u> participating in consistently, and don't be overly concerned with exercise intensity. Although exercise heart rate and caloric expenditure are important training considerations, the most important factor is staying with your program. <u>Training effects result from involvement</u>, and do not have to be the primary goal or purpose for your participation.
10. If you really want to exercise, but nothing seems to enable you to stay with your program, think of some activity that you really enjoy or that you <u>have</u> to

do. Then make a promise to yourself that you won't allow yourself to do the preferred activity unless you have already exercised.

11. Be proud of yourself for staying with your end conditioning program. Fifty percent of the population can't do that.

From: Falls, et al; Essentials of Fitness, Saunders College/Holt, Rhinehart & Winston, Philadelphia, 1980

Appendix IV

Kegels: Toning the Pelvic Floor/Diastasis Recti

(from Fitness and Pregnancy: Government of Canada; Fitness and Amateur Sport Branch)

Pelvic Floor

Think of a base that has to support all your pelvic organs - your bladder, uterus and bowel, for example - that's the pelvic floor.

Specifically, the pelvic floor is the group of muscles attached to the pelvis (the hip bone) at the coccyx (tail bone), lower pelvic sides and pubic bone (in the front).

These muscles are always under pressure, but this pressure becomes even more intense under the weight of an enlarged uterus during pregnancy.

Another set of muscles equally important to remember during pregnancy are called sphincters. These are the muscles that surround the passages - the anal passage, vagina and urethra - through the pelvic floor.

During pregnancy, it's extremely important to keep the pelvic floor and sphincter muscles in good shape since the constant pressure of a heavier uterus can create strain. Many women experience problems with bladder control in late pregnancy and after delivery. Exercising the urethral sphincter can improve control.

Exercising rectal muscles can prevent hemorrhoids

which result from blood congestion in the rectum. Toning the muscles of the vagina helps form a firm elastic canal for childbirth. Both will lead to an easy delivery and better healing afterwards.

These exercises are called "kegeling" and are described as follows:

Faucet

Trying to control the flow of urine will help strengthen the urethral sphincter. Urinate in spurts, stopping the flow in midstream; this will help strengthen the urethral sphincter. When you are able to exert this much control, interrupt the flow several times during each urination.

Wave

This exercise can be done in any position, but try this one for starters: sit on a hard chair and lean forward with your feet on the floor.

Now try to tighten the sphincter muscles - anal, vaginal and urethral - from back to front, in succession. While it's difficult to separate these muscles from one another, it's much easier to contract them in succession.

When all three are tightened, hold the position for one or two seconds and then release the muscle in a

wave-like motion, from front to back.

Elevator

Again, this exercise can be done in any position.

Imagine that you are on an elevator going from the first to the tenth floor of a building.

Now contract your pelvic muscles a little at a time, tightening them at each floor until you reach the tenth floor at the count of ten.

Descend and then gradually release your muscles, loosening them at each floor. By the time you reach the first floor - and not before - you should be back to normal muscle tension.

Don't stop at the ground floor. Release the muscles even more, moving down to the basement and the sub-basement of your imaginary building. Then contract the muscles again, until you are back to the first floor.

Diastasis Recti: Exercise Modifications

Full curl-ups should not be done, the hands should be placed across the abdominal area to support the recti muscles.

Raise only the head and be sure that the shoulders stay on the floor. Exhale as you raise the head to the chest and inhale as the head is returning to the floor. Performing this exercise several times a day will strengthen

the muscles and decrease further separation.

The proper method for assuming a lying position from a standing one will guard against the possibility of diastasis recti, or minimize the possibility of further separation if it has already occurred. From a standing position, bend the knees and crouch so that your hands are touching the floor (note that the torso is straight which normally would be contra-indicated due to potentially excessive forces on the knee but in this case it is the lesser of two evils). Next, lower your knees to the floor and roll onto one hip. Then lie down on your side with the knees bent; use your arms to push yourself onto your back while continuing to keep your knees bent. To stand up from a lying position, reverse this procedure, one step a time. For the majority of women doing Interactive Exercise, this process will no doubt be overcautious, but it is useful not only for the mother suffering from diastasis recti, but also for a mother who has only recently delivered her baby.

In a back-lying position, knees bent, cross the arms over the abdomen, holding onto the sides to pull the recti muscles to the midline as the head is raised. As the diastasis lessens over time, the head and shoulders may be raised in a full curl-up. Until the gap is closed, exercises that involve rotating or bending the trunk or twisting the hips should be done cautiously or avoided altogether.

APPENDIX V

Preventing Injuries in Exercise

The question of injury prevention in exercise management is difficult to resolve. Much disagreement exists among exercise professionals as to potential risks and benefits and information changes so quickly that, quite literally, what may be commonly accepted as safe today may well be thought hazardous tomorrow. In addition, wide variations in abilities and body mechanics among participants means that those exercises that are safe for one person may be dangerous for another and varying levels of body awareness (Chapter 2) among participants means that many may not even be aware enough of their somatic responses to detect possible damage. Nevertheless, some basic principles do remain constant and deserve some attention. There are also special considerations for a unique target group such as postnatal mothers.

Several principles can minimize the risk of injury in any exercise programme. To begin with, the use of ballistic or bouncing movements should be reduced or eliminated for stretching or muscular endurance repetitions. Sudden stretching causes muscles to contract in reflex action and can increase the risk of injury or muscle fatigue. Slow sustained stretches held for a minimum of six seconds allow

for more efficient stretching with less risk of tissue damage.

Another important consideration involves ensuring that joints (e.g., knees, neck, lower back) do not exceed their normal range of motion. Any flexion of a joint should not exceed an angle of 90^{o} and attention should be paid to keeping the weight distributed and the body in good alignment.

In a general sense, the key to successful exercise management is to encourage individual participants to work to their own levels by stressing competence rather than competition. This is accomplished by the introduction of a levels system where variations of a particular exercise are demonstrated and participants can choose that which is most appropriate. As we are advocating a general conditioning programme, we need to be aware of the possibility of specific problems among participants, in order to address them responsibly. For example, someone who runs regularly must take special care to stretch out the muscles of the calf and the back of the thigh (hamstrings; see figure 1, P.165) as these become shortened by the effects of an ongoing running programme. An overweight person must take care not to put too much pressure on the joints (e.g., avoid jumping). Postnatal mothers (our own target group) share unique problems in that the muscles of the lower back, abdomen and the pelvic floor have undergone considerable stretching (and

possible tearing) and must be rehabilitated slowly but steadily.

Occasionally, a woman who has just delivered a baby may suffer from a condition known as diastasis recti in which the bands of the abdominus recti muscles have separated due to the strain of pregnancy and delivery. If the separation is extreme (three or more fingers fitting horizontally between the bands) there is a need for modification of any of the abdominal strengthening exercises (see Chapter 2, Part 2). Exercises called "kegels" (see Appendix IV) are useful both before and after delivery to tone the pelvic floor and the sphincter muscles (see fig. 1,P. 38). Appendix VI outlines the specific exercises of the interactive programme and discusses more specific concerns related to injury prevention. Note that before beginning any exercise programme, it is advisable to have all participants complete a Par Q form (see figure 1, P.165) which gives basic information concerning level of fitness and potential risks.

PHYSICAL ACTIVITY READINESS QUESTIONNAIRE (PAR-Q)*
A Self-administered Questionnaire for Adults

PAR Q & YOU

PAR-Q is designed to help you help yourself. Many health benefits are associated with regular exercise, and the completion of PAR-Q is a sensible first step to take if you are planning to increase the amount of physical activity in your life.

For most people physical activity should not pose any problem or hazard. PAR-Q has been designed to identify the small number of adults for whom physical activity might be inappropriate or those who should have medical advice concerning the type of activity most suitable for them.

Common sense is your best guide in answering these few questions. Please read them carefully and check the ☑ YES or NO opposite the question if it applies to you.

YES	NO		
☐	☐	1.	Has your doctor ever said you have heart trouble?
☐	☐	2.	Do you frequently have pains in your heart and chest?
☐	☐	3.	Do you often feel faint or have spells of severe dizziness?
☐	☐	4.	Has a doctor ever said your blood pressure was too high?
☐	☐	5.	Has your doctor ever told you that you have a bone or joint problem such as arthritis that has been aggravated by exercise, or might be made worse with exercise?
☐	☐	6.	Is there a good physical reason not mentioned here why you should not follow an activity program even if you wanted to?
☐	☐	7.	Are you over age 65 and not accustomed to vigorous exercise?

If You Answered

YES to one or more questions

If you have not recently done so, consult with your personal physician by telephone or in person BEFORE increasing your physical activity and/or taking a fitness test. Tell him what questions you answered YES on PAR-Q, or show him your copy.

programs

After medical evaluation, seek advice from your physician as to your suitability for:

- unrestricted physical activity, probably on a gradually increasing basis.
- restricted or supervised activity to meet your specific needs, at least on an initial basis. Check in your community for special programs or services.

NO to all questions

If you answered PAR-Q accurately, you have reasonable assurance of your present suitability for:

- A GRADUATED EXERCISE PROGRAM - A gradual increase in proper exercise promotes good fitness development while minimizing or eliminating discomfort.
- AN EXERCISE TEST - Simple tests of fitness (such as the Canadian Home Fitness Test) or more complex types may be undertaken if you so desire.

postpone

If you have a temporary minor illness, such as a common cold.

Reference: PAR-Q Validation Report, British Columbia Ministry of Health, May, 1978.
Produced by the British Columbia Ministry of Health and the Department of National Health & Welfare.

APPENDIX VI: Interactive Exercise: Benefits and Techniques

Exercise Index (NOTE: The indicated exercises * come directly from The Perinatal Fitness Manual, Department of Health, Victoria, British Columbia)

A. Standing Position

1. Wall Sit
2. Squat Walk (toes in, toes out, etc.)
3. Squats
4. Weight Lifting
5. Weight Lifting (with dowels)
6. Hip Circling/Pelvic Thrusts
7. Dancing

B. Crab Position

1. Trunk Lowering
2. Crab Walk
3. Rockettes
4. Inverted Push-Ups
5. The Slide

C. Sitting Position

1. Rock and Rolls
2. Hip Walk
3. Hip Rock
4. Cross Overs

Exercise Index (Continued)

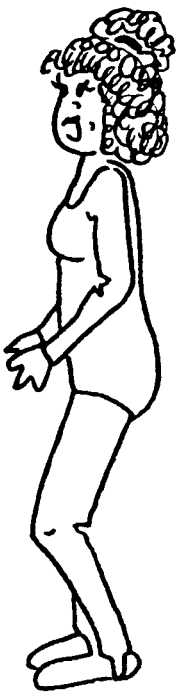
C. (Cont'd.)

5. Ride the Bicycle
6. Sit Backs
7. See Saw
8. Foot Flexors
9. Row Your Boat
10. Tip Your Boat
11. The Mountain
12.* Tailor Sitting/Frog Kicking

D. Lying Position

1. Back Flattener
2.* Diagonal Roll-ups/Arm Raises
3. Pelvic Clock
4.* Sit-ups/Push-ups
5. Spine Lift
6. Circus Tricks
7.* Side Bends/Knee Bends
8.* Leg Raises/Airplane/Pelvic Tilt
9. Scissors/Flutter Kicks
10. Side Leg Lifts
11. Tip the Bicycle
12. Baby Relaxation/Progressive Relaxation

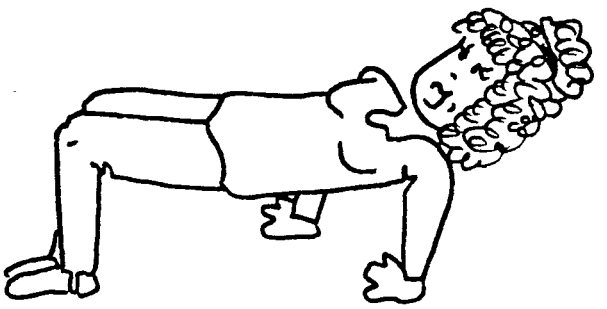
Basic Exercise Positions



A. Standing Position:

Stand with your feet parallel and about shoulder width apart. Bend your knees slightly so that they feel comfortably loose and flexed. Tuck your pelvis under, relax your shoulders and lengthen the muscles of your neck and upper back.

B. Inverted Hands and Feet Position:



Balance your body on the soles of your feet and the palms of your hands. The body is supported in an inverted position, and effort is made to keep the trunk as level as possible (i.e. back is toward the mat, the stomach to the ceiling). This position is most enjoyed by babies who have learned to sit up and

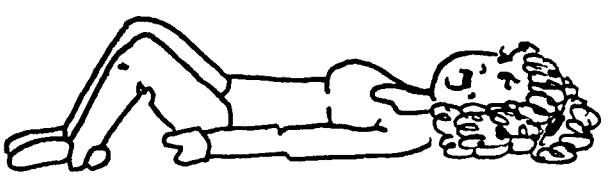
hold on, although it can be achieved with younger children in a "snuggly" or similar holding device.

C. Sitting Position:

Sit on the mat with legs outstretched in front of you, knees slightly bent (soles of feet should rest completely on the floor). Keep your back comfortably erect with pelvis tucked under and shoulders erect. Lengthen the muscles of your neck and upper back.

D. Lying Position:

Lie down comfortably on the mat with your knees bent so that the soles of both feet are resting completely on the ground. Your arms should lie comfortably at your sides, palms up.



Exercise A-1 The Wall Sit

Benefits

Relational: To provide the mother and child with a close interactive time and to allow the baby to experience a slight variation in spatial relations as this close contact continues.

Physical: To allow the mother to strengthen the muscles of the lower back and the quadriceps and to slightly stretch the calf muscles.

Technique

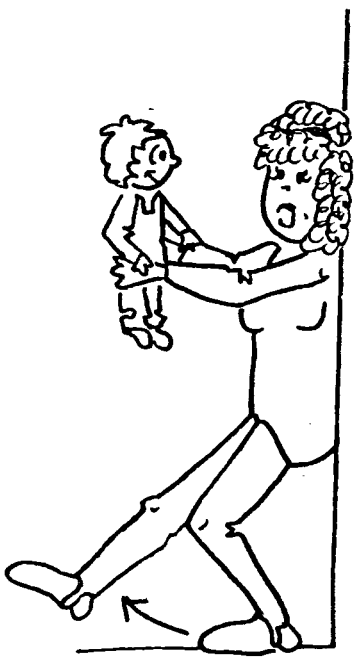
1. Assume the basic standing position, close to an unadorned wall.
2. Position yourself so that your heels are slightly away from the wall. Hold your baby facing you for greatest contact potential; hold her facing away from you for a variation and a chance for her to explore the world.
3. Talking or singing to your baby, slowly lower yourself as far as possible without moving your heels from the wall (Note: do not extend to a full sitting

3.. (Cont'd.)

position, as this can put excessive strain on the knee and does very little to increase the value of the exercise). Push the small of your back into the wall.

4. Hold this position for 8-12 counts, come up, relax and cuddle your baby. Lower yourself again, pushing the small of your back into the wall and kick out in time to the music for 8-12 beats. Come up and relax.

5. Repeat the series outlined in Step #4 - 1-3 times.



Exercise A-2 The Squat Walk

Benefits

Relational: To experience continued close contact time while experiencing rhythm and rhythmic variations in space relations.

Physical: To strengthen and tone the quadriceps, adductors and and abductor muscles of the mother.

Technique

1. Assume the basic standing position. Flex your knees slightly more and point your toes out.
2. Place the baby securely in front of you, using a holding device if necessary. The baby can be placed so that she is either facing toward you or away form you.
3. Simply take the baby for a walk around the room, pointing out what you see and involving her in the environment. Walk backwards for a while to vary the baby's perspective.
4. Change the muscle focus of the exercise by pointing

the toes in.

5. Continue walking as long as the exercise is fun and interesting to both of you.

Note: You can vary this exercise (for a different training effect) by walking on your heels (to stretch the calf muscles and on your toes (to stretch the front leg muscles and strengthen the calf muscles).

Exercise A-3 The Squat

Benefits

Relational: To experience extreme variations in spatial relations with continued close contact.

Physical: To develop the mother's leg and arm muscles.

Technique

1. Assume the basic standing position.
2. Holding the baby at arm's length (keeping elbows flexed), slowly lower him until his toes touch the ground. Make sure that your knees remain flexed and that the lift comes through the work of the quadricep muscles and those of the lower back.
3. If you are working with a toddler, put him on the floor in front of you and slowly pick him up, using the same technique. Keep elbows and knees flexed and the pelvis tucked.
4. Raise the child over your head if possible (alternatively, just as high as you can), hold for 8-12 counts and slowly

lower to either the floor or to chest level (depending upon the age of the child).

5. Repeat 2-4 times.

Exercise A-4 Weight Lifting

Benefits

Relational: To allow the child to experience extreme variations in spatial relations while continuing to experience close contact.

Physical: To tone and develop the mother's leg and arm muscles.

Technique

1. Assume the basic standing position.
2. Holding the child with one arm supporting the lower body and the other arm supporting the head and neck, rotate your body so that your upper body is slightly forward, the back is straight and the baby is in front of you.
   Keep the knees slightly bent and relaxed.
3. Begin working the muscles of the arms by lifting and lowering the baby, taking care to maintain the proper position. Be sure to make lots of eye contact and talk to the baby during this phase. Repeat 8-12

times, rest and repeat the series 1-3 times.

4. To work the muscles of the legs, remain in the parallel position but use the flexion of the knees to move the baby up and down. Keep her close to you, and continue eye contact and conversation. Repeat 8-12 counts, relax, and repeat the series 1-3 times.

Note: Due to the relatively insignificant weight of the baby, this exercise should not pose any problems for the back. However, should any discomfort be felt, cut down on the number of repetitions or discontinue the exercise altogether.

Exercise A-5 Weight Lifting (with dowels)

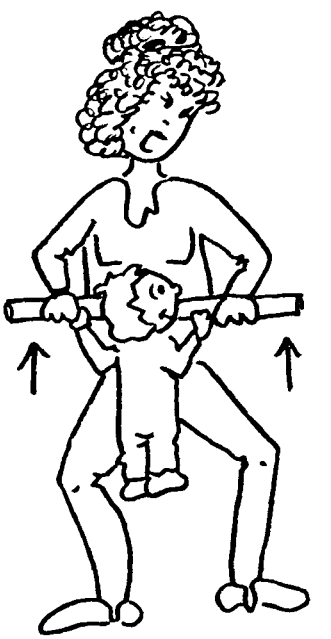
Benefits

Relational: To allow the child to experience extreme variations in spatial relations, and to feel in control of these experiences.

Physical: To develop the biceps, triceps and leg muscles of the mother, and to develop the biceps and triceps of the child. This exercise will also assist the child the child with small muscle control and grasping ability.

Technique

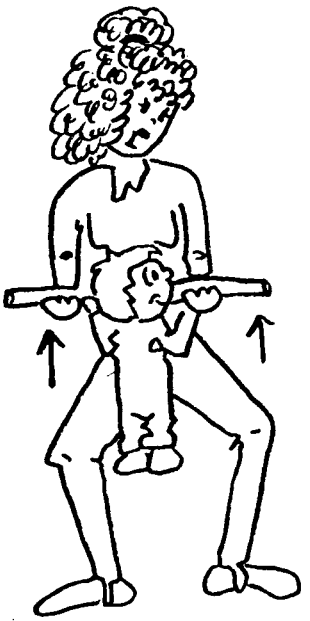
1. Assume the basic standing position.
2. Taking a 2-3' length of wood doweling and holding it in a horizontal position (remembering proper technique) and encourage the child to hold on to the dowel. Prepare him for what is coming by letting him know that you intend to lift him up.
3. Begin by wrapping your hands around the bar palms up and slowly lift the bar (with the child holding on) as far as is comfortable



for both you and the child. Hold only for a few seconds and return the child to the ground. This exercise strengthens the bicep muscles of the arms.

4. To strengthen the triceps, reverse the hold and grasp the dowel palms down. Again, lift only as far as is comfortable, hold for a few seconds and return the child safely to the ground. Praise the child for holding on.
5. Repeat the series as often as possible for a maximum of 3 times.

Note: This is an exercise designed primarily for older children although younger children can, with much practice, develop the requisite muscle strength.



Exercise A-6 Hip Circling/Pelvic Thrusts

Benefits

Relational: To allow the child to experience rhythm and rhythmic spatial variations in a close physical relationship.

Physical: To tone the muscles of the abdomen and waist and to strengthen and differentiate the pelvis of the mother.

Technique

1. Assume the basic standing position.
2. Secure a younger baby (i.e. in a snuggly) or have an older child straddle you around the waist, his arms around your neck.
3. Begin by making wide circles with the hips for 8-12 counts and reverse the direction for 8-12 counts. Sway hips from side to side for 8-12 counts and finish with pelvic thrusts (i.e. moving the pelvis forward and back) for 8-12 counts.
4. Repeat the series 1-3 times.

Exercise A-7 Dancing

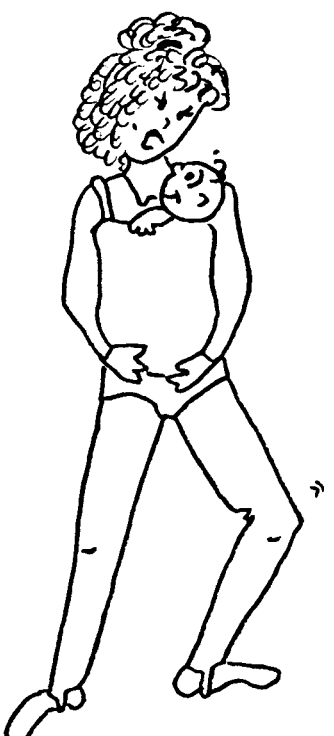
Benefits

Relational: To allow the child to become aware of the mother's breathing and to experience rhythm as a part of their relationship.

Physical: To begin to elevate the mother's heart rate and to tone the leg and arm muscles of both the mother and the baby.

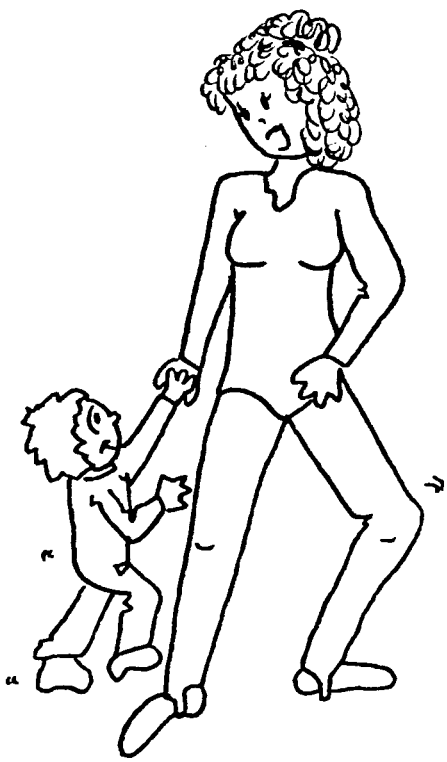
Technique

1. Assume the basic standing position.
2. Secure a younger baby (i.e in a snuggly) or have an older child straddle you around the waist, her arms around your neck. She may also wish to remain on the floor and dance by herself, and this should be encouraged.
3. Begin to sway in time to the music and execute whatever polka steps (i.e. small jump to the side, two small steps) simple side steps or small kicks you may feel like doing. Just be sure to keep the movements small so as not



to adversely affect the baby. Be sure that the head is supported, especially for a younger child.

4. Continue the movements for as long as you both seem to enjoy them, but stop if the child shows any signs of discomfort or irritability. Many children will accommodate to this activity very quickly, but you will probably find that in the beginning you may not be able to continue for more than about 5 minutes.



Exercise B-1 Trunk Lowering

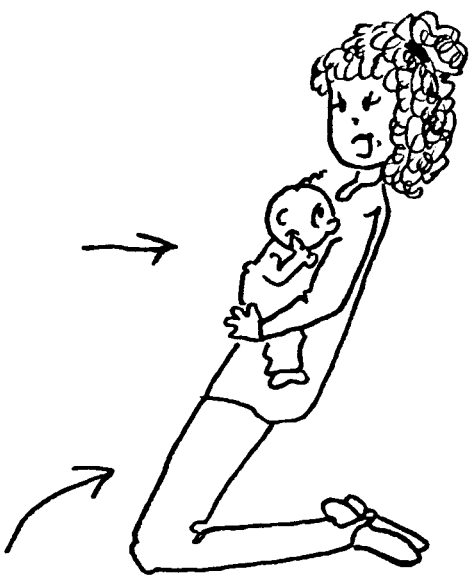
Benefits

Relational: To allow the mother and the child to experience close body contact, and to allow the child to experience slight rhythmic body movements.

Physical: To strengthen the mother's quadriceps.

Technique

1. Support yourself in an upright position on your knees.
2. A younger child should be supported in a snuggly or other securing device and an older child can be held with her arms around your neck and her legs straddling your waist.
3. Taking great care not to overextend the knee, slowly move the body backwards to a comfortable position and hold there for about 8-12 counts.
4. Return to an upright position, relax and cuddle your baby, and repeat 1-3 times.



Exercise B-2 Crab Walk

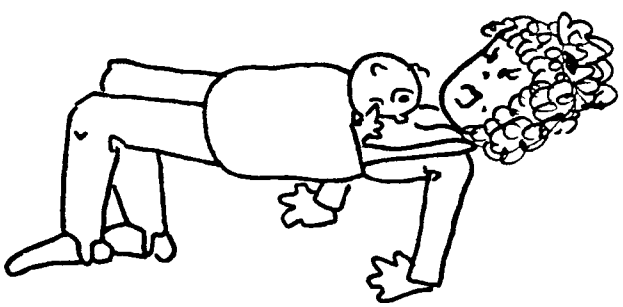
Benefits

Relational: Provides a different experience in spatial relations and as such acts as an aid in balance development. Also provides an opportunity for language development.

Physical: Strengthens the quadriceps, pectorals and the arm muscles of the mother and helps to develop and tone the child's thigh muscles (especially those of the inner thigh).

Technique

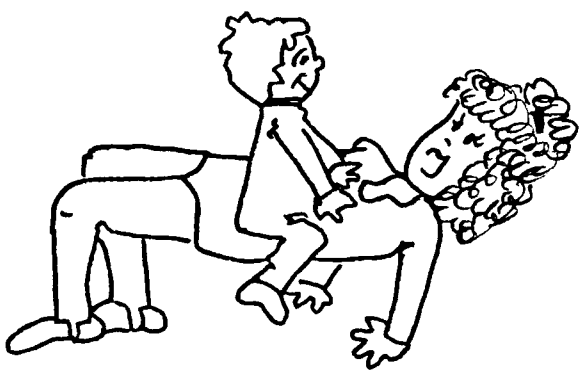
1. Assume basic crab position.
2. If the child is old enough to sit up without difficulty, have him straddle your abdomen. Tie a belt around your waist to enable him to hold on if necessary. A younger child should be placed in a securing device.
3. Take the child "for a walk"; go forward, go backward, and to the sides and around in a circle. Talk about what you are doing to enable him to fit



word to deed; even use the words "right" and "left" when appropriate.

4. Continue for as long as the activity is mutually satisfying.

Note: It is important to remain convinced of the benefits of conversing with your baby as much as possible, even if you feel that she is too young to understand. In addition to the reassurance generated by voice tone alone, babies are capable of understanding language a long time before they are capable of speech.



Exercise B-3 Rockettes

Benefits

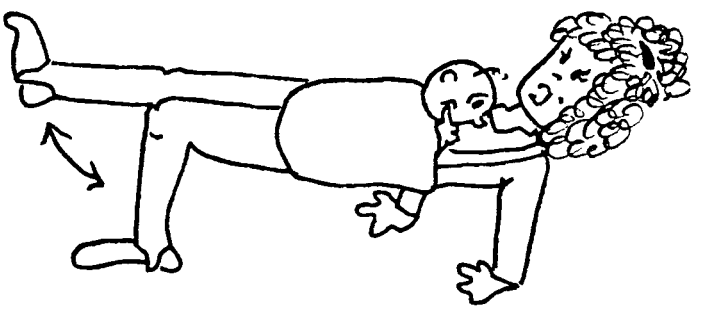
Relational: Same as the crab walk, but a slight variation on the experience and the accompanying sensations.

Physical: Essentially the same as the crab walk, but the variation produces an additional toning effect of the quadricep muscles for the mother.

Technique

1. Assume basic crab position.
2. With child securely on abdomen (see crab walk), kick your legs in the following sequence: 8-12 kicks with one leg, 8-12 kicks with the opposite leg and alternate legs for 8-12 kicks.
3. Rest, relax and cuddle your baby.
4. Repeat 1-3 times.

Note: If this exercise becomes too much of a strain, do the kicking routine from a sitting position.



Exercise B-4 Inverted Push-Ups

Benefits

Relational: Provides an experience in spatial orientation and in balance.

Physical: To develop the child's thigh muscles while strengthening the mother's pectoral and arm muscles, alternately strengthening the muscles of the abdomen and spine.

Technique

1. Assume basic crab position.
2. With child securely on the abdomen (see crab walk), begin by slowly lowering the body using only the arms. Return the body to the starting position using only the arms.
3. Next, lower the body using only the muscles of the abdomen and the back (the arms remain flexed, but steady). Return the body to the starting position using only the abdominal and back muscles.
4. Repeat the sequence 8-12 times, relax and repeat 1-3 times.

Exercise B-5 The Slide

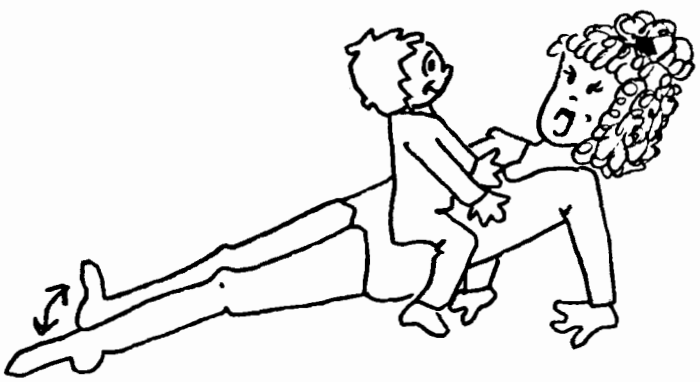
Benefits

Relational: Teaches the child to "hold on", acts as an aid to balance development and is an additional spatial variation.

Physical: Strengthens the arm and leg muscles of the child and strengthens the mother's arms while tightening the muscles of the abdomen, thighs and buttocks.

Technique

1. Assume basic crab position with child securely balanced on abdomen (as with crab walk).
2. Extend the feet so that the knees are no longer bent and the body is supported by the hands (fingers pointing toward the feet) and the heels (be sure floor is well padded).
3. To tone the leg muscles and create an interesting diversion for the child, alternate flexing one foot with pointing the other. The child will feel this movement through your legs



and enjoy it.

4. Tighten the muscles of the stomach, buttocks and thighs and hold for 8-12 beats. Count out loud so your baby can hear you and to be sure you are not overextending yourself.

5. Relax by sitting down, shaking out your arms and cuddling your baby. Repeat 1-3 times.

Exercise C-1 Rock and Rolls

Benefits

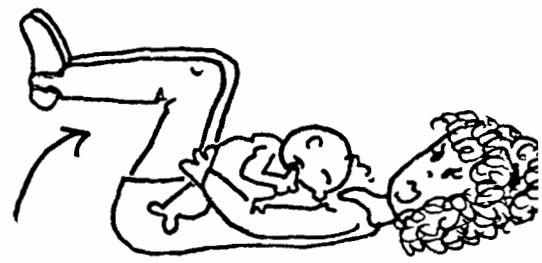
Relational: To experience close contact and rhythmic orientation to different planes in space.

Physical: To loosen up the mother's spine and make it more flexible and to tone the mother's abdominal muscles.

Technique

1. Assume the basic sitting position with a younger child secure and close to the chest and an older child sitting on the stomach.
2. With reassuring words to the baby, gently rock back into a lying position, bringing buttocks slightly off the ground. Return to sitting position using abdominal muscles. Use the appropriate language to describe to her what you are doing (e.g. going back, coming up, etc.). Make eye contact with the baby whenever possible.

3. Repeat a minimum of 6-8 times; more if it is comfortable for both you and the baby.



Exercise C-2 The Hip Walk

Benefits

Relational: To experience the sensation of side to side movement in combination with movement forward in space. Also to aid in language development.

Physical: To loosen the mother's hip area and give a slight toning effect to the gluteal muscles. Also tones the arm and leg muscles of the baby as he holds on.

Technique

1. Assume the basic sitting position; baby hugged close to chest or an older child straddling the abdomen.
2. Talking and making eye contact with the baby if possible, begin shifting your body weight from one hip to the other to approximate a walking motion.
3. Go forward for 12 counts, back for 12 counts and around in a circle for 12 counts. Talk to the baby at all times, making an

effort to use appropriate directional vocabulary.

4. Repeat the set 1-3 times; do more only if it still feels comfortable.

Exercise C-3 The Hip Rock

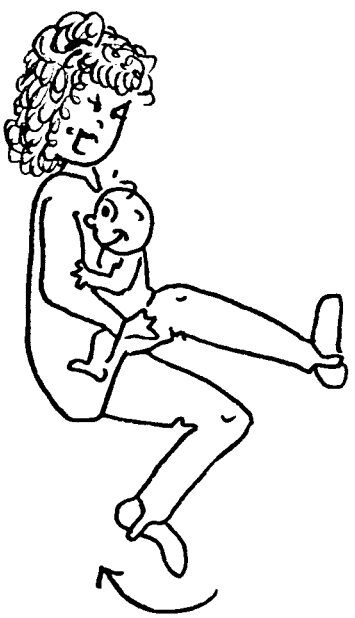
Benefits

Relational: A more intense version of the hip walk; continued close interactive time.

Physical: Essentially the same benefits as the hip walk, but an additional strengthening effect of the waist and lower back muscles is obtained.

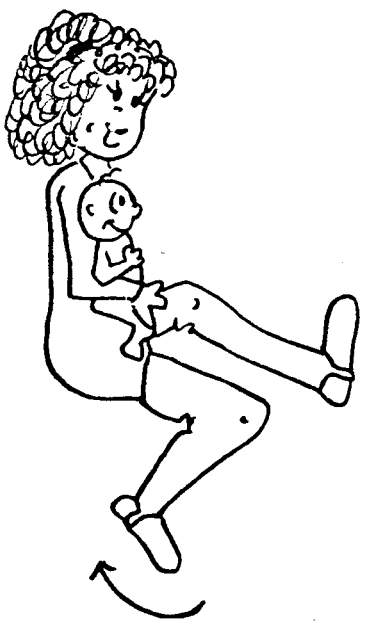
Technique

1. Assume basic sitting position.
2. Continue to talk and make eye contact with the baby while you shift your weight onto one hip, bending the opposite leg at the knee (the leg will end up angled either to the side or toward the back of the body).
3. Take care of your knees during this exercise; you do not want to push the inside of the knee uncomfortably close to the floor.
4. Continue to talk to your baby and tell her that you are going side to side, left to right, etc.



5. Repeat 8-12 times; more if both of you continue to enjoy yourselves.

Note: It is of no additional benefit and in fact may be uncomfortable to do this exercise quickly - TAKE YOUR TIME!!



Exercise C-4 Cross-Overs

Benefits

Relational: To experience continued close contact and rhythmic activity.

Physical: Helps the mother to tone the muscles of the thighs and continues a gentle massage and toning of the abdominal muscles due to effort involved in maintaining an upright position.

Technique

1. Assume basic sitting position.
2. Place the baby either facing you (sitting on your abdomen) or looking toward your feet. Alternate these positions to keep up the baby's interest level.
3. Bending one leg at the knee, touch the knee of the opposite leg with that foot.
4. Repeat 8-12 times on one side before switching to the opposite leg for 8-12 counts. Count the movements out loud. Alternate legs for 8-12 counts.

5. Repeat entire sequence 1-3 times.

Exercise C-5 Ride the Bicycle

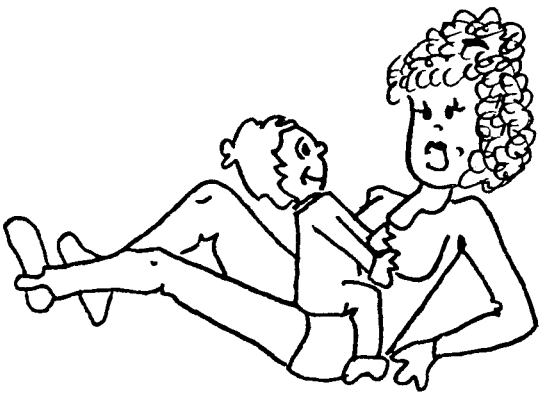
Benefits

Relational: Allows the child to experience "holding on" along with continued close contact and kinesthetic stimulation.

Physical: To tone the mother's abdominal and lower back muscles.

Technique

1. Assume the basic sitting position and lean back, supporting yourself on your elbows with your fingers pointing toward the feet. Make sure that your lower back is curved and pressed into the floor.
2. Taking care to keep the legs high rather than extended, move the legs in a circular motion to imitate the pedalling of a bicycle.
3. Remember to talk, sing or hum to the baby to involve her and to make sure that you are not overextending yourself.
4. Repeat the cycling movements for 8-12 cycles



with toes pointed, then flex the feet, reverse the movement and pedal backwards.

5. Repeat the sequence (forward pedalling; toes pointed, backward pedalling; feet flexed) 1-3 times.

Exercise C-6 Sit Backs

Benefits

Relational: To experience continued closeness and to relate to rhythmic movement.

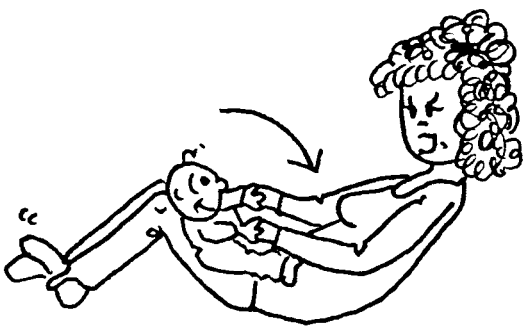
Physical: To strengthen the mother's abdominal muscles.

Technique

1. Assume the basic sitting position.
2. Curl the back slightly, making a conscious effort to press the lower back into the floor.
3. Hold that position while working and tensing the muscles of the abdomen. Tap your feet rhythmically on the floor.
4. Clap your hands with the baby's, snap your fingers, talk or sing to the baby not only to keep her involved, but to make certain that you are not overextending yourself.
5. Hold for a count of 8-12 beats and then, if your abdominal muscles are tiring, come back to an upright sitting position, spread your legs and tip the baby forward in between

your legs (making sure she is properly supported) while you relax these muscles and your lower back.

6. Repeat for a total of 2-4 times.



Exercise C-7 See Saw

Benefits

Relational: To experience a different balancing sensation along with continued close contact.

Physical: To stretch the mother's hamstring muscles and the muscles of the calf.

Technique

1. From the basic sitting position, tuck in one leg so that the foot is resting comfortably on the upper thigh of the opposite leg.
2. Holding the baby, lift the weight off the lower spine and rotate the body in the direction of the leg being stretched.
3. Place the baby on the leg, as close to the ankle as possible and stretch the body to meet the baby. Concentrate on bringing your chest to your knee, keeping your head up and looking at the baby, smiling and talking.
4. Hold the stretch for 8-12 beats and then repeat the exercise on the opposite leg.

5. Repeat the sequence 1-3 times.

Exercise C-8 Foot Flexors

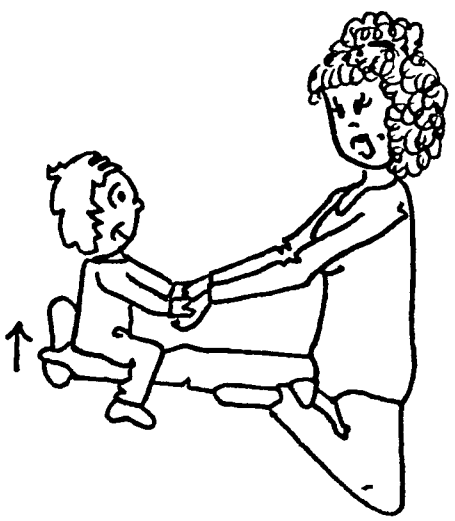
Benefits

Relational: To provide a different balancing sensation with continued close interaction.

Physical: Strengthens the mother's quadricep muscles and those of the lower front of the leg. Also helps to loosen and mobilize the ankle joint.

Technique

1. Assume the see saw position, baby on or close to ankle.
2. Alternate pointing and flexing the foot, tensing and attempting a slight raising of the leg.
3. Hold each extension or flexion a minimum of 6-8 beats and between each set rotate the ankle in a clockwise and then a counter-clockwise direction for 6-8 beats.
4. Do two sequences on one leg and then move to the opposite leg and do two sequences.
5. Repeat if desired.



Exercise C-9 Row Your Boat

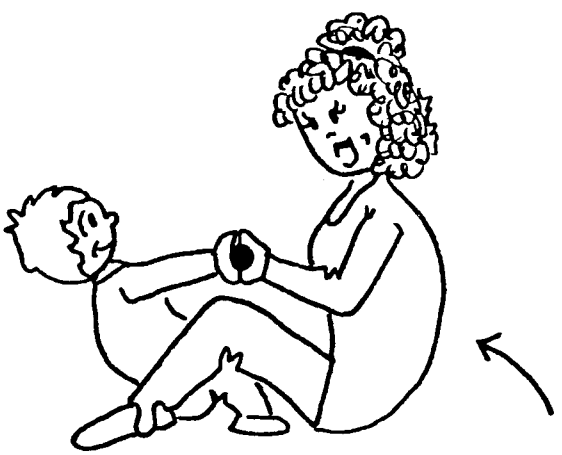
Benefits

Relational: An exciting variation of the "peek-a-boo" game, develops spatial relations within a "play-time" context.

Physical: For the mother, this exercise strengthens the abdominals and the lower back and stretches the muscles of the inner thigh. For the baby, this exercise strengthens the back and stomach muscles and helps to develop grasping ability.

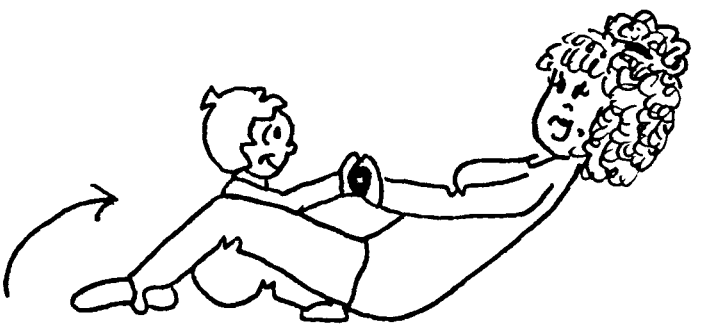
Technique

1. Assume basic sitting position and move legs apart, keeping knees slightly bent. If the baby is strong enough to sit unaided, place him on the floor facing you. If not, hold him on your lap, either facing in or out.
2. The child who can sit alone is encouraged to do so while holding a 2-3' length of doweling which you are also holding. With a younger child, the dowel can either be eliminated



from the exercise or you can encourage him to hold on to the dowel from his position on your stomach.

3. Take turns (you and the baby) "curling" back onto the floor from a sitting position. Make sure that you are curling your spine onto the mat and encourage your baby to do likewise by making sure that the movement is done slowly and the dowel is kept no higher than the baby's shoulder height.
4. When it is your turn to come up, encourage the child's participation in the game by playing peek-a-boo ("I see you") or other appropriate games.
5. Repeat 8-12 times minimum; longer if interest and energy persist.



Exercise C-10 Tip Your Boat

Benefits

Relational: To allow the child to experience the sensation of orientation to a different placement of the body in space.

Physical: Stretches the internal and external oblique msucles of both mother and child; also stretches the adductor muscles of the inner thigh (for the mother) and helps to develop the child's grasping ability.

Technique

1. Assume the "Row Your Boat" variation of the basic sitting position.
2. If you are working with an older child, have her face you and alternate stretching from side to side while you are both holding on to the dowel (Note: this means that the dowel will be higher on the side being stretched and lower on the same side as the direction of the stretch).

3. With a younger child, move your body from side to side with the child sitting on your lap (encourage her to grasp the dowel). Remember to talk or sing to the child.

4. Repeat side to side, slowly and rhythmically, 8-12 times on each side.

Note: With this exercise, unlike "Row Your Boat" where you are working the abdominals, it is possible to keep the knees as close to the floor as possible; it is not necessary to keep them bent. This will give an even more effetive stretch to the muscles of the inner thigh.

Exercise C-11 The Mountain

Benefits

Relational: To allow the child to experience a variation in spatial relations and balance perspective.

Physical: To stretch the muscles of the inner thigh of the mother and to strengthen her pectoral muscles and the muscles of the arms.

Technique

1. Assume the basic sitting position.
2. Place the soles of the feet together in such a way that a stretch is felt in the muscles of the inner thigh (pull the feet as close to the pelvic area as necessary to feel the stretch, but do not go past the point of comfort).
3. Hold your baby under her arms in front of you and slowly (with resistance) lift the baby as high as you comfortably can. When you have reached your maximum height, hold the baby there and involve her in the activity using appropriate verbal cues

(e.g. "Look how high you are!")

4. Slowly lower the baby, give her a big cuddle and repeat a minimum of three times.

Exercise C-12 Tailor Sitting/Frog Kicking/Bicycling

Benefits

Relational: Allows close contact and kinesthetic stimulation while engaging in a play activity.

Physical: To improve the mother's hip flexibility and to stretch the muscles of the inner thigh. To improve the flexibility of the child's hips and back and to prepare for crawling.

Technique

1. Assume basic sitting position.
2. Cross your legs in front (tailor fashion) and place the baby in front of you. A variation of this exercise for an older child might be to encourage the child to sit the same way, stretching his upper body over to meet yours while you alternate doing the same thing to him.
3. Lie the baby down on her back, grasp the legs and move them in a bicycle motion. Turn the baby over on her abdomen and push her knees up along the floor to a bent knee (frog)

position. Return her feet together with her legs straight.

4. Repeat bicycling 8-12 times, frog kicks 8-12 times and relax and cuddle. Repeat the series a maximum of 1-3 times.

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Exercise D-1 The Back Flattener

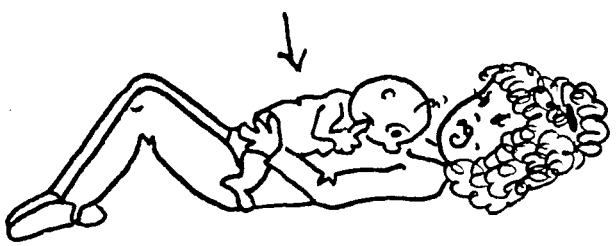
Benefits

Relational: Relaxation and Contact Time.

Physical: Strengthens the mother's abdominal and lower back muscles.

Technique

1. Assume basic lying position.
2. Hold a young baby close to your chest, or have an older child sit on your abdomen.
3. Press the small of your back into the floor and hold for a count of 8-12 beats, tightening your abdomen in the process. Count the hold out loud.
4. Release slowly, relax and cuddle your baby.
5. Repeat a minimum of three times.



Exercise D-2 Diagonal Roll-Ups/Arm Raises

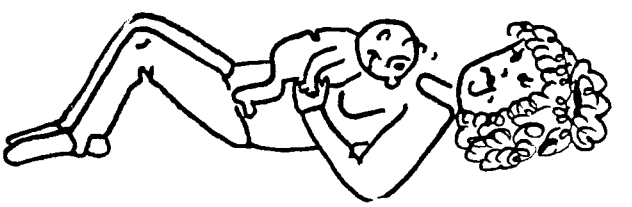
Benefits

Relational: Relaxation and contact time in addition to language awareness.

Physical: For the mother, this exercise strengthens the abdominal muscles. For the child, the exercise helps to straighten and strengthen the arms.

Technique

1. Assume basic lying position.
2. Sit the child facing you on your abdomen with her head resting on your knees.
3. Slowly roll up to a sitting position and, as you are rolling up, raise your child's right arm above her head with your right hand while you rotate your trunk slightly to the left. Use the appropriate verbal cues where appropriate (e.g. up, down, left, right).
4. Repeat with the child's left arm and your left hand.
5. Do 8-12 roll-ups on each



side; repeat the series only if energy and enthusiasm permit.

Exercise D-3 The Pelvic Clock

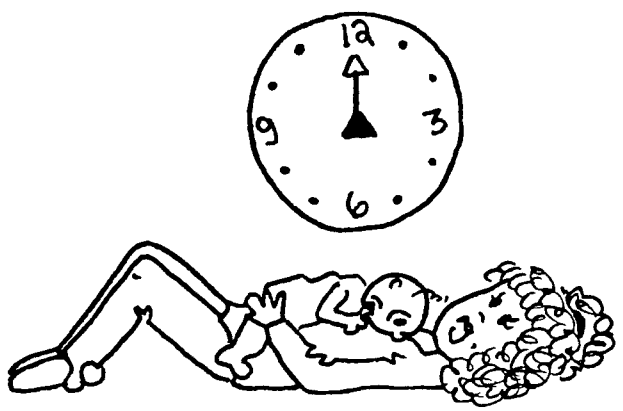
Benefits

Relational: Relaxation and contact time with slight rhythmic movement.

Physical: For the mother, this exercise strengthens the muscles of the lower back and the abdomen. It also helps the mother to be more aware of and able to differentiate the pelvic area.

Technique

1. Assume basic lying position with baby resting comfortably on the stomach or sitting on the abdomen if preferred by a child old enough to be able to sit unassisted.
2. Imagine that your pelvis is a clock. The top of your pelvis would be 12 o'clock, the bottom would be 6 o'clock, the right side would be 3 o'clock, and the left side would be 9 o'clock.
3. Begin pushing your pelvis into the floor in the following sequence (or make up one of your own as long as it involves the full

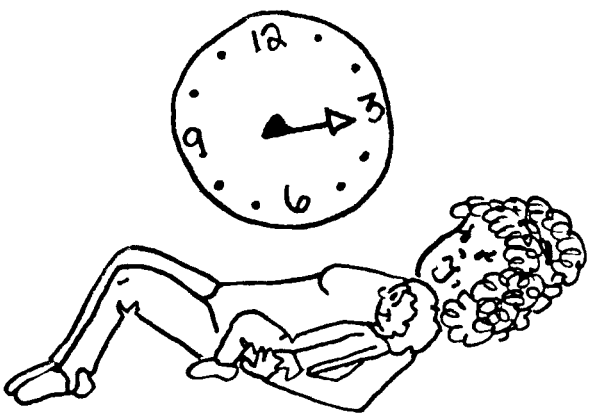


range of motion); 12,6,3,9

(repeat) 12,6,9,3 (repeat) 12,3,6,9 (repeat) 12,9,6,3 (repeat). Count the numbers out loud for the benefit of both yourself and the baby.

4. Go right around the clock (counting 1-12). Repeat, reversing the numbers (i.e. counting 12-1).

5. Repeat the entire sequence 1-3 times. This is a gentle yet effective exercise.



Exercise D-4 Sit-Ups/Push-Ups

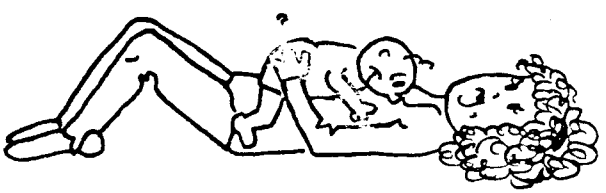
Benefits

Relational: Achievement and warm contact within a "play-time" atmosphere.

Physical: Strengthens the mother's neck and abdominal muscles while strengthening the back, neck and arm muscles of the child.

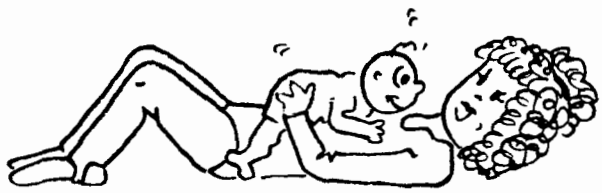
Technique

1. Assume basic lying position.
2. Lay the baby face down on your abdomen with his head on your chest. Lift your head to look at him and talk to him. Stroke his back to encourage him to arch his back and push up with his arms. An older child can be verbally encouraged to use his arms.
3. To intensify the abdominal strengthening effect, lay the baby on the floor between your legs. Tell an older child that you are goig to have a game of "Peek-a-boo". Do a partial sit-up while reaching for your child. Talk to your child to encourage him to



push up on his hands.

4. Gently roll back down, relax, and repeat a maximum of 8-12 times.



Exercise D-5 The Spine Lift

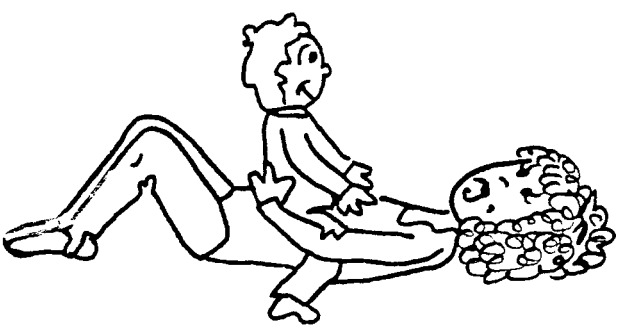
Benefits

Relational: Provides a balancing experience and a variation in spatial orientation for the child within the context of a warm relationship.

Physical: Strengthens the mother's buttocks, stomach and thigh muscles.

Technique

1. Assume basic lying position with your baby lying on your abdomen (a snuggly or other securing device may be helpful with a younger baby). An older child may wish to straddle the abdomen.
2. Visualizing the individual vertebrae of the spine, with knees bent and firmly planted on the floor and hands supporting the child only when and where necessary, gradually lift the spine off the floor, one vertebra at a time, taking 8-12 counts to achieve your maximum extension.

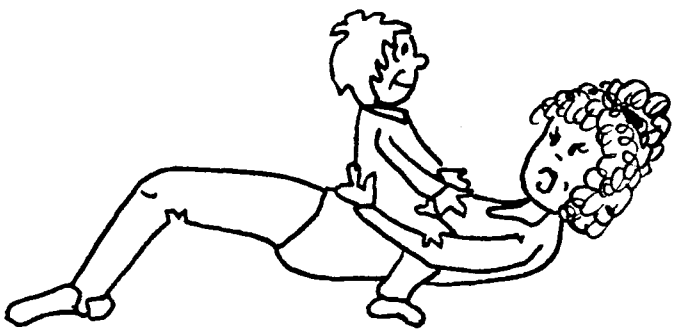


3. Hold your maximum extension for 8-12 counts while you tighten (in sequence) the

muscles of the buttocks, thighs and abdomen. Release the tension gradually.

4. Lower the spine gradually (one vertebra at a time) taking 8-12 counts to reach the floor. Cuddle your baby and relax.

5. Repeat 1-3 times, or more if it continues to be fun for you both.



Exercise D-6 Circus Tricks

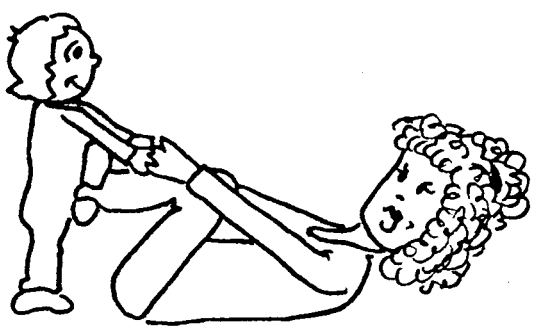
Benefits

Relational: Provides a balancing and spatial orientation experience.

Physical: For the mother, this exercise stretches the hamstring muscles while strengthening the pectoral muscles and the muscles of the arms. For the child, the exercise will aid in developing overall body tone due to the effort involved in maintaining the position.

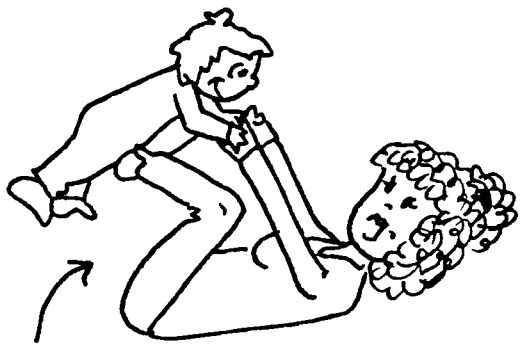
Technique

1. Assume basic lying position.
2. Raise legs and place your baby or child so that he is being supported by the soles of your feet. You support his upper body with your hands.
3. With words of reassurance and encouragement, raise and lower the baby's body. Remember to consciously push your lower back into the floor.
4. Repeat for 8-12 counts, lower the baby, relax and



cuddle him.

5. Repeat a minimum of 1-3 times; longer if interest and energy continue.



Exercise D-7 Side Bends/Knee Bends

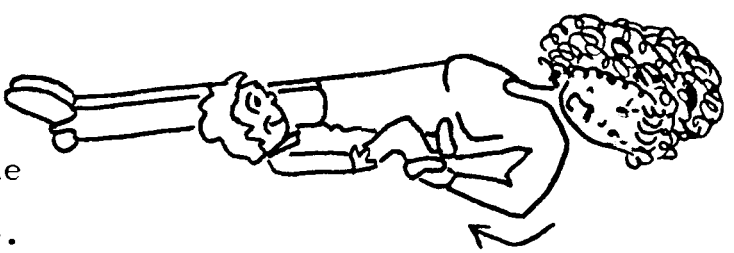
Benefits

Relational: Relaxation and close contact time.

Physical: Strengthens the mother's side and waist muscles while increasing the flexibility of the child's knees and hips.

Technique

1. Assume basic lying position. Taking special care to press the lower back into the floor, straighten the legs.
2. Lay your child on your right side, his feet at your waist, his head at your knees.
3. Grasp the child's left foot with your right hand.
4. Slide your head and shoulders along the floor as you bend sideways toward your child while bending her knee toward her chest. Slide back gently and repeat 4-6 times.
5. Relax, and then repeat the exercise on the left side.



Exercise D-8 Leg Raises/Airplane/Pelvic Tilt

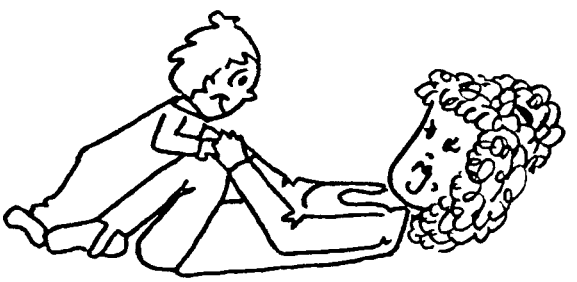
Benefits

Relational: An experience in rhythmic variation in spatial relations.

Physical: This exercise will tone the child's back muscles while strengthening the calf, quadricep and abdominal muscles of the mother.

Technique

1. Assume basic lying position.
2. Raise your thighs so that your lower legs are parallel to the floor. Place the child on your shins and raise and lower your legs. You can hold onto the child but, if she is old enough, encourage her to hold on for herself. Hold her arms out as you straighten and bend your kneees.
3. Repeat this exercise for 8-12 counts and then move the child to the abdomen, supporting her head if necessary. Tilt your pelvis three times and then lift and lower your hips



three times to bounce the child. Repeat. Repeat the sequence 1-3 times.

4. It is safe to do this exercise with the head on the floor if continual effort is made to press the small of the back into the floor, but raising the head will insure back safety and also turn the activity into a more intense abdominal exercise. If this puts too much of a strain on the neck (and the baby can support herself) lace the hands behind the head for support.

Exercise D-9 Scissors/Flutter Kicks

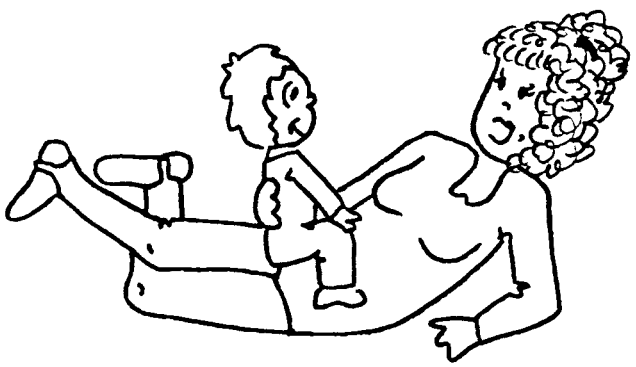
Benefits

Relational: To experience continued closeness while relating to alterations in spatial orientation.

Physical: To strengthen the adductor and abductor muscles of the mother's inner and outer thigh.

Technique

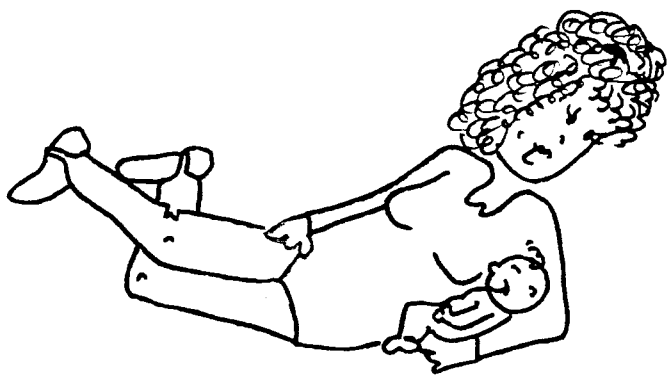
1. Assume basic lying position and rotate onto one hip. Support your child on your hip. Lie your baby beside you.*
2. Supporting child with upper arm (if necessary), raise and lower the top leg 8-12 times. Relax. Move the legs forward and back in a quick short movement to aid in the relaxation (8-12 times).
3. Turn onto the other hip and repeat the sequence. Alternate pointing the toe and flexing the foot.
4. Repeat the series 1-3 times.



Note: In this exercise, flinging the leg as high as you can will

not produce any beneficial results and may even be harmful. Strive for a careful positioning of the leg; do not be concerned if you cannot lift it very high.

*Cuddle your baby with your supporting arm.



Exercise D-10 Side Leg Lifts

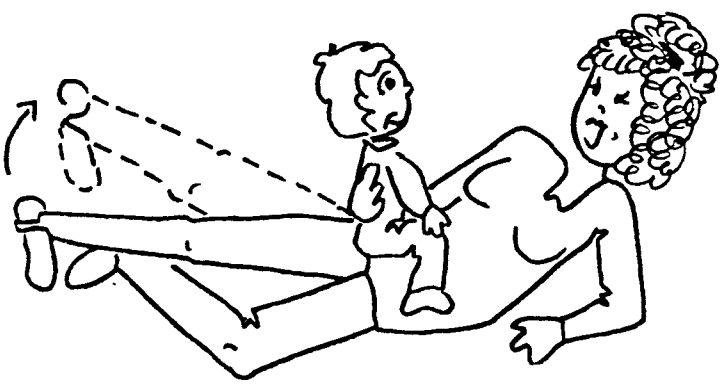
Benefits

Relational: Provides a close contact time for a younger child and an experience in balancing for an older child.

Physical: Strengthens the mother's hip, butocks and thigh muscles.

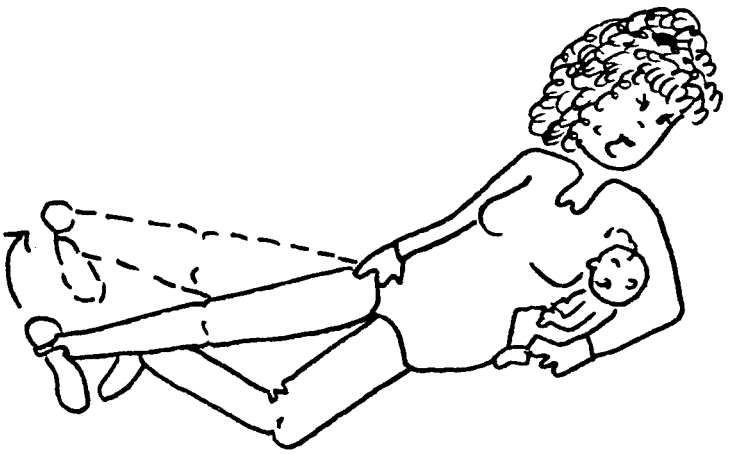
Technique

1. Assume basic lying position, rotating over to one hip and making sure that your hips and shoulders are in a straight line. Keep the lower leg bent.
2. Encircle your baby with your lower arm and place an older child so that he is straddling your waist.
3. Place your upper arm in front of you for support (to insure that you do not rotate forward). Keeping the upper leg straight, raise and lower your leg for 8-12 counts. Keep the foot flexed and the toe pointing down.
4. Bend the upper leg at the knee, place the foot in front of you and raise and



lower the bottom leg 8-12 counts.

5. Repeat the series 1-3 times.



Exercise D-11 Tip the Bicycle

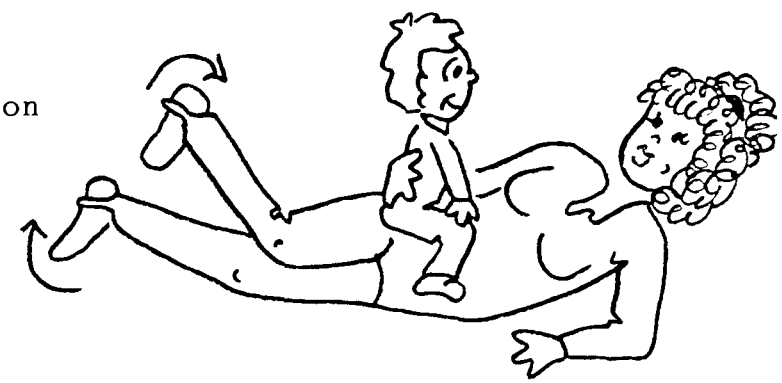
Benefits

Relational: Similar to the bicycling exercise (C-5) but orients the baby to a different type of stimulation in position. It is also more of an experience in balancing.

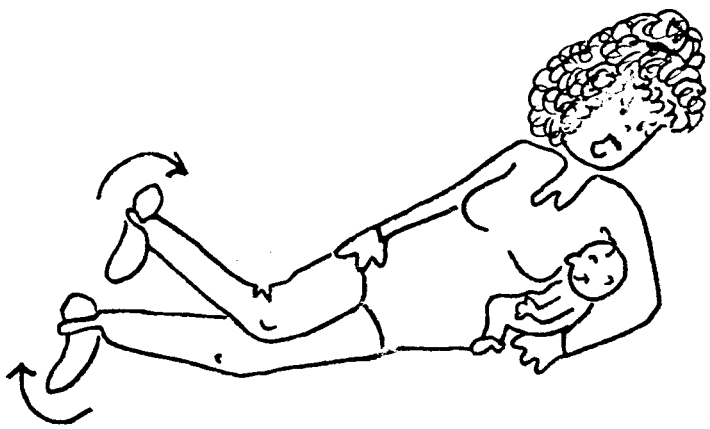
Physical: Same as bicycling exercise (C-5) with an additional toning effect of the waist and outer thigh muscles for the mother.

Technique

1. Assume basic lying position.
2. Rotate the pelvis onto one hip and support yourself on that hip with the arm on the same side, elbow bent.
3. Support your baby with the opposite arm on your hip or waist. Lie a younger baby beside you and cuddle him with the supporting arm.
4. Continue a bicycling motion for a maximum of 8-12 counts, or as long as you feel comfortable.
5. Repeat the motion on the opposite side.



NOTE: This exercise is somewhat more difficult to execute than simply "riding" the bicycle and for this reason may not be sustained for as long. If it is too uncomfortable or the baby does not seem to enjoy it or has trouble balancing, go on to another exercise and try it again another time.



Exercise D-12 Baby Relaxation

Benefits

Relational and

Physical: To allow the child's system to return to its normal state.

Technique

1. Lie your baby in front of you in a comfortable position. Make sure that he is warm and as free from distraction as possible.
2. Begin at the face and pat and gently massage the skin down the arms, over the chest, abdomen and buttocks area. Apply slightly more pressure over the abdomen to try to work any trapped gas down to where it can be expelled. Keep the strokes slow and smooth and, if you talk to him, keep your voice low and calm. Turn him over onto his abdomen and massage his back, finishing with his legs.
3. It may be quite difficult to introduce this activity to an older child if she is not accustomed to it but try it any way. Don't aim for a perfect experience; just do whatever she seems

to like for as long as she seems to like it.

NOTE: If you decide to use oil for this experience, take the baby's clothes off if possible and use an edible vegetable oil rather than baby oil which is petroleum based. Sometimes, if the baby cries during this experience, it is his/her way of discharging tension and should just be allowed to happen. You will be the best judge of your child.

Exercise D-12 Progressive Relaxation

Benefits

Relational and

Physical: To allow the mother's system to return to its normal state.

Technique

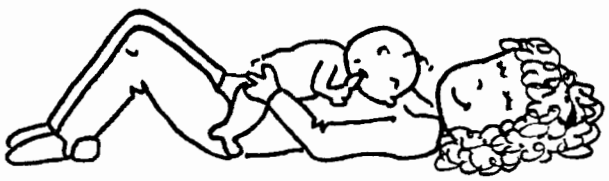
1. Assume basic lying position with child lying on the stomach. If an older child refuses to cooperate, do the exercise alone and let him go his own way (if you can). He may just return thinking that you are doing something that looks like fun; in any case, it would be pointless to try to force him.
2. Checking to see that the lower back is pressed into the floor, inhale deeply, taking a count of 4 full beat to completely fill your lungs with air. Hold the air in your lungs for a count of 4 beats and then gradually (taking 4 more counts) expell all the air from your lungs. Repeat a minimum of 4 times.

3. Progressively tighten the following areas of your body: feet, calves, knees, thighs, buttocks, abdomen,

chest, back, shoulders, arms, hands, neck, face, head. Hold as much tension as possible in your entire body for a count of 6-8 seconds.

4. Release the tension with a reverse wave of relaxation from your head to your fet.

5. Repeat.



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