NORMAL GAIT

Normal gait is the manifestation of movement of the human body along a straight line. To perform this, it requires adequate ranges of movement in the joints of the lower limbs (toes, ankles, knee and hip joints), normal muscle power, in extension and flexion of leg muscles, together with high levels of integrated function of the sensory and motor components of the central nervous system.

ABNORMAL GAIT AND ITS ANALYSIS

When a person fails to walk straight in an erect position due to defects in any joints of the lower limbs or lack of postural reflexes in the limbs, and/or in the presence of inadequate muscle power, it results in an abnormal gait.

The following methods are used for research purposes in identification of abnormal gaits and their clinical diagnosis, for example:

BIOMECHANICAL ANALYSIS

This is obtained by slow or rapid step by step ciné film movement.
Time and Distance Factors Analysis

This is used for studying locomotion in patients, especially when someone is suffering from joint and locomotor system disease. In disease of joints the velocity of walking will vary, and therefore the length of stride will be affected.

Electromyography

Electromyography and analysis of the muscle fatigue time also reveals various muscle disorders associated with gait abnormality.

In the absence of such sophisticated monitoring facilities, a simple functional assessment is carried out. It is essential that all patients are asked to perform some simple tasks:

1. Rise and transfer from bed to chair, chair to commode, and back to bed again.
2. Rise from chair and walk in a straight line, inside or outside the parallel bar, to return to the point of start, stop in between.
3. Pick up objects from the floor while standing or sitting in a chair.

DISTURBANCES OF EQUILIBRIUM AND GAIT

Dizziness

The patient may complain of recurrent dizziness, sense of rotation and falls. This may be due to a lesion in the internal auditory meatus and semicircular canals.

In cases where the patient fails to walk steadily, and in particular is unable to come down stairs, then the lesion is probably in the labyrinth, in the internal auditory meatus. Such patients also complain of dizzy spells on walking. There is ataxia, but the postural reflexes remain intact.

Ataxia

Due to Loss of Sensation, Limb Weakness, or Cerebellar Disease

Conditions where ataxia may occur due to the above include hereditary, spinocerebellar artery thrombosis, cerebellar degeneration and infarction.