

**Tamil Nadu Physical Education and Sports University**

**Chennai 600127**

**Department of Physical Education**

**Sports Psychology**

**“MOTOR LEARNING”**



**Study Material**

**Complied by**

**Dr.S.Thirumalai Kumar**

## Define Motor Learning ( 2 Marks)

"Physical" refers to pertaining to the body and motor refers "Which produces action". Motor Learning is defined as a persistent change in movement behavior potentially as a result of practice or experience.

## Define Motor Learning and Explain the Basic Considerations for Motor Learning (15 Marks)

### Motor learning

According to American Sports Psychology Association **Motor learning is he process of acquiring and perfecting motor skills and movements, either simple acts or complex sequences of movements, which comes about through varying types of practice, experience, or other learning situations.**

Motor learning results in muscle memory, whereby the acquired motor skill can be performed without conscious effort, as in performing a skill (Dribbling, Kicking, Shooting, Passing), climbing stairs, or riding a bike.

The following are the basic consideration for Motor Learning

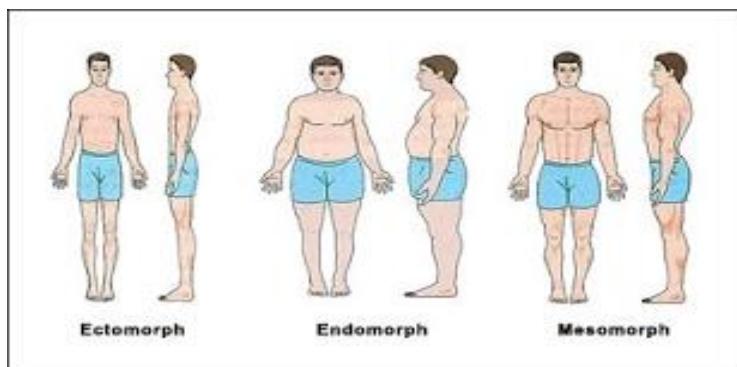
### 1. Body build

Kretschmer's Classification		
Body Type	Body Characteristics	Personality Characteristics
Pyknic	Fat types, in whom fat is more than muscle	Social and helping to others
Athletic	Healthy, balance between muscles and bone development	Energetic, optimist can adjust to any situation
Asthenic	Thin, and lean tall, no muscle, only bone	Unsociable, shy, pessimist and always alone

Morphological types according to Kretschmer

# Sheldon's Classification

Body Type	Body Characteristics	Personality Characteristics
<b>Endomorphy</b>	<b>No muscle development etc. prominent stomach</b>	<b>Takes everything easy, sociable and affectionate</b>
<b>Mesomorphy</b>	<b>Balance between development of stomach and bones</b>	<b>Likes to work, interested in adventurous activities</b>
<b>Ectomorphy</b>	<b>Weak, tall, thin</b>	<b>Pessimist, unsociable and alone</b>



Psychologists wanted to find out the successful athletes in various sports. So that one will be able to predict the performance in a given sport.

They found that there is positive relationship between mesomorphy and motor ability and a negative correlation between endomorphy and motor ability. Ectomorphs have better balance and flexibility.

Structure decides function and also function decides structure.

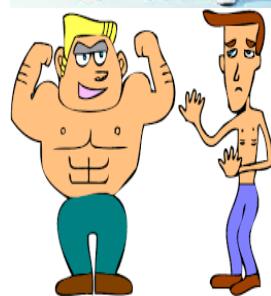
## **2. Height**

Height is measured with the help of stadiometer. Height is an advantage for the athletes to perform motor skill. For eg : A tall basketball player will shoot many goals, able to take jump balls and able defense in outstanding way. In volleyball also a tall player will be a good blocker and spiker. This is true in the case of tennis players, throwers and swimmers.



## **3. Weight .**

Weight is measured with the help of Weighing Machine. Weight is one of the important factor in classification. For eg. McCloy's classification (Determining Normal Weight) . Game like Kabaddi needs a person with more weight, and basketball also the defender is preferred to be a hefty person than a lean person.



## **4. Strength**

Strength is the capacity of a muscle or group of muscles to exert force against a given resistance. Minimum amount of strength is necessary for motor skill performance. There are three types of strength namely explosive, static and dynamic. Strength develops simultaneously with musculature in the fetus. Strength is necessary for the child to move to grasp, to push, to pull and to support the body, Explosive strength is used when the task requires a sudden expenditure of energy., Many sports such as sprinting or putting the and standing broad Jump requires explosive strength. Dynamic strength may be described as the expenditure of energy against a movable object or expenditure in which muscular movement occurs.

<b>Explosive Movements</b>	
<b>Sprinting</b>	<b>Leaping</b>
<b>Jumping</b>	<b>Bounding</b>
<b>Cutting</b>	<b>Kicking</b>
<b>Juking</b>	<b>Punching</b>
<b>Diving</b>	<b>Throwing</b>
<b>Rotating</b>	<b>Hopping</b>

Static strength is employed when muscular energy is directed against an immovable force and there is little or no movement of the limbs or trunk. Isometric exercises develop static strength.

Lifting of weights and grip strength are measured by hand dynamometer. Back and leg strength are measured by back/leg dynamometer. The tension supplied by various muscles are measured by tensiometer. Elbow extension strength and knee- flexion strength are measured by cabletiensiometer . Factors like heredity, body build, training, diet and age affect the basic strength. Strength could be increased gradually through regular exercise. muscular strength could be increased by weight training exercises.



## 5. Endurance

This is the ability to withstand stress, to sustain muscular pressure, or to sustain movement for an extended period. Like strength, endurance begins to develop in early childhood. Two types of endurance are there namely Muscular endurance and Cardiovascular endurance.

Muscular endurance is the capacity of a muscle or a group of muscles to contract repeatedly against a moderate resistance. The individual must maintain a moderate energy output over an extended duration of time. Strength and endurance delay fatigue. Endurance permits the individual to prolong the performance of an act. Endurance seems to increase up to the post pubescent level. Different activities require different types of endurance. The age at which peak endurance can be reached seems to vary from sport to sport and from individual to individual.

## 6 . Flexibility

Flexibility is determined by the range of movement of a joint. This is very essential for athletes and swimmers. The fact is that from birth, our flexibility begins to diminish. Flexibility could be easily checked with the help of touching the toe. Infants show extraordinary trunk and joint flexibility, but gradually they lose this ability when they grow. Example, to chew or lick their own toes. Flexibility diminishes as a result of physiological development, bone and muscle growth and reduces also by disuse.

The following factors limit joint flexibility

- (i) the nature of the joint structure (ii) the condition of the ligaments and fascia that surround the joint (iii) the muscle extensibility.

Basketball, hockey and volleyball players must have flexible wrist. Flexibility is essential for gymnasts and dancers. The football player must have flexible ankles. Flexibility could be increased by doing asanas. Flexibility can be measured by using goniometer.

## **7. Agility**

Agility is the ability to move quickly and efficiently., An obstacle course in which the participant is required to change directions quickly is commonly used to measure agility. Sports like basketball, football and tennis require their players to change directions constantly- forward, backward and sideward. Many drills in these games are labeled as agility drills.

## **8. Balance**

The ability to maintain body position is balance. Balance is necessary for the successful performance of sports skills. Muscular development is a prerequisite for balancing ability. Each sport demands a particular type of balance. Two types of balance are there namely dynamic balance and static balance.

Dynamic balance is the ability to sustain equilibrium while the body is moving. Eg. A child on a teeter-totter ( seesaw) relies on dynamic balance. Dynamic balance is essential in those dynamic sports requiring sudden changing movements. Eg. Tennis, basketball and football Static balance is the ability to sustain equilibrium while stationary-standing on one foot. The ability of balance could be measured with the help of balance beam, stabilometer and balance board.

## **9. Co-ordination**

Coordination is defined as the ability to integrate perceptual and motor skills in the efficient execution of specific movements. It is the harmonious functioning of the muscles in producing complex movements. This kind of coordination that is used seems to be specific to the task. Catching for example, requires hand-eye coordination. Kicking football requires eye-foot coordination. Dancing requires hand-leg-eye coordination. Coordination is important for gross motor skills. This can be measured by complex coordination test.

## **10. Reaction Time**

Reaction time is the elapsed interval of time from the presentation of a stimulus to the initiation of a response. Reaction time depends on perception of the stimulus (a noise or light i. e audio or video) and the initiation of the appropriate movement., Eg. The sprinter awaits for the starting gunshot. Here the Reaction Time the time elapsed from the pistol shot to the sprints response.



The simplest method of reducing reaction time is to have a subject place his finger on a button pressing with instructions to remove his finger when he sees a light signal just above the button. The apparatus used is called as chronoscope.

## **11. Movement Time**

A particular act takes is be completed after it has been initiated. Eg. In a start, from the sprints response to the completion of the race, the time recorded is the movement time. This is caused by muscular force. There is a high relationship between reaction time and movement time.

## **12. Reflex Time**

A reflex is usually non-volitional (autogenic). This is an automatic response, predictable and does not require perceptibility. Example: If the athlete is standing at the starting block, the time elapsed from the stimulation to the initiation of movement is the reflex time. Reflex time is shorter than the response time because the involvement of brain is not here. But spinal cord controls this.

## **13. Response Time**

This is the time an individual takes to complete the entire movement and includes the reaction time, movement time and reflex time.

