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HABITUAL POSTURES OF SCHOOL CHILDREN

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HABITUAL POSTURES OF SCHOOL CHILDREN

"How use doth breed a habit in a man."
—SHAKSPERE, *Two Gentlemen of Verona*, v. 4.

Habit is the repetition in a more or less involuntary manner of an act originally performed with some degree of volition. Among the forces which dominate human beings, there is none more potent than habit. Education, in essence, is intellectual growth through repetition. The child voluntarily repeats his task, until he is able to recall it with slight volitional effort. With what clumsy fingers the pianist strikes the keys until, by a multitude of repetitions in which brain cells and muscles have co-ordinated, he acquires the facility wherewith to charm his listeners!

The influence of habit upon the development of moral character is well understood by parents and educators. The repetition of physical postures and movements has the power, in a similar way, to modify and recast the shape of the body.

Physical beauty depends largely upon the element of physical symmetry. It is worth while, therefore, to study postures which tend to maintain bodily symmetry, if only for the purpose of enhancing personal attractiveness. Add the further fact, that physical health depends largely upon the maintenance of bodily symmetry, and the subject becomes one of practical importance, not only to parents and teachers, but to all men.

In the following pages I shall present the results of a careful study of the influence of habitual postures upon the shape and health of the body, leaving for the present the other and equally important element of symmetry, namely, the influence of habitual movements. In order to present the subject in a practical manner, it will be necessary to study the mechanics, so to speak, of the various postures which the body naturally

takes, standing, sitting, and lying. By this means we shall be able to decide which postures it is safe to permit to become habitual, and which ones tend to loss of symmetry.

In standing, the lower extremities are placed beneath the trunk in one of three ways. All others in which equilibrium is attained are modifications of these.

First. With both extremities placed evenly beneath the trunk. (Fig. 1.)

Second. With one leg supporting the trunk, and the other thrown forward, as in walking. (Fig. 2.)

Third. With one leg supporting the trunk, and the other thrown to the side. (Fig. 3.)

In the first position, the trunk is evenly poised upon its supports, with all its parts symmetrically placed. This would be a proper one to assume habitually, were it not that it keeps both extremities in muscular activity at the same time, whereas they demand the privilege of working alternately. Involuntarily one support drops out from under the weight, and the position changes to the third, which, as will be shown later, is an objectionable one.

The second position, namely, with one leg in advance of the other, as in walking, permits the body to rest upon one extremity, with very slight reduction of the normal spinal curves. The bones of the skeleton are all so placed in this posture as to retain the muscles in normal symmetrical relations as regards the distance between their origin and attachment, the direction of their fibers, etc. The backward movement of the head and shoulders to balance the weight of the forward leg, calls into action the muscles of the back and shoulders, while those upon the front of the body are placed in an equal degree of extension. The influence of this is to place the chest in a position favorable to respiration; hence this posture is conducive to chest expansion. The head cannot drop to either side without disturbing the equilibrium of the body, and the soft tissues of the face retain their symmetry. The ease with which the weight of the trunk can be transferred from one extremity to the other, makes this a

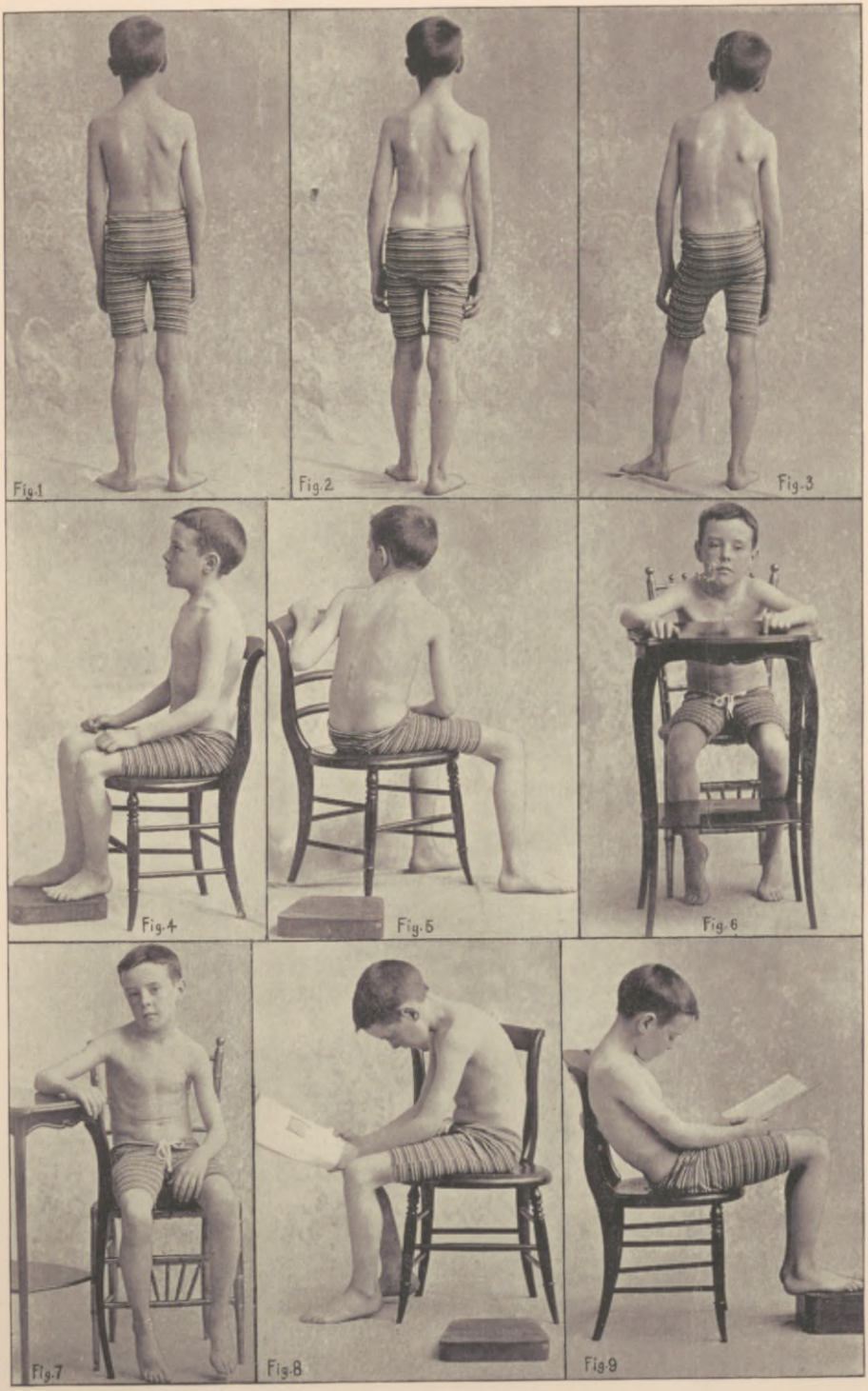
Fig.1
Fig.2
Fig.3
Fig.4
Fig.5
Fig.6
Fig.7
Fig.8
Fig.9

position which can be retained a long time without undue fatigue, and which renders it favorable to the making of gestures and the use of the voice; hence it naturally becomes the favorite posture of the orator and the public singer. Because of the narrow base which it gives to the body, however, and the corresponding sense of insecurity which the individual unaccustomed to it feels, this is not a posture naturally chosen; but with a stable foundation beneath the feet, it is one easy to assume, and children should be taught to fall into it habitually.

The third posture in standing is the one most commonly chosen, doubtless because of the broader base which it gives for the support of the trunk when needed. The change, also, from the walking posture to this, is so radical that it gives a sense of rest most grateful to the tired tissues.

The best way to make a critical study of this position with relation to its healthful tendencies or otherwise, is to examine an individual whose occupation has, for several years, necessitated the standing posture, and who has acquired the habit of dropping upon one and the same leg.

Understanding symmetry to mean "exact accordance of the two halves of one body," we place the person to be studied evenly upon both feet, and compare the two sides. We find in most cases the following variations, more or less well marked according to the general health of the individual, and the length of time the posture has been habitual: (In robust persons the muscles and soft tissues are not molded by posture as readily as in the poorly nourished and overworked.)

If the left extremity has been the favorite one (as it often is), the left thigh will measure in circumference a little more than its fellow. The left hip will be found higher than the right, and the spinal column slightly curved laterally, presenting its concavity toward the supported side.

In all cases there is marked projection of the angles of the ribs upon the unsupported side, indicating more or less turning of the bodies of the spinal vertebræ in that direction.

The ribs upon the left side approach each other and the top of the hip, shortening in a very marked manner the body line upon that side; the spaces between the ribs on the right side are proportionately widened, and the lengthened body line lacks the curve presented by the opposite side. The left shoulder is lower than the right; the left hand accordingly reaches a lower point upon the thigh than does its fellow. The head drops toward the left shoulder (to aid the shoulder and arm in balancing the weight of the unused leg), while the chin points in the opposite direction. There is marked loss of symmetry between the two sides of the face, produced by the influence of gravitation and unequal muscular activity. Unmodified by defects of sight or hearing, or by a variation in the length of the extremities, the lines of the face always manifest the following deviations from the normal, in all cases where this position has become a habit: The angle of the jaw becomes the lowest portion of the face, hence the soft tissues of the cheeks gravitate in that direction, producing a rounded contour on the lower side, in contrast with the flattened outline of the opposite cheek. The angle of the mouth usually drops a little; sometimes, however, it becomes elevated instead. The median line of the nose frequently inclines to the left as it approaches the tip, and the nostril is drawn upward, shortening the distance between the angle of the nose and the eye, as compared with the corresponding line on the opposite side. The left nostril is also dilated more than on the right, upon which side the cavity of the nose is somewhat obstructed.

The cheek fold becomes more or less erased on the left (by gravitation of the tissues outward), while on the right the same force deepens and elongates it. The left lower lid is pulled slightly downward, increasing the breadth of the opening at the outer angle of the eye. The same tractile force applied to the right eye upon the nasal side, lengthens, or seems to lengthen, the opening, at the same time widening the space at the inner angle. Hence the left eye becomes oval, and the right eye linear in all marked cases. Lack of

symmetry in the two halves of the face has long been observed by artists and photographers, but the casual observer seldom takes note of it, until his attention is called specially to the subject. The changes in the face which I have here pointed out, are all produced by carrying the head habitually on one and the same side, whatever the cause. Most often, however, it occurs as a result of standing and sitting with the trunk tilted to one side. When asymmetry is produced by defective vision, the face lines differ from those described according to the angle at which the best refraction is obtained.

The neck muscles tell the story of habitual posture more loudly, if possible, than do the lines of the face. Those which are attached to the base of the skull participate most markedly in the changes observed elsewhere.

The external muscles of the skeleton are not the only ones involved in this process of change. Those which move the eyeball are, to say the least, placed at a disadvantage in sidewise postures of the head, certain of them being forced to do more than their share in the work of rotation of the ball. No observations have as yet been made which demonstrate special abnormal conditions thus produced; but it is not unreasonable to include this posture among the causes of eye fatigue.

There is often a demonstrable decrease in the size of the chest on the side of the elevated shoulder, due, doubtless, to the changed position of the ribs and shoulder blade, to which are attached important respiratory muscles.

Shortening of the abdominal wall on the supported side, by approximation of the ribs and hip, displaces the intestines downward, and in the direction of greater space. This is specially injurious to growing girls, because of the unequal pressure thereby placed upon the movable organs within the pelvis. Habitually crowded toward the side of support, they acquire this position permanently, the result of which is an impeded circulation, and a positive tendency to pelvic disease later in life. With this array of facts before us, we recognize in this common posture, namely, with one leg supporting the

trunk and the other thrown out to the side, one which we cannot too strongly deprecate.

In sitting, the body naturally assumes a variety of attitudes, which, for purposes of study, may be classified as follows:

1. With pelvis resting equally upon the chair (or other support), spinal column erect, holding the head poised upon its summit. Arms balanced on the line of the hips. (Fig. 4.)
2. The same position, with shoulders placed diagonally to the transverse diameter of the hips. (Fig. 5.)
3. Body erect with both arms supported. (Fig. 6.)
4. With one arm supported. (Fig. 7.)
5. Arms and head in front of trunk. (Fig. 8.)
6. With pelvis resting on the front of the chair, and shoulders braced against its back. (Fig 9.)

The first of these, like the first and second postures in standing, places the trunk in a symmetrical position. It is one in which gravitation largely replaces muscular activity, therefore it is economic of force. With support applied to the lower part of the back, and below the shoulder blades, it can be maintained a long time without general fatigue. It is, therefore, the position which should be acquired in early life as the habitual one in sitting.

The second posture, namely, with spinal column in rotation, is an exceedingly dangerous one if permitted to become habitual, because it places the bony segments of the spinal column in a position calculated to produce elongation of some of their connecting ligaments, with shortening of others. The muscles of the back are also used unequally, the whole tending toward production of that dreaded condition, lateral curvature of the spine. Too much care cannot be given to the prevention and correction of the habit of sitting or standing with the shoulders out of line with the hips.

The third position, namely, with both arms supported, while it is not especially detrimental to health, in time destroys beauty of figure. The trunk is, in shape, an inverted pyramid, poised upon a pedestal—the pelvis. The arms, attached to its base, act as weights, which, by their adjustments, have

power to bend and mold the pliable, pyramidal trunk almost at will. Suspended upon the side line, they balance each other. Supported, nay, pushed upward by resting upon chair-arms, or desk, they elevate the shoulder blades, with which, by virtue of their intimate union, they are practically continuous. The resultant shape betrays the habit.

The fourth posture in my classification tends to shorten the body line upon the weighted side, with the far reaching results described in connection with the third position in standing. Combine with it more or less rotation of the spine, and this attitude becomes one of serious menace, especially to growing girls.

The fifth position, or that in which the arms and head drop in front of the trunk, is also productive of evil results, if often assumed. In this position the muscles of the chest, after drawing the arms forward, remain in the position of contraction, one which is unfavorable to free inspiration. The shoulder blades are widely separated, with their posterior borders everted. The weight of the head drops upon the muscles which connect it with the spine. These, with other back muscles, become elongated and weakened by this gradual stretching process. The upper antero-posterior curve in the spinal column, under the influence of this posture, deepens, and the obliquity of the ribs increases, diminishing the capacity of the chest, and with it the vital force of the body. Furthermore, this posture tends to fold the body together upon its anterior aspect. The result of this is to crowd the contents of the abdomen backward and downward, with the secondary effect of displacing and deforming the movable and easily molded organs of the pelvis. It is easy to demonstrate, therefore, that the indulgence in this habit of posture in early life, not only produces narrow chests, round shoulders, and drooping head, but much of the ill health to which girls so often become the victims.[1]

With the pelvis slipped forward upon the chair, and shoul-

[1] It is not wise to direct children to "throw their shoulders back," as in attempting to do this they assume a position which they cannot retain involuntarily. They should, instead, be directed to raise the chest, and place the shoulders and elbows upon the line of the hips.

ders braced, as in the sixth position, the weight of the trunk falls mainly upon the sacrum and coccyx. These bones are not sufficiently cushioned by flesh to protect the nerves which lie upon their surface, hence the latter are liable to become injured by the pressure thus applied. In this position, too, the normal curves of the spinal column are replaced by one long one, with its convexity presenting posteriorly. Important muscles and ligaments are thus placed unduly upon the stretch, making permanent curvature of the spine in this direction easy of occurrence in individuals of weak and lax tissues.

The sitting posture, at best, is not a safe one for children and delicate individuals to occupy continuously. The influence of gravitation, however applied to the spinal column, is one which it difficult for so movable a structure to resist; so that the tendency to the production of abnormal curves is always great, and increasingly so the longer the posture obtains.

No one position in bed should be allowed to become habitual. The only one in which all the parts of the body are placed symmetrically (namely, upon the back with a low pillow beneath the head), unfortunately is not conducive to the free circulation of the blood. Side positions interfere more or less with respiratory movements, and the prone position does not allow free access of air to the nostrils; hence the importance of frequent change without indulgence in a favorite posture.

The restless activity peculiar to infancy and childhood is the guardian of physical symmetry during this period. In sleep, as well as during waking hours, the muscles keep busy turning and twisting the little structure in a way our gymnasium teachers might well emulate. Occasionally, a specially "good baby" suffers in shape, because he does not demand for himself the right to kick and cry. Through some physical defect on the part of mother or nurse, infants are sometimes held habitually upon one and the same side. Pressure thus applied unequally to the easily molded bones, is liable to produce one-sidedness of the skull and chest, and sometimes of the pelvis also, which mars the individual through life.

With school work begins confinement within doors, and to the sitting posture, with a subduing of the restless activity so long the child's safeguard. Rarely is the seat assigned the little victim so constructed as to be helpful in maintaining the body in equilibrium. A desk is placed before him, which eloquently offers support, eagerly accepted by one or both elbows, placing his body almost continuously in the third or fourth position of our classification. Should the teacher's desk and the blackboard be at his right or left, as is often the case, instead of in front of him, he is obliged, in order to give her his attention, to twist his body into the second, and most dangerous, of the sitting postures described. The old custom of requiring children to sit sidewise at the desk to write, held the body with the spine placed strongly in rotation.

Relief from the monotony of sitting comes with the call to recitation. Here, perchance, the pupil stands, although, if the opportunity presents to lean against the wall or seat, he quickly utilizes it; otherwise he is sure to swing the body over upon one leg, into the third position of our series. In spite of his teacher's oft repeated command, " stand up," he drops again and again into this posture, until it becomes habitual, with its far reaching evil consequences.

The hands are troublesome members at times, and the disposal of them becomes a vexed question to teachers. The study of our fifth position in sitting, shows that no more serious mistake *can* be made in the schoolroom than to require children to fold the arms across the chest. Folding the arms behind the back, as a change from forward positions, is sometimes restful, but, if long continued, tends to deepen the normal curves of the back.

It is a common practice for children to carry a pile of books upon the arm, to and from school. This is harmful in its tendency, for several reasons: It confines one arm, preventing its easy swing in walking, an important element in equalizing the circulation of the blood. It unbalances the body, making necessary a shifting of the parts to restore equilibrium, thus

placing the trunk in an unsymmetrical position. Most individuals, adults as well as children, acquire the habit of using one arm more than the other, in carrying books, bags, etc. That the habitual weighting of the same side tends to produce deformity, is shown in the figure of the man who has carried a pack on one shoulder continuously.

Nearly all occupations in life present temptations to the body to acquire a habit of posture which, in time, modifies the shape of the individual. The teacher herself, while using her best efforts to train her pupils to right habits of posture, is likely to become unsymmetrical. A careful physical examination made by me of over two hundred teachers (women), revealed the fact that a majority of them had the mark of their occupation stamped upon them, either in the twist of body, which results from standing on one and the same leg, with the other thrown to the side, or the high shoulders and projecting head, caused by sitting habitually in a chair with arms.[2]

The woman who sews by hand acquires a low right shoulder, with head dropped toward the opposite side; while the one who spends many hours each day working on the sewing machine becomes high shouldered and short-necked. The man who stands at his desk all day acquires the same shape, so does the sailor who climbs the mast. The man of letters does not sit over his desk many years without elongating the muscles which attach the head to the spine, thus acquiring the forward poise of the head so often seen in the pulpit and upon the lecture platform. Drug and dry goods clerks, if right-handed, work with the body resting on the right foot. The resultant shape we are all familiar with, if observant. The horse-car driver, the truckman, and even the hod-carrier, all receive in time their trademark.

Since the evil results of habits of posture are so far reaching and so subtle in their influence upon the human body, it becomes the duty, not alone of educators, but of business

[2] Nearly all these women wore corsets habitually; hence, the statement that this garment prevents asymmetry is fallacious.

men who employ large numbers of people, and of architects who plan large public buildings, to make the surroundings of those for whom they are responsible as hygienic as possible.

Chairs[3] and other seats should be provided which help the body to maintain itself in symmetrical postures. They should be so placed as to make it unnecessary to turn the head and shoulders in the act of giving attention. Sufficient space should be allowed for the extension of the lower extremities. Desks upon which the elbows can rest should not be placed before school children.[4]

Workshops should be so planned that operatives can change their work from side to side, or vary it, to prevent them from becoming unsymmetrical.

Furthermore, corrective exercises of three minutes' duration should be given, at stated intervals during the day, in all our schools and workshops, with the definite object in view of preventing loss of symmetry and deterioration of health.

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[3] Dr. William Schulthess (*Zeitschrift für Orthop. Chirurgie*, Bd. I. Hft. 1) describes a seat which he has planned, with special reference to the prevention of spinal curvatures in children. His plan seems to me to embody the fundamental principles involved in the construction of a suitable schoolroom seat.

[4] It goes without saying, that the schoolroom desk cannot be dispensed with. It, however, should be so constructed as to be a help and not a hindrance to the symmetrical growth of the pupil. To be of assistance, it should consist of two parts; a writing table and a reading desk. The former should be low, having a flat top, and ample space beneath for the knees. Moreover, it should be only long enough to accommodate the copy book.

The reading desk (which might consist of a section of the table), should be adjustable, swinging upward and forward to place the type to be read at the right focal distance for each individual pair of eyes, thus preventing the necessity of dropping the head and shoulders forward in study.

Such a school desk would leave the arms free, maintain the body erect, and prevent eye-strain.