POSTURE EXERCISES

A HANDBOOK
FOR SCHOOLS AND FOR TEACHERS
OF PHYSICAL EDUCATION

By

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and

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LETTER OF TRANSMITTAL

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, September 11, 1926.

Sir: Transmitted herewith is a handbook of posture exercises by Dr. Armin Klein, director of the posture clinic of the Massachusetts General Hospital, and Miss Leah C. Thomas, director, corrective gymnasium, Smith College. The exercises are intended primarily for schools but are adapted for training groups of children wherever proper direction is available. It is believed, therefore, that this book will be useful because of the growing recognition of the value of a posture program in the school curriculum.

Respectfully submitted.

Hon. JAMES J. DAVIS,
Secretary of Labor.

Grace Abbott, Chief.

Provided by the Maternal and Child Health Library, Georgetown University
POSTURE EXERCISES

A POSTURE-TRAINING PROGRAM FOR SCHOOLS

Correct body mechanics has been taught by orthopedists for many years. The subjects of instruction usually have been individuals suffering from ailments due to continued habits of poor body carriage. The instruction was sought and given only as a means of relief from symptoms referable to deranged physiology. Of course many experienced a cessation of symptoms once they learned good posture. Posture training limited to such individuals or small groups, however, represented only a transitional phase. Such work is inadequate to serve the needs of the community because it reaches a relatively small number of persons and because it is corrective rather than preventive. If the acquisition of good posture can relieve certain symptoms and complaints it would seem logical to prevent their occurrence by substituting for the usual habits of poor body carriage new habits of proper body carriage. At least it would seem economical to take the experiences gained and the lessons learned 1 in teaching good body mechanics to individuals and small groups, as in posture clinics, and apply them to larger groups. The best opportunity for this group instruction in good body mechanics is found where the largest numbers come together to be instructed—the schools.

Teaching body mechanics, however, to classroom groups of about 48 children is somewhat more difficult than teaching individuals. The personal contact between the teacher and the child is not so close in large groups in school. The conscious effort of the teacher, therefore, to keep each pupil interested in his individual possibilities must be proportionately greater. But this conscious effort on the part of the teacher must be accompanied by an enthusiasm which will communicate itself to the pupils and inspire each one with the will to acquire good posture. In a class where this has happened the pupils will readily learn to carry themselves correctly.

The acquisition of habits of good body mechanics can come only after prolonged and repeated exercise and practice. The fundamentals must be learned first; other details follow. This is also the method of teaching football in the universities. First the athlete learns how to hold the ball, how to fall on the ball, how to tackle, and other major points. Once he has become proficient in these essentials he may then proceed to the finer and more intricate details of team play. The instruction in the fundamentals of body mechanics, as the

1 Persons interested in teaching posture in schools will find it of value to read first the manual on Posture Clinics (U.S. Children's Bureau Publication No. 164), as to acquire a foundation for large-group instruction by learning how to teach the individual.
POSTURE EXERCISES

name implies, deals with the foundation of the subject. It is, therefore, above all things important that the training in the fundamentals of good body mechanics—the maintenance of the normal curves of the spine and the retraction of the lower abdomen, with the chest held up and the chin pulled in—be emphasized strongly and also be made as attractive as possible.

Not only must the children understand in general what constitutes good posture, but each child must realize what he as an individual needs to do in order to achieve it. To make this clear he should see a silhouette of his own body and should have explained to him the ways in which the silhouette shows his posture to be defective. With this knowledge of his specific problem he can be spurred on to pass willingly through the period of constant and sometimes monotonous repetition of the fundamental exercises. Monotony, of course, is not really necessary. It may be avoided by interspersing games or story plays that permit relaxation and some freedom of motion. The fundamentals must be learned, however, and the instruction should include as much repetition as is necessary to insure this result.

Different children may take different periods of time to learn correct posture, partly because individuals differ in their degree of faulty posture and in their ability to control matter with mind—to coordinate their muscular efforts. Then again the variation in time may be due to differences in anatomical structure.

Though the fundamental requirements of good posture (the back with normal curves, abdomen with lower part retracted, chest held up, and head up with chin in) are the same for all, the exercises through which these fundamentals are learned should be adapted to each type of physique—the thin, the stocky, and the intermediate. The long thin type of child, who tends to increase the curve of his lumbar spine and the forward inclination of the pelvis, needs exercises designed to "flatten" the lumbar spine and to tilt the pelvis backward. The broad, heavy-set child, tilting back at the dorsal-lumbar junction, localizes his trouble in the dorsal region. He, therefore, needs exercises designed at first to stretch the ribs and through them to make flexible the dorsal region of the spine; other exercises should bring the back up where it belongs. This does not necessarily mean that children in the classroom need be given individually specialized exercises. But exercises given for the whole room should include all the exercises necessary for all the types—thin, broad, or neutral. All the types can take all the exercises.

The exercises should be planned to develop conscious control of the voluntary muscles which keep the body erect. For some children whose musculature is very weak and flabby a certain amount of development of muscular strength would be required. But this need for strength is not to be emphasized in the posture program. The slight amount of strength that the exercises require will usually be

*Plan for development of muscular strength should be made for children who know how to use their bodies correctly and can be carried out in gymnasium or on outdoor athletic fields. The posture program is concerned primarily with proper body carriage as an essential basis for good physiological functioning of the body, attained with the least amount of instruction. Such a program is feasible in classrooms without disrupting the curriculum; in fact the physical instruction serves as an adjunct to the mental instruction.
POSTURE EXERCISES

developed in the effort to attain conscious control over the skeletal muscles that maintain correct posture.

After the fundamental exercises have been repeated sufficiently often to make possible conscious control of the muscles governing good posture—after the child has learned how to "flatten" his back, retract his lower abdomen, and hold his chest high and his chin back and in—he should acquire with continued repetition of the same exercises the ability to maintain good posture subconsciously. When he achieves this he has made good posture a habit.

Then the day's exercises should include a much greater variety. They may be practically a "setting-up" drill, varied by dancing, games, or sports; but emphasis must always be placed on the proper alignment of the body while the advanced exercises are being done. One or two of the fundamental posture exercises should be practiced in each lesson if necessary, and good posture during the advanced exercise must be stressed. For that is the final object—to instill the principles of proper body carriage while sitting, standing, walking, or performing any other activity.

This groundwork of good posture can be acquired by most classes, roughly speaking, within about eight weeks, or less for the older children. In the junior high school grades (the seventh, eighth, and ninth), the time necessary may often be only about three weeks, or about 15 working days of 10 minutes each. In the lowest grades (the first and second), the time required for teaching the fundamentals may be very much longer.

TEACHING ORGANIZATION

To get the best results the organization to teach body mechanics in grade schools should consist of an orthopedist, supervising physical-education teachers, and the grade teachers—to mention the most important last. Good results may be obtained by a staff consisting of supervising physical-education teachers and grade teachers, or of grade teachers alone, provided the supervisors and the grade teachers have a thorough understanding of the basic principles of good body mechanics. If the grade teacher must work alone, posture work should be undertaken only after she has become familiar with the fundamental principles and the exercises by personal instruction or thorough study.

The orthopedist, the nominal head of the organization, examines the children at the beginning and the end of the school year. His interest will naturally be attracted to the mechanical aspects of the findings revealed by his medical examination. He classifies the children as to type of physique—thin, intermediate, or stocky. He also grades the children in regard to posture, according to the presence or absence of specified indexes of good posture. (See p. 6.) Then he records any deformities of the chest or spine and static deformities of the lower limbs. He notes the parts of the trunk where respiration is featured, whether the expansion of the diaphragm or the elevation of the ribs is the most striking part of the respiratory process. He completes his examination with anthropometric measurements. (A questionnaire for his guidance is published at the end of this report.) Then he photographs the children. (For method
see p. 15.) He should also talk to the teachers and pupils to arouse their interest and increase their knowledge of the subject. During the term in addition to routine executive duties he acts chiefly in an advisory capacity in regard to the many orthopedic problems that arise in the course of the instruction in good body mechanics.

The supervisor (or supervisors, depending on the number of children under instruction), the person in active charge of the organization, should be a physical instructor with "posture" training. It is hardly necessary to add that this supervisor will be valuable in direct proportion to the amount of his or her experience in the actual teaching of body mechanics even if that experience has been with individuals rather than groups. During the examinations the supervisor helps the physician, especially (if she is a woman) in making the anthropometric part of the examination and in photographing the girls. After that she teaches posture to the grade teachers, for it is important that the teachers themselves know how to use their bodies correctly before they are allowed to teach others to do so. After a week of this preliminary instruction the supervisor may turn to the pupils to teach them the rudiments of good body mechanics. Throughout the year she supervises the grade teachers in the actual teaching of posture. She should visit each room at least once a week for 15 minutes.

The grade teachers are the most important persons in the entire organization. They teach posture daily to the children. The period of formal instruction may be only 10 minutes each day. The grade teachers, however, watch the attitudes of the children during the entire day to see that they use their bodies correctly. It is the teacher who shows the child his silhouette or profile photograph and points out the defects in his body carriage. She shows him the mechanically correct position of the body, the "A" posture, and stimulates him to try to acquire it.

If no orthopedist is available, the supervisor will have to grade and classify the children in addition to her other duties, assuming the responsibilities ordinarily assigned to the physician. If no special physical instructor is available or if the number of children under instruction is too small to warrant the employment of anyone but the grade teacher, she can make profile photographs or silhouettes of the body forms of her children and then classify them according to body type and posture. Then with these as a basis, if she has learned the fundamentals of good posture, she can proceed to teach good body mechanics.

All members of the organization have the same task. Each tries with the help of his own personality to make correct posture better understood and easier to master.

**CLASSIFICATION AND GRADING OF THE CHILDREN**

The body is in good mechanical position when the weight of it rests evenly on the heads of the femurs—i.e., the hip joints. In this position the head is balanced above the shoulders, the chest is elevated, and the breastbone is the part of the body farthest forward. The lower abdomen is retracted and flat, and the back curves are within normal limits. In the standing position the hip joints in
Skeletal form of a person with good body mechanics (fig. 1) and of a person with poor body mechanics (fig. 2)
lateral view are directly in line with the knees and ankle joints. In this ideal standing posture a perpendicular dropped from the ear or just behind it would fall through the shoulder, hip, and ankle joints. Because the head is held erect, because the chest is up, because the curves of the spine are not exaggerated, and because the lower abdominal muscles are retracted, the person whose posture is diagrammatically shown in skeleton form in Figure 1 will function with good balance and form, gracefully, smoothly, efficiently, alertly.

A body with variations from the ideal pictured in Figure 1—that is, with forward head, drooping chest, hollow back, and protuberant abdomen—has poor posture, the degree depending on the amount of variation. (Fig. 2.) Because the head is dropped downward and forward; because the chest falls down and inward, becoming flat and angular at the sides; because the normal curves of the spine are exaggerated; and because the abdominal muscles are relaxed, the person whose posture is diagrammatically shown in skeleton form in Figure 2 is forced to maintain his equilibrium by overexertion of his spinal muscular supports and flexed or overextended knees. He is a slouchy, ungraceful, inefficient, uninspiring individual whose functioning may be impaired as a result of poor body mechanics.

Some persons use their bodies like the ideal pictured in Figure 1, the alignment of their body parts being perfect; others do fairly well, but not so well as the first group; some stand poorly, and some very poorly. Thus individuals fall readily into four grades of body carriage: Excellent, good, poor, and bad posture; or “A,” “B,” “C,” and “D.”

The indexes of grade A posture have already been stated in the description of the ideal Figure 1. In grade B posture the head and chin are inclined slightly forward. As a result the chest drops a little and the upper part of the back inclines somewhat backward. The abdomen, though perhaps rounded, does not protrude. The lower or lumbar spine follows, as it were, the abdomen, and the hollow back shows its first signs of appearance. In grade C posture the head is plainly forward and the chin protrudes. The curve from the back of the head to the lower end of the shoulder blades is elongated and accentuated. The chest has dropped until it is “flat.” The relaxed abdomen protrudes also, and the lower back is hollow. In grade D posture the head is allowed to drop forward. The chin is dropped. The chest is sunken. The upper trunk has swayed backward. To maintain equilibrium the forward inclination of the lower spine is markedly increased. The back curves are therefore extremely exaggerated. With the sinking of the chest the abdomen drops, relaxed and protuberant. The knees are sometimes bent forward, sometimes sprung backward. The relaxation is complete.

With classification according to grade of body carriage comes an appreciation of the severity of body defects that the pupil must overcome to improve his posture. Obviously a child with a D rating has further to go than the C child, who in turn has further to go than the B child before they all acquire A posture. The examiner therefore can prognosticate which groups of children, other things being equal, will take longer to learn to maintain a correct attitude. His findings can be passed on to the instructors to enable them to train their pupils in body mechanics more sympathetically and in-
POSTURE STANDARDS
Stocky-Type Girls

Excellent Good Poor Bad

EXCELLENT POSTURE
1. Head up—chin in (Head balanced above shoulders, hips, and ankles)
2. Chest up (Breast bone the part of body forward)
3. Lower abdomen in and flat.

GOOD POSTURE
1. Head slightly forward.
2. Chest slightly lowered.
3. Lower abdomen in (but not flat)
4. Back curves slightly increased.

POOR POSTURE
1. Head forward.
2. Chest flat.
3. Abdomen relaxed (Part of body forward)

BAD POSTURE
1. Head markedly forward.
2. Chest depressed (Sunken)
3. Abdomen completely relaxed and protruberant.

Children's Bureau, United States Department of Labor, Washington, D.C., 1925.

FIG. 3

Provided by the Maternal and Child Health Library, Georgetown University
POSTURE STANDARDS

Stocky-Type Boys

Excellent Good Poor Bad

A  B  C  D

EXEMPLARY POSTURE
1. Head up—chin in
   (Head balanced
   above shoulders,
   hips, and ankles)
2. Chest up
   (Breast bone the
   part of body far-
   thest forward)
3. Lower abdomen in,
   and flat.
4. Back curves within
   normal limits.

GOOD POSTURE
1. Head slightly
   forward.
2. Chest slightly
   lowered.
3. Lower abdomen in
   (but not flat).
4. Back curves slightly
   increased.

POOR POSTURE
1. Head forward.
2. Chest flat.
3. Abdomen relaxed
   (part of body far-
  thest forward)
4. Back curves exag-
   gerated.

BAD POSTURE
1. Head markedly
   forward.
2. Chest depressed
   (Sunken).
3. Abdomen complete-
   ly relaxed and pro-
   burrence.
4. Back curves extreme-
   ly exaggerated.

Children's Bureau, United States Department of Labor, Washington, D.C., 1925.

Fig. 4

Provided by the Maternal and Child Health Library, Georgetown University
POSTURE STANDARDS
Thin-Type Girls

Excellent Good Poor Bad

A B C D

EXCELLENT POSTURE
1. Head up—chin in. (Head balanced above shoulders, hips, and ankles)
2. Chest up (breast bone the part of body farthest forward)
3. Lower abdomen in, and flat.

GOOD POSTURE
1. Head slightly forward.
2. Chest slightly lowered.
3. Lower abdomen in, and flat.
4. Back curves slightly increased.

POOR POSTURE
1. Head forward.
2. Chest flat.
3. Abdomen relaxed (part of body farthest forward)

BAD POSTURE
1. Head markedly forward.
2. Chest depressed (sunken)
3. Abdomen completely relaxed and protruberant.

Provided by the Maternal and Child Health Library, Georgetown University
POSTURE STANDARDS

Thin-Type Boys

Excellent Good Poor Bad

A  B  C  D

EXCELLENT POSTURE
1. Head up-chin in (head balanced above shoulders, hips, and ankles)
2. Chest up (breast bone the part of body farthest forward)
3. Lower abdomen in, and flat.

GOOD POSTURE
1. Head slightly forward.
2. Chest slightly lowered.
3. Lower abdomen in (but not flat).
4. Back curves slightly increased.

POOR POSTURE
1. Head forward.
2. Chest flat.
3. Abdomen relaxed (part of body farthest forward).

BAD POSTURE
1. Head markedly forward.
2. Chest depressed (sunken).
3. Abdomen completely relaxed and protuberant.

Children's Bureau, United States Department of Labor, Washington, D.C., 1925.

Fig. 6

Provided by the Maternal and Child Health Library, Georgetown University
POSTURE STANDARDS
Intermediate-Type Girls

Excellent Good Poor Bad

EXCELLENT POSTURE
1. Head up—chin in
   (Head balanced above shoulders, hips, and ankles)
2. Chest up
   (Breast bone the part of body farthest forward)
3. Lower abdomen in, and flat.

GOOD POSTURE
1. Head slightly forward.
2. Chest slightly lowered.
3. Lower abdomen in (but not flat)
4. Back curves slightly increased.

POOR POSTURE
1. Head forward.
2. Chest flat.
3. Abdomen relaxed (part of body farthest forward)

BAD POSTURE
1. Head markedly forward.
2. Chest depressed (sunken)
3. Abdomen completely relaxed and protruberant.

Children's Bureau, United States Department of Labor, Washington, D.C., 1928.

Fig. 7

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POSTURE STANDARDS

Intermediate-Type Boys

Excellent | Good | Poor | Bad

A | B | C | D

EXEMPLARY POSTURE
1. Head up-chin in (Head balanced above shoulders, hips, and ankles)
2. Chest up (Chest bone the part of body farthest forward)
3. Lower abdomen in, and flat.

GOOD POSTURE
1. Head slightly forward
2. Chest slightly lowered
3. Lower abdomen in (but not flat)
4. Back curves slightly increased

POOR POSTURE
1. Head forward
2. Chest flat
3. Abdomen relaxed (part of body farthest forward)
4. Back curves exaggerated

BAD POSTURE
1. Head markedly forward
2. Chest depressed (sunked)
3. Abdomen completely relaxed and protruding
4. Back curves extremely exaggerated

Children's Bureau, United States Department of Labor, Washington, D.C., 1926.

Fig. 8
POSTURE EXERCISES

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telligently. The pupils themselves are stimulated to correct their poor posture. Since the characteristics of the posture grades are defined, the child when graded knows exactly what he must correct. If he has ordinary ambition he will be stimulated to correct his body defects in order to advance his rating.

It becomes apparent, however, that gradations in the manner of body carriage vary with individuals. Generally speaking, the indexes of bad posture are the same in two given persons, although they may appear to differ greatly. Basic differences in body structure will determine the specific appearance of the various grades of posture.

Stocky individuals, as they assume the relaxed attitude, lean backward from the middle of the back, the dorso-lumbar junction. Thin individuals with poor use of their bodies sway backward from the lowest part of the spine. The pelvis at the same time is tipped forward. Individuals of the intermediate type, as they deviate from good poise, bend backward not at the middle of the back as do the broad, stocky persons, nor at the lowest part of the spine as do the thin persons, but midway in the lower back or lumbar spine. These three types of anatomical structure—broad, intermediate, and thin—are easily recognized if seen "pure."

The thin type has a torso long and slender or delicate and narrow. The length in the lumbar region is striking. Frequently there may even be six lumbar vertebrae instead of the usual five. The neck is long and thin also. The elongated spine gives more flexibility, and this explains the marked slump, or ptosis, possible in these people. They sometimes look as if some heavy force were pushing them down from above; so much so that they sway far backward in the upper back and protrude far forward in the lower back, the pelvis tipping forward with the low spine. The shoulders may become markedly rounded and forward and the shoulder blades scaphoid. The extremities and their muscles are usually long and slender.

The broad type includes the heavy looking, "broad-backed" persons with large skeletons. The neck is short and "chunky." The torso is broad and relatively short. The lumbar region is short, sometimes because there are only four lumbar vertebrae instead of the usual five and sometimes because the sacrum is set well down between the hip bones. Because of the very construction of the spine the lumbar curve is less marked. Flexibility is lacking in this sturdily built spine. The extremities are large and broad. This is the type that tends to be obese.

In the intermediate type the torso is a compromise in length and breadth between the other two types. The normal rounded curves of the spine, if they become exaggerated, appear mild and gradual. The sharp "corners" of the thin type and the large fatty deposits of the broad type are missing. The neck may be almost as long as that of the thin type; or it may be short, though hardly so thick and "chunky" as in the broad type. The musculature is firm. Flexibility of the spine, though not so marked as in the thin type, is much greater than in the broad type. This intermediate class is heterogeneous; it should include all individuals that do not readily fall into one of the other two groups. Ordinarily, after study and experience, the fundamental characteristics of the thin and stocky.
types will be seen to predominate sufficiently in the individuals examined to warrant classification in one of these groups. When, however, the characteristics peculiar to these types do not so stand out, classification in the intermediate group is logical. In this group should fall those who might have a tendency toward thin or broad characteristics but do not actually possess them.

When classification as to body form has been completed it is clear what may be expected of the individuals of different types. The broad type usually are fitted anatomically for slow, heavy, "labourious" work; the thin type for work requiring speed or agility; and the intermediate type for either kind of work, according to whether their physical characteristics incline more to one group or the other. If in the industrial world employees were selected according to the anatomical types best fitted for special kinds of work they would be more efficient individuals, more efficient employees, and more efficient members of society.

It should be remembered that with classification of body type comes appreciation of the effort necessary for any person to maintain good body carriage. The broad type leaning backward only in the upper spine has to be taught principally to mobilize the chest and to keep it up, to straighten the spine. Attention in that case should be concentrated on exercise of the upper thorax and head. A slight amount of "pelvic roll" is usually necessary to balance the lower back. Then the body mechanics is corrected.

The problem with the thin type is greater. The long, thin, willowy bodies are easily contorted into almost grotesque shapes. The force of gravity is most effective here. As has been mentioned, some persons of this type appear to be laboring under the effects of a compressing load at the upper end of the spine. First the pelvis must be rolled backward; usually it has tipped so far forward that it is rather difficult to get it back to its ideal inclination. Then the upper chest must be balanced over the pelvis and lower back. This again is often quite difficult. At first, in bringing the thorax and head into proper position, the pupil is likely to lose the correct position he has just learned for the pelvis and lower back. But with patience on the part of the instructor and diligence and assiduity on the part of the pupil good body mechanics is finally learned. It is most difficult for the thin type, however, and this should be understood in training them.

The persons of the intermediate type are hardly so limber and willowy as the thin type, but are more flexible than the broad type. Some individuals perhaps will find it hard to roll the pelvis and lower back into proper position; others will find it more difficult to balance the chest and head on the fixed lower back and pelvis. Instruction should be directed to the difficulty and concentrated there. The very fact that the patient can not easily correct the maladjustment of posture associated with his anatomical structure is a clear indication that individualization of instruction is essential.

The examiner classifying individuals according to grades of posture and physique can, from his knowledge of the workings of the different types, direct the attention of the instructor to the part of the body where correction is most needed.
POSTURE EXERCISES

METHODS OF PHOTOGRAPHING CHILDREN

The best and least expensive method for photographing large numbers of children is that advocated by Norman Fradd by means of his "silhouetteograph camera." The equipment includes a screen of architect’s tracing linen mounted on a frame about 7 feet high and 3 feet wide, and illuminated by a 1,000-watt electric light placed 3 to 5 feet behind it. The child stands sidewise directly in front of the screen, so that a photograph produces a profile silhouette. The silhouetteograph camera is placed about 10 feet in front of the child. This camera takes the picture directly on sensitized bromide paper with an exposure of about five seconds. One of the features of the camera is its movable plate holder, which allows multiple exposure on the bromide paper, the number depending on the size of the picture desired. Stencil numbers on the screen identify the pictures. A picture can be taken, developed, and fixed in two or three minutes. If a large number are done at one time, the time necessary for each picture is reduced and the cost can be brought down to about 1 cent per picture.

Profile tracings of the body form can also be made by means of a schematograph like the one sold by the American Posture League. The writer has used a schematograph made by salvaging an old square-cased camera, which cost about $6 and some spare moments. The lens was left as found. Directly back of it, however, in the film chamber was put an ordinary mirror facing the aperture back of the lens and fixed at an angle of 45° to the bottom of the case. The top of the film chamber was removed and replaced by a piece of glass. When an undressed patient was placed in front of the camera, with the side of his body toward the lens and with lights shining on the back and front of him, a piece of tissue paper placed on the new glass top of the camera would show the image of the patient as reflected by the mirror below. The contour of the image when traced on the paper would give a graphic record of the body contour of the individual before the camera. A tracing of this record as a pattern on black paper and then cut from the black paper on the outline would give as a final result a black silhouette.

DETAILS OF EXERCISES

The exercises by means of which posture is taught to children in school are here presented for the use of grade teachers, arranged in progressive groups or lessons. Once a lesson is learned the teacher may add it to the group previously learned and constantly repeated, and may then proceed to the next lesson. In this way progress may be made steadily from lesson to lesson. At the same time the teacher may select from the group previously learned exercises to be repeated daily so that they will never be forgotten. Each lesson should be mastered in about two weeks. Each exercise, while being learned, should be repeated 10 to 20 times.

EXERCISES SUITABLE FOR PRIMARY GRADES

The children in the lowest grades (first and second) balance themselves correctly, when standing, only with difficulty. Sitting exercises are therefore given first to secure control over the abdominal muscles. The little children are able to get a better upward stretch of the ribs and therefore better mobilization (greater flexibility) of the dorsal spine if allowed to lean against the backs of their seats. This supporting position also prevents exaggerated backward bending (to which these children are prone) when doing exercises designed to stretch the intercostal spaces.

With practice in the exercises will come improvement in posture at the end of the first year. The children will not always overcome the habit of tightening the shoulder and neck muscles when attempting to stand well poised. They will, however, have strengthened their abdominal muscles and have had many beneficial rib-stretching exercises. The spines of most children at the age of 5 to 7 years are very flexible and often "flat" to begin with. When conscious control has been gained over the abdominal muscles it is usually easy for the children to stand against the wall in perfect posture simply by retracting or pulling in their lower abdomens.

All the exercises in the primary grades are taught informally. All instructions to a child who is being corrected should be given loud enough for all the children to hear. Thus they may all profit from the corrections made on any individual pupil, and the teacher can keep the entire class interested while she is teaching individuals.

If the teacher understands the principles of these exercises, she can readily adapt them to many rhythmic songs and story plays already in State syllabi of physical education.

LESSON I

Exercise 1.—Sitting—Abdominal retraction.

The child sits leaning against the back of his seat.

Pull in the abdominal muscles and then relax them. Continue this exercise 10 times, as informal commands such as "in," "out" are given.

This exercise teaches the children voluntary conscious control over their lower abdominal muscles. It also strengthens these muscles and paves the way for similar but more difficult exercises. When the abdominal muscles are being pulled in, the lower back should be made to touch the back of the seat.

The accompanying illustrations show the hollow back and the protuberant abdomen characteristic of the usual incorrect sitting position, contrasted with the retracted abdomen and flat back of the correct position.
POSTURE EXERCISES

Exercise 2.—Sitting—Correct position (1).

The child sits leaning against the back of his seat.
Pull in the abdominal muscles as in exercise 1, thus flattening the lower back and fixing the base of the spine. Then pull the chin in and backward. Keep the shoulders relaxed. Relax.
This exercise teaches the correct sitting position.

Exercise 1.—Sitting—Correct position (2).

The child sits away from the back of the seat with the abdominal muscles retracted, with the chin drawn in, and the lower back flat, as described in the previous exercise. This is the starting position for all the sitting exercises that follow and will hereafter be referred to as Position A.
Pull in the abdominal muscles and then relax them. Repeat this exercise 10 times.
While the child does this exercise the chest and shoulders are as still as in the previous exercise.
This exercise teaches the correct sitting position without the help of a back support.

Exercise 2.—Sitting—Rib stretching.

The child sits in Position A.
Raise the left arm forward-upward. Reach up with the left hand six times, so that a strong pull is felt on the lower ribs of the left side. Repeat this exercise on the right side.
The rib stretching increases the flexibility of the rib muscles and by mobilizing the ribs renders the dorsal spine more limber. No great degree of accuracy in the performance of the exercises is to be expected with the very small children in these primary grades.

Exercise 1.—Sitting—Rib spread—Costal breathing.

Position A. The child sits with hands flat against the sides of the lower ribs.
Inhale. (He may offer resistance to the ribs by pressing his hands against them. This definite resistance makes the control of the rib muscles easier to acquire. He "blows himself up" and makes his hands move outward.) Exhale and lower the ribs. (He blows out the breath and makes his hands come closer together.)
This exercise increases the excursion (degree of expansion) of the ribs and the diaphragm and in this way enlarges the capacity of the lungs.

Exercise 2.—Sitting—Alternate trunk bending sidewise.

Position A. The child sits with hands clasped on his head.
Bend the trunk sidewise to the left and then to the right.
The motion in the spine centers at about the middle of the spine. With the hands on top of the head the child "sits tall." This raises
the ribs considerably. Bending to one side from this position then gives a strong pull on the ribs of the opposite side and also increases the flexibility of the middle of the spine.

LESSON IV

Exercise 1.—Standing—Abdominal retraction against wall.

The child stands with his heels 4 inches from the wall but with hips, shoulders, and head touching the wall. Pull in the lower abdominal muscles and make the lower back touch the wall. Relax the abdominal muscles and allow the lower back curve to return.

The strong abdominal retraction while the child is leaning against the wall for a guide is beneficial in strengthening the abdominal muscles. It serves to increase the conscious control over these muscles and so prepares the children for abdominal retraction when standing without support. Most of the children in these grades are able to touch the lower back against the wall simply by contracting their abdominal muscles. Their common habit of holding the breath while pulling in their abdominal muscles should be guarded against. Some children will not learn to do this exercise correctly until they reach the third grade.

Exercise 2.—Standing against wall—Correct position.

The child stands with his heels 4 inches away from the wall but with hips, shoulders, and head touching the wall and lower abdominal muscles retracted. The lower back is touching the wall. The base of the spine is therefore fixed in the correct position. The children can be given the idea of pasting themselves against the wall.

Pull the chin inward and backward. Relax.

This exercise elevates the chest and fixes the upper spine in correct position.

LESSON V

Exercise 1.—Standing against wall—Deep breathing.

The child stands against the wall as in the preceding exercise but with his hands clasped on his head.

Take a deep breath and "grow tall," pushing against the hands with the top of the head.

The starting position of this exercise is an excellent one in which the diaphragm can act freely under conditions best suited to develop good muscle tone.

Exercise 2.—Standing—Correct position.

The child stands at his desk with hands at sides—head up and chin in.

Pull in the lower abdominal muscles. (This flattens the lower back.) Relax the abdominal muscles. (This allows the curve to return.)

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*The children may be placed in a line against any flat, clear wall surface. The teacher can then quickly pass from one child to another.
POSTURE EXERCISES

Throughout this exercise the chest is up and forward while the hips are rolled back on the hip joints as a pivot, without any support behind. The knees must not be flexed.

This exercise teaches the child how to hold the body correctly poised when standing, as for recitations. It is the correct standing position and hereafter will be referred to as Position B.

LESSON VI

Exercise 1.—Standing—Hands on head—Correct position.

The child stands at his desk.

Place the hands on the head. Pull in the lower abdominal muscles, flattening the lower back. Pull the chin inward and backward. Return to the starting position.

Through this exercise the child will learn how to balance his body correctly from a difficult starting position.

Exercise 2.—Standing—Trunk bending forward.

The child stands at his desk with hands at his sides in Position B. Bend the trunk forward. Straighten the trunk.

The center of motion should be at the hips, as if the spine were not flexible but a solid rod.

The accompanying illustrations show the rounded back, the depressed chest, and the drooped head characteristic of the incorrect position, in which the trunk has "buckled" at a point just below the ribs, contrasted with the flat back, retracted abdomen, elevated chest, and balanced head of the correct position. Except for the flexion at the hips, the correct position is unchanged from the correct standing position.

Exercise 1.—Tiptoe walk.

Walk around the room on tiptoe.

The abdominal muscles should be pulled in and the trunk bent slightly from the hips in the position of tip-toeing toward someone to tell a secret. This throws the body weight forward and impresses on the mind the idea of carrying the chest forward with the hips back and the abdomen in when walking.

Exercise 2.—Standing—Knee bending.

The child stands in the aisle beside his desk in Position B.

Bend the knees and spread the thighs apart. With the arms parallel and extended between the lower limbs, touch the fingers to the ground near the toes. Keep the knees turned out. Return to starting position.
POSTURE EXERCISES

The back is kept flat, the chest up and forward, and the head erect throughout this exercise. The children enjoy this bobbing up and down. They pretend they are frogs.

This exercise teaches the children to keep the back flat while concentrating on a difficult exercise. With the slight variation of touching the ground with the arms at the sides, the children will also learn one of the positions for picking up objects from the floor.

LESSON VIII

Exercise 1.—Standing—Arms circling—Deep breathing.

The child stands at the desk in Position B.

Raise the arms forward and upward while taking a deep breath. (While doing this the child should “grow tall.”) Lower the arms sidewise and exhale. (If the child while doing this will imagine that he is a bird flying high in the air he will still keep his head up and his chest high.)

This exercise gives an opportunity for deep breathing while the body is held correctly poised.

Exercise 2.—Standing—Knee bending upward.

The child stands with his lower abdominal muscles retracted and the lower back flattened.

Raise the left knee upward to a position almost at right angles with the trunk. Straighten the leg. Repeat with the right leg. Step forward, bending the knee upward at each step.

These children are turkey gobblers moving across the yard. They grow bigger until they are full grown. Then they feel so important that they stand tall and seem to strut around and enjoy themselves immensely. This exercise is rather strenuous and makes the children unconsciously breathe deeply and stretch tall.

EXERCISES SUITABLE FOR INTERMEDIATE GRADES

The first exercises for the intermediate grades (third, fourth, fifth, and sixth) are sitting exercises. The most satisfactory results are obtained in this group because the children are willing to work hard, are intelligent in their cooperation, and are able to coordinate their muscles.

LESSON I

Exercise 1.—Sitting—Abdominal retraction.

The child sits and leans against the back of his seat.

Pull in the lower abdominal muscles and so make the lower back touch the back of the seat. Relax.

If the lumbar curve is at all exaggerated so that it can not be flattened simply by pulling in the lower abdominal muscles, the hips must be “rolled” backward and downward about the hip joints.
as a pivot. This will straighten the lumbar curve. The shoulders and chest are held perfectly still; all the motion occurs below the waist line. This backward and downward rolling motion in the lower back should be simultaneous with the contraction of the abdominal muscles. This method of correcting the posture of the trunk is easier than those that follow, because the starting position is a sitting one. Then the segments of the spine naturally balance more easily, because the pull on it from the anterior skeletal muscles is removed.

This exercise strengthens the abdominal muscles and teaches the child conscious control of them. It also leads to an exercise which flattens the lower back when standing. When the child has learned to flatten his lower back in this way he should pull his chin inward and backward while doing this exercise. Pulling the chin back and in raises the chest. This then gives the correct sitting position—*Position A.*

**Exercise 2.—Sitting—Alternate rib stretching.**

The child sits away from the back of the seat with his hands clasped on the forward part of the head. The head should be erect and the elbows well back. The abdominal muscles should be contracted as in Lesson I, exercise 1.

Raise the left shoulder, stretching upward so that a strong pull can be felt on the lowest ribs on that side. Repeat this stretching of the ribs on the right side and then on both sides at the same time.

This exercise should be done slowly without holding the breath. It makes the rib muscles flexible and raises the diaphragm.

**Exercise 3.—Sitting—Diaphragmatic breathing.**

The child sits at his desk in *Position A.*

Inhale. (This will cause a bulging of the upper abdominal muscles.) Exhale. (This will cause a retraction of the abdominal muscles.) Continue inhaling and exhaling 10 to 20 times.

This exercise teaches correct diaphragmatic breathing. If the chest is held in this position diaphragmatic breathing will go on whether the child is sitting, standing, or walking.

**LESSON II**

**Exercise 1.—Sitting—Rib spread—Costal breathing.**

The child sits with his hands on the sides of the lower ribs.

Inhale. (He may offer resistance to the ribs by pressing his hands against them. This definite resistance makes the control of the rib muscles easier to acquire. The child "blows himself up" and makes his hands move outward.) Exhale and lower the ribs. (He blows
out the breath and makes his hands come closer together.) This exercise increases the excursion of the ribs and the diaphragm and in this way enlarges the capacity of the lungs.

**Exercise 2.—Sitting—Arms forward-upward—Rib stretching.**

The child sits away from the back of his chair in *Position A.*

Raise the arms forward and upward to make an angle of 45° with the axis of the body. Stretch first with the left arm, then with the right arm, and then with both arms.

This exercise raises the ribs. It therefore increases the mobility of the ribs and through them of the dorsal spine. This exercise is a progression from the preceding ones in that the correct position is held while attention is concentrated on the use of the arms.

**Exercise 3.—Sitting—Trunk bending forward.**

The children sit in *Position A.*

Incline the trunk forward from the hips as if the spine were not flexible but a straight rod.

This is the position that should be assumed by the pupils when bending forward to write, to draw, or to do any other desk work. The absence of the rounded back and shoulders and the lowered chest of the incorrect position is strikingly noticeable.

**LESSON III**

**Exercise 1.—Standing against wall—Abdominal retraction.**

The child stands with his heels 4 inches from the wall but with hips, shoulders, and head touching the wall.

Flatten the lower back against the wall by pulling in the abdominal muscles while strongly contracting the buttock muscles. (This causes a downward "rolling" motion in the lower back that flattens the lumbar curve. All motion occurs at the waist line and the hips. The shoulders and chest are held perfectly still.) Relax the contracted muscles and allow the lumbar curve to return.

At first the children are unable to do this exercise correctly without assistance. They must learn to contract simultaneously buttock and abdominal muscles. This coordination may be learned quickly if the teacher will place one hand on the lower abdominal muscles and the other hand on the low back and actually "roll down" the buttocks, apparently lengthening the back. After this has been repeated a few times the child will be able to do it for himself.

It is futile for the teacher to talk about this exercise or attempt to explain it; it must be demonstrated on the individual pupil. The entire class can do this exercise at the same time by using the flat wall surface in the corridors. This is one of the most important posture exercises because it succeeds in giving the child conscious control of the two muscle groups that are fundamental in maintaining correct posture—the abdominal and the buttock, or gluteal, muscle groups. This exercise should be continued off and on throughout the year. It can not be repeated too often.

**LESSON IV**

**Exercise 1.—Standing—Correct position.**

The child stands at his desk with hands at sides, head up and chin in.
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Pull in the lower abdominal muscles and flatten the lower back (count 1). Relax the abdominal muscles and allow the lower-back curve to return (count 2).

This exercise teaches the child to flatten his back without the support of the wall or the back of the seat. It is important that the abdominal contraction should not be so exaggerated that the position looks awkward.

Exercise 2.—Standing—Rib spread—Costal breathing.

The child stands with hands on the sides of the lower ribs.

Inhale. (He may offer resistance to the ribs by pressing his hands against them. This definite resistance makes the control of the rib muscles easier to acquire. First he “blows himself up” and makes his hands move outward.)

Exhale and lower the ribs. (He blows out the breath and makes his hands come closer together.)

This exercise increases the excursion of the ribs and the diaphragm and in this way enlarges the capacity of the lungs. Note the increase of the chest diameter in inspiration, as shown by the accompanying illustrations.

LESSON V

Exercise 1.—Sitting—Hands on head—Rib stretching.

The child sits with hands on head and lower back flattened against the back of the seat.

Stretch by pulling the ribs and chest upward, not allowing the lower back to move away from the back of the seat. Relax.

With this support one is able to pull upward forcefully on the ribs. This pull should be felt on the dorsal spine.

Exercise 2.—Standing—Hands on head—Abdominal retraction.

The child stands in the aisle with hands on head, head up and chin in.

Flatten the curve in the lower back by repeating the same exercise as when standing against the wall in Position B.

This is a progression from the previous exercises in that the back is held correctly in spite of the increased tendency to hollow the lower back when the hands are held clasped on the head.

Exercise 3.—Standing—Hands on hips—Diaphragmatic breathing.

The child stands at his desk with hands on hips and with chest raised, head up and chin in.

Inhale. (This causes a bulging of the upper abdominal muscles.) Pull in the abdominal muscles and exhale. (This results in a retraction of the upper abdominal muscles.)

With the correct and elevated position of the chest, free, diaphragmatic breathing will go on subconsciously.
LESSON VI

Exercise 1.—Standing—Alternate rib stretching.

It is now understood that the following standing exercises are done with the lower back rolled down and abdominal muscles contracted—Position B. The child stands with hands clasped on forward part of head, head well back, chin in, elbows back.

Raise the left shoulder upward, stretching so that a strong pull can be felt from the lowest rib. Repeat the stretch on the right side, then stretch both sides at the same time. Take this exercise slowly.

This exercise gives a strong upward pull on the ribs and raises the diaphragm, thus making room for the organs which are being raised by the retraction of the lower abdominal muscles.

Exercise 2.—Standing—Tall stretch.

The child stands at his desk—Position B.

Raise the arms forward and upward to form an angle of 45° with the axis of the body. Rise on the toes and stretch tall, as if trying to reach an object just beyond reach. Return to starting position.

A strong upward pull should be felt from the lowest ribs and through the middle of the back. This exercise stretches practically all the trunk muscles—in particular the anterior groups of muscles, which in poor posture are often contracted.

Exercise 3.—Standing—Knee bending upward.

The child stands with hands on hips in Position B.

Bend the left knee upward and lower. Repeat with the right knee. This exercise teaches the child to hold the back flat while concentrating on a leg exercise.

Exercise 4.—Standing—Hands on head—Diaphragmatic breathing.

The child stands with hands clasped on forward part of head, head up, chin in.

Inhale. (The upper abdominal muscles will bulge.) Exhale. (Allow the abdominal muscles to retract.)

Such a breathing exercise is inserted after an exercise which has already stimulated respiration.

LESSON VII

Exercise 1.—Standing—Hands on hips—Trunk bending forward.

The child stands with hands on hips.

Bend the trunk forward from the hips as if the spine were a solid rod and not flexible. Straighten the trunk.
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This way of bending the trunk should become habitual in a short time. It prevents strain on the lower back, keeps the chest up, and holds the abdominal organs in the same relatively high position as when the child is standing.

Exercise 2—Standing—Tall walk.

The child stands in Position B.

Raise the arms forward and upward to an angle of 45° with the trunk. Walk on tiptoe.

The raising of the arms in this position rather than overhead prevents any tendency toward bending backward or hollowing the lower back. The ribs are raised and the rib and upper back muscles stretched. The diaphragm is lifted, making room for the viscera, which are being supported by the contracted lower abdominal muscles. Walking on tiptoes also brings in an element of balance.

Exercise 3—Standing—Leg raising.

The child stands with hands on hips, back flat, and chin in.

Raise the extended left leg forward. Lower. Repeat with the right leg.

In this exercise the child learns to hold the back flat while concentrating on body balance and doing a leg exercise. Later more difficult leg exercises can be given, followed by a combination of leg and arm exercises done with the trunk held in perfect poise, as in the accompanying illustration.

Exercise 4—Standing—Hands on head—Diaphragmatic breathing.

The child stands with hands on head.

Raise the chest by holding head well back with chin in. Inhale and extend upper abdominal muscles. Exhale and retract the upper abdominal muscles.

This exercise is a progression from the other breathing exercises because of the starting position.

LESSON VIII

Exercise 1—Marching.

The children march around the room maintaining correct posture. The knees should not be stiff and the arms should swing as when the children are walking along the street.

Exercise 2—Standing—Arms forward-upward—Trunk bending forward.

The child stands with arms raised forward and upward.

Bend the trunk forward from the hips, keeping the back flat. Straighten trunk and repeat.

This exercise gives the pupils an opportunity to learn to maintain correct posture while doing a difficult exercise.

Exercise 3—Standing—Deep knee bending.

The child stands in Position B.

Bend the knees and spread the thighs apart. With the arms parallel and extended between the lower limbs, touch the finger
POSTURE EXERCISES

tips to the floor near the toes. Keep the back flat but slightly bent forward from the hips. (This exercise may be done in quick rhythm.) Raise the trunk in perfect posture each time.

This exercise teaches the child to keep his back flat while stooping or squatting. If the finger tips are touched to the floor at the sides of the heels instead of the toes, the child will learn the correct position for picking up objects from the floor.

Exercise 4.—Standing—Arms circling, with deep breathing.

The children stand in Position B.

Raise the arms forward and upward and take in a deep breath. Lower the arms sidewise and downward and exhale.

EXERCISES SUITABLE FOR JUNIOR HIGH SCHOOL GRADES

It is advisable in attempting to teach a group of older children of the junior high school grades (seventh, eighth, and ninth) to show first pictures of correct and incorrect posture. Stress the advantages of the first and the disadvantages of the second. In this way the child is visually stimulated to appreciate good body mechanics and to desire it for himself. He will then cooperate sympathetically if sufficient interest is centered in him. It is therefore essential, though the instruction is by classroom groups, that attention be centered on the individuals in the groups. Their particular needs, rather than the form of the exercise ordered, must be the first consideration. Greater interest should be shown in how the child uses his body while doing an exercise than in how he does that particular exercise. Development of technical skill in any particular exercise is to be desired but is not an end in itself. It must be remembered always that the exercises are only a means to the goal of health and beauty through better body mechanics.

Many children in the junior high school grades have exaggerated spinal curves closely resembling those of adults. No matter how willingly, intelligently, and hard these children may work, it will actually take them much longer to flatten their lumbar curves than it will the children of the two younger groups. The spines and their ligaments have become stiffer in the children of the age usually found in the junior high school group. If it were possible, it would be better to have the children start their posture training in the stretching position on the floor. Since this procedure is impossible in most classrooms the junior high school students begin with the "standing—abdominal-retraction" exercise. By the time this exercise has been learned control of the abdominal muscles will have been acquired. This principle of abdominal retraction fundamentally underlies all posture training. All the exercises for the junior high school are arranged in order of progression from the abdominal-retraction exercise.

The Children's Bureau has available for loan or purchase a two-reel film on posture produced under the technical supervision of Doctor Klein. The film is intended primarily for physicians and teachers, but the first reel is sufficiently general in its treatment to be of interest to parents and to children of the upper grammar-school and high-school grades. The film is so arranged that each reel may be shown separately.
Lesson I

Exercise 1.—Standing against wall—Abdominal retraction.

The child stands with heels 4 inches from the wall but with hips, shoulders, and head touching the wall.

Flatten the lower back against the wall by pulling in the abdominal muscles while strongly contracting the buttock muscles.

This exercise causes a downward "rolling" motion in the lower back that flattens the lumbar curve. The shoulders and chest are held perfectly still, all the motion occurring at and below the waist line. Most children will be able to do this exercise correctly only when they become conscious of a power of coordination between the buttock and abdominal muscles. This coordination may be learned quickly if the teacher will place one hand on the lower back and the other on the lower abdominal muscles and actually "roll down" the buttocks. After this has been repeated a few times the child will be able to do the same thing alone.

It is almost futile for the teacher to talk about or to explain this exercise; it must be demonstrated on the individual pupil. The entire class can do this exercise at the same time by using the flat wall surface in the corridors. This is one of the most important posture exercises, because it gives the child conscious control of the two muscle groups that are fundamental in maintaining correct posture—the abdominal and the buttock, or gluteal, muscle groups. This exercise should be continued off and on throughout the year. It can not be repeated too often.

Lesson II

Exercise 1.—Standing—Hands back of neck—Abdominal retraction.

Place the hands back of the neck, fingers straight, finger tips touching. Repeat the same exercise against the wall as was described in Lesson I.

This exercise is much more difficult than the one preceding because of the starting position. Placing the hands at the back of the neck when leaning against the wall raises the ribs, and it is rather a strenuous exercise to flatten the lower back while holding the ribs in this position. The repetition of flattening the lower back in difficult starting positions will result later in the child's being able to flatten the back without difficulty when standing in the normal position.

The accompanying illustrations show the flat back in the correct position and, in the incorrect position, the exaggerated back curve caused by placing the hands back of the neck.

Exercise 2.—Sitting—Correct position.

Draw the chin in and back, thus raising the chest. Pull in the lower abdominal muscles and at the same time roll down the lower back in the same way as when standing against the wall in Lesson I. Relax the abdominal muscles, allowing the lower back curve to return.
This exercise teaches the sitting position in which all sitting exercises should be taken.

**Exercise 3.—Sitting—Diaphragmatic breathing.**

Raise the chest by sitting erect with head well back and chin in. Hold the chest high while inhaling and exhaling. Inhale. (This causes bulging of the upper abdominal muscles.) Exhale. (This results in retraction of the upper abdominal muscles.)

Many children are able to maintain the high chest position throughout the exercise if one hand is placed on the chest. The deep breathing is then continued without moving the hand up or down. This exercise teaches correct diaphragmatic breathing with the chest held in the best position for this form of breathing.

**LESSON III**

**Exercise 1.—Standing—Correct position.**

Standing away from the wall with hands at sides, flatten the curve in the lower back by retracting the lower abdominal muscles and contracting the buttock muscles. (This fixes the lower part of the spine in the correct position.) While maintaining this position of the lower spine raise the head and pull the chin in. (This then fixes the upper part of the spine in its correct position and elevates the chest.) Flatten the lower-back curve on count one. Raise the head and pull in the chin on count two. Relax on count three.

This exercise teaches the child how to assume the correct posture quickly and without help.

**Exercise 2.—Sitting—Lower back against chair—Alternate rib stretching.**

Place hands on head and flatten lower back against back of chair. Raise left shoulder upward, stretching so that a strong pull can be felt from the lowest ribs. Repeat this stretch on the ribs on the right side. Then stretch upward on the ribs on both sides at the same time. Take this exercise slowly. Do not hold the breath.

Rib-stretching exercises are very important because—

1. They elevate and widen the chest. This is conducive to deeper, freer action of the diaphragm. When the chest is flat and narrow the diaphragm is relaxed and its excursion is shallow.

2. They stretch the rib muscles and move the ribs through the greatest possible arc, thus increasing the flexibility through the middle section of the spine where the ribs are attached. This increased flexibility will make it easier for a child to "stretch up" and "stand tall" with very little effort. It is especially beneficial to the broad-type child who leans backward at the midsection of his spine.

**LESSON IV**

**Exercise 1.—Standing—Hands back of neck—Correct position.**

Place hands at back of neck. Flatten the curve in the lower back by pulling in the abdominal muscles. At the same time strongly contract the buttock muscles. While maintaining this position of the lower spine raise the head and pull the chin in. Flatten the lower-back curve on count one. Pull the chin in on count two. Relax on count three.
This exercise teaches the child how to assume the correct posture from a difficult position.

**Exercise 2.—Sitting—Alternate rib stretching.**

Sit away from back of chair with hands on head. Raise the left shoulder upward, stretching so that a strong pull can be felt on the lowest ribs. Repeat this stretch on the right side. Then stretch both sides at the same time. Take this exercise slowly. Do not hold the breath.

This stretching produces flexibility of the ribs and raises the diaphragm.

**Exercise 3.—Sitting—Hands on head—Diaphragmatic breathing.**

Clasp hands on top of head just above the forehead. Pull on the hands, raising the ribs. Inhale and extend upper abdominal muscles. Exhale and retract upper abdominal muscles. Repeat 10 to 20 times before lowering ribs.

This exercise aims to gain the maximum elevation of the ribs. Thus if the child will become habituated to a position of his ribs even short of this maximum elevation he will still gain a rib elevation beneficial to good diaphragmatic breathing.

**Lesson V**

**Exercise 1.—Sitting—Arms forward-upward—Rib stretching.**

Stretch the left arm forward and upward, raising the ribs on the left side. Repeat with right arm, raising the ribs on the right side. Then stretch both arms, raising the ribs on both sides.

Throughout this exercise flatten the lower-back curve as much as possible and hold the head and chest high. This same exercise may be taken with the arms nearly vertical if the lower-back curve can be held flattened against the back of the chair throughout the exercise.

This exercise produces flexibility of the ribs and elevates the lowest ribs.

**Exercise 2.—Sitting—Trunk bending forward.**

With back flat, head up, and chin in, bend the trunk forward from the hips as if the spine were not flexible but a straight rod.

Children should be taught to write and draw and do all other desk work with the trunk bent forward in this way rather than bending over the desk with back rounded, ribs and chest lowered, and abdomen relaxed.

**Exercise 3.—Standing—Diaphragmatic breathing.**

With hands on sides of lower ribs take a deep breath to expand lower ribs laterally. Hold the ribs in this position while breathing deeply. Exhale and retract upper abdominal muscles. Inhale and extend upper abdominal muscles.

This exercise teaches correct diaphragmatic breathing.

**Lesson VI**

**Exercise 1.—Sitting—Hands on head—Abdominal retraction.**

Lean against the back of chair with hands clasped on top of head, so as to elevate the ribs. Pull in the lower abdominal muscles
and flatten the lower back (count one). Relax the abdominal muscles and allow the curve to return (count two). Repeat 10 times without lowering chest or ribs.

This teaches the child to flatten the lower back, which in the given starting position is difficult.

Exercise 2.—Standing—Alternate rib stretching.
With hands clasped on head raise left shoulder, stretching upward, so that a strong pull can be felt on the lowest ribs. Repeat stretch on the right side, and then stretch both sides at the same time. Take this exercise slowly.

This exercise gives a strong upward pull on the ribs and raises the diaphragm, thus making room for the organs elevated by the retraction of the lower abdominal muscles.

Exercise 3.—Standing—Arms forward-upward—Rib stretching.
Flatten the lower back, holding head up and chin in. Raise the arms forward-upward to form an angle of 45° with the trunk. Rise on the toes and stretch tall from the finger tips. Return to starting position.

A strong upward pull should be felt through the lowest ribs and through the middle of the back.

This exercise puts the body in an overcorrected mechanically good position from which, if the child does slump only a little, the position will still be excellent.

Exercise 4.—Sitting—Hands on head—Diaphragmatic breathing.
With hands clasped on head and chest elevated by holding the head up and chin in inhale and extend upper abdominal muscles. Exhale and retract the upper abdominal muscles. Repeat 10 to 20 times before lowering chest.

Lesson VII

Exercise 1.—Sitting—Hands on head—Correct position.
Sit away from the back of the chair with hands clasped on top of head. Straighten the lower back. Relax and allow curve to return.

This exercise teaches the child to flatten the back when the starting position makes it difficult.

Exercise 2.—Tiptoe walk.
Walk on tiptoe with the arms raised forward-upward to form an angle of 45° with the axis of the body.

In this position the diaphragm is lifted, making room for the viscera, which are being held up by the contraction of the anterior abdominal muscles.

Flattening the lumbar curve brings into play the balancing mechanism of the back muscles in the lumbar region.

Exercise 3.—Standing—Trunk bending forward.
Bend the trunk forward from the hips, keeping the back flat. Raise the trunk and repeat.

During the bending described the relative positions of the pelvis, thorax, and spine are not changed.
Exercise 4.—Standing—Alternate knee bending upward.

With arms raised forward-upward bend the left knee upward and lower. Repeat with right leg.

This exercise is to accustom the child to hold the back flat and the trunk in correct poise while taking leg exercises.

The accompanying illustration shows the head correctly balanced above the shoulders and hips, the chest elevated, the lower abdomen retracted, and the back curves normal. Except for the change in the position of the arms and one leg, the posture here is similar to the correct standing position shown in Figure 18a.

Exercise 5.—Standing—Hands on hips—Diaphragmatic breathing.

With hands on hips, chest raised, head up, and chin in, inhale and extend the upper abdominal muscles. Exhale and retract the upper abdominal muscles. Hold chest high while breathing deeply. Repeat 10 to 20 times before lowering chest.

Lesson VIII

Exercise 1.—Marching.

March around the room, maintaining correct posture.

The neck and arm muscles should be relaxed. The knees should not be stiff.

Exercise 2.—Standing—Arms forward-upward—Trunk bending.

With arms raised forward-upward bend the trunk forward from the hips, keeping the back flat. Straighten the trunk and repeat.

If emphasis is placed on the upward stretch of the ribs even while bending forward, this exercise is difficult. It teaches excellent control of the back muscles.

Exercise 3.—Standing—Hands on head—Diaphragmatic breathing.

With hands on head pull on hands, thus spreading ribs. Inhale and extend upper abdominal muscles. Exhale and retract the upper abdominal muscles.

Hold the ribs high while breathing deeply. Repeat 10 to 20 times before lowering chest.

Exercise 4.—Standing—Arms forward-upward—Alternate leg raising.

With arms raised forward-upward, raise the left leg forward, and lower. Repeat with right leg.

In this exercise the pupils learn to hold the back flat while combining an arm and leg exercise. A difficult element of balance is brought into this exercise with the starting position.

Exercise 5.—Standing—Hands on head—Diaphragmatic breathing.

With hands on head, raise chest by stretching tall. Inhale and extend the upper abdominal muscles. Exhale and retract the upper abdominal muscles. Repeat 10 to 20 times before lowering chest.
POSTURE EXERCISES

Three definite steps are noticeable in the progress of the junior high school pupils in the course of a year: (1) Ability to flatten the lower back against wall; (2) ability to flatten the lower back when standing away from the wall; (3) ability to hold the back flat and to maintain correct body balance throughout the lesson.

The foregoing lesson plans should be followed by additional progressive exercises, similar to a setting-up drill, folk dancing, rhythms, clogging, games, or sports, with emphasis always on maintaining correct body mechanics throughout each lesson.

ADVANTAGES OF THE SCHOOL FOR POSTURE TEACHING

The foregoing exercises to develop the habit of good posture in school children are strikingly simple. They are not designed to make athletes. Attention is fixed simply on proper alignment of the body as a whole, to insure correct position of the vital organs housed in the body. This will result in proper physiological functioning of the body.

No harm can come from prompting the smooth, "frictionless" functioning of the body. All children who are able to go to school can, therefore, take these exercises with benefit regardless of "tendencies" that some may have toward certain diseases or afflictions. These exercises have the advantage of universal application.

The exercises are also easily introduced. No special apparatus is necessary. The machinery and organization for this instruction are already in the school. The grade teacher is the logical person to teach body mechanics. She knows her children intimately. She knows best how to "put posture across" to them. Teachers have been trained to teach, and "posture" is so simple that it really calls for very little extra effort on their part to teach it. They have the children under their direct supervision for about five hours daily. To be sure, only about 10 minutes daily may be allotted for formal instruction in body mechanics. The supervision over the child for the rest of the day, however, gives the teacher the exceptional opportunity of watching the child at times other than the period of formal instruction in posture. She can correct him and exhort him to use his body correctly while reading, writing, reciting, and playing.

The introduction of posture into the schools makes it possible to continue the instruction throughout the grade-school life. It is then possible to plan the training in body mechanics so that the fundamentals can be taught during attendance in the lower grades (perhaps made attractive with games and story plays) and then continued through the upper grades with gradual advancement in technique and with the addition of a setting-up type of exercise as well as games and sports. With so long a period for the inculcation of the principles of posture it should be possible to assure the formation of habits of good body mechanics.

The teaching of other habits than those of good body mechanics is already done in the schools. It is accepted that habits formed when the child is young will tend to persist through life. Habits of posture if acquired during the school age will prevent the occurrence of many of the sequelae in later life—adults broken down under strain and chronic invalids.
Posture training in school is also of benefit at the time at which it is given. It serves to break up the day for the children. Continuous mental instruction throughout the session can lead only to mental lassitude on the part of the pupils. The period of learning must be broken by some exercises, and when this must be done indoors it can be done best with posture exercises. In this way relaxation from continued mental effort is accomplished, disrupting the routine procedure of the classroom least. After the barest fundamentals have been learned the exercises can all be gone through with the pupils in their seats or standing in the aisles beside their desks.

School instruction in posture is just as logical as school instruction in reading, writing, and arithmetic. If posture training is made a regular part of the curriculum, the child will accept it as part of the instruction he has come to consider reasonable and necessary. He may or may not show the results of the teachings immediately. But the child's early life when the instinct of imitation is marked, when the body is limber, when the mind is impressionable, when the influence of suggestion and education is greatest, is the time to teach proper body mechanics. Then he will grow up with acquired habits of correct body balance. His energy will be available to the maximum degree for his daily activities. His body will function with its parts properly aligned, without unnecessary friction—an economical and efficient unit.

Because of its universal application, its marked simplicity, the ease with which it can be introduced without disrupting the curriculum; because it can be carried on over the entire grade-school life of the child and thereby bring about the formation of the habit of correct body carriage; because it can serve as a means of relaxation for the pupil; and because school is the logical place for it, body mechanics should be taught to every child in school.