

Sensory motor learning: developing a kinaesthetic sense in the throws, George Liset, UNH
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p. 52. **Sensory motor learning**

In order to take advantage of the body's ability to improve through sensory motor learning, the athlete must give the brain an opportunity to detect and eliminate unnecessary and counterproductive muscular movements in technique. Neurophysiologists have determined that when a high level of muscular effort is exerted, it becomes impossible for the brain to make the clear sensory distinctions needed to improve the body's neuromuscular organization.

[Example: teaching a novice the weight throw with full competitive weight] Most athletes are so concerned with fighting the weight that they are not able to concentrate on the movement and technique. This is why conventional exercises, with their focus on muscular effort, force and speed, actually inhibit the brain's ability to function properly on the body's behalf.

When teaching a new movement or technique, the coach needs to realize that slow, easy movements will activate the brain's movement centres and generate a flow of valuable information between the brain and the muscles. By using minimal muscle force, we allow the brain to be free to make important sensory decisions. The coach and athlete should notice that tension, strain, fatigue and discomfort disappear as neuromuscular system reprogramme the body for technical improvement. In other words, the less muscular effort produces more sensory motor learning and greater physical improvement. [Cf. Russian approach, *Skisport*, 1975: Ease first, then quickness, then later power.]

Psycho-physical learning

The term “psycho-physical” is used to emphasize that fact that a person's mind and body are not separate entities, but are dimensions of one whole functioning being. [Gestalt, whole-form basis of system-dynamic movement theory] Many of our daily movements, such as walking, are unconscious. These habitual patterns have been developed over time and countless repetitions. As one teaches new skill movements, techniques need to be developed using reasoned means whereby a technique can be performed in a naturally coordinated and efficient way.

Coaches have to realise that as athletes learn new movements, they also have to retrain the mind as well as the body. Sometimes athletes develop what F.M. Alexander term “imperfect sensory appreciation.” In this case, what feels “right” to an athlete is almost always wrong. It is wrong because the athlete has moved their [sic] habitual way for so long that their habitual way feels correct and normal. For example, clasp your hands in front of you. One or the other thumb will be on top. Now unclasp them and re-clasp them with the other thumb on top. The other position will probably feel “wrong” to you. However, if the position is practiced, it will eventually feel right.

When a coach tries to teach the “correct” technique to an athlete who is fighting the irresistible urge to feel right, the process of change to a new pattern of movement becomes a seemingly impossible task, because the athlete's ability to carry out any technical instruction is based on the accuracy of their sensory appreciation.

The more movement experiences that an athlete has the better he/she will be able to construct an internal visual kinaesthetic map of their environment. The athlete can then act on this map. A drill that could be used would be to have an athlete perform a technique/movement, then perform the same one with eyes closed and make a comparison of the two. Learning occurs when the athlete can discern a discrepancy between the two. [This is Schöllhorn's **contrast** or **differential learning**]