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Imagined Movement: An Ideokinetic Facilitator

Imagination is the driving force of all creative endeavor, and stimulating and challenging the student's imagination is the most crucial ingredient in successful teaching. In the ideokinetic approach for posture improvement, however, the need for challenging the imagination becomes even more important than usual. We rely on it to bring about the subcortical patterning of muscle coordination which will produce and maintain an efficient alignment of the skeletal machinery.

When a person imagines movement, putting forth no voluntary muscular effort to aid its execution, the coordinated action of muscles which produces the imagined movement will be patterned subcortically. Imagining the movement is a thought process only; it involves no muscular effort by the subject, because muscular effort interferes with the skeletal changes which the imagined movement is designed to produce.

To change skeletal alignment by imagined movement, therefore, one needs to know where and in what direction the spatial relationship of bones must be changed to attain a more efficient structure. Having established this, one needs only to concentrate on visualizing a movement that will promote these changes to occur in the various places in the body. It will take time to establish more efficient neuromuscular habits; they are attained only through repeated practice.

Imagined Movement Versus Voluntary Effort

The ideokinetic approach to better skeletal balance through the use of imagined movement is a radical departure from the long-established technique of relying on the volitional effort of the individual to "put" and "hold" the parts of his body in a better alignment. The old technique prescribes the practice of exercises to strengthen weak muscles which are often considered to be the cause of poor posture, and it accounts for the

many admonitions concerning posture which have come into common use. Parents and teachers exhort children to stand tall, stretch up, put the shoulders back, hold the head up and the chin in, tighten the "stomach" muscles, flatten the low back against the floor if supine lying, or against the wall if standing, and finally (the most reprehensible of all admonitions), to tuck the pelvis under. These exhortations are the province of the drill sergeant and the exercise master, but not of the educator.

The concept that poor posture results from poorly developed or weak muscles in certain areas of the body is a faulty premise to begin with. The body's response to poor structural alignment, regardless of cause, is to develop patterns of greater muscle activity to cope with the added work load required to maintain equilibrium in an unbalanced structure. Hence the problem lies in the established neuromuscular coordination which dominates the subcortical patterning of muscle response in all voluntary movement. Voluntary movement to increase strength in the weak muscles, which undoubtedly exists, will simultaneously increase strength in the stronger muscles also, because of the prevailing habits of neuromuscular coordination. Volitional movement uses the old habits and even tends to establish them more firmly. It maintains the pattern of overdevelopment of muscles which correlates with the existing deviations from efficient structural alignment. Thus neuromuscular habits of coordination are intensified by voluntary efforts to improve posture, and there is no salutary effect on the internal mechanics of structural alignment, even though outward appearance may seem better. Only by *changing the coordination* of muscles toward patterns of balanced action around, and close to the joints of fulcrums of the weight-supporting Class I levers of the framework, can the structure simultaneously be brought into better alignment and increased conformity with principles of mechanical balance. No amount of study or work on the mechanics of the body in relation to outside objects will ever substitute for consideration of the internal mechanics of its bony levers. This is basic to the highest level of accomplishment in *any* field of activity.

The application of imagined movement as a teaching method departs from volitional techniques by emphasizing change in the *subcortically controlled neuromuscular coordination.* Simply stated, the student is instructed to concentrate on envisioning movement occurring within his body without contributing any effort to its performance. In fact, the contribution of any voluntary effort negates the influence of the imagined movement on the subcortical patterning of muscle coordination. This does not mean that imagined action cannot be used while movement is being performed voluntarily, but in this situation the imagined movement cannot relate to the moving part or parts. Instead it must relate to some other nonmoving section of the body (Chapter 23).

The Premise for Imagined Movement

Why is the teaching of imagined movement the most effective means of improving neuromuscular coordination? Certainly in the realm of mechanics the need for mechanical *balance* of a machine for efficient performance without undue wear and tear goes unchallenged. This balance is built into the machine. The human body obeys the same mechanical laws as any machine and, therefore, it too must meet the same structural requirements for efficiency in movement. Because of the design of the skeletal framework, however, it can never be aligned for absolute, stable mechanical balance. In any upright position there must always be some muscle and ligamentous action working to maintain balance in which, ideally, structural alignment will conform as closely as possible with principles of mechanical balance. Since there are so many adverse influences on the development of the muscular patterns of action necessary to balance the body in the upright position, there is an ever-present postural problem of varying degree in all individuals. In any person, at whatever age, the upright position is maintained automatically, which means that his own established neuromuscular habits are in control to such an extent that his figure and movement help to identify him as a particular individual. When postural alignment is good, the basic neuromuscular habits of coordination which maintains its equilibrium are likewise good; but when postural alignment is poor the basic neuromuscular habits are inefficient and become a handicap to good movement.

Considering the role that subcortically patterned muscular action plays in all movement, and the fact that *this subcortical patterning cannot be changed through voluntary effort,* it becomes obvious that the only way to improve skeletal alignment is through influence from the cortical level—that is, through education basic to the understanding of movement and through ideation and concentration on visualizing movement in the body. This ideation is effective only when the student relies completely on mental activity as it deals with facts, and on an imagined movement without voluntary effort. Imagined movement cannot be introspected; it is a spontaneous response evoked as a natural concomitant of the purposive act—the idea of movement. Its effectiveness is based on the premise that the central nervous system will pattern subcortically the muscle action which will obtain the visualized goal of movement (12) in only one way, namely, the most efficient way for the purpose. It can do this only when voluntary aid is not imposed.

The teaching of imagined movement draws on the sciences, especially anatomy and mechanics. It is impossible to devise meaningful and effective images of movement within a structure that is little known and only vaguely understood, and it is likewise an exercise in futility to devise a movement

to be imagined that disobeys all fundamental laws of mechanics. It is also important to understand the nervous system's role in movement as both the *communicator,* which sends and receives messages, and the *coordinator,* which patterns the muscle work which makes it possible for man to achieve his goals, whether they lie in an occupation, recreation, sports, or the arts. Both the teacher and the student must be able to appreciate fully and respect the role of the nervous system in all movement (Chapter 15).

It is much more important to know and understand the *principles* of the function of muscles than it is to know their names, origins, insertions, and individual functions. On the other hand, the posture teacher who wishes to grow in skill and creative ability in his teaching must study muscles repeatedly, be able to visualize their alignment on the skeletal framework from the deepest to the most superficial layers, be acquainted with the recent knowledge revealed through research, and especially be familiar with the contributions of the early outstanding authorities in the field of movement, such as Beevor (6), Duchenne (23), Winslow (89), and Wright (92). Today's knowledge of the muscles and the nervous system is vast but by no means complete, and research continues to reveal facts which increase our understanding of the complicated process of movement.

Identifying Postural and Movement Problems

In every posture class the teacher must quickly identify and assess the severity of various problems in body alignment and movement among the students. In order to do this, the teacher needs (1) a concept of good skeletal alignment based on facts of anatomy and mechanics, and adjustable to differences in body build; (2) knowledge of typical faults of posture, and the ability to locate the key areas of poor relationship of parts of the skeleton; (3) the ability to determine where and in what direction movement is needed to bring the alignment of the skeleton into closer conformity with principles of mechanical balance; (4) the ability to note restriction of range and direction of movement in the movement patterns of each student; (5) the ability to assess the degree of integration of the trunk both while standing and during movement; and, finally, (6) the ability to detect false notions about posture and movement as manifested by the appearance and use of the body. The posture teacher who is skilled in palpation of muscles to determine their relative degree of development and in the interpretation of muscular development in terms of skeletal alignment has the advantage of being able to confirm the conclusions drawn from observation. However, the constructive use of the hands in teaching posture is never any better than the factual and functional knowledge the teacher has of the human body.

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Inefficiency Imposed on Subcortical Patterning of Muscle Action

There are many ways in which inefficiency is built into the subcortical patterning of muscular action. Some inefficiency results from the postural exhortations previously mentioned, but some also can be attributed to activity teaching. The criticism often given activity teaching, both in schools and in studies of many types, is that all too often it lacks uniformity of terminology, conciseness of explanation, and accuracy of description. This inconsistency, which extends to a wide range of activities, is even found among teachers within a single institution. To confuse the student further, sometimes the activity teacher will describe and demonstrate a movement and frequently the description and demonstration will appear to be totally unrelated. This confusion is endemic to sports and dancing, but it is by no means limited to them. A student exposed to a number of inadequacies by different teachers often winds up with utterly confused concepts of movement and with misguided beliefs which cannot help but adversely influence his subcortical patterning of neuromuscular coordination. Thus the beliefs and the most frequently practiced patterns of movement are reflected in the body alignment and in its movement.

That Which Moves in the Imagination

That which the individual visualizes in movement in his body may be bone itself, as the round head of the femur moving inward to snuggle close to the inside of its socket to close an imagined gap between the two. It may be a mechanical gadget, as a sliding curtain rod located in the center of the trunk elongating upward under the center-base of the head to push it upward. It may be something fanciful, as growing an Alice-in-Wonderland neck of great length. In each case, movement occurs only in response to something which is visualized.

The nine lines-of-movement discussed in Chapter 17 identified both the location and direction of force needed to improve skeletal alignment. In view of these lines-of-movement, it should, therefore, be necessary only to visualize a force (albeit the resultant of many forces) at work along a straight line properly located in the framework to obtain the desired results. Unfortunately, it is only the rare abstract thinker whose imagination will be stimulated by the concept of a theoretical force moving along an imaginary straight line. Consequently the teacher must design images depicting forces and their direction of action to which the student can relate from his own knowledge and practical experience. The teacher must have a repertoire of many images for each line-of-movement, since all images are not equally effective in all students, and because an image used repeatedly tends to lose its value as a challenge to subcortical patterning of muscle

coordination. There are times when no familiar imagery will solve a problem. Students engaged in strong activity sometimes suffer a highly specific muscular problem which does not respond to the typical line-of-movement images. In these cases images for the specific area must be designed in the midst of teaching on the basis of existing bone alignment and relative muscle action—a most interesting challenge to any posture teacher.

Education

Teaching in the posture laboratory provides the freedom from pressure and a favorable atmosphere for *movement education* which no other part of an activity program can provide. In fact, real progress cannot be made without the posture laboratory. Since results are gained through thinking (ideation), every possible means of challenging the mental activity of the student must be used. Every line-of-movement with its appropriate imagery deals with specific parts of the skeletal framework, and together they deal with the entire structure as a unit. There should be a graphic description of the mechanisms involved in each line-of-movement, their location, and the suitability of their design for their particular function in weight support and movement. Such descriptions should be illustrated in various ways on the skeleton—by drawings, pictures, toys, individual bones, and comparisons with machines, all of which help the student to build a sound concept and an accurate mental picture of how the body balances and moves. Throughout such explanations and illustrations, the student should be urged to visualize and locate in his own body the skeletal mechanisms being discussed. Early in his laboratory experience he should be given an explanation of the role of the nervous system in movement. This need not be complicated, but it should be extensive enough to give the student a realization of the very limited extent of voluntary control over movement, of the folly of trying to control any of the muscle work in movement directly, and of why exercises and the voluntary movement of parts of the body into suggested positions of alignment are neither the answer to posture nor the complete answer to movement problems.

The Construction of Imagined Movement

Experience in the use of imagined action in teaching posture and in solving problems of movement has shown that the central nervous system makes no mistakes in choosing an efficient neuromuscular action in its response to visualized movement, if such movement is allowed by the design of the skeletal structure and physical laws, and when there is no interference from voluntary movement. Imagining a movement for which the skeletal structure is not designed elicits either no response or an uncon-

scious increase of general muscular tension. It has also been found that visualized movement across the line-of-action of muscle or muscles, or in line with the direction of muscle fibers, produces relaxation of these muscles.

The following principles may serve as guides in designing movement which can be imagined in the body. To successfully use these principles, however, the teacher first needs an extensive functional knowledge of the skeletal structure, its ideal alignment, its typical deviations from efficient alignment, and the location and direction of movement needed to improve body alignment.

1. Each imagined movement must comply with the design of skeletal structure, especially its joints and the movement they allow.

2. The direction of imagined movement must promote change in position of weight-supporting parts to bring them into better conformity with principles of mechanical balance to the extent allowed by the design of the skeletal framework.

3. Imagined movement must obey physical laws in that force of some type produces the movement, even though the movement may be visualized without regard to what produces it. If the student asks how the imagined movement is produced, whether by the pull of gravity as some muscles release their tightness, or by change in coordinated action of muscles, the teacher must be able to answer his question.

4. The anteroposterior curves of the spine should never enter, as a whole, into the construction of an imagined movement of the entire spine. The only imagined movement which influences the alignment of the entire spine is either lengthening down the back, or lengthening the axis upward. Imagined movement may be related, however, to a single vertebra or to any complete curve of the spine, either lateral or anteroposterior.

5. Imagined movement should never be described in terms of muscles or their action, for this is too extensive and complicated to understand even if it could be determined.

6. Imagined movement must be designed in terms of structures which are familiar to the students. No one can build a picture in his mind's eye out of material with which he has no experience. For instance, an accordion is familiar to most if not all people while a mortise is not.

7. Imagined movements tend to lose their challenge to thinking with continued repetition; furthermore, they do not appeal equally to all people. For this reason it is necessary to design and use many different images for each line-of-movement.

8. An imagined movement may not be suitable for all the various positions the body may assume for posture work. Some images may be changed somewhat for different positions; others may be suitable for only one position.

The Presentation of Movement To Be Imagined

As stated above, posture teaching is an important educational discipline. The presentation of each image affords valuable opportunities to supply factual information which is useful not only for the moment but also throughout life. Posture training will give the student the knowledge with which to evaluate the degree of truth in the ubiquitous writings on fads promoting "cure-all" solutions to "figure" problems. No one except the person himself can change his basic patterns of neuromuscular coordination; and therefore both his figure and factual knowledge (not opinion) are needed to guide his work.

Imagined movement does not lend itself to demonstration by the teacher since the movement is not actually performed. Its effects can be noted in a student's body, however, as the teacher directs him in his imagined movement, especially in the standing position in which a remolding of bodily alignment is readily observed. What is observed, however, cannot be voluntarily imitated. Hence the teacher's ability to communicate images in a manner which will stimulate the mental response of the student becomes of utmost importance; there is no other way to improve the basic neuromuscular coordination throughout the body more promptly.

The following principles for the presentation of movement to be imagined apply mainly to work in the posture laboratory, although the activity teacher may also use them, especially if he has used imagined action to change his own body.

1. State the purpose of the imagined movement in terms of the skeletal relationships it should change, and why such change is needed.

2. Use a graphic description of the movement to be visualized, illustrating it when possible on the skeleton or with a toy, a picture, a drawing, or a comparison with movement of a machine.

3. Be specific in locating the imagined movement in the body and the direction it is to take. This can be done on a skeleton, on the student's body, or on the teacher's body. Preferably it should be shown first on the skeleton, then on the student's body.

4. Be clear and precise in the description of movement to be imagined; and proceed slowly enough to allow the student time to locate and visualize in his body what is being described. Describe it first for the class as a whole, then again when individual help is needed as the teacher moves among the students.

5. Use as few words as possible in any description. Talking too much interferes with the student's concentration on the action to be imagined.

6. Use freely such words as *imagine, visualize, as if, watch,* and *pretend.* The author seldom uses the term *relax,* mainly because of its negative implications. When it is used, emphasis is placed on "balanced relaxation" of

beginning is innately the student's response to the teacher and the new technique. The teacher can follow this response by watching the student's facial expressions. His eyes invariably express curiosity, disbelief, lack of understanding, or even an analysis of the teacher; or, more positively, understanding, readiness to cooperate, and concentration on imagining movement.

These are all primary student-teacher reactions which must be considered. As in any teaching procedure, the willingness to learn, based on the student's trust and confidence in the teacher, is the prerequisite for successful teaching.