

MUSCULAR ACTIVITY IN POSITIONS ALLOWING GOOD ALIGNMENT DEVELOPS GOOD HABITS OF COORDINATION AND THE MUSCLE STRENGTH NECESSARY TO MAINTAIN GOOD ALIGNMENT IN MORE DIFFICULT POSITIONS.

See Preface.

Every child, in his earliest years, is interested in discovering for himself how best to balance and move his body. Nature endows him as a baby with structural units (bones) through which to learn to balance his weight; and with activity interest (expressed through muscles) to move these units. Nature starts him in the horizontal position *his skull* position. This is the easiest one in which to balance the body weight because the work is done by the heavy part of the body. The spinal column is supported in a lengthwise fashion and the organic weight is distributed over a large base.

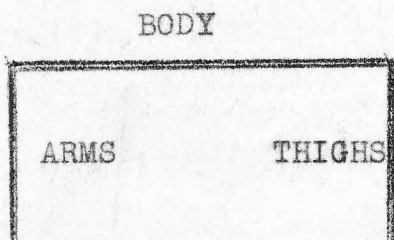
The newborn baby begins movement in this position by squirming and wriggling. In this way he acquires the muscle strength necessary to change his balance from that of lying on his back to that of lying on his side, or, when placed on his side, to change to that of lying on the front or back. If his environment is favorable, early in life he develops this action until he is turning his body to either side as well as to the back and front. From this he advances into one phase of early locomotion, sideways rolling.

A child's body proportions are especially adapted to rolling. The head is large, the legs are short, the body rounded and the muscle structure very pliable. The rolling action develops the deep muscles of the back, abdomen, thighs, and shoulders, and thereby lessens the tendency to lordosis (sway back), abdominal protuberances, uneven hips and shoulders, and poor head carriage. As the body balance is changed from the back of the body to the side, to the front of the body, etc., all of the muscles of the heavy part of the body are being exercised. In this way back muscles develop sufficient strength to maintain an erect spine and well-balanced head; and the deep abdominal muscles become strong enough to furnish good organic support and the straighter front line that is so much desired.

The rolling action is the easiest one in which to relate all parts of the body. There is easy coordination of the legs with the body center. Because the three joints of the legs — thigh, knee and ankle joints — can be maintained in a good alignment to one another and to the back, there is brought about a well-rounded action of the entire musculature of the legs and feet; this helps to develop the muscle strength and good habits of coordination necessary for the maintenance of straight legs and strong ankles and feet.

The backward roll (1), more commonly known as the backward somersault, is a much more difficult form of rolling than is the side roll. The easy portion of it used in the play "Humpty Dumpty" is of great value in the development of the back, abdominal, pelvic and thigh muscles. The action consists in allowing the body to fall rhythmically backward from a sitting position on the floor to that of lying on the back and then returning to the sitting position. It is quite a feat to the child of from one and one-half to three years of age and to do it rhythmically, with the body and legs coordinating well, will require considerable practice by the adult as well as the child.

Another activity in which it is easy to support the body weight is that of crawling. The horizontal position taken



in the crawling action gives the body a large base of support by means of four uprights. The spinal column is well supported in a way that gives length (erectness). The action of the thighs in the all-fours movement is

especially good for the development of the pelvic (deep abdominal) and thigh muscles. It is most essential that these muscles be well developed since, to maintain an erect back, straight abdominal line, even hips and shoulders, well-supported chest

(1) The forward roll should not be taught to young children since the head is too large to allow the body weight to be taken by the upper back and shoulders as it should be.

and good head-carriage in the erect position, there must be good strength of support in the lower mid-area of the body.

The crawling action develops a sense of movement from the center of the body; the uniform functioning of the arms and legs carries an interplay of movement back and forth through the body that instills good coordinated habits. Sensory experience of the crawling activity is vivid to most children because they are accustomed to its use in undirected play. However, it is only the well-relaxed child who crawls with a well-coordinated and rhythmical motion, since the average child's motive is to cover the ground rapidly. To aid these children in improving their coordination, and to develop the muscle structure necessary for this improvement, slower crawling should be encouraged.

Crawling backward action will aid in this. It is less familiar to the child and he is less likely to associate it with rapid motion. The action is often employed by the baby before the forward crawl. In the movement backward the heavier and pelvic end of the body leads. This centers the weight in the pelvis thereby stimulating the action of these muscles.

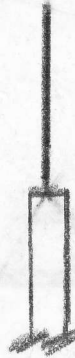
Crawling hands and feet also encourages slower crawling because it is a more difficult form of crawling for the average child. A few children before walking become so proficient in the movement that they can move rapidly in this

position; but these children have unusually well developed back and pelvic muscles. The action is particularly good for the development of these muscles, and also those of the front of the thighs, front of the legs and feet.

Too much time or too long periods spent by the little child in the more difficult positions of sitting and standing increases the tendency to lordosis (sway back), abdominal protuberance, uneven hips and shoulders, and poor head carriage. The vertical position taken in the standing

BODY

Legs



action gives a small base of support for the body. There is a long line of weight to be maintained on an end supported by only two uprights. These uprights, in turn, to furnish a good base of support, must maintain the straight alignment of several joints.

The sitting position relieves the strain of the body weight on the joints of the knees and feet. But to maintain the back erect with the added weight of the shoulders and head there must be good development of the muscles situated near the base of support and close to the center of support. These are the pelvic (deep abdominal), thigh and spinal muscles. To carry on the development of these muscles that has been acquired in the rolling and crawling positions children should

use sitting positions that stimulate their action. There are six positions that the body may take in sitting on the floor.

They are:

1. Sitting with legs straight out. *Turning round*
2. Sitting between the heels. *Bowing*
3. Sitting with the knees flexed. *H. D. - rocking*
4. Sitting with legs crossed.
5. Sitting with one leg flexed and one leg crossed under.
6. Squatting.
7. *Sitting with both legs to side*

Sitting with legs straight out and sitting between the heels are the usual sitting positions taken by the child of under two years. In the sitting between the heels position it is easy to maintain the body balance and keep the body proper erect, since this position encourages the use of the pelvic (deep abdominal), lower back, thigh and spinal muscles. For this reason it is an excellent position for the child to take. His legs are short and his muscles pliant and allow the joints of the legs to easily take the position. It is a more or less difficult position for the adult whose legs are longer and whose muscles are less supple than the child's. In sitting with legs straight out and sitting with the knees flexed (a later age development of the first) it is difficult to maintain the body balance and keep the body proper erect. There is a tendency to round the back, protrude the abdomen, droop the shoulders and

head, and depress the chest.

Sitting cross legged is perhaps the usual position taken by the adult sitting on the floor. Where there is good development of the pelvic (deep abdominal), inner thigh and spinal muscles, as among the people of the Orient, the body is well coordinated and maintained in this way. But when there is not sufficient development of these muscles, the body quickly tires in this position and tends to allow the back to round, the abdomen to protrude, the shoulders and back to droop, and the chest to become depressed.

In sitting with one leg flexed and one leg crossed under, it is easier to maintain the body balance and keep the body proper erect than when both legs are crossed or flexed. There should be frequent alternation of the legs in this action, however, to avoid uneven development of the muscles of the right and left sides of the body.

The squatting position is one much used by the child from about two years of age on. His legs are short, and the muscles of his legs sufficiently pliant to allow the legs to easily take and maintain this position. It is an excellent position for him to take since it encourages the use of the pelvic (deep abdominal), inner thigh, and spinal muscles, which aid in maintaining the body balance and keeping the body proper erect.

Children should not be expected to maintain these positions for many minutes at a time. In undirected play the

*Sitting in chair - seat height level than persons lower leg seat depth less than upper leg. Feet on floor, in front of chair. Back support at each end of lumbar curve. (over)*

child often takes the sitting between the heels or the squatting position for comparatively long periods. These need never be interrupted since the positions are so well adapted to the child's proportions and strength that the length of their maintenance can well be left to his own physical inclination.

In directed play whenever it is desired that children refrain from moving, as in singing or listening to stories, the teacher should suggest a very frequent change for the whole group from one sitting position to another.

The child of four years and over will be helped by more diversified action in the standing position. With the attention centered so much of the time upon carrying the body in a forward direction, the abdomen and chin tend to be thrust forward, thus increasing the depth of the spinal curves at the waistline and neck. By reversing the direction of movement and walking backward for a short distance, the opposite points will be emphasized, i.e. the lower back just below the waistline, and the back of the head will tend to lead. In this unaccustomed position weaker muscles are stimulated to aid in maintaining the body balance, which brings about improved coordination and body carriage. Walking backward action is also helpful in bringing about a more even development of the muscles of the legs and feet, as well as developing freer motion at the thigh and ankle joints.

Walking or sitting with a weight on the head directly stimulates the body muscles to lengthen the back and make it



erect. The action is excellent for strengthening back muscles and improving the balance of the head and upper body. A soft substance and one that shapes to the top of the head is better than a hard, flat object. A very light weight should be used with little children since these muscles tire very quickly and any overstraining of them will be likely to set up a dislike for the action.

Jumping is one of the erect activities that is particularly good for body development. In this action the crouch (pelvic and thigh) muscles must be employed, which directly stimulates their use and consequent development.

In the circle holding hands position used in so much of the nursery school play and kindergarten games, adults and older children should be careful not to pull the smaller child's hands up to a level easy for themselves; but to lower their arms to a level easy for the child. When the arms are pulled upward it is less easy to maintain the body balance, and, since the child's crouch muscles are weak, he should not be stimulated to assume positions that are unfavorable to their development.

#### CORRECT POSITIONS FOR REST.

There are three positions in which the body best relaxes because in these the bony structure adapts itself more readily to assisting in its support. These positions for resting help to control the body weight near the center of the body where it can be easiest maintained. They are:

1. The position of lying exactly on the back with

the knees easily flexed so that the feet rest flat on the surface of the bed or floor.

This position is especially helpful for relaxing the muscles that hold the back in too pronounced an inward curve at the waistline, thereby increasing the tendency to lordosis and abdominal protuberance.

2. The position of lying exactly on the front of the body and thighs with the feet extended and the toes pointing inward or straight ahead. The arms should rest at the sides of the body with the palms turned upward.

This position helps to relax the muscles that hold the upper back in too pronounced an outward curve; it straightens and lengthens the entire spinal column.

This position needs a very firm surface such as the floor. It is important that the springs and mattress of a child's bed should not sag in the middle, otherwise lying on a bed in this position will increase the tendency to sway back, abdominal protuberance and generally poor posture. And for the same reason a pillow should not be used under the head in this position since it would place the upper body on a higher level than the rest of the body.

3. The position of lying exactly on the right or left side of the body with the thighs more or less flexed to the body.

In this position the rib carriage is lengthened downward at the sides and back of the body, thus strengthening the

deep abdominal and lower back muscles. Balancing of the structure on its side aids in keeping the body rounded and the hips narrowed. *amplify*

## SIDEWAYS ROLLING

(Directions for parent or teacher)

1. Lie on the back on the floor with the knees easily flexed (bent) so that the feet rest <sup>flat</sup> on the floor. The arms should rest at the sides of the body.
2. Relax the shoulders, neck and buttocks until the body weight is centered in the lower middle area of the body between the hips. KEEP THE ATTENTION ON THIS ALL THROUGH THE EXERCISE.
3. Relax one arm and bring it close to the side of the body as you slowly roll the body onto that side. Let the other arm fall slowly upward and over the face as you progress.
4. Allow the legs to slowly straighten as the body continues to roll to the abdomen.
5. As the rolling continues to the other side and then to the back allow the legs to slowly draw up again <sup>alternately</sup> to Position 1. (This completes one revolution or sideways roll of the body). The arm position will not change until the body starts rolling in the reverse direction. The play being dramatized will determine the number of rolls in one direction before rolling the reverse way. one to six rolls is the usual number.
6. Reverse the arm in Position 3 in order to roll the reverse direction.

It will help the adult to roll with ease if the rolling action of a bag of sand is imitated in this movement.

## SIDEWAYS ROLL WITH LEGS AND ARMS EXTENDED

(Directions for parent or teacher)

1. Lie on the back on the floor with the knees flexed on the abdomen; the upper arms or the arms at full length may rest on the floor at the sides of the body.
2. Straighten both legs and both arms towards the ceiling.
3. Gently scratch the lower back on the floor while you relax the muscles of the shoulders, rib carriage, buttocks and knees. (1)
4. Keep the body weight centered in the lower center area of the body between the hips, as you fall to one side with the legs and arms more or less straight. (the adult's knees will be flexed somewhat because of the length of leg).
5. Return to back position in as easy a way as is possible for the individual.
6. Straighten both legs and arms towards the ceiling as in 2.
7. Gently scratch back and relax as in 3.
8. Keep the body weight centered and fall to the opposite side as in 4.

(1) This does not mean that the lumbar spine should be flat. It means that the muscles that hold the lumbar spine in too great a curve should relax and allow more action in the opposing muscles — the ones that help to keep the lumbar spine in its normal curve. The action of gently attempting to scratch the back on a flat surface will stimulate development of these weaker muscles.

If a person has sacro-iliac difficulty this exercise should be done exceedingly gently at the start until the muscles are strengthened; or not at all.

Rocking back  
and forward  
hands knees

(Crawling Activity)

Crawling Backward

Directions for the Adult

generally

The baby uses this activity before the crawling forward. It is especially good for the development of the pelvic and thigh muscles, because since the pelvic end leads, it centers the weight and thought there, bringing control of action to these muscles. It is most essential that these muscles be well developed, because the sitting and standing positions drag on the spinal curves and pull the thighs out of line.

Directions for Crawling Backward -

Slowly progress in a straight line backward, using the hands and knees in the following order:

2nd  
take out  
" "  
" "

Right knee - Left hand  
Left knee - Right hand  
Right knee, etc.

1st  
put in  
" "  
" "

The hands will just barely clear the floor.

BACKWARD ROLL

*1/4 way*

(Directions for parent or teacher)

1. Sit on the floor with the knees flexed (bent), the feet flat on the floor, and the hands resting relaxed on the legs below the knees. (1)
2. Center the weight in the lower middle area of the body between the hips by relaxing the hands and arms, knees and legs.
3. Allow the hands to release their hold and slide around to the back of the thighs (upper legs) as the body VERY SLOWLY AND RHYTHMICALLY rolls backward to rest on the back. The legs will more or less fold on the abdomen like the blades of a jackknife.
4. With a little kick of the legs and the assistance of the hand-holds on the backs of the thighs roll forward to the sitting position as in 1.

The adult should strive for a slow rate of speed in both the rolling down and rolling up so as to interest the child in going slowly.

It will help the adult to center the action in the deep body muscles and help control the rate of falling if the action of a bag of sand is imitated throughout the movement.

(1) Remove the shoes if the heels are high.



CRAWLING BACKWARD ON HANDS AND KNEES

(Directions for parent or teacher)

1. Position on all fours (hands and knees) with the thighs taking more of the body weight than the shoulders. The eyes should be directed straight down at the floor. The knees should be a hand-span apart, measured from center knee to center knee. (1)  
Each hand should rest on the floor directly under its shoulder with the fingers pointing slightly inward, and the thumb relaxed and close to the palm of the hand. The elbows should be relaxed and slightly bent.
2. Think of the back as broad and flat like a table top, with the head and spine passing in a long, continuous line through its center. Keep a snug abdominal line as does an animal.
3. Creep in a straight line backward by —  
Slowly drawing up the *left* hand and putting it down a few inches to the rear.  
Slowly drawing up the right knee and putting it down a few inches to the rear.  
Slowly drawing up the *right* hand and putting it down a few inches to the rear.  
Slowly drawing up left knee, etc., in above order.  
The action of the left knee with the right hand and of the right knee with the left hand is almost simultaneous, but there is a slight variation in time as will be seen in watching the progression of an animal.

(1) Measure with outstretched tip of little finger to outstretched tip of thumb.